



Graduate School of Architecture & Urban Design

2026–27

Bulletin

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About This Bulletin

The graduate and professional *Bulletins* are the catalogs of programs, degree requirements, courses that may be offered and course descriptions, pertinent university policies, and faculty of the following schools of Washington University in St. Louis: Architecture & Urban Design; Art; Arts & Sciences; Business; Engineering; Law; Medicine; Public Health; and Social Work & Social Policy.

The *WashU Continuing & Professional Studies Bulletin* is the catalog for WashU Continuing & Professional Studies (CAPS), the professional and continuing education division at Washington University in St. Louis. The catalog includes programs, degree requirements, course descriptions, and pertinent university policies for students earning a degree or taking courses through CAPS.

The 2026-27 *Bulletin* is entirely online but may be downloaded in PDF format for printing. Individual pages as well as information from individual tabs may be downloaded in PDF format using the PDF icon in the top right corner of each page. To download the full PDF, please choose from the following:

- Architecture & Urban Design Bulletin (PDF) (*to come*)
- Art Bulletin (PDF) (*to come*)
- Arts & Sciences Bulletin (PDF) (*to come*)
- Business Bulletin (PDF) (*to come*)
- Engineering Bulletin (PDF) (*to come*)
- Law Bulletin (PDF) (*to come*)
- Medicine Bulletin (PDF) (*to come*)
- Public Health Bulletin (PDF) (*to come*)
- Social Work & Social Policy Bulletin (PDF) (*to come*)
- School of Continuing & Professional Studies Bulletin (undergraduate & graduate) (PDF) (*to come*)

The degree requirements and policies listed in the 2026-27 *Bulletin* apply to students entering Washington University during the 2026-27 academic year. For more information, please visit the Catalog Editions (p. 8) page.

Every effort is made to ensure that the information, applicable key policies, and other materials presented in the *Bulletin* are accurate and correct as of the date of publication (July 1, 2026). To view a list of changes that have taken place after that date, visit the Program & Policy Updates page. Please note that the *Bulletin* highlights key university policies applicable to its students. Not all applicable university and departmental policies are included here.

Washington University reserves the right to make changes at any time without prior notice to the *Bulletin* and to university policies. Therefore, the electronic version of the *Bulletin* as published online is considered the official, governing document, and it may change from time to time without notice.

The next edition of the *Bulletin* will be published on July 1, 2027. Midyear changes to current courses (titles, descriptions, and credit units) are not reflected in this *Bulletin*. For more information about determining the appropriate edition of the *Bulletin* to consult, please visit the Catalog Editions page (p. 8) in the About This Bulletin section.

For the most current information about registration, visit the Plan for Next Semester Overview page of the Workday@WashU website. To view current semester course listings, consult the Class Schedule Search on the Office of the University Registrar website.

Degree progress is monitored in Workday based on program requirements as published in the *Bulletin* in the year of the student's matriculation. Students are responsible for reviewing their academic progress for accuracy and remaining credential requirements. Questions about degree requirements and course applicability should be directed to advisors.

Please email the Bulletin editor (bulletin@wustl.edu), Jennifer Etling Gann, with any questions concerning the *Bulletin*.

Bulletin Policies

Policies related to this catalog include the following:

Changes to the Bulletin

Every effort is made to ensure that the information, policies and other materials presented in the *Bulletin* are accurate and correct as of the date of publication. For more information about the content review process for the *Bulletin*, please visit the Catalog Editions page (p. 8).

The *Bulletin* for the upcoming academic year is published annually on July 1, and certain post-publication changes may be made until October 1. To view a list of changes that have taken place after the July 1 publication date, please visit the Program & Policy Updates page.

Washington University reserves the right to make changes at any time without prior notice. Therefore, the electronic version of the *Bulletin* and the policies set forth therein may change from time to time without notice. The governing document at any given time is the then-current version of the *Bulletin*, as published online, and then-currently applicable policies and information are those contained in that *Bulletin*.

Discontinued Programs

Students enrolled in programs that discontinue admitting new students during their tenure are expected to meet degree requirements published in the *Bulletin* and in place during their year of matriculation. If a program's requirements change, a student may request to change to a subsequent version effective during their enrollment, which is subject to approval by their school. Students who leave the university may not be allowed to return to a discontinued program depending on the time frame the university has established that the program will teach out remaining students.

Students are held to other policies in effect and as published for the current academic year.

For more information, please visit the Prior Bulletins page (p. 8).

Year of Matriculation

Students are expected to meet degree requirements published in the *Bulletin* and in place during their year of matriculation. If a program's requirements change, a student may request to change to a subsequent version effective during their enrollment, which is subject to approval by their school.

For more information, please visit the Catalog Editions page (p. 8).

Course Numbering

Washington University adopted a new course labeling structure in Fall 2025. The first part is the subject code indicating the area of study: for example, ANTHRO for Anthropology or MEMS for Mechanical Engineering and Materials Science. The second part is a four-digit course number. Course numbers demonstrate a progression of difficulty and/or depth in coursework.

- 1000 to 1999 indicates an introductory undergraduate course, usually without prerequisites.
- 2000 to 2999 indicates an introductory or intermediate undergraduate course, sometimes with prerequisites.
- 3000 to 3999 indicates an upper-level undergraduate course, often with a prerequisite of a prior course or class standing (e.g., junior standing).
- 4000 to 4999 indicates an undergraduate course or seminar with advanced content, in which a graduate student may be eligible to register.
- 5000 to 9999 indicates a graduate course, in which advanced undergraduates may request to register.

The presence of a course in this *Bulletin* signifies that it is part of the curriculum currently offered and may be scheduled for registration.

Curriculum Designators

The subject codes shown below are used in Washington University's course records and are listed here alphabetically.

A

Code	Name
AAS	Asian American Studies
ACCT	Accounting
AFAS	African & African American Studies
AHBR	Applied Health Behavior Research
AMCS	American Culture Studies
ANESTH	Anesthesiology
ANTHRO	Anthropology
APL	Applied Linguistics
ARAB	Arabic
ARC	Archaeology
ARCH	Architecture
ART	Art
ARTARCH	Art History & Archaeology
ASGS	Arts & Sciences Graduate Studies

B

Code	Name
BBS	Biology & Biomedical Sciences
BDSAI	Biomedical Data Science and AI
BEYOND	Beyond Boundaries
BIOCHEM	Biochemistry & Molecular Biophysics
BIOL	Biology & Biomedical Sciences
BME	Biomedical Engineering
BMI	Biomedical Informatics
BSDC	Brown School Doctoral

C

Code	Name
CAPS-AFAS	CAPS - African & African American Studies
CAPS-AMCS	CAPS - American Culture Studies
CAPS-ANTHRO	CAPS - Anthropology
CAPS-ARAB	CAPS - Arabic
CAPS-ART	CAPS - Art
CAPS-ARTARCH	CAPS - Art History & Archaeology
CAPS-BIO	CAPS - Biology
CAPS-BUS	CAPS - Business
CAPS-CHEM	CAPS - Chemistry
CAPS-CHINESE	CAPS - Chinese
CAPS-CIM	CAPS - Computers & Information Management



CAPS-CLASSICS	CAPS - Classics
CAPS-COMM	CAPS - Communications
CAPS-COMPLIT	CAPS - Comparative Literature
CAPS-CRM	CAPS - Clinical Research Management
CAPS-CS	CAPS - Computer Science
CAPS-DANCE	CAPS - Dance & Somatic Movement Studies
CAPS-DATASTUDIES	CAPS - Data Studies
CAPS-DRAMA	CAPS - Drama
CAPS-EASIA	CAPS - East Asian Studies
CAPS-ECOMP	CAPS - English Composition
CAPS-ECON	CAPS - Economics
CAPS-EDUC	CAPS - Education
CAPS-ELIT	CAPS - English & American Literature
CAPS-ELP	CAPS - English Language Programs
CAPS-EPSC	CAPS - Earth & Planetary Sciences
CAPS-FILM	CAPS - Film & Media Studies
CAPS-FR	CAPS - French
CAPS-GERMAN	CAPS - Germanic Languages & Literatures
CAPS-GIS	CAPS - Geographic Information Systems
CAPS-GS	CAPS - General Studies
CAPS-HCARE	CAPS - Health Care
CAPS-HEBR	CAPS - Hebrew
CAPS-HINDI	CAPS - Hindi
CAPS-HIST	CAPS - History
CAPS-HRM	CAPS - Human Resources Management
CAPS-IA	CAPS - International Affairs
CAPS-IRISH	CAPS - Irish Studies
CAPS-IS	CAPS - International Studies
CAPS-ISLA	CAPS - Integrated Studies in Liberal Arts
CAPS-ITAL	CAPS - Italian
CAPS-JAPAN	CAPS - Japanese
CAPS-JME	CAPS - Jewish, Islamic, & Middle East Studies
CAPS-JRN	CAPS - Journalism
CAPS-KOREAN	CAPS - Korean
CAPS-LAS	CAPS - Latin American Studies
CAPS-LING	CAPS - Linguistics
CAPS-MATH	CAPS - Mathematics & Statistics
CAPS-MUS	CAPS - Music
CAPS-NPM	CAPS - Nonprofit Management
CAPS-PHIL	CAPS - Philosophy
CAPS-PHYS	CAPS - Physics
CAPS-POLSCI	CAPS - Political Science
CAPS-PORT	CAPS - Portuguese

CAPS-PSYCH	CAPS - Psychological & Brain Science (Psychology)
CAPS-RELST	CAPS - Religious Studies
CAPS-RUSS	CAPS - Russian
CAPS-SCAN	CAPS - Scandinavian
CAPS-SCI	CAPS - Science
CAPS-SOC	CAPS - Sociology
CAPS-SPAN	CAPS - Spanish
CAPS-SPCH	CAPS - Speech
CAPS-SUST	CAPS - Sustainability
CAPS-WGSS	CAPS - Women, Gender, & Sexuality Studies
CFH	Center for the Humanities
CHEM	Chemistry
CHINA	Chinese
CHST	Children's Studies
CLASSICS	Classics
CLNV	Clinical Investigation
CNST	Construction Management
COMPLITHT	Comparative Literature & Thought
CSE	Computer Science & Engineering
CWP	College Writing Program
CYBER	Cybersecurity Management

D

Code	Name
DANCE	Dance
DAT	Data Analytics
DCDS	Division of Computational & Data Sciences
DESIGN	Design
DRAMA	Drama

E

Code	Name
EALC	East Asian Languages & Cultures
ECON	Economics
EDUC	Education
EECE	Energy, Environmental, & Chemical Engineering
EEPS	Earth, Environmental, & Planetary Sciences
EGS	Engineering Graduate Studies
ELIT	English Literature
EMED	Emergency Medicine
EMGT	Engineering Management
ENGR	General Engineering
ENST	Environmental Studies
ESE	Electrical & Systems Engineering
ETEM	Engineering Management



F

Code	Name
FASHION	Fashion Design
FILM	Film & Media Studies
FIN	Finance
FRENCH	French

G

Code	Name
GENETICS	Genetics
GENST	General Studies
GERMAN	Germanic Languages & Literatures
GLOBAL	Global Studies
GNCOUN	Genetic Counseling
GREEK	Greek

H

Code	Name
HBRW	Hebrew
HCO	Health Care Operations
HINDI	Hindi
HISTORY	History

I

Code	Name
IMSE	Institute of Materials Science & Engineering
INFO	Information Management
INTERD	Interdisciplinary Studies
INTL	International Studies
IPMS	Movement Science
ITAL	Italian

J

Code	Name
JAPAN	Japanese
JCE	Joint Civil Engineering
JCHE	Joint Chemical Engineering
JCS	Joint Intro to Computing
JEC	Joint Engineering Communications
JEE	Joint Electrical Engineer
JEMT	Joint Engineering Math
JIMES	Jewish, Islamic, & Middle East Studies
JME	Joint Mechanical Engineering

K

Code	Name
KOREA	Korean

L

Code	Name
LANDARCH	Landscape Architecture
LATAM	Latin American Studies
LATIN	Latin
LAW	Law
LAWO	Law Online
LING	Linguistics
LWST	Legal Studies

M

Code	Name
MAIR	Military Aerospace Science
MARM	Military Science
MATH	Mathematics & Statistics
MBIO	Molecular Biology
MBIOPHARM	Molecular Biology & Pharmacology
MEC	Managerial Economics
MEDH	Medical Humanities
MEDICINE	Internal Medicine
MEDINTER	Medicine Interdisciplinary
MEDPHASE1	Medicine Phase 1
MEDPHASE2	Medicine Phase 2
MEDPHASE3	Medicine Phase 3
MEDPHYS	Medical Physics
MEDRSRCH	Medicine Research
MEMS	Mechanical Engineering & Materials Science
MGS	Medicine Graduate Studies
MGT	Management
MKT	Marketing
MSB	Biostatistics & Genetic Epidemiology
MUSIC	Music

N

Code	Name
NEUROL	Neurology
NEUROSCI	Neuroscience
NEUROSUR	Neurological Surgery
NRSSCI	Nursing Science



O

Code	Name
OB	Organizational Behavior
OBGYN	Obstetrics & Gynecology
OPHTH	Ophthalmology & Visual Sciences
ORTHO	Orthopedic Surgery
OSP	Overseas Programs
OT	Occupational Therapy
OTO	Otolaryngology

P

Code	Name
PACS	Audiology & Communication Sciences
PATH	Pathology
PBPMSTUDY	Biological & Physical Sciences for PBPM
PE	Physical Education
PEDS	Pediatrics
PHCC	Public Health Concentration Courses
PHDC	Public Health Doctoral
PHEL	Public Health Electives
PHFN	Public Health Foundation
PHIL	Philosophy
PHPC	Public Health Practicum
PHRS	Public Health Research
PHS	Population Health Sciences
PHSL	Public Health Skill Lab
PHTPS	Public Health Transdisciplinary Problem Solving
PHYSICS	Physics
PHYTHER	Physical Therapy Program - Grad
PNP	Philosophy-Neuroscience-Psychology
POLSCI	Political Science
PORTUG	Portuguese
PRJM	Project Management
PSY	Psychiatry
PSYCH	Psychological & Brain Sciences
PUBHLTHSOC	Public Health & Society

R

Code	Name
RADIOL	Radiology
RADONC	Radiation Oncology
RELPOL	Religion & Politics
REPRSCI	Reproductive Science
RESEARCH	Research
REST	Religious Studies
RUSS	Russian

S

Code	Name
SCOT	Supply Chain, Operations, & Technology
SDS	Statistics & Data Science
SLU	Saint Louis University
SOC	Sociology
SPAN	Spanish
SPCN	Social Policy Concentration
SPFN	Social Policy Foundation
SPGN	Social Policy General
SPHR	Speech & Hearing
SURGERY	Surgery
SWCP	Social Work Concentration Practicum
SWDT	Social Work Doctoral
SWEL	Social Work Electives
SWEV	Social Work Evaluation
SWFN	Social Work Foundation
SWHS	Social Work History & Professional Theme
SWLM	Social Work Leadership & Management
SWPM	Social Work Practice Methods
SWSL	Social Work Skill Lab
SWSP	Social Policy
SWTH	Social Work Theory

T

Code	Name
TIPM	Industrial Management

U

Code	Name
UMSL	University of Missouri-St. Louis
URBDES	Urban Design
URST	Urban Studies



W

Code	Name
WGSS	Women, Gender, & Sexuality Studies
WRITING	Writing

Catalog Editions

The courses and policies listed in this *Bulletin* are subject to change at any time through normal approval channels within Washington University. New courses, changes to existing coursework, and new policies are initiated by the appropriate institutional departments, committees, or administrators. Academic policy revisions are generally implemented in the next academic year following notification thereof. Washington University publishes a new edition of the *Bulletin* each July, and its contents apply to the subsequent fall, spring, and summer terms. Occasionally a policy or requirement must be changed and implemented during the same academic year (e.g., in the case of relevant external requirements, such as state regulations). All changes must be approved by college or school personnel who oversee academic curriculum and policies.

Washington University students are expected to meet degree requirements published in the *Bulletin* and in place during their year of matriculation. Undergraduates who initially enroll in a summer term to pursue a special program follow requirements for the subsequent fall term. Students will need to check their school's processes to potentially change applicable catalog years or alter their degree requirements.

Students should review specific Washington University and individual school policies related to transfer credit, changing programs, leaves of absence, and military service.

Prior Bulletins

To find program details, course descriptions, and relevant policies, choose the year of enrollment below to find the available *Bulletins*. If the required year is not shown or the school's *Bulletin* is not available, please email the Office of the University Registrar (registrar@wustl.edu) with specifics of what information is needed.

2025-2026

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Public Health Bulletin (HTML) (PDF)

- Social Work & Social Policy Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- School of Continuing & Professional Studies Bulletin (HTML: Undergraduate, Graduate) (PDF)

2024-2025

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- School of Continuing & Professional Studies Bulletin (HTML: Undergraduate, Graduate) (PDF)

2023-2024

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- School of Continuing & Professional Studies Bulletin (HTML: Undergraduate, Graduate) (PDF)

2022-2023

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2021-2022

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2020-2021

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2019-2020

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Business Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2018-2019

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)

- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2017-2018

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Law Bulletin (HTML) (PDF)
- Medicine Bulletin (HTML) (PDF)
- Social Work & Public Health Bulletin (HTML) (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2016-2017

- Graduate Architecture & Urban Design Bulletin (HTML) (PDF)
- Graduate Art Bulletin (HTML) (PDF)
- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Graduate Engineering Bulletin (HTML) (PDF)
- Medicine Bulletin (PDF)
- Undergraduate Bulletin (HTML) (PDF)
- University College Bulletin (HTML: Undergraduate, Graduate) (PDF)

2015-2016

- Graduate Arts & Sciences Bulletin (HTML) (PDF)
- Medicine Bulletin (PDF)
- Undergraduate Bulletin (HTML) (PDF)

2014-2016

- University College Bulletin (undergraduate & graduate) (PDF)

2014-2015

- Medicine Bulletin (PDF)
- Undergraduate Bulletin (HTML) (PDF)

2013-2014

- Medicine Bulletin (PDF)
- Undergraduate Bulletin (HTML) (PDF)

2012-2015

- Graduate Arts & Sciences Bulletin (PDF)

2012-2014

- University College Bulletin (undergraduate & graduate) (PDF)

2012-2013

- Medicine Bulletin (PDF)
- Undergraduate Bulletin (HTML) (PDF)

2011-2012

- Medicine Bulletin (PDF)
- Undergraduate Bulletin (HTML) (PDF)

2010-2011

- Medicine Bulletin (PDF)
- Undergraduate Bulletin (PDF)

2009-2012

- Graduate Arts & Sciences Bulletin (PDF)

2009-2010

- Medicine Bulletin (PDF)

2008-2010

- Undergraduate Bulletin (PDF)

2008-2009

- Medicine Bulletin (PDF)

2006-2009

- Graduate Arts & Sciences Bulletin (PDF)
and accompanying 2008 Update (PDF)

2006-2008

- Undergraduate Bulletin (PDF)

About Washington University in St. Louis

Who We Are Today

Washington University in St. Louis — a medium-sized, independent university — is dedicated to challenging its faculty and students alike to seek new knowledge and greater understanding of an ever-changing, multicultural world. The university is counted among the world's leaders in teaching and research, and it draws students from all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands. Students and faculty come from more than 100 countries around the world.

The university offers more than 250 programs and 5,500 courses leading to associate, bachelor's, master's, and doctoral degrees in a broad spectrum of traditional and interdisciplinary fields, with additional opportunities for minor concentrations and individualized programs. For more information about the university, please visit the About WashU page of our website.

Enrollment by School

For enrollment information, please visit the University Facts page of our website.

Our Mission Statement

The mission of Washington University in St. Louis is to act in service of truth through the formation of leaders, the discovery of knowledge, and the treatment of patients for the betterment of our region, our nation, and our world.

At WashU, we generate, disseminate, and apply knowledge. We foster freedom of inquiry and expression of ideas in our research, teaching, and learning.

We aim to create an environment that encourages and supports wide-ranging exploration at the frontier of discovery by embracing diverse perspectives from individuals of all identities and backgrounds. We promote higher education and rigorous research as a fundamental component of an open, vibrant society. We strive to enhance the lives and livelihoods not only of our students, patients, and employees but also of the people of the greater St. Louis community and beyond. We do so by addressing scientific, social, economic, medical, and other challenges in the local, national, and international realms.

Our goals are:

- to foster excellence and creativity in our teaching, research, scholarship, patient care, and service
- to welcome students, faculty, and staff from all backgrounds to create an inclusive, equitable community that is nurturing and intellectually rigorous

- to cultivate in students habits of lifelong learning and critical and ethical thinking, thereby enabling them to be productive members and leaders of a global society
- to contribute positively to our home community of St. Louis, and to effect meaningful, constructive change in our world

To this end we intend:

- to hold ourselves to the highest standards of excellence
- to educate aspiring leaders of great ability from diverse backgrounds
- to encourage faculty and students to be innovative, bold, independent, critical thinkers
- to build an inclusive, equitable, respectful, ethically-principled environment for living, teaching, learning, and working for the present and future generations
- to focus on meaningful and measurable outcomes for all of our endeavors

Mission statement endorsed by the Faculty Senate Council in April 2021 and approved by the Board of Trustees on October 1, 2021.

Trustees & Administration

Board of Trustees

Washington University's Board of Trustees is the chief governing body of Washington University in St. Louis. Current members of the board include the following:

Andrew Bursky
Chair

Andrew E. Newman
Vice Chair

Penny Pennington
Vice Chair

Nick Barto (*Ex Officio*)

Chris Boerner

Blackford F. Brauer

Corinna Cotsen

Lori Coulter

Arnold W. Donald

Jeffrey L. Fox

Gaurav Garg

Avram A. Glazer

John Hamilton

Stacey Hightower

Thomas Hillman

Carrie A. Johnson

Lal Karsanbhai

David W. Kemper

Jerald Kent

Alaina Maciá

Andrew D. Martin (*Ex Officio*)

Vicki Match Suna

Susan B. McCollum

Alicia S. McDonnell

James M. McKelvey, Jr.

Steven "Cash" Nickerson

Michael W. Riney

Anthony W. Ryan

Craig D. Schnuck

Nicholas Somers

Mary Danforth Stillman

Kurt A. Summers

Barbara Schaps Thomas

Lawrence E. Thomas

David A. Ulevitch

Eric B. Upin

Henry D. Warshaw

Joseph F. Wayland

Dean Yamamoto

Nicholas S. Zeppos

Please visit the Board of Trustees website for more information.

University Administration

In 1871, Washington University co-founder and then-Chancellor William Greenleaf Eliot sought a gift from Hudson E. Bridge, a charter member of the university's Board of Directors, to endow the chancellorship. Soon after this endowment was received, the position was renamed the "Hudson E. Bridge Chancellorship."

The officers of the university administration are currently led by Chancellor Andrew D. Martin. University leadership is detailed on the Washington University website.

Andrew D. Martin

Chancellor

Mark D. West

Provost

Academic Calendar

The academic calendar of Washington University in St. Louis is designed to provide an optimal amount of classroom instruction and examination within a manageable time frame, facilitating our educational mission to promote learning among both students and faculty. The dates listed here are the outline of the standard semester calendar, applicable to traditional undergraduate and many graduate programs. Certain schools or programs may have varying calendars due to the nature of particular fields of study. Please refer to the Academic Calendar page of the Office of the University Registrar's website for more information.

Fall Semester 2026

Date	Day	Description
August 24	Monday	First day of classes
September 7	Monday	Labor Day holiday (no classes)
October 3-6	Saturday-Tuesday	Fall Break (no classes)
November 25- November 29	Wednesday-Sunday	Thanksgiving Break (no classes)
December 7	Monday	Last day of classes
December 8-9	Tuesday-Wednesday	Reading days
December 10-16	Thursday-Wednesday	Final exams

Spring Semester 2027

Date	Day	Description
January 18	Monday	Martin Luther King, Jr. holiday (no classes)
January 19	Tuesday	First day of classes
March 14-21	Sunday-Sunday	Spring Break (no classes)
May 3	Monday	Last day of classes
May 4-5	Tuesday-Wednesday	Reading days
May 6-12	Thursday-Wednesday	Final exams

Commencement

Date	Day	Description
May 21	Friday	Class of 2027 Commencement

Summer Semester 2027

Date	Day	Description
May 24	Monday	First Summer Session begins
May 31	Monday	Memorial Day holiday (no classes)
July 5	Monday	Independence Day holiday observed (no classes)
August 19	Thursday	Last Summer Session ends

Religious Holiday Class Absence Policy

As home to students, faculty, and staff of all the world's major religions and as a non-sectarian institution, Washington University in St. Louis values the rich diversity of spiritual expression and practice found on campus. It is therefore the policy of the university that students who miss class, assignments, or exams to observe a religious holiday should be accommodated as follows:

1. Absences should be counted as excused in any course in which attendance is a measure of academic performance;
2. Reasonable extensions of time should be given, without academic penalty, for missed assignments; and
3. Exams should be reasonably rescheduled without academic penalty.

To ensure that accommodations may be made, students who plan to miss class for a religious holiday must inform their instructors in writing *before the end of the third week of class* or as soon as possible if the holiday occurs during the first three weeks of the semester. Instructors should inform students on their syllabus and/or at the start of the class how they would like students to notify them of any accommodation needs related to religious observance.

Absence for religious reasons does not lessen students' responsibility for coursework or material covered during their absence. It is incumbent on the student who misses a class to catch up on any material discussed and assignments given during that class period. If a student believes that they have not received a reasonable accommodation despite engaging with their instructor on the topic, they should follow the course grievance process outlined by their school.

The Office for Religious, Spiritual & Ethical Life provides a list of Religious & Spiritual Holidays that fall within the academic year. This list is not a designation of religious holidays recognized by the university, and it is not meant to be comprehensive; it is simply a guide to help students and instructors plan their courses and assignments.

For Faculty

Every effort should be made to avoid scheduling exams on religious holidays, particularly those with work restrictions as noted on the holiday calendar.

Faculty should be supported in establishing a teaching schedule that allows them to avoid conflict with their observance of religious holidays. Where this is not possible, faculty should make up any missed class(es) in the method most appropriate to student learning in their course (e.g., rescheduling for an alternate time, providing asynchronous material, engaging a guest lecturer). Appropriate advance notice should be provided to students.

Any instructor with concerns regarding either a given holiday or the academic implications of a particular student's religious observance of holidays may seek guidance from the chair of their department, the dean of their school, or the Director for Religious, Spiritual & Ethical Life.

Campus Resources

Student Support Services

The Learning Center

The Learning Center, located on the lower level of the Mallinckrodt Center and housed within the Center for Teaching and Learning, is the hub of academic support at Washington University in St. Louis. The Learning Center's programs are designed to support students in their course work by helping them develop the lifelong skill of "learning how to learn" and by stimulating their independent thinking. All services are free (with the exception of MCAT prep), and each year more than 1,800 students participate in one or more of our programs.

The Learning Center offers support for foundational courses through Peer-Led Team Learning and our drop-in mentoring programs (Residential Peer Mentoring and Drop-In Academic Mentoring). Individual peer-led coaching is available for academic skills such as time management, study strategies, note-taking, accessing resources, and managing test anxiety. Other services offered include small group mentoring for eligible students and an MCAT preparation program.

For more information, visit the Learning Center website or call 314-935-2066.

Disability Resources

Disability Resources supports students with disabilities by fostering and facilitating an equal access environment for the Washington University community of learners. Disability Resources partners with faculty and staff to facilitate academic and housing accommodations for students with disabilities on the Danforth Campus. Students enrolled in the School of Medicine should contact their program's director. Please visit the Disability Resources website or call 314-935-5970 for more information.

TRIO: Student Support Services

TRIO is a federally funded program that provides customized services for undergraduate students who are low income, who are the first in their family to go to college, and/or who have a documented disability. Services include academic coaching, academic peer mentoring, cultural and leadership programs, summer internship assistance and post-graduation advising. First-year and transfer students are

considered for selection during the summer before they enter their first semester. Eligible students are encouraged to apply when they are notified, because space in this program is limited. For more information, visit the TRIO Program website.

Medical Student Support Services

For information about Medical Student Support Services, please visit the School of Medicine website.

Office for International Students and Scholars

The Office for International Students and Scholars (OISS) is dedicated to fostering an inclusive environment that celebrates our international students' and scholars' diverse experiences, cultures, and aspirations. OISS plays a pivotal role in cultivating a vibrant, intercultural atmosphere on our campus, extending support to international students, scholars, faculty, and staff through immigration sponsorship. OISS commits to ensuring a seamless integration process for those who are admitted, appointed, or employed by Washington University. Grounded in the belief that education can shape global perspectives, the OISS mission is to empower the Washington University international community with the knowledge and resources needed to navigate U.S. immigration compliance while guiding them with care and compassion at every step.

OISS has locations on both the Danforth Campus and the Medical Campus. For information about OISS locations, office hours, staff, and services, visit the Office for International Students and Scholars website, email oiss@wustl.edu, or call 314-935-5910.

Office of Military and Veteran Services

This office serves as the university's focal point for military and veteran matters, including transitioning military-connected students into higher education, providing and connecting students with programs and services, and partnering across campus and in the community. Services include advising current and prospective students on how to navigate the university and maximize Department of Defense and Veterans Affairs (VA) educational benefits, transition support, Veteran Ally training for faculty and staff, veteran-unique programming, and connecting students to campus and community resources. Military-connected students include veterans, military service members, spouses, dependent children, caregivers, survivors and Reserve Officer Training Corp cadets. There are two university policies that apply to students who still serve in the Armed Forces and students who use VA educational benefits:

- The Policy on Military Absences, Refunds and Readmissions applies to students serving in the U.S. Armed Forces and their family members when military service forces them to be absent or withdraw from a course of study.

- The Policy on Protections for VA Educational Benefit Users applies to students using VA education benefits when payments to the institution and the individual are delayed through no fault of the student.

The Office of Military and Veteran Services is located in Umrath Hall on the Danforth Campus. Please visit the Military and Veteran Services website or send an email to veterans@wustl.edu for more information.

Relationship and Sexual Violence Prevention (RSVP) Center

The RSVP Center offers free and confidential services including 24/7 crisis intervention, counseling services, resources, support and prevention education for all students on the Danforth Campus. The RSVP Center operates from a public health model and uses trauma-informed practices to address the prevalent issues of relationship and sexual violence. By providing support for affected students, it is our goal to foster post-traumatic growth and resilience and to help ensure academic retention and success. Our prevention efforts call for community engagement to engender an intolerance of violence and an active stance toward challenging cultural injustices that perpetuate such issues. Learn more at the RSVP Center website.

WashU Cares

WashU Cares assists the university with handling situations involving the safety and well-being of Danforth Campus students. WashU Cares is committed to fostering student success and campus safety through a proactive, collaborative and systematic approach to the identification of, intervention with and support of students of concern while empowering all university community members to create a culture of caring. If there is a concern about the physical or mental well-being of a student, please visit the WashU Cares website to file a report.

The Writing Center & Speaking Studio

The Writing Center & Speaking Studio — a free service — offers writing and public speaking support to all Washington University undergraduate and graduate students. Tutors will read and discuss any kind of work in progress, including student papers, senior theses, application materials, dissertations and oral presentations. The Writing Center staff is trained to work with students at any stage of the writing process, including brainstorming, developing and clarifying an argument, organizing evidence, and improving style. Rather than editing or proofreading, tutors will emphasize the process of revision and teach students how to edit their own work.

The Writing Center is located in Mallinckrodt Center on the lower level. Appointments are preferred and can be made online, but walk-ins will be accepted if tutors are available. Dedicated Undergraduate Walk-in Hours are held in the second half of each semester (after fall break and spring break) on Tuesday and Wednesday afternoons. Questions? Email writing@wustl.edu.

Student Health and Well-Being Services, Danforth Campus

The Student Health Center – Danforth Campus provides medical, psychiatric, and health promotion services for undergraduate and graduate students on the Danforth Campus. Please visit the Student Health Center – Danforth Campus website for more information about Health Center services and staff members.

Hours:

Monday, Tuesday, Thursday, and Friday: 8 a.m. - 5 p.m.

Wednesday: 10 a.m. - 5 p.m.

Saturday, Sunday, and university holidays: Closed

For after-hours care, students should access TimelyCare.

Medical Services

Medical Services staff members provide care for the evaluation and treatment of an illness or injury, preventive health care and health education, immunizations, nutrition counseling, sports medicine, travel medicine, and sexual health services. Student Psychiatry Services staff provide ongoing medication management for students to address their mental health concerns. Student Health Center providers are participating members of the Washington University in St. Louis Physician's Network. Any condition requiring specialized medical services will be referred to an appropriate specialist. The Health Center accepts health insurance plans that have met waiver criteria for the Student Health Insurance Plan and will be able to bill the plan according to plan benefits. The Student Health Insurance Plan requires a referral for medical care any time care is not provided at Student Health (except in an emergency). Call 314-935-6666 or visit the Student Health Center – Danforth Campus website to schedule an appointment.

Appointments are also available for the assessment and referral of students struggling with substance use.

The Student Health Center lab provides full laboratory services. Some tests can be performed in house. The remainder of all testing that is ordered by Student Health is completed by LabCorp. LabCorp serves as Student Health's reference lab, and it is a preferred provider on the student health insurance plan. This lab can perform any test ordered by Student Health Center providers or outside providers.

All incoming students must provide proof of immunization for measles, mumps, and rubella (i.e., two vaccinations after the age of one year old; a titer may be provided in lieu of the immunizations). Proof of receiving a meningococcal vaccine on or after the age of 16 is

required for all incoming undergraduate students. A TB test in the past six months is required for students entering the university who screen positive on the TB questionnaire found on the student portal. It is also recommended that before beginning their studies at WashU, all students will have received the tetanus diphtheria pertussis immunization, the hepatitis A vaccine series, the hepatitis B vaccine series, the HPV vaccine series, the meningitis B vaccine, and the varicella vaccine. Failure to complete the required forms will delay a student's registration and prevent their entrance into housing assignments. Please visit the Student Health Center website for complete information about immunization requirements and deadlines.

Health Promotion Services

Health Promotion Services staff and Peer Health Educators provide free programs and risk reduction information related to mental health, sexual health, alcohol/other drugs, and community care. For more information, visit the Zenker Wellness Suite in Sumers Recreation Center, consult the Health and Wellbeing Digital Library, follow us on Instagram (@washu_healthpromotion), and/or email wellness@wustl.edu. In 2018, this department launched the WashU Recovery Community to provide an opportunity for students in recovery from substance use to connect with other students with similar experiences.

Center for Counseling and Psychological Services (CCPS)

Hours:

Monday, Tuesday, Thursday, and Friday: 8 a.m. - 5 p.m.

Wednesday: 10 a.m. - 5 p.m.

Saturday, Sunday, and university holidays: Closed

For after-hours mental health support, students should access the TimelyCare app and request a "Talk Now" visit.

Located in the Student Health Center-Danforth Campus, CCPS is staffed by licensed professional staff members who work with students to resolve personal and interpersonal difficulties. These may include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. Services include individual, group, and couples counseling; crisis counseling; and referral for off-campus counseling when students' needs can be better met outside of CCPS. All full-time students who pay the university health and wellness fee as part of their tuition are eligible for services. Visit the CCPS website or call 314-935-6695 to schedule an appointment during business hours. For additional information, visit the CCPS website or send an email to ccpscoordinator@wustl.edu.

Important Information About Health Insurance and Fees for Danforth Campus Students

All full-time, degree-seeking WashU students are automatically enrolled in the Student Health Insurance Plan upon completion of registration. Students may opt out of this coverage and receive a refund of the health insurance fee if they provide proof of existing comprehensive insurance coverage that meets all university requirements. Information concerning opting out of the student health insurance plan can be found online after June 1 of each year. All students must request to opt out by September 5 of *every year* in which they wish to be removed from the Student Health Insurance Plan. The Student Health Center provides billing services to many of the major insurance companies in the United States. Specific fees and copays apply to students using Medical Services and Student Psychiatric Services; these fees are billable to the students' insurance plans. More information is available on the Student Health Center – Danforth Campus website.

In addition, WashU has a health and wellness fee designed to improve the health and well-being of the campus community. It is assessed by the university, and it is entirely separate from health insurance. This fee helps support membership to the Summers Recreation Center, health education/prevention efforts, the Center for Counseling and Psychological Services, and TimelyCare.

Student Health Services, Medical Campus

For information about student health services on the Medical Campus, please visit the Student & Occupational Health Services page of the School of Medicine website.

Campus Security

The Washington University campus is among the most attractive in the nation, and it enjoys a safe and relaxed atmosphere. Personal safety and the security of personal property while on campus is a shared responsibility. Washington University has made safety and security a priority through our commitment to a full-time professional police department, the use of closed-circuit television, card access, extensive lighting initiatives based on Crime Prevention Through Environmental Design (CPTED) practices, shuttle services, emergency telephones, and ongoing educational safety awareness programs. The vast majority of crimes that occur on college campuses are crimes of opportunity, which can be prevented.

The best protection against crime is an informed and alert campus community. Washington University has developed several programs to help make everyone's experiences here safe and secure. An extensive network of emergency telephones — including more than 200 "blue light" telephones — is connected directly to the University Police

Department and can alert the police to a person's exact location. In addition to the regular shuttle service, an evening student walking/mobile escort service known as "Bear Patrol" and a mobile Campus Circulator shuttle are available on the Danforth Campus.

The Campus2Home shuttle will provide a safe ride home for those living in four designated areas off campus — Skinker-DeBaliviere, Loop South, north of the Loop, and just south of the campus — within these boundaries:

- North – Olive Blvd
- South – Clayton Road
- East – Union Blvd
- West – Hanley Road

Shuttles will run from 7:00 p.m. to 4:00 a.m. seven days a week during academic sessions. Rides should be requested via the TripShot app. Pickup locations to choose from are the Mallinckrodt Center, the Summers Welcome Center, and the Knight Center. The shuttle takes passengers directly to the front doors of their buildings. Shuttle drivers will then wait and watch to make sure passengers get into their buildings safely.

The University Police Department is a full-service organization staffed by certified police officers who patrol the campus 24 hours a day throughout the entire year. The department offers a variety of crime prevention programs, including a high-security bicycle lock program, computer security tags, personal safety classes, and security surveys. Community members are encouraged to download and install the WashU Safe personal safety app on their phones; this app allows users to call for help during emergencies, to use Friend Walk to track their walks on and off campus, and to access many additional safety features. For more information about these programs, visit the Washington University Police Department website.

WashU PD also has comfort dogs — Bear, Brookie, Misty, and Archie — on campus to support our students, faculty, and staff. In addition, there is a decompression/comfort room inside the police station at 6615 Shepley Drive on the South 40. This room offers a supportive, stress-free, and welcoming environment designed to promote wellness and connection with the officers and the comfort dogs. Students are welcome to walk in at any time, or they can schedule a visit by emailing wupddogs@wustl.edu to secure a dedicated time with the dogs.

In compliance with the Campus Crime Awareness and Security Act of 1990, Washington University publishes an annual report entitled *Safety & Security: Guide for Students, Faculty, and Staff — Annual Campus Security and Fire Safety Reports and Drug & Alcohol Abuse Prevention Program*. This report is available to all current and prospective students on the Danforth Campus and to university employees on the Danforth, North and West campuses. To request a hard copy, contact the Washington University Police Department, 6615 Shepley Drive, Clayton, MO 63105, 314-935-5555.

For information regarding protective services at the School of Medicine, please visit the Campus Safety page of the Washington University Operations & Facilities Management Department.

Student Complaints

WashU provides students with different processes to handle complaints depending on the nature of the complaint. The Student Feedback & Complaint Form provides information on the different avenues available, as well as a web-form for submitting complaints. Complaints submitted through the form are reviewed by the Office of the Vice Chancellor for Student Affairs and forwarded to the University office or department that would be responsible for addressing the complaint. Complaints may be made anonymously, but students have the option of providing contact information to receive a response regarding steps taken to resolve the complaint. The University's Whistleblower Protection Policy applies to students making good-faith complaints regarding violations of policy or unethical acts.

If a student has a complaint related to distance education, as a participant in the National Council for State Authorization Reciprocity Agreements (NC-SARA), WashU follows the SARA policy that provides for the resolution of complaints resulting from distance education courses, activities, and operations delivered by WashU to students who participate in such courses outside of the state of Missouri (including the District of Columbia, Puerto Rico, and the US Virgin Islands, but excepting California, which is not a member of NC-SARA). Under NC-SARA Policy Section 4.5 (Process for Resolving Complaints), students are asked to seek resolution of complaints first through WashU, as described above. If the complaint is not resolved, distance education students should contact the Missouri State Portal Entity:

Joshua Fischer, Program Specialist
Email: joshuafischer@dhewd.mo.gov
Phone: 573-751-2361
Missouri Department of Higher Education and Workforce
Development
PO Box 1469
Jefferson City, MO 65102-1469

Students who participate in distance education courses and who reside in California may contact the Bureau for Private Postsecondary Education.

University Policies

Washington University has various policies and procedures that govern our faculty, staff and students. Highlighted below are several key policies of the university. Web links to key policies and procedures are available on the Office of the University Registrar website and on the University Policies page. Please note that the policies identified on these websites and in this *Bulletin* do not represent an entire repository of university policies, as schools, offices, and departments may implement policies that are not listed. In addition, policies may be amended throughout the year.

Application to Graduate

Students are required to apply for program completion in Workday, by the deadline relevant to the semester in which they intend to graduate, in order to be eligible for degree conferral. Additional information is available from the Office of the University Registrar.

Compliance with Section 103 of the Veterans Benefits and Transition Act of 2018

It is WashU's policy to not impose penalties on individuals using Veteran Education Benefits, including the assessment of late fees, the denial of access to classes, libraries or other institutional facilities, or the requirement to borrow additional funds to cover the student's inability to meet his or her financial obligations to the institution due to the delayed disbursement of a payment by the VA. This applies to individuals who submit their Certificate of Eligibility for entitlement to educational assistance to their VA School Certifying Official (SCO).

1. Students should submit a Certificate of Eligibility not later than the first day of a course for which the student wishes to use the entitlement for educational assistance. The SCO will advise the student to provide additional Documentation and information necessary for the proper certification of enrollment.
2. If a student does not receive their Certificate of Eligibility from the VA by the start of the academic term, the student should notify their SCO of their intent to use Veteran Education Benefits and should submit additional Documentation and forms as requested.
3. In cases where a student is unable to meet a financial obligation to the university because the amount of a disbursement from the VA is less than anticipated, the university will require additional payment from the student and will provide the student with a timeline for payment before assessing late fees. Students should contact their SCO for assistance.
4. Students may request certification for previous academic terms if they were eligible for benefits at the time for which they want to be certified. In cases where Veteran Education Benefits are used to certify previous academic terms, students are responsible for any late fees incurred prior to the date of the certification request. This excludes Yellow Ribbon benefits, which are not retroactive for previous fiscal years.

Courses and Credit

Academic Calendar

Washington University in St. Louis primarily follows a standard semester-based academic calendar: a fall and spring semester, each spanning 16 calendar weeks, including sessions of half-semester lengths and intersessions beginning before the term start date, and

a summer term of 13 weeks, including sessions of half-term length, an intercession beginning before the term start date, and 3-, 5- and 8-week lengths. The Doctor of Medicine program follows a yearlong calendar supporting modular curriculum delivery.

Credit Measure

Credit hours for undergraduate and graduate programs are awarded as “units” based on the University Statement on Credit, which is in alignment with the Federal definition found in 34 CFR 600.2.

Email Communication

Email is the mechanism for official communication with students at Washington University. Students are expected to read email communications from the university in a timely fashion.

All students will be individually assigned a University email address, which will be maintained in the University email directory. Official University communications will be sent to the student's University email address in order to ensure such communications reach the intended recipient.

With the exception of School of Medicine students, a student may have email forwarded from their assigned University email address to another email address of the student's choice. School of Medicine students are prohibited from forwarding their University-assigned email address to an email address external to the University other than @bjc.org and @va.gov email domains. Students who choose to have email forwarded to another email address do so at their own risk. The University is not responsible for email forwarded to any other email address. A student's failure to read official University communications sent to the student's University email address does not absolve the student of responsibility for awareness of and compliance with the content of the official communication. Faculty and administrators should use a student's University email address when communicating via email with the student. This policy will ensure that all students will be able to comply with course and other requirements communicated to them by email from course instructors and administrators.

Graduate Student Academic Integrity

Authority of Schools Over Graduate and Graduate Professional Students

1. Each school at the university may establish an academic integrity officer and/or a panel to hear and decide cases of alleged academic or professional misconduct by its graduate or graduate professional students. Schools that so choose are required to create procedures to govern the process of investigating and adjudicating the complaints filed.

- a. The school dean, or a designee, determines the composition of such a panel and the scope of the panel's authority, which will not exceed the parameters set out immediately below.
 - b. The panel has authority to impose or recommend appropriate sanctions to the school dean, including suspension or expulsion, if academic or professional misconduct is determined.
 - c. Appeals of decisions made by an academic and professional integrity panel of a school may be made to the school dean, whose decision is final. This includes decisions of a school's academic and professional integrity panel, where the panel is vested with such authority, and the panel's decision is to impose the sanctions of suspension or expulsion. Schools are permitted, but not required, to establish an intermediate level of appeal that must be completed before a final appeal to the dean.
 - d. Except for cases falling within the immediately preceding sub-bullet, any appeal from a decision of a dean of a school to suspend or expel a student will be made in accordance with the provisions of Section VI of the Code.
2. If a school does not establish an academic integrity officer or panel or if an established officer or panel fails to function, complaints of academic or professional misconduct against graduate or graduate professional students may be heard by Academic Integrity in the Office of the Provost, the Academic Integrity Board, or the Student Conduct Board.

Source: Washington University Student Conduct Code IV.A.6

International Travel

WashU is concerned with the health, safety, and security of all members of our community while they are traveling outside of the United States of America.

The WashU International Travel Policy has been adopted to ensure a consistent set of travel standards to be followed by all units of the university. The policy applies to all international travel that is sponsored by, that is funded in any part by, or that involves registered academic experiences at Washington University in St. Louis.

The full text of the International Travel Policy is available on the WashU Global website.

Involuntary Leave

Policy Statement

The primary goals of this Involuntary Leave Policy (“policy”) are to protect the well-being and safety of Washington University students and the university community and to preserve the integrity of the university's academic, residential and administrative functions.

An involuntary leave under this policy will not be invoked unless the student's behavior is of such a serious nature that the continued presence of the student at the university is judged to threaten the safety, well-being or health of that student and/or others in the WashU community, or the ability of that student or others to engage in customary functions and activities at the university.

Examples of circumstances where this policy may be invoked include: suicidal threats; self-starvation or purging behavior; substance abuse or addiction; threats of harm to self or others; or disturbing, disruptive or destructive behavior.

This policy is not intended to replace disciplinary actions taken in response to violations of other university policies, including the university Student Conduct Code (SCC). A student who commits a violation of any university policy before taking voluntary leave or being placed on involuntary leave may be required to defend such charges before being considered for re-admission. Temporary suspension may also be issued in accordance with the SCC and this policy.

Policy Procedures

The vice chancellor for student affairs, the dean of any school or the designees of any of the aforementioned (referred to herein as "administrator") may be alerted to a student's concerning behavior from a variety of sources on campus including the student's advisor, a college dean, residential life staff, student affairs staff, health care providers or other faculty members. If the administrator deems it appropriate, the following procedures may be initiated.

1. **Notification:** Whenever possible, the administrator will notify the student that involuntary leave is under consideration and attempt to meet with the student to discuss his or her behavior. The administrator will provide the student with a copy of this policy. During the meeting, the administrator may choose to encourage the student to take a voluntary leave of absence, thereby eliminating the need to complete the procedures for involuntary leave. If the administrator believes that the student's well-being may be in imminent danger, he or she may proceed with a case conference without notifying and/or meeting with the student.
2. **Assembly of Case Conference Committee:** If the student is unable or chooses not to meet with the administrator, or if the student chooses not to take a voluntary leave of absence and the administrator still believes that involuntary leave may be appropriate, the administrator will convene a Case Conference Committee ("committee") of appropriate individuals or their designates to conduct a case conference regarding the need for an involuntary leave of absence. The committee may include the following:
 - The dean of the student's college or school
 - The assistant/associate vice chancellors for student affairs
 - Student conduct administrator
 - Director of the Student Health Center, Danforth Campus
 - Director of Counseling and Psychological Services
 - Assistant director of sorority and fraternity life
 - Executive director of Campus Life

- Chief of police
- Residential Life staff
- Director of the Office of International Students & Scholars
- Office of the General Counsel
- The student's advisor(s) or academic dean
- Professors, instructors, or staff who have observed the student's behavior of concern

3. **Committee Consideration:** The administrator should convene a Case Conference as soon as possible. During this conference, the committee should address whether and to what extent the student engages in, or is judged to be likely to engage in, behavior described in this policy. Where deemed necessary by the committee to facilitate a more informed recommendation, the committee may consult with other university administrators, faculty or staff familiar with the student. The committee may seek additional information from the student or enlist the assistance of other university faculty or staff members familiar with the student to consult with the student on behalf of the committee. If contacted, the student may refuse to provide information, but such refusal shall not limit the right of the committee to make a recommendation under this policy, nor limit the right of the university to mandate an involuntary leave.
4. **Committee Recommendation:** Following the Case Conference and the review of relevant information, the committee will make a written recommendation to the administrator. In lieu of recommending involuntary leave, the committee may make recommendations as to other conditions and/or requirements under which the student may remain at the university.
5. **Decision:** After review of the committee's recommendation, the administrator will decide whether to mandate an involuntary leave of absence, to mandate other requirements if the student remains at the university, or to permit the student to remain at the university with no additional requirements. The administrator will give the student written notice of this decision. This notice will provide (1) a brief summary of the reasons for decision, (2) the duration of the leave or a description of the requirements for the student to remain on campus, and (3) the steps that the student must take to request readmission if involuntary leave is invoked. The administrator may notify a parent or guardian, in accordance with the Family Educational Rights & Privacy Act ("FERPA"). Pursuant to FERPA, the administrator may also notify a spouse or partner upon obtaining the student's consent. Where an involuntary leave is mandated, the student must leave campus within the time frame established in the notice. In that event, the student's parent(s), guardian(s) or other persons may be asked to make arrangements for the safe removal of the student from the university community.

Option of Voluntary Leave

At any time prior to the administrator's decision, the student may choose to take voluntary leave. The university expects students to notify family members when they voluntarily withdraw from the university. However, when permitted by FERPA, the university retains the discretion to notify parents, guardians, spouses or partners if the student chooses to leave.

Records and Tuition

Leave may affect academic grades, credits and access to university housing or other facilities. Tuition, financial aid, and housing costs will be refunded in accordance with university policy. Regardless of whether leave is voluntary or involuntary, the student's status at the university will be updated in student systems to reflect a leave of absence, which includes a notation on the transcript indicating: "Leave of Absence" and the start date. When involuntary leave is not mandated, but a student is required to fulfill certain requirements to remain on campus, the student's in-progress status is unchanged and no notation will be made on the transcript.

Safety and Security

In cases involving serious and imminent threat to the safety, well being or health of the student or other members of the campus community, or to the ability of others in the university community to conduct their customary university functions and activities, the administrator may take immediate action to remove the student from the university community. In such event, the administrator may immediately notify the student's parent, guardian, spouse, partner, or other relevant individuals in accordance with FERPA. The parent, guardian or other person may be asked to make arrangements for the safe removal of the student from the university community pending a decision on involuntary leave.

Request for Re-Enrollment

When a student is placed on involuntary leave or accepts voluntary leave, a letter from the administrator to the student will outline the conditions for re-enrollment. Conditions for re-enrollment are at the discretion of the administrator. If the leave was for health or medical reasons, the administrator will work with the director of health services or his/her designate to formulate appropriate conditions of return, which may include requirements and/or guidance regarding treatment. A copy of this letter will be forwarded to the academic dean of the student's college or school and, where health-related, to the director of the Student Health Center.

When a student's voluntary or involuntary leave is not health-related, the procedures to request re-enrollment will be outlined in the administrator's letter.

The following process will guide re-enrollment for all students taking involuntary or voluntary leave of absence for a health-related reason:

1. The student must contact in writing both the academic dean and the director of the Student Health Center to request re-enrollment between June 1 and July 1 for the upcoming fall semester or November 1 and December 1 for the spring semester.
2. The student's health status must be reviewed by the director of the Student Health Center or his/her designate. As part of the review, the student may be asked to present written evidence that the student has been evaluated and completed follow-up measures recommended by the student's treating health care professional. This evidence may include a recitation of the health care professional's credentials, a description of their contact with the student, the evaluation method, the diagnosis, the recommended follow-up measures and the student's efforts to complete them. The student's efforts to complete those follow-up measures will be evaluated to determine whether the student used the time away from the university to address the issues that led to the separation and to acquire skills to facilitate a successful return to the university.
3. A recommendation regarding medical eligibility for re-enrollment will be made by the director of the Student Health Center or his/her designate and forwarded to the student's academic dean and the administrator. The academic dean, in consultation with the administrator, will determine academic eligibility for re-enrollment and will communicate in writing the final decision and any conditions to the student.

Appeal of Administrator Decisions

A student may submit, within 24 hours of receiving the written decision from the administrator, a written appeal to the provost who will review the written record only. A decision to affirm or reverse the administrator's decision will be rendered within 48 hours. The decision of the administrator will be affirmed if supported by substantial information appearing in the record of the case. The decision of the provost is final.

Confidentiality

The university will strive to protect, to the greatest extent possible, the confidentiality of students involved in matters of voluntary or involuntary leave. Because the university has an obligation to preserve the security of its community, the university cannot guarantee complete confidentiality where it would conflict with the university's obligation to investigate meaningfully matters which may threaten a student's health or safety or the safety and security of the university community. When some disclosure of the university's information or sources is necessary, that disclosure will be limited to the extent possible. Medical records of a student will be protected in accordance with the WashU Student Health Center Notice of Privacy Practices. The university will, to the extent permitted by law, keep confidential all records of committee reviews. The records maintained by the Case Conference Committee will be available only to the administrator

and other university officials in accordance with FERPA. All records will be destroyed after a period of ten (10) years from the date of final decision on involuntary leave or the student's decision to take voluntary leave.

Nondiscrimination Statement

Washington University encourages and gives full consideration to all applicants for admission, financial aid, and employment. The university does not discriminate in access to, treatment during, or employment in its programs and activities on the basis of race, color, national origin (including shared ancestry or ethnic characteristics), citizenship (where prohibited by federal law), age, religion, sex, sexual orientation, gender identity or expression, veteran status, disability, or genetic information.

Policy on Discrimination and Harassment

Washington University is committed to having a positive learning and working environment for its students, faculty, and staff. University policy prohibits discrimination on the basis of race, color, age, religion, sex, sexual orientation, gender identity or expression, national origin (including shared ancestry or ethnic characteristics), citizenship (where prohibited by federal law), veteran status, disability, or genetic information. Harassment based on any of these classifications is a form of discrimination; it violates university policy and will not be tolerated. In some circumstances, such discriminatory harassment may also violate federal, state, or local law. A copy of the Discrimination and Harassment Policy is available on the Human Resources website.

Conduct Prohibited by Title VI

Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, color, or national origin in programs that receive federal financial assistance. Discrimination on the basis of race, color, or national origin includes discrimination or harassment based on a person's actual or perceived 1) shared ancestry or ethnic characteristics; or 2) citizenship or residency in a country with a dominant religion or distinct religious identity (such as individuals who are Hindu, Jewish, Muslim, Buddhist, or Sikh). Such conduct is prohibited by the Discrimination and Harassment Policy.

Sexual Harassment

Sexual harassment is a form of discrimination that violates university policy and will not be tolerated. It is also illegal under state and federal law. Title IX of the Education Amendments of 1972 prohibits discrimination based on sex (including sexual harassment and sexual violence) in the university's educational programs and activities. Title IX also prohibits retaliation for asserting claims of sex discrimination. The university has designated the Title IX Coordinator identified below to coordinate its compliance with and response to inquiries concerning Title IX.

For more information or to report a violation under the Policy on Discrimination and Harassment, please contact the following individuals:

Discrimination and Harassment Response Coordinators

Apryle Gladney, Vice Chancellor and Chief Human Resources Officer
Phone: 314-935-1252
apryle.gladney@wustl.edu

Gillian Lawson, Director of Investigations, Office of Institutional Equity
Phone: 314-935-1139
oie-investigations@wustl.edu; gillian.boscan@wustl.edu

Office: The Link in the Loop
Address: 621 N. Skinker Blvd., Suite 300, St. Louis, MO 63130
WashU University Reporting Hotline

Title IX Coordinator

Jessica Kennedy, Director & Title IX Coordinator, Office of the Provost
Phone: 314-935-3118
jwkennedy@wustl.edu

Office: Umrath Hall, Room 001
Address: One Brookings Drive, MSC 1175-0153-0B, St. Louis, MO 63130

Inquiries or complaints regarding civil rights may also be submitted to the United States Department of Education's Office of Civil Rights at 400 Maryland Avenue, SW, Washington, DC 20202-1100; by visiting the U.S. Department of Education website; or by calling 800-421-3481.

Student Academic Records and Transcripts

Under the Family Educational Rights and Privacy Act of 1974 (FERPA) — Title 20 of the United States Code, Section 1232g, as amended — current and former students of the university have certain rights with regard to their educational records. Washington University's FERPA policy is available via the Office of the University Registrar's website.

All current and former students may request official Washington University transcripts of their academic records from the Office of the University Registrar. Current students may print unofficial transcripts for their personal use from Workday. Instructions and additional information are available on the Office of the University Registrar's website.

Washington University does not release nor certify copies of transcripts or other academic documents received from other schools or institutions. This includes test score reports and transcripts submitted to Washington University for purposes of admission or evaluation of transfer credit.

Academic records may not be altered after degree conferral, at which time records are considered closed or sealed.

Student Conduct

The Washington University in St. Louis Student Conduct Code (“the Code”) sets forth community standards and expectations for university students. These community standards and expectations are intended to foster an environment conducive to working, learning, and inquiry. Each student is held to the expectations outlined in the Code.

Freedom of thought and expression as well as respect for different points of view are essential to the university’s academic mission. Nothing in the Code should be construed to limit the lawful, free, and open exchange of ideas and viewpoints, even if that exchange proves to be offensive, distasteful, or disturbing to some. However, such speech must conform to university policies.

The Code also describes general procedures that may be used to ensure that these standards and expectations are upheld by all students. The university is committed to ensuring that students adhere to university policies, take responsibility for their actions, and recognize how their choices may affect others.

Complaints against students that include allegations of sex-based discrimination — including sexual harassment, sexual assault, dating violence, domestic violence and stalking — in violation of the Student Conduct Code are governed by the procedures found on the Gender Equity and Title IX Compliance Office website. These procedures are also available in hard copy from the Title IX Coordinator or the director of the Office of Student Conduct and Community Standards.

Students may be accountable to both governmental authorities and to the university for acts that constitute violations of law and the Student Conduct Code.

For a complete copy of the Student Conduct Code, visit the Student Affairs website.

For more information, visit the Student Conduct and Community Standards website.

Student Financial Responsibility

Communication

Washington University in St. Louis uses University-assigned email accounts and University-supported systems for communication with students and authorized users. Washington University will also contact students via personal email addresses, cellular phone numbers, or wireless devices from time to time regarding the Student Account or other general information. Students are responsible for reading University communications in a timely manner.

Promise to Pay

When students register for any course at or receive any service from Washington University in St. Louis, they accept full responsibility to pay all tuition, fees, and other associated charges assessed as a result of registration and/or receipt of services such as housing, dining, and other University-provided items that exceed financial support provided by the University, the University payment plan, and/or third parties by the scheduled due dates shown on the WebSTAC student account. Failure to attend class or receive a bill does not absolve students of financial responsibility as described above.

Failure to Pay

University policies regarding Student Accounts (including payment options, late fees, holds, and refunds) are published on the University’s Financial Services website. If a student fails to pay the Student Account balance by the scheduled due dates, the University will place a financial hold preventing the student from registering for future courses and could assess a late fee on the past due portion until the past due amount is paid in full. Failure to pay will result in a Delinquent Student Receivable Account. Delinquent Student Accounts will be referred to University’s Collection Services department. Collection Services may report the Delinquent Student Account to one or more national credit bureaus, refer the Delinquent Student Account to a third-party collection agency, and pursue all legal and equitable remedies to collect the monies owed to the University.

Student Health

Drug and Alcohol Policy

Washington University is committed to maintaining a safe and healthy environment for members of the university community by promoting a drug-free environment as well as one free of the abuse of alcohol. Violations of the Washington University Drug and Alcohol Policy will be handled according to existing policies and procedures concerning the conduct of faculty, staff, and students. This policy is adopted in accordance with the Drug-Free Workplace Act and the Drug-Free Schools and Communities Act.

Tobacco-Free Policy

Washington University is committed to providing a healthy, comfortable and productive work and learning environment for all students, faculty, and staff. Research shows that tobacco use in general, including smoking and breathing secondhand smoke, constitutes a significant health hazard. The university strictly prohibits all smoking and other uses of tobacco products within all university buildings and on university property, at all times. A copy of our complete Tobacco-Free and Smoke-Free Policy is available on the Washington University Human Resources website.

Medical Information

Entering students in Danforth Campus programs must provide medical information to the Student Health Center – Danforth Campus. This will include the completion of a health history and a record of all current immunizations.

If students fail to comply with these requirements prior to registration, they must obtain the required vaccinations and tests at the Student Health Center – Danforth Campus or in the community. Students will be assessed the costs of the vaccinations and/or tests. Students will be unable to complete registration for classes until all health requirements have been satisfied.

Noncompliant students may be barred from classes and from all university facilities, including housing units, if in the judgment of the university their continued presence would pose a health risk to themselves or to the university community.

Medical and immunization information is to be given via the student health portal on the Student Health Center – Danforth Campus website. All students who have completed the registration process should access the student health portal on the website. Students should fill out the form and follow the instructions for transmitting it to the Student Health Center – Danforth Campus. Student information is treated securely and confidentially.

Entering students in Medical Campus programs must follow the requirements as outlined on the WashU Medicine Student Health Services website.

Student Status: Expulsion and Dismissal

The terms *expulsion* and *dismissal* are used to indicate distinct types of involuntary separation of a student from the university or from their program of study.

- *Expulsion* refers to a permanent removal from the university. A student who is expelled is not eligible to return to a prior program of study nor to enter a new program of study.
- *Dismissal* refers to a permanent separation from a specific program of study or school. A student may apply to begin a different program of study and may or may not be admitted according to the standards and practices of that program or school.

Time Away and Reinstatement

Degree-seeking students may be eligible to request a leave of absence for health or other personal reasons (e.g., family, military service, professional obligations, religious mission). The mechanism and process are described on the Office of the University Registrar's website. Such leaves may exceed no more than two years from the effective date of the leave; individual programs' policies may limit

students to shorter leaves. Students must verify their school and program policies and any other relevant requirements related to immigration or financial aid/support policies. Students who have not requested and received approval for reinstatement after two years will have their records withdrawn.

Required enrollment reporting to the federal government will reflect a leave of absence for 180 days after it is enacted; any longer duration of institutional leave is recorded in their systems as a withdrawal.

Students on approved leave of absence will retain access to their Washington University email addresses, and to Workday to review their records. Access to other University privileges such as recreation facilities and libraries as well as participation in activities are paused during a leave of absence.

Students are expected to request reinstatement to in-progress status to resume studies via the process outlined on the Office of the University Registrar's website. Depending on the nature of their leave, additional steps or documentation may be required and must be provided to appropriately consider the request. Students whose records have been withdrawn as a result of two years of inactivity may be allowed, depending on program-specific policies regarding the maximum time allowed to complete the program of study, to request to re-enter their programs. In these cases, additional items may be required of the student depending on the circumstances, the length of time away, and whether their program of study has undergone curricular revisions since their enrollment.

Undergraduate Student Academic Integrity

Effective learning, teaching, and research all depend upon the ability of members of the academic community to trust one another and to trust the integrity of work that is submitted for academic credit or conducted in the wider arena of scholarly research.

Such an atmosphere of mutual trust fosters the free exchange of ideas and enables all members of the community to achieve their highest potential.

In all academic work, the ideas and contributions of others must be appropriately acknowledged, and the work of a student that is presented as original must be, in fact, original. Faculty, students, and administrative staff all share the responsibility of ensuring the honesty and fairness of the intellectual environment at Washington University in St. Louis.

Scope and Purpose

This statement on academic integrity applies to all undergraduate students at Washington University. Graduate students may be governed by policies in each graduate school or division. To the extent a graduate school or program has not adopted its own academic integrity policy, the provisions of this policy will apply. All students are expected to adhere to the highest standards of behavior.

The purpose of the statement is twofold:

1. To clarify the university's expectations with regard to undergraduate students' academic behavior; and
2. To provide specific examples of academic misconduct (the examples are only illustrative, *not* exhaustive).

This policy and statement were endorsed by the Faculty Senate Council. Any changes to the policy are to be reviewed by the Faculty Senate Council, as described in the Faculty Senate Council bylaws.

Violations of This Policy Include but Are Not Limited to the Following:

1. Plagiarism

Plagiarism consists of taking someone else's ideas, words or other types of work product, and presenting them as one's own. To avoid plagiarism, students are expected to be attentive to proper methods of documentation and acknowledgement. To avoid even the suspicion of plagiarism, a student must always:

- Enclose every quotation in quotation marks and acknowledge its source.
- Cite the source of every summary, paraphrase, abstraction or adaptation of material originally prepared by another person and any factual data that is not considered common knowledge. Include the name of author, title of work, publication information and page reference.
- Acknowledge material obtained from lectures, interviews or other oral communication by citing the source (name of the speaker, the occasion, the place and the date).
- Cite material from the internet or material generated by an artificial intelligence as if it were from a traditionally published source. Follow the citation style or requirements of the instructor for whom the work is produced.

2. Cheating on an Examination

A student must not receive or provide any unauthorized assistance on an examination. During an examination, a student may use only materials authorized by the faculty.

3. Copying or Collaborating on Assignments Without Permission

When a student submits work with their name on it, this is a written statement that credit for the work belongs to that student alone. If the work was a product of collaboration, each student is expected to clearly acknowledge in writing all persons or artificial intelligences who contributed to its completion.

Unless the instructor explicitly states otherwise, it is dishonest to collaborate with others when completing any assignment or test, performing laboratory experiments, writing and/or documenting computer programs, writing papers or reports, and completing problem sets.

If the instructor allows group work in some circumstances but not others, it is the student's responsibility to understand the degree of acceptable collaboration for each assignment and to ask for clarification if necessary.

To avoid cheating or unauthorized collaboration, a student should never:

- Use, copy, or paraphrase the results of another person's work or material generated by an artificial intelligence and represent that work as their own, regardless of the circumstances.
- Refer to, study from, or copy archival files (e.g., old tests, homework, solutions manuals, or backfiles) that were not approved by the instructor.
- Copy another's work or to permit another student to copy their work.
- Submit work as a collaborative effort if they did not contribute a fair share of the effort.

4. Fabrication or Falsification of Data or Records

It is dishonest to fabricate or falsify data in laboratory experiments, research papers, reports or in any other circumstances; to fabricate source material in a bibliography or "works cited" list; or to provide false information on a résumé or other document in connection with academic efforts. It is also dishonest to take data developed by someone else and present them as one's own.

Examples of falsification include:

- Altering information on any exam, problem set, or class assignment being submitted for a re-grade.
- Altering, omitting, or inventing laboratory data to submit as one's own findings. This includes copying laboratory data from another student to present as one's own; modifying data in a write-up; and providing data to another student to submit as their own.

5. Other Forms of Deceit, Dishonesty, or Inappropriate Conduct

Under no circumstances is it acceptable for a student to:

- Submit the same work, or essentially the same work, for more than one course without explicitly obtaining permission from all instructors. A student must disclose when a paper or project builds on work completed earlier in their academic career.
- Request an academic benefit based on false information or deception. This includes requesting an extension of time, a better grade or a recommendation from an instructor.
- Make any changes (including adding material or erasing material) on any test paper, problem set or class assignment being submitted for a re-grade.
- Willfully damage the efforts or work of other students.
- Steal, deface, or damage academic facilities or materials.
- Collaborate with other students planning or engaging in any form of academic misconduct.

- Submit any academic work under someone else's name other than their own. This includes but is not limited to sitting for another person's exam; both parties will be held responsible.
- Violate any rules or conditions of test-taking or other course assessment (e.g., bringing materials or devices into an exam room when disallowed).
- Engage in any other form of academic misconduct not covered here.

This list is not intended to be exhaustive. To seek clarification, students should ask the professor or teaching assistant for guidance.

Reporting Misconduct

Faculty Responsibility

Faculty and instructors are strongly encouraged to report incidents of student academic misconduct to the academic integrity coordinators in the Office of the Provost in a timely manner (normally within five business days of discovery) so that the incident may be handled fairly and consistently across schools and departments. Teaching assistants and assistants in instruction are expected to report instances of student misconduct to their supervising instructors. Faculty members are expected to respond to student concerns about academic integrity violations in their courses.

Student Responsibility

If a student observes others violating this policy, they are strongly encouraged to report the misconduct to the instructor, to seek advice from the academic integrity coordinator in the Office of the Provost, or to address the student(s) directly.

Exam Proctor Responsibility

Exam proctors are expected to report incidents of suspected student misconduct to the course instructor and/or the Disability Resources staff, if applicable.

Procedure

Jurisdiction

This policy covers all undergraduate students, regardless of their college of enrollment, as well as graduate and professional students whose schools and programs do not have a separate policy and procedure. Cases will be heard by a panel drawn from an Academic Integrity Board made up of faculty and students representing the undergraduate schools and participating graduate programs.

Student Rights and Responsibilities in a Hearing

A student accused of an academic integrity violation, whether by a professor, teaching/graduate assistant, academic integrity coordinator or student is entitled to:

- A presumption of non-responsibility unless and until a panel determines that, based upon the evidence, it is more likely than not that the student engaged in a violation of academic integrity under this policy.
- Request a mediation/facilitation session prior to a hearing.
- Review the written evidence in support of the charge.
- Ask relevant questions.
- Offer an explanation as to what occurred.
- Present relevant material that would cast doubt on the correctness of the charge.
- Determination of the validity of the charge by an unbiased and objective panel and generally without reference to any past record of misconduct.

When responding to a charge of an academic integrity violation, a student may:

- Deny the charges and request a hearing in front of an Academic Integrity Board panel.
- Admit the charges and request a hearing to determine recommended sanction(s).
- Admit the charges and accept the imposition of sanctions by the academic integrity coordinator without a committee hearing.
- Request a leave of absence from the university. The academic integrity matter must be resolved prior to re-enrollment. A notation will be placed on the student's transcript indicating there is an unresolved academic integrity matter pending.
- Request to withdraw permanently from the university with a transcript notation that there is an unresolved academic integrity matter pending.

A student has the following responsibilities in resolving the charge of academic misconduct:

- Admit or deny the charge. This will determine the course of action to be pursued.
- Provide truthful information regarding the charges. It is a student code violation to provide false information to the university or anyone acting on its behalf.

Sanctions

If Found *Not* in Violation of the Academic Integrity Policy

If the charges of academic misconduct are not proven, no record of the allegation will appear on the student's transcript.

If Found in Violation of the Academic Integrity Policy

If, after a hearing, a student is found responsible for violation of the academic integrity policy or if a student has admitted to the charges prior to a hearing, the academic integrity coordinator may impose sanctions, including but not limited to the following:

- Issue a formal written reprimand.
- Impose educational sanctions, such as completing a workshop on plagiarism or academic ethics.
- Recommend to the instructor that the student fail the assignment. (A grade is ultimately the prerogative of the instructor.)
- Recommend to the instructor that the student fail the course.
- Recommend to the instructor that the student receive a course grade penalty less severe than failure of the course.
- Place the student on disciplinary probation for a specified period of time or until defined conditions are met. The probation will be noted on the student's transcript and internal record while it is in force.
- Impose suspension or expulsion.

Additional educational sanctions may be imposed. This list is not intended to be exhaustive.

A hearing panel may also elect to refer their recommended sanctions to the SCB Chairperson for determination if, for example, the recommendation departs from their standard recommendations.

Withdrawing from the course will not prevent the academic integrity coordinator or hearing panel from adjudicating the case, imposing sanctions, or recommending grade penalties, including a failing grade in the course.

A copy of the sanction letter will be placed in the student's academic file and may be reported in accordance with the Policy on Reporting of Student Conduct Violations.

Appeals

If a student believes the panel did not conduct a fair hearing or if a student believes the sanction imposed is excessive (i.e., suspension or expulsion), they may seek an appeal within 14 days of the original decision. For cases in which the decision resulted in suspension or expulsion, the appellate officer will be the Vice Provost of Educational Initiatives or the Vice Provost for Graduate Education. For all other cases, the appellate officer will be the Chair of the Student Conduct Board. Appeals are governed by Section VI of the university Student Conduct Code.

Administrative Record-Keeping Responsibilities

It is the responsibility of the academic integrity coordinators to keep accurate, confidential records concerning academic integrity violations. When a student has been found responsible for an academic integrity violation, a letter summarizing the allegation, the outcome, and the sanction will be placed in the student's official conduct file and may be reported out in accordance with the Policy on Reporting of Student Conduct Violations.

In addition, a report of the outcome of every formal accusation of student academic misconduct will be shared with the director of university student conduct programs, who shall maintain a record of each incident.

Multiple Offenses

When a student is formally accused of academic misconduct and a hearing is to be held, the academic integrity coordinator shall query the Office of Student Conduct and Community Standards (OSCCS) about the student(s) accused of misconduct. OSCCS shall provide any information in the OSCCS records concerning prior code violations of that student to the integrity coordinator. Such information will be used in determining sanctions if the student is found responsible for an academic integrity violation in the present case. Evidence of past misconduct generally may not be used to resolve the issue of whether a student has committed a violation in a subsequent case unless the hearing chair deems it relevant.

Reports to Faculty and Student Body

Periodic (at least annual) reports will be made to the students and faculty of their school concerning accusations of academic misconduct and the outcomes, without disclosing specific information that would allow identification of the student(s) involved.

*Endorsed by the Faculty Senate Council on March 16, 2010
Effective July 1, 2010
Updated December 4, 2014*

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Updated April 18, 2024*

University Affiliations

The accrediting organizations and memberships of the different areas of Washington University are listed below.

Additional information about professional and specialized accreditation can be found on the Office of the Provost website.

Washington University in St. Louis

Accreditation

- Higher Learning Commission

Memberships

- American Academy of Arts & Sciences
- American Association of Colleges & Universities
- American Council of Learned Societies
- American Council on Education
- Association of American Universities
- Hispanic Association of Colleges and Universities
- Independent Colleges and Universities of Missouri
- National Association of Independent Colleges and Universities
- National Council for State Authorization Reciprocity Agreements
- Universities Research Association

College of Arts & Sciences

Memberships

- American Academy of Physician Associates
- American Camp Association
- Association for Pre-College Program Directors
- Association of University Summer Sessions
- Diversity Abroad
- Forum on Education Abroad
- Higher Education Protection Network
- International Center for Academic Integrity
- International Educational Exchange
- Midwest Association of Pre-Law Advisors
- National Academic Advising Association
- National Association of Advisors for the Health Professions
- National Association of Fellowships Advisors
- North American Association of Summer Sessions
- Professional and Organizational Development Network

Office of Graduate Studies, Arts & Sciences

Accreditation — Office of Graduate Studies

- American Psychological Association Commission on Accreditation
- Psychological Clinical Science Accreditation System

Memberships

- American Academy of Physician Associates
- Association of Graduate Schools
(Founding member)
- Council of Graduate Schools
(Founding member)
- Midwest Association of Pre-Law Advisors
- Pod Network
- Student Affairs Administrators in Higher Education
- The Council of Independent Colleges

Sam Fox School of Design & Visual Arts

Accreditation — College of Art

- National Association of Schools of Art & Design
(Founding member)

Accreditation — College of Architecture

- Master of Architecture: National Architectural Accrediting Board
- Master of Landscape Architecture: Landscape Architectural Accreditation Board

Membership — College of Architecture

- Association of Collegiate Schools of Architecture

Accreditation — Mildred Lane Kemper Art Museum

- American Alliance of Museums

Membership — Mildred Lane Kemper Art Museum

- Association of Academic Museums and Galleries
- Association of Art Museum Directors
- College Art Association

Olin Business School

Accreditation

- Association to Advance Collegiate Schools of Business International
(Charter member since 1921)

McKelvey School of Engineering

Accreditation

- In the McKelvey School of Engineering, many of the undergraduate degree programs are accredited by the Engineering Accreditation Commission of ABET.

Membership

- American Society for Engineering Education

School of Law

Accreditation

- American Bar Association

Memberships

- American Association of Law Libraries
- American Society of Comparative Law
- American Society of International Law
- Association of Academic Support Educators
- Association of American Law Schools
- Central States Law Schools Association
- Clinical Legal Education Association
- Equal Justice Works
- Mid-America Association of Law Libraries
- Mid-America Law Library Consortium

- National Association for Law Placement
- National Association of Law Student Affairs Professionals
- Southeastern Association of Law Schools

School of Medicine

Accreditation

- American Speech-Language-Hearing Association, Council on Academic Accreditation in Audiology and Speech-Language Pathology (ASHA CAA)
- Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)
- Liaison Committee on Medical Education
- Council on Education of the Deaf (CED)
- Missouri Department of Elementary and Secondary Education (DESE)
- American Occupational Therapy Association, Accreditation Council for Occupational Therapy Education (ACOTE)
- American Physical Therapy Association, Commission on Accreditation in Physical Therapy Education (CAPTE)
- Accreditation Council for Genetic Counseling (ACGC)
- Accreditation Council for Continuing Medical Education (ACCME)
- Accreditation Council for Pharmacy Education (ACPE)
- American Nurses Credentialing Center (ANCC)
- Association of Regulatory Boards of Optometry's Council on Optometric Practitioner Education (ARBO/COPE)
- Joint Accreditation for Interprofessional Continuing Education
- Accreditation Council for Graduate Medical Education (ACGME)

Membership

- Association of American Medical Colleges

School of Public Health

Accreditation

- Council on Education for Public Health

Affiliation

- Association of Schools and Programs of Public Health

Brown School

Accreditation

- Council on Social Work Education



School of Continuing & Professional Studies

Memberships

- American Association of Collegiate Registrars and Admissions Officers
- Council for Adult and Experiential Learning
- International Center for Academic Integrity
- National Academic Advising Association
- National Association of Student Personnel Administrators
- University Professional and Continuing Education Association

Note: Business-related programs in the School of Continuing & Professional Studies are not accredited by the Association to Advance Collegiate Schools of Business International.

University Libraries

Membership

- Association of Research Libraries

Graduate Policies

Please expand the sections below for more information about WashU's graduate policies and guidelines.

Academic Load Status for Financial Aid, Immigration, and Enrollment Verification

Graduate (Fall, Spring)

Status	Enrolled Units of Credit
Full time	9+ units
Half time	4.5-8.99 units
Less than half time	Fewer than 4.5 units

Graduate (Summer)

Status	Enrolled Units of Credit
Full time	6+ units
Half time	3-5.99 units
Less than half time	Fewer than 3 units

Certain courses may, due to appropriate curriculum and monitoring circumstances, be encoded to carry a load value higher than the actual academic credit awarded. Examples include certain engineering co-op experiences, doctoral research study and select clinical or practicum courses.

Registration in Courses

Registration dates are published in advance on the Office of the University Registrar's website. Late registration after the term begins is permitted only until the "add/drop" deadline relevant to a student's program. Students will not earn credit for courses in which they are not duly registered. Students may not register in courses that have conflicting meeting times.

Students may drop a course by the published deadline found on the Office of the University Registrar's website; dropped courses do not appear on the permanent academic record, and no grade is recorded. Students may withdraw from a course after the drop deadline and until the published withdrawal deadline. A withdrawal will result in a W notation associated with the course on the permanent record, including the transcript. Students who wish to drop or withdraw from a course are expected to follow steps to do so by the appropriate deadline. Failure to drop a course or withdraw by the published deadline may result in a failure of the course, and the transcript will reflect the failing grade.

Transfer Credit

Transfer credit is recorded on a student's permanent record. Courses transferred from other institutions of higher education do not have grades or grade points awarded and therefore do not apply toward a student's GPA.

Institutionally, Washington University participates in the Inter-University Exchange Program. Courses taken at Saint Louis University and the University of Missouri–St. Louis, according to the parameters documented, are approved to transfer to Washington University. The School of Law has a specific agreement in place with Saint Louis University for JD students only and under certain circumstances. Other transfer credit policies vary by school and program. Details may be found in the relevant academic sections of this *Bulletin*.

Tuition and Cost of Attendance

The cost of a Washington University education varies by school and, in some cases, by program. Tuition rates and fees are available through the Office of Financial Planning and Budget and are typically listed in greater detail (including fees and financial support options and procedures) on school websites.

Withdrawals and Refunds

If a student withdraws from Washington University after classes have begun, they must promptly file a request to withdraw in order to have appropriate registration and refund policies apply. These timelines vary by school and, in some cases, by program. Students should refer to the appropriate sections of this *Bulletin* for details.

University PhD Policies & Requirements

Academic PhD Programs

The following university-wide policies and practices apply to all PhD students regardless of school affiliation. They are specific to PhD program administration and PhD student experience. Schools/divisions may set stricter standards for students within their ambit, but they may not set standards that fall below university-wide policies. This page *does not* include those policies and practices that apply to the student community as a whole (e.g., the University Student Conduct Code).

Academic and Professional Integrity for PhD Students

The Academic and Professional Integrity Policy for PhD Students (PDF) continues to apply to all PhD students on the Danforth and Medical campuses, including dual-degree students when one of the degree programs is a PhD program.

Involuntary Leave of Absence

The Involuntary Leave of Absence Policy that applies to undergraduates was adopted to apply to all PhD students in 2014.

PhD Student Support Policies and Resources

New Child Leave

Full-time PhD students may request a New Child Leave to assume care for a new child. They should maintain their full-time student status. Students on New Child Leave are not expected to participate in mentored teaching or research experience for up to 60 consecutive calendar days (8 weeks) and will receive their current stipend support during this 60-day period. Students may request additional time off via a leave of absence without receiving a stipend (for up to a full semester) if approved by the student's department/program.

New Child Leave does not affect the student's full-time status and will not appear on the student's official transcript. New Child Leave must be taken within the first year after the child's date of birth or adoption. Students should contact their department/program to request a New Child Leave. Students who receive support from external agencies should consult the policies and guidelines of the sponsor as well as their Vice Dean or designee before requesting a New Child Leave.

Child Daycare Subsidy

The Child Daycare Subsidy is sponsored by WashU, and its purpose is to help PhD students with children under their care (who meet the requisite eligibility criteria) to meet the costs of child daycare while they pursue their studies.

The amount of the Child Daycare Subsidy awarded to eligible applicants is based on their financial need, the number of children they have enrolled in child daycare facilities, their child daycare expenses, and available funding. Eligible PhD students can expect the following:

- For one child, the maximum award is \$3,550 per Fall/Spring semester.
- For two children, the maximum award is \$4,550 per Fall/Spring semester.
- For three or more children, the maximum award is \$5,550 per Fall/Spring semester.

The subsidy amount cannot exceed the cost of the daycare facility.

The application is available on the Office of the Provost website.

Financial Policies

PhD Student Minimum Financial Award

The education of PhD students represents a significant commitment on the part of both WashU and the students admitted/enrolled. WashU typically funds most full-time PhD students for a minimum of five years (with the exception of post-professional PhD programs in the School of Medicine). Funding typically consists of full tuition scholarship and financial support to defray living expenses. Financial support may also be referred to as stipends or fellowships. Such financial support may be sourced internally from university-wide fellowships such as the Olin Chancellor's Fellowship (OCF), the McDonnell International Scholars Academy (p. 113), or school/program/department funds or from external sources (e.g., external research contracts and grants, external fellowships such as NSF GRFP).

The minimum PhD financial support rate for the 2026-27 academic year is \$37,853 annually, dispersed on a monthly basis while the student is enrolled full time. The rate applies to all PhD programs with the exception of post-professional specialty programs in the School of Medicine. Departments, schools, cross-school interdisciplinary programs, and other fellowship programs may choose to offer a rate higher than the established minimum, but they must do so for all students in their cohort. The eligibility criteria for PhD students receiving such financial support are outlined in the PhD Student Funding section below.

Students admitted to a part-time PhD program or on a part-time basis are not eligible for this minimum financial award.

PhD Student Funding

Financial support at or above the university-wide PhD minimum stipend rate allows PhD students to focus on their programmatic requirements, enabling them to make expeditious progress toward degree completion. This section predominantly pertains to PhD students, but it may apply to other graduate and professional students receiving financial support from the university.

Eligibility and Status

Students receiving university financial support must do the following:

- Enroll and maintain full-time student status in a graduate or professional program during the academic year;
- Make satisfactory academic progress in accordance with their degree program requirements; and
- Report to their degree program and university fellowship program (if applicable) any additional financial award(s) they receive or employment they engage in as outlined in this policy.

Because graduate students sometimes receive funding from multiple sources, it is the responsibility of the student, the student's department/degree program, and the Principal Investigator (if applicable) to understand and abide by the terms and conditions of each funding source.

Funding From Multiple Sources

Eligible students are encouraged to seek additional fellowships from external agencies. In addition to the funding amount, which can be more generous than that of a university financial award, these external fellowships are prestigious; they provide valuable training, experiences, and resources, and they enhance future career opportunities. In addition, securing external funding to support training and research is often an important component of the professional development of graduate students.

PhD students receiving university financial support who also receive an external fellowship or stipendiary award *may not* combine or "stack" the external award with the university financial support.* Students receiving an external fellowship or stipendiary award have two options.

Option 1: Supplementation of an External Fellowship or Stipendiary Award

If the sum of all external fellowship or stipendiary awards is less than the university financial support, the university funds may supplement the total amount of external funding to bring the student up to their guaranteed university fellowship or to the minimum university financial support for PhD students.

Students who receive external fellowship or stipendiary awards providing annual stipends that total more than the university financial support will retain the full external award(s) and will receive no additional university financial support for the duration of the external award.

- *Example One:* A student has a university award of \$38,000. The student receives a \$34,000 external award; the university will supplement the external award by \$4,000 to bring the student up to their university award of \$38,000.
- *Example Two:* A student has a university award of \$38,000. The student receives an external foundation award of \$42,000. Since the external award is greater, no university funds will be distributed while the student is supported by the external award.

Option 2: Deferral of University Fellowship or Stipendiary Award

Students receiving an external fellowship or stipendiary award during years one through five of study may, with program approval, defer up to one year of the university fellowship or stipendiary award made at the time of admission, if permissible based upon the award criteria from the external funding agency.

The university fellowship program and/or the student's home department or program can assist students when considering the benefits of each option. For cases in which a student has access to multiple sources of funding, external funds must be used before university funds are applied. University, school, and degree program funds will be the last source of funds to be applied to a student's financial support.

Schools and departments/programs may choose to offer an additional financial incentive to students who are awarded competitive external funding. Any such incentives must be uniformly awarded to all qualifying students within a degree program. Incentive awards given by school or degree programs to students who win external awards do not count toward the total university financial support; these incentive awards are in addition to the fellowship or stipendiary award.

All financial support will be applied in accordance with the terms and conditions of each funding source. In consultation with the student, departments/programs should ensure financial support is dispersed in the correct amount and in accordance with applicable policy.

* Limited exceptions may occur for instances in which the external award is explicitly contingent on the continuation of the university stipendiary award. In such instances, the decision on stacking is at the discretion of the school dean or their designee for support provided by the school or by a cross-school interdisciplinary program and at the discretion of the fellowship administrator for university-wide fellowships (e.g., OCF, MISA).

PhD Student Employment

Full-Time Employment

University financial support that is provided at or above the university-wide PhD minimum stipend rate is intended to enable students to focus exclusively (i.e., full time) on their studies. Students who receive university financial support at or above the university-wide minimum PhD stipend rate are not permitted to hold full-time employment.

Students who perform full-time employment during the summer term will have their university fellowship or stipendiary award stopped for the duration of their full-time employment. Students are also subject to any school or program-based policies regarding employment, which may be more restrictive. Students should consult their school and degree program for approval.

Part-Time Employment

To ensure that students receiving university financial support can focus on their programmatic requirements and make expeditious progress toward degree completion, part-time employment should not exceed an average of 10 hours per week. This allowance may be restricted by schools/departments/programs to a smaller number of hours per week to conform with a student's funding source policies and with federal time and effort reporting guidelines (as applicable).

If a student and that student's advisor(s) believe that additional part-time employment will enhance the student's outcomes and is unlikely to hinder timely progress toward degree completion, the student may request approval for an exception through their school's graduate program office. Any such exceptions will be documented and kept on file in the school. For students supported on federal grants, it is the school's responsibility to ensure adherence to any constraints derived from time and effort reporting.

To reiterate, students are also subject to any school or department/program-based policies regarding employment, which may be more restrictive. Students should consult their school and degree program for approval prior to undertaking any part-time employment.

Implications for International Students

International students attending WashU on a visa must consult with the Office for International Students and Scholars (OISS) before accepting any external or internal employment, either full-time or part-time.

Tax Implications

Please visit WashU's Financial Services website for more information about the taxability of stipend payments. Students are encouraged to consult a personal tax advisor to ensure that they are adhering to federal and state laws and Internal Revenue Service (IRS) regulations.

PhD General Requirements and Policies

To earn a PhD at WashU, a student must complete all courses required by their department/program; maintain satisfactory academic progress; pass certain examinations; fulfill residence and mentored experience requirements; write, defend, and submit a dissertation; and file an Intent to Graduate in Workday Student. **Note:** Individual schools and departments/programs may have more restrictive policies than the university-wide policies stated herein.

Residence Requirement

Each full-time PhD student must spend at least one academic year enrolled full-time at Washington University in St. Louis. Any exceptions must be approved by the dean of the student's respective school and the Vice Provost for Graduate Education.

Students admitted to a part-time PhD program must be enrolled in at least 3 units for each Fall/Spring semester until the unit requirements for their program are satisfied

Time Limit for PhD Enrollment Eligibility

Full-time PhD students are eligible for enrollment at Washington University in St. Louis for a maximum of 14 Fall/Spring semesters (seven years). Enrollment includes traditional course registration and 0-unit courses that carry a full-time enrollment status. Semesters of approved leaves of absence do not count toward this time limit.

Students admitted to a part-time PhD program are eligible for enrollment at Washington University in St. Louis for 18 Fall/Spring semesters (nine years). Semesters of approved leaves of absence do not count toward this time limit.

Full-time PhD students and those admitted to part-time PhD programs may petition for an enrollment eligibility extension for a maximum of one academic year. Petitions must be directed to the student's dean or their designee. Supplemental petitions will not be permitted. In unusual circumstances, the dean or their designee may appeal to the Vice Provost for Graduate Education on behalf of a particular student.

Qualifying Examinations

Progress toward the PhD is contingent upon the student passing examinations that are variously called *preliminary*, *qualifying*, *general*, *comprehensive*, or *major field exams*. The qualifying examination process varies considerably according to the department/program, and the structure and schedule of the qualifying exam are set by the department/program in accordance with best practices within their field. The department/program is responsible for documenting the process properly and ensuring the process is clearly outlined to their students. Each PhD program is responsible for notifying the school registrar or the appropriate record custodian of the student's outcome, whether successful or unsuccessful.

Mentored Experience Requirement

As part of the university-wide degree requirements, PhD students and some master's students (i.e., MFA in Writing and MFA in Dance) at WashU must complete a department-/program-defined Mentored Experience Requirement (MER). The MER is an accomplishment that is noted on the student's academic record when complete. Each department/program established a Mentored Experience Implementation Plan (MEIP) in which required MER units and pathways for completion are defined and specified. The MEIP typically consists of Mentored Teaching Experiences (mentored activities designed to achieve competencies in teaching at basic and advanced levels) and/or Mentored Professional Experiences (mentored activities focused on the development of skills relevant to individual, intended career and professional outcomes). Students enroll in Mentored Teaching Experience courses and/or Mentored Professional Experience courses to signify progression toward completing the MER.

Dissertation

As evidence of the mastery of a specific field of knowledge and of the capacity for original scholarly work, each candidate must complete a dissertation. Each PhD candidate will form a Research Advisory Committee (RAC) approved by their department/program and by their school's graduate program oversight body. The RAC will approve the subject and approach of the dissertation, which will be evidenced by the student's completion of the Title, Scope and Procedure requirement.

The RAC should consist of at least three full-time Washington University in St. Louis faculty members who are authorized to supervise PhD students and who have appropriate expertise in the proposed field of study. One of these faculty members must be the student's primary research advisor/mentor. Additional members, including external members with active research programs at outside institutions, may serve on the RAC subject to approval by the school's graduate program oversight body.

- For cross-school/interdisciplinary PhD programs, the approvals referenced above should be obtained from the graduate program oversight body of the school of the primary research advisor/mentor.
- For a PhD program offered in partnership with an external academic institution, one full-time faculty member of the partner institution who is authorized to supervise PhD students and who has appropriate expertise in the proposed field of study may serve on the RAC as part of the three-member minimum requirement.

A Title, Scope and Procedure form for the dissertation must be signed by the RAC members and by the program chair. Full-time students must submit the Title, Scope and Procedure form to the school registrar or the appropriate record custodian at least six months before the degree is expected to be conferred or before the beginning of the fifth year of full-time enrollment, whichever is earlier. Students enrolled in a part-time PhD program must submit the Title, Scope

and Procedure form to the school registrar or the appropriate record custodian at least six months before the degree is expected to be conferred or before the beginning of the sixth year of enrollment, whichever is earlier.

A Doctoral Dissertation Guide and a template that provides instructions regarding the format of the dissertation are available through the website of the Office of the Provost; both of these should be read carefully at every stage of dissertation preparation.

Each student is required to make the full text of the dissertation available to the committee members for their review at least one week before the dissertation defense. Most degree programs require two or more weeks for the review period; students should check their department/program's policies.

Dissertation Defense

Approval of the written dissertation by the Research Advisory Committee (RAC) is strongly recommended before the student can orally defend the dissertation. The doctoral dissertation committee that examines the student during the defense consists of at least five members. Normally, the members of the RAC also serve on the Doctoral Dissertation Committee. The dissertation committee is then additionally augmented to ensure that the following criteria are met:

1. Three of the five members (or a similar proportion of a larger committee) must be full-time Washington University in St. Louis faculty members or, for programs offered by Washington University in St. Louis-affiliated partners, full-time members of a Washington University in St. Louis-affiliated partner institution who are authorized to supervise PhD students and who have appropriate expertise in the proposed field of study. One of these three members must be the PhD student's primary thesis advisor, and one may be a member of the emeritus faculty.
2. All other committee members must be active in research/scholarship and have appropriate expertise in the proposed field of study whether at Washington University in St. Louis, at another university, in government, or in industry.
3. At least one of the five members must bring expertise outside of the student's field of study to the committee, as judged by the relevant school's graduate program oversight body.

The approval processes outlined under RAC in the Doctoral Council bylaws also apply to the doctoral dissertation committee, including approval of each dissertation committee by the host school's graduate program oversight body/bodies.

The student is responsible for making the full text of the dissertation accessible to their committee members for their review in advance of the defense according to program rules. Washington University in St. Louis community members and guests of the student who are interested in the subject of the dissertation are normally welcome to attend all or part of the defense but may ask questions only at the discretion of the committee chair. Although there is some variation among degree programs, the defense ordinarily focuses on the dissertation itself and its relation to the student's field of expertise.

Attendance by a minimum of four members of the Doctoral Dissertation Committee, including the committee chair and an outside member, is required for the defense to take place. This provision is designed to permit the student's defense to proceed in case of a situation that unexpectedly prevents one of the five members from attending. Students should not plan in advance to only have four members in attendance; if one of those four cannot attend, the defense must be rescheduled. The absence of all outside members or of the committee chair would necessitate rescheduling the defense.

Students, with the support of their Doctoral Dissertation Committee chair, may opt to hold their dissertation defense in-person or by utilizing a virtual or hybrid format.

Dissenting Vote(s) at a Dissertation

Faculty members of the Doctoral Dissertation Committee normally will examine the PhD candidate and vote on whether to approve the dissertation. In the vast majority of cases, these votes are unanimously for approval. In the rare case that there are faculty concerns that cannot be resolved through subsequent revisions and which therefore result in dissenting (negative) vote(s), the committee chair will refer the case to the Vice Provost for Graduate Education for resolution.

In the case of a single dissenting vote, the committee chair and the dissenting voter will be asked to explain the reasons for the dissent in a letter to the Vice Provost for Graduate Education. After consulting with these and other members of the committee, the Vice Provost for Graduate Education may then decide to accept the majority opinion and approve the dissertation, or they may seek the opinion of an additional reader. After considering this additional evidence, the Vice Provost for Graduate Education may approve or decline to approve the dissertation.

In the case of two or more dissenting votes, the committee chair and the dissenting voters will again be asked to explain the reasons for the dissent. The Vice Provost for Graduate Education may then decide to decline to approve the dissertation. Alternatively, they may ask the department or graduate program to name a Resolution Committee, consisting of three tenured or tenure-track professors at Washington University in St. Louis or elsewhere who did not serve on the original committee, to reexamine the dissertation and the candidate. A unanimous positive recommendation from this committee will be required in order for the Vice Provost for Graduate Education to approve the dissertation. Failure of a department or graduate program to identify three faculty members to serve on this Resolution Committee will be tantamount to a rejection of the dissertation.

Dissertation Submission

After the successful defense of their dissertation, the student must submit an electronic copy of the dissertation online to the university by the established deadline for their graduation term. Dissertations must be submitted no later than three months after the oral defense of the dissertation. Petitions for an extension to the three-month limit may be submitted to the Director of Graduate Studies for consideration and approval. The submission website requires students

to choose from among publishing and copyrighting services offered by ProQuest ETD Administrator, but the university permits students to make whichever choices they prefer. Washington University in St. Louis doctoral students may initially request to embargo the public release of their dissertation for a specified period of six months, one year, or two years. Renewals beyond the initial embargo may be granted by the Vice Provost for Graduate Education. Students are asked to submit the Survey of Earned Doctorates separately. The degree program is responsible for delivering the final approval form, signed by the committee members at the defense and then by the department/program chair or director, to the school registrar or the appropriate record custodian. Students who complete all degree requirements and defend their dissertations successfully have not completed their PhD requirements; they finish earning their degree only when their dissertation submission has been accepted by their school of record.

Degree Candidacy Extension

Degree Candidacy Extension (DCE) refers to a non-enrolled status available, under exceptional circumstances, to full-time PhD students who have completed all PhD degree requirements with the exception of the dissertation.

Extended degree candidates are not registered for any courses, have no enrollment status, and are ineligible for financial awards or support, benefits, and resources available to enrolled Washington University in St. Louis students. Once a student enters DCE, they may not register or enroll with Washington University in St. Louis as a student in their intended degree program in a future term.

DCE status may be assigned to full-time students in a variety of situations, including but not limited to the following:

- PhD students who do not complete their dissertation after exhausting the time allowable for PhD enrollment status due to circumstances beyond their control (see Time Limit for PhD Enrollment Eligibility earlier on this page);
- PhD students who secure full-time employment prior to the completion of their dissertation and who have established a timeline for the completion of the dissertation requirement; and
- PhD students who have exhausted their university financial support period as defined by their school or program prior to the completion of their dissertation and who have established a time line for the completion of the dissertation requirement.

DCE status may be inappropriate for international students dependent on a U.S. visa, and such students may not be eligible for this status. International students should always consult with an OISS advisor prior to making an enrollment status change. In addition, students admitted as part-time PhD students are not eligible for DCE status.

DCE status is not the rule. Rather, it is assigned as an exception. Students must obtain the recommendation of their department/program leadership and petition the Vice Dean for Graduate Education (or equivalent) within their school to request to enter DCE status. If the petition is successful, the DCE status is conferred for the period of one year, after which an additional petition should be made and approved. Students seeking to remain in DCE status are obligated to provide a written report on their dissertation's progress annually to

their department to secure their approval for subsequent petitions. Individual departments may require additional checkpoints to ensure progression. Students may remain a PhD candidate in this status for a maximum of three calendar years.

If three calendar years pass from the first semester in which a student was placed on DCE and the student has not successfully completed all degree requirements, then that student has officially forfeited their eligibility to earn the PhD degree. Under these circumstances, the student may petition the Vice Provost of Graduate Education with the support of their department chair and school vice dean to be allowed to complete the degree outside of the three-year extension period. The petition will include a timeline for completion. The Vice Provost of Graduate Education reserves the right to deny any such request.

PhD Mentored Experiences

The Mentored Experience Requirement (MER)

As part of the university-wide degree requirements, PhD students and students in certain master's programs (i.e., MFA in Writing and MFA in Dance) at Washington University in St. Louis must complete a program-defined Mentored Experience Requirement (MER). The MER is an accomplishment that is noted on the student's academic record when complete. Each program established a Mentored Experience Implementation Plan (MEIP) in which required MER units and pathways for completion are defined and specified. The MEIP typically consists of Mentored Teaching Experiences (mentored activities designed to achieve competencies in teaching at basic and advanced levels) and/or Mentored Professional Experiences (mentored activities focused on the development of skills relevant to individual, intended career, and professional outcomes). Students enroll in Mentored Teaching Experience (MTE) courses and/or Mentored Professional Experience (MPE) courses to signify progression toward completing their MER.

Mentored Experience Implementation Plan (MEIP)

An MEIP is a program-defined plan for students to complete their MER and engage in mentored teaching activities and/or mentored professional activities. MEIPs include the philosophy related to the role of teaching or professional experiences within the discipline, the program's plan for preparatory engagement, the normal sequence of opportunities for a student, and the number of MER units required. Each of these terms are defined within this section.

MEIPs were updated by programs during the 2024-25 academic year, and new plans are available under each program's "Mentored Experience Implementation Plan" tab in the *Bulletin*. Plans were effective as of Fall 2025 and applied to all students who had not yet completed their MER. Any revised plans in this Bulletin would be effective for students entering their program in Fall 2026.

Preparatory Engagement

Preparatory Engagement activities represent an introduction to the foundational skills associated with teaching or communication. Preparatory Engagement represents an important foundational component to training in pedagogy. As such, all MEIPs contain required pedagogical preparation before students are permitted to engage in assisting or teaching in a classroom.

Mentored Teaching Experiences (MTEs)

An MTE represents a collaborative engagement between a student and a faculty mentor wherein the student reflects on and interprets disciplinary knowledge; identifies multiple ways to represent disciplinary content; adapts content to students' abilities and prior knowledge; and develops methods to assess and improve the teaching and learning process in a discipline. A student engaged in an MTE will have an assigned faculty mentor supporting the student's development into an educator able to communicate and/or evaluate disciplinary knowledge.

Two categories of MTE exist at WashU: Assistantships in Instruction (AI) and Mentored Independent Teaching (MIT). Each MTE engagement is weighted by MER units to recognize the different levels of effort involved.

Assistant in Instruction (AI)

An AI experience is one in which the student is directly engaged in the organization, instruction, and/or support of a semester-long course *primarily taught by a faculty member*. During the AI, the student receives mentorship from the faculty member in best practices in classroom engagement, instruction in the field, interpersonal engagement, and other relevant skills. Students receive regular informal feedback or evaluation from the mentor throughout the semester, as well as a final evaluation from the mentor and course evaluations from students enrolled in the course as part of the normal course evaluation process.

The student is formally listed as instructional support via Workday in the course listings. In general, AI assignments connect to undergraduate courses or to lower-level graduate courses that the student has taken previously.

MER units for AI experiences are determined by the program based on the level of activity needed for each assignment:

- 5 MER units are equivalent to an average of 5 hours per week of engagement; students enroll in their program's course numbered 8005 during the semester of engagement.
- 10 MER units are equivalent to an average of 10 hours per week of engagement; students enroll in their program's course numbered 8010 during the semester of engagement.
- 15 MER units are equivalent to an average of 15 hours per week of engagement; students enroll in their program's course numbered 8015 during the semester of engagement.

Mentored Independent Teaching (MIT)

An MIT is a semester-long experience for students who engage as the primary instructor or co-instructor of a course *under the mentorship of a faculty member* as part of their MER. Throughout the semester, students receive regular feedback from a faculty mentor based on classroom observation conducted a few times per semester or other acceptable review mechanisms. The student should ask for guidance and support from the faculty mentor while navigating the responsibilities of independent teaching. Faculty mentors are also required to complete the final evaluation for the student.

An MIT experience may not be a requirement or option under every program's MEIP. Each MIT engagement will equate to 20 MER units. The 20 MER unit assignment accounts for the considerable level of preparation and consultation each PhD student needs to engage in as part of this introductory experience toward acquiring the skills required for independent teaching. Students enroll for the semester of engagement under their program's course numbered 8020.

Mentored Professional Experiences (MPEs)

MPEs are unpaid experiences that allow students to develop skills and experiences relevant to their intended career outcomes. These experiences could include, for example, opportunities in industry, communication and outreach, government or policy, consulting, or higher education administration. The duties and responsibilities of the MPE should be intellectually substantive and offer opportunities for the student to develop new skills and experiences.

An MPE experience may not be a requirement or option under every program's MEIP. Each MPE engagement will equate to 20 MER units. The 20 MER unit assignment accounts for the considerable level of preparation and time needed for this engagement. An MPE should involve at least 150 hours (and not more than 180 hours) per engagement. Students enroll for the semester of engagement under their program's course 8120.

Optional MER Activities

Some programs allow for students to participate in additional, optional MTE or MPE engagements. If allowed, the program's MEIP will list the requirements for a Teaching Intensive Pathway (TIP) or a Professional Intensive Pathway (PIP).

Teaching Intensive Pathway (TIP)

The TIP is an optional pathway for those students whose career interests lie in academia or another field that would benefit from extended MTEs. This immersive experience allows students to further explore the breadth and depth of teaching best practices and pedagogy related to their respective field.

Students who are interested in participating in this elective experience must formally request to participate, which is subject to program approval. Due to this experience being an elective, unpaid experience, students who participate in the TIP will not receive compensation.

Professional Intensive Pathway (PIP)

The PIP is an optional pathway for those students whose career interests lie outside of academia or want to benefit from MPEs. An MPE is an unpaid professional experience for PhD students that allows students to develop skills and experiences relevant to their intended career outcomes. Students and mentors complete a mentorship plan prior to the start of each MPE. Students who are interested in participating in this elective experience must formally request to participate, which is subject to program approval. Similar to normal MPE experiences, students who participate in the PIP do not receive compensation associated with their MPE.

Post-MER Completion Teaching Activities

To be eligible to participate in an additional teaching activity at WashU, students must complete their MER as defined by their program's MEIP prior to undertaking optional elective instructional activity. Any independent teaching for pay that occurs after the completion of the MER must meet the spirit of the part-time employment policy or otherwise students must request an exception.

Instructional Support

At the completion of the student's MER as defined in the MEIP, students may elect to pursue additional instructional opportunities at WashU as a non-MTE AI or a similarly situated role. These additional opportunities are subject to the approval of their primary advisor and their department/program as well as the existence of such a position. These students will be paid an hourly rate.

Instructor or Co-Instructor of Record

At the completion of a student's MER requirements as defined in the MEIP, the student may elect to pursue instructor opportunities at WashU as an independent instructor. These opportunities are subject to the approval of the student's primary advisor and their department/program as well as the existence of such a position. Students who have completed their MERs must demonstrate the requisite experience and training in pedagogy to engage in teaching at the fully independent level. These students are eligible for compensation in accordance with the adjunct professor collective bargaining agreement.

Current MEIPs

Arts & Sciences

- Anthropology, PhD, Archeology Concentration
- Anthropology, PhD, Biological Anthropology Concentration
- Anthropology, PhD, Sociocultural Anthropology Concentration
- Art History & Archaeology, PhD
- Chemistry, PhD
- Classics, PhD
- Comparative Literature, PhD
- Dance, MFA
- Earth, Environmental, and Planetary Sciences, PhD
- East Asian Languages and Cultures, PhD
- Ecology and Evolutionary Biology, PhD
- Economics, PhD
- Education, PhD
- English and American Literature, PhD
- English and Comparative Literature, PhD
- French and Francophone Studies and Comparative Literature, PhD
- French and Francophone Studies, PhD
- German and Comparative Literature, PhD
- Germanic Languages and Literatures, PhD
- Hispanic Studies and Comparative Literature, PhD
- Hispanic Studies, PhD
- History, PhD
- Mathematics, PhD
- Music, PhD, Music Theory Concentration
- Music, PhD, Musicology Concentration
- Philosophy, PhD
- Philosophy-Neuroscience-Psychology, PhD
- Physics, PhD
- Political Science, PhD
- Psychological & Brain Sciences, PhD
- Sociology, PhD
- Statistics and Data Sciences, PhD
- Writing, MFA

Business

- PhD Program

Engineering

- Biomedical Engineering PhD
- Biomedical Engineering PhD-MD
- Computational & Data Sciences, PhD
- Computer Engineering, PhD

- Computer Science, PhD
- Electrical Engineering, PhD
- Energy, Environmental, & Chemical Engineering, PhD
- Imaging Science, PhD
- Materials Science & Engineering, Interdisciplinary PhD
- Mechanical Engineering, PhD
- Systems Science & Mathematics, PhD

Medicine

- Division of Biology & Biomedical Sciences Programs
 - Biochemistry, Biophysics & Structural Biology, PhD
 - Biomedical Informatics & Data Science, PhD
 - Cancer Biology, PhD
 - Computational & Systems Biology, PhD
 - Developmental, Regenerative, & Stem Cell Biology, PhD
 - Immunology, PhD
 - Molecular Cell Biology, PhD
 - Molecular Genetics & Genomics, PhD
 - Molecular Microbiology & Microbial Pathogenesis, PhD
 - Neurosciences, PhD
 - Plant & Microbial Biosciences, PhD
- Medical Physics, PhD
- Movement Science, PhD
- Nursing Science, PhD
- Rehabilitation and Participation Science, PhD
- Speech and Hearing Sciences, PhD

Public Health

- Public Health Sciences, PhD

Brown School

- Social Work, PhD

Additional information including forms, resources, and FAQs are available on the Mentored Experiences page of the Office of the Provost website.



Graduate School of Architecture & Urban Design

The Graduate School of Architecture & Urban Design cultivates the designer's identity as a leader and as both an expressive individual and a socially responsible citizen. Our programs emphasize the physicality of design through regard for site, purpose, material, technique, and meaning. Our commitment to the ethical practice of architecture, landscape architecture, and urban design spans disciplines, contending cultural theories and the range of representational media.

The Graduate School of Architecture & Urban Design provides an intimate environment for learning, with individualized attention in the design studios and correspondingly small lectures and seminars. The independent character of a student's abilities is demonstrated and tested in the final semester through the Degree Project, in which students work individually with faculty and critics. The graduate school also has a strong teaching and research assistant program, with approximately one out of every four students engaged in this learning experience.

Contact Information

Graduate School of Architecture & Urban Design
MSC 1079-131-105
One Brookings Drive
St. Louis, MO 63130-4899
Phone: 314-935-6227
Contact Form

Email: wuarch@wustl.edu
Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture>

Faculty

Endowed Professors

Derek Hoeferlin
Raymond E. Maritz Professor of Architecture
MArch, Yale University

Aki Ishida
Sam and Marilyn Fox Professor
MSAAD, Columbia University

Bruce Lindsey
E. Desmond Lee Professor for Community Collaboration
MFA, University of Utah
MArch, Yale University

Robert McCarter
Ruth & Norman Moore Professor
MArch, Columbia University

Eric Mumford
Rebecca and John Voyles Professor of Architecture
PhD, Princeton University

Professors

Patricia Heyda
MArch, Harvard University

John Hoal
PhD, Washington University in St. Louis

Linda C. Samuels
PhD, University of California, Los Angeles

Hongxi Yin
PhD, Carnegie Mellon University

Associate Professors

Chandler Ahrens
MArch, University of California, Los Angeles

Gia Daskalakis
Dipl de Postgrado, Universidad Politecnica de Catalunia

Catalina Freixas
Dipl Arch, Universidad de Buenos Aires

Pablo Moyano
MArch/MUD, Washington University in St. Louis

Constance Vale
MArch, Yale University

Kelley Van Dyck Murphy
MArch, Washington University in St. Louis

Assistant Professors

Wyly Brown
MArch, Harvard University

Seth Denizen
PhD, University of California, Berkeley

Rayshad Dorsey
MArch, Harvard University

Michelle Hauk
PhD, Columbia University

Petra Kempf
PhD, Karlsruhe Institute of Technology

Zahra Safaverdi
MArch, Harvard University



Visiting Professors

Montserrat Bonvehi Rosich

PhD, Universitat Politècnica de Catalunya

L. Irene Compadre

MArch, Washington University in St. Louis

Jonathan Louie

MArch, University of California, Los Angeles

Nicole McIntosh

MArch, Swiss Federal Institute of Technology

Alaa Sulliman Hamid

MDes, Harvard University

Senior Lecturers

Ryan Abendroth

MArch, University of Illinois at Urbana-Champaign

Matthew Allen

PhD, Harvard University

Anna Bach

PhD, Barcelona School of Architecture

Eugeni Bach

MBArch, Barcelona School of Architecture

Julie Bauer

Diplom-Ingenieur in Architecture, Technical University of Berlin

Melissa Betts Sanders

MArch/MUD, Washington University in St. Louis

George Johannes

MArch, Washington University in St. Louis

Carl Karlen

MArch, University of Illinois at Chicago

Karel Klein

MArch, Columbia University

Don Koster

MArch, Washington University in St. Louis

Doug Ladd

BA, Southern Illinois University, Carbondale

Dennis McGrath

BArch, University of Kansas

Allison Méndez

MArch, Washington University in St. Louis

Bob Moore

PhD, Washington University in St. Louis

Justin Parscher

MLA, Harvard University

Aaron Schump

MArch, Columbia University

Jim Scott

JD, Saint Louis University School of Law

Jonathan Stitelman

MArch/MUD, Washington University in St. Louis

Lindsey Stouffer

MFA, Washington University in St. Louis

Ian Trivers

PhD, University of Michigan

Lecturers

Bomin Kim

DrSU, Washington University in St. Louis

Professors Emeriti

Kathryn Dean

Iain A. Fraser

Gerald Gutenschwager

Robert Hansman

James Harris

Sheldon S. Helfman

Stephen P. Leet

Adrian Luchini

Donald Royse

Carl Safe

Thomas L. Thomson

Heather Woofter

Deans Emeriti

Constantine E. Michaelides

FAIA

Cynthia Weese

FAIA

Courses

- ARCH (p. 42): Architecture
- LANDARCH (p. 56): Landscape Architecture
- URBDES (p. 62): Urban Design

Architecture

ARCH 5010 Architectural Design I (March 3)

The first of a two-semester sequence that introduces students to architectural design, focusing on conceptual, theoretical, and tectonic principles.

Credit 9 units.

Typical periods offered: Fall

ARCH 5020 Architectural Design II (March 3)

The second of a three-semester sequence of core design studios, which continues the examination of issues raised in ARCH 5010.

Credit 9 units.

Typical periods offered: Spring

ARCH 5023 Visions of a Brighter Future: The History of Progressive Design At Worlds Fairs

From the time of the Crystal Palace Exposition in 1851, world's fairs have been fraught with boosterism, nationalism and the exploitation of cultures deemed lesser. But due to the infusion of political will and large amounts of money, they also involved the design and construction of enormous numbers of buildings all at once - resulting in the creation of small cities with their own infrastructure of utilities, waste disposal, police departments, hospitals and power plants. The best architects and engineers of each era were called upon, sometimes in official competitions, to design and build innovative structures that expanded the use of materials and utilized engineering solutions which affected the built environment of the world. The 1893 Chicago World's Fair alone changed the way Americans looked at cities and started the City Beautiful Movement. Many architects designed influential pavilions at world's fairs, including Eliel Saarinen, Alvar Aalto, Oscar Niemeyer, Mies Van Der Rohe, Philip Johnson, Eero Saarinen, Frei Otto, Moshe Safdie, Kenzo Tange, Thomas Heatherwick, Norman Foster and Buckminster Fuller. Today still-standing legacies of these fairs, including the Eiffel Tower, the Seattle Space Needle, the Montreal Biosphere, Habitat '67 and Zaha Hadid's Bridge Pavilion remind us of past glories. World's Fairs are not relics of the past, but continue to be held today, involving architectural firms in master planning, pavilion design and exhibit creation on a massive scale. Students will be expected to make short 10-15 minute presentations to the class on local sites at assigned times over the course of the term. Other class requirements include regular attendance and class participation in discussions that demonstrate awareness of the required readings. There will also be a short paper at the beginning of the semester and a 15-page final research paper. For this paper students will be expected to document, critically analyze and draw conclusions about a building, structure or landscape at a world's fair.

Credit 1.5 units.

Typical periods offered: Fall, Spring

ARCH 5110 Architectural Representation I (March 3)

This course examines the history/theory and practice of representation, specifically the systems of drawing used in architecture. The objective is to develop the requisite discipline, accuracy, and visual intelligence to conceptualize and generate a relationship between space and form. The course focuses on two concurrent tasks: first to outline and analyze the historical development of representational logics and their impact on architectural ideation, and second to explain the codification and usage of specific geometries, including orthographic and isometric projection, central and parallel perspective, and architectural axonometric. We will see that, rather than a translation of reality,

representation operates between perception and cognition as a transcription of reality and is thus a powerful instrument in the design and making of architecture. The relationship between the drawing forms and the tools used to produce them are brought into focus as manual, digital, photographic and physical applications driven by drawing intentions. The course is organized as a lecture/lab with emphasis on practice of manual and photographic applications.

Credit 3 units.

Typical periods offered: Fall

ARCH 5120 Architectural Representation II (M.Arch 3)

The course examines the history/theory and practice of representation, specifically the systems of drawing used in architecture. The objective is to develop the requisite discipline, accuracy, and visual intelligence to conceptualize and generate a relationship between space and form. The course focuses on two concurrent tasks: first to outline and analyze the historical development of representational logics and their impact on architectural ideation, and second to explain the codification and usage of specific geometries, including orthographic and isometric projection, central and parallel perspective, and architectural axonometric. We will see that, rather than a translation of reality, representation operates between perception and cognition as a transcription of reality and is a powerful instrument in the design and making of architecture. The relationship between the drawing forms and the tools used to produce them are brought into focus as manual, digital, photographic and physical applications driven by drawing intentions. This course is organized as a lecture/lab with emphasis on the practice of digital media and physical modeling. Emphasis is on participation and excessive absences will be noted. PLEASE NOTE: The second half of the semester will focus on computing, for which each student is required to have a laptop computer.

Credit 3 units.

Typical periods offered: Spring

ARCH 5311 Environmental Systems I: Site Planning

Environmental Systems 1, site planning module, addresses the relationship between buildings and an expanded idea of context, including environmental, material and spatial realms. The class places an emphasis on each student developing his or her own attitude toward architectural sustainability, its role within the design process, and its relationship to architectural form. The theme of site expands the idea of the architectural project to examine landform, position, foundation, access and region. Two goals for the class are, first, to provide you with ways of thinking about and of working with issues of sustainability, which can inform your design practice, and second to equip you with the basic knowledge needed to continue within the technology sequence. Only students who have received a partial waiver for A46 438 Environmental Systems I may register for this course.

Credit 1 unit.

Typical periods offered: Fall, Spring

ARCH 5405 The Architecture of Le Corbusier

A seminar course examining the works of Le Corbusier (1889-1965), one of the most important architects of the modern era whose works continue to exercise enormous influence on contemporary architecture. The seminar will explore Le Corbusier's entire career, including both built works, such as the Monastery of La Tourette, and unbuilt projects, such as the Venice Hospital. Students will analyze and present twenty selected architectural works dating from 1920 to 1965. Introductory lectures by the professor, followed by two student presentations in each class, and each team of two students will be required to present two buildings (one earlier work and one later work). Analytical methods employed in the student presentations in the course will cover the full range of contextual, cultural, material,

constructive, and experiential attributes of buildings, and students will employ the graphic analysis standards developed by the professor. Individual research papers, as well as hard copies and CD's of the two in-class presentations will be due at the end of the semester. Students will be credited in the professor's book, *Le Corbusier*. Fulfills Master of Architecture History and Theory Elective Distribution requirement. Enrollment limited to 20 students.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5406 Le Corbusier and Contemporary Architecture:**Comparative Critical Analyses**

This graduate seminar employs comparative critical analyses to explore 20 works of the Swiss-French architect Le Corbusier (1887-1965), as well as works by 10 contemporary architects that share disciplinary ordering principles with the works of Le Corbusier: Guillermo Jullian de la Fuente and José Oubrière (associates of Le Corbusier), Henri Ciriani, Michel Kagan, Sandra Barclay and Jean Pierre Crousse, Yvonne Farrell and Shelley McNamara (Grafton Architects), Luigi Snozzi, Waro Kishi, Alberto Campo Baeza, and Thomas Phifer. Le Corbusier was one of the most important architects of the modern era, and his works continue to exercise enormous influence on contemporary architecture. This course will explore the architectural ordering principles that structure his work and the manner in which these ordering principles have been employed by contemporary architects. Analytical methods employed in the course will cover the full range of contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on Le Corbusier's focus on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use as well as the poetics of construction (or the way in which a building is built) and of what materials the building is made, as well as how all of these factors combine to construct the experience of those who inhabit it. Following introductory lectures by the faculty, each of the subsequent 10 class meetings will consist of a presentation of selected pairings of buildings -- two by Le Corbusier (generally a public building and a private house) and one by a contemporary architect -- to be presented by a team of two or three students. Readings from the text and other sources (scanned by TA) will be assigned and then discussed during each class. Students will be evaluated on both the quality of their individual presentations and the quality of their participation in the class discussions. Summary papers and CDs of the PowerPoint presentations will be due at the end of the semester.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Spring

ARCH 5407 Frank Lloyd Wright and Contemporary Architecture

This graduate seminar employs comparative critical analyses to explore 10 works of the American architect Frank Lloyd Wright (1867-1959) and works by 10 contemporary architects that share disciplinary ordering principles with the works of Wright, selected from a list including John and Patricia Patkau, Tod Williams and Billie Tsien, Glenn Murcutt, Brian Healy, Wendell Burnette, Tom Kundig, Peter Stutchbury, Jose Luis Mateu, BAK, and Matthias Klotz. Wright's work was the inspiration for the first generation of Modern architects, including Mies van der Rohe, Jan Duiker, and others, and this course will explore the architectural ordering principles structuring his work and the manner in which these ordering principles have been employed by contemporary architects. Analytical methods employed in the course will cover the full range of contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on Wright's focus on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use as well as by the poetics of construction (the way in which a building is built), of what materials it is made, and how all these combine to construct the experience of those who inhabit it. Following introductory lectures by the faculty, each of the subsequent 10 class meetings will consist of the presentation of a selected pairing of buildings -- two by Wright

(house and public building) and one to three by a contemporary architect -- to be presented by a team of two students. Students will be evaluated on both the quality of their individual presentations and on the quality of their participation in the class discussions. Summary papers and CDs of the PowerPoint presentations will be due at the end of the semester.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall, Spring

ARCH 5408 The Architecture of Carlo Scarpa

A course examining the major works of the Italian architect Carlo Scarpa (1906-1978). Scarpa was a unique figure among second generation Modern architects, being at once deeply embedded in the archaic and anachronistic culture of Venice, and at the same time transforming this place by weaving the most Modern of spatial conceptions into its material fabric. This course will focus on Carlo Scarpa's redefinition of the concepts of "renovation" and "preservation," and his reinterpretation of Modern architecture as constituting an integrated part of its historical place and culture; Scarpa's re-engagement of the traditional building methods and materials of the Veneto, reviving lost arts as well as introducing new structures, constructions, and materials into historic contexts; Scarpa's deployment of the articulate detail as a fundamental ordering idea; and Scarpa's engagement of Modern culture, including the integration within his works of concepts drawn from Modern painting and sculpture. Architectural works covered in this course include the Brion Cemetery, the Castelvecchio, the Querini Stampalia Gallery, the Olivetti Showroom, the Banco Popolare di Verona, the Canova Plaster Gallery, among others, and will include his many interior renovations, his exhibition designs, and his glass designs for Venini. The class will consist of lectures by professor and in-class presentations by students. Students will individually research and analyze selected works of architecture, preparing presentations and summary research paper.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5409 Alvar Aalto: Critical Studies

This seminar's overall objective is the exploration and comprehension of 20th century Finnish, Nordic and world architectural culture through the significant works of Finnish architect Alvar Aalto (1898-1976). The emblematic works include the Paimio Sanatorium (1932), the Villa Mairea (1937), the Helsinki University of Technology (1948), the Säämätsalo Civic Center (1953), the Finnish Pensions Institute (1956), and the Vuoksenniska Church (1958). The full range of design scales will be examined, from door handles, details and furniture, to housing, public buildings and urban designs. This larger survey will provide for focus specifically on the research, documentation and physical and digital modeling of Aalto's designs for Finland's World's Fair Pavilions in Paris (1937) and New York (1939), at the specific request of the Alvar Aalto Foundation and Museum, for inclusion in their ongoing research archive and as the basis for a future publication. Further discussions will relate Aalto's work to a growing body of critical appraisals and to contemporary architectural practices. Weekly course meetings, weekly readings, individual and group presentations, individual and group research papers/projects. Optional field trip to Finland at spring break. Fulfills History/Theory elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5410 Louis I. Kahn and Contemporary Architecture:**Comparative Critical Analyses of Built Works**

A graduate seminar employing comparative critical analyses to explore ten works of the American architect Louis Kahn (1901-1974) and works by ten contemporary architects who have been influenced in some way by the works of Kahn, selected from a list including Steven Holl, Tod Williams and Billie Tsien, Peter Zumthor, Herman Hertzberger,

Grafton Architects, Brad Cloepfil/Allied Works, Wiel Arets, Stanley Saitowitz, Thomas Phifer and Nieto Sobejano. Kahn was one of the most influential of the second generation of Modern architects, and this course will explore the architectural ordering principles structuring his work, how these were often derived from Kahn's perceptions regarding the works of his predecessors, and the manner in which these ordering principles have been employed by contemporary architects. Analytical methods employed in the course will cover that full range of contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on Kahn's focus on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use, as well as the poetics of construction, or the way in which a building is built, and of what materials it is made, and how all these combine to construct the experience of those who inhabit it. Following introductory lectures by the faculty, each of the subsequent ten class meetings will consist of a presentation of a selected pair of buildings, one by Kahn and one by a contemporary architect, to be presented by teams of two students. Each student team will present two buildings, one by Kahn and one by a contemporary architect; one presentation in the first half of the semester, and one presentation in the second half of the semester. Students will be evaluated on both the quality of their team presentations, and on the quality of their participation in the class discussions accompanying each presentation.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Spring

ARCH 5412 The Architecture of Marcel Breuer

A seminar course examining the works of Marcel Breuer (1902-1981), one of the most important, but to date largely overlooked architects and designers of the second generation of Modernism. A contemporary of Louis Kahn and Carlo Scarpa, Breuer was trained at the then newly-opened Bauhaus in Weimar, and he then became the Furniture Shop Master in the Bauhaus at Dessau. During this time he designed a number of pieces of tubular steel furniture that are still in production today, including the Wassily Chair, named after fellow Bauhaus faculty and painter, Wassily Kandinsky. After working in Berlin, Zurich, Budapest and London, Breuer emigrated to the United States in 1937, opening an office with Walter Gropius (1937-41), teaching at the GSD Harvard (1937-1947), opening his own office in 1941, and moving to New York City in 1946, where he practiced for the rest of his life. Often considered a follower of Gropius, Breuer's architecture was in fact one of the most elegant and powerful transformations and extensions of the later, primarily cast concrete works of Le Corbusier. While Breuer has been most often recalled for his furniture designs (which are important and will be examined in the class), his accomplishments as an architect are far more significant, and will be examined in depth in this course.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5413 Urbanism Since 1850

Since the beginning of the industrial railroad era, architects have attempted to shape the form of cities in a variety of ways. Through lectures, field trips, discussions and films, this course will examine some of the most important episodes in urbanism since the urban and technological transformations of the mid-nineteenth century, including Haussmann's Paris and Cerda's extension of Barcelona, the Vienna Ringstrasse and the critical response to it in the work of Camillo Sitte; the American City Beautiful and English Garden City movements; early modern efforts in housing and planning, such as those of CIAM, the International Congress of Modern Architecture; urbanism and regionalism under the American New Deal; the era of massive metropolitan change after the Second World War, including postwar replanning efforts in various situations; the development of the discipline of urban design under Josep Lluís Sert at Harvard and

elsewhere; visionary projects of the 1960s; the ideas and influence of Kevin Lynch, Colin Rowe, and Aldo Rossi and the work of the Congress for the New Urbanism; and more recent directions in urbanism. Fulfills History/Theory elective requirement for M.Arch students.

Credit 3 units. Arch: GARW, GAUI, RW

Typical periods offered: Fall, Spring

ARCH 5414 The Architecture of Steven Holl, 1974-2014

A seminar course examining the works of Steven Holl (1947-), one of the most important architects practicing today. During his forty-year career, 1974-2014, Holl's ordering principles and designs have exercised considerable influence over contemporary developments in architecture around the world. Today Holl is rightly considered the greatest of the third generation of American modern architects, following the first generation of Louis Sullivan, and the second generation of Louis Kahn, architects whose work has served as both a source of inspiration and a standard for Holl's work. In addition to teaching continuously at Columbia University since 1981, where he developed innovative design studio projects, Holl also co-founded in 1976 the influential critical journal PAMPHLET ARCHITECTURE. The course will be structured on the five sections of the proposed book, and will examine important early works such as the Hybrid Building at Seaside, the American Library in Berlin, and the five Edge of the City proposals; mid-career works such as the Housing at Fukuoka, the Stretto House in Dallas, the Chapel of St. Ignatius in Seattle, the Kiasma Museum in Helsinki, and Higgins Hall at Pratt Institute; and later works such as the School of Art at the University of Iowa, the Nelson-Atkins Museum addition in Kansas City, the Linked Hybrid in Beijing, and the Horizontal Skyscraper at Shenzhen. Analytical methods employed in the student presentations in the course will cover the full range of contextual, cultural, material, constructive and experiential attributes of buildings, with particular emphasis on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use, as well as 'the poetics of construction, or the way in which a building is built, and of what materials it is made, and how all these combine to construct the experience of those who inhabit it. Students will employ the graphic analysis standards developed by the professor. Following introductory lectures by the professor, each of the subsequent ten class meetings will consist of two student presentations of building analyses, and each team of two students will be required to present two buildings: one work from early in the career to be presented in the first half of the semester, and one work from later in the career to be presented in the second half of the semester. Students will be evaluated on both the quality of their team presentations, and on the quality of their individual participation in the class discussions accompanying each presentation. Individual research papers, as well as hard copies and CD's of the two in-class presentations, will be due at the end of the semester. Students will be credited in the professor's book; STEVEN HOLL, to be published by Phaidon Press in 2015. As an integral part of the course, the professor will lead an 'optional' field trip to the School of Art at the University of Iowa; this field trip will take place on a weekend. Fulfills History/Theory elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5417 Architectural Association, 1971-1990: Texts, Buildings, and Drawings

This seminar will examine the convergence of curatorial, publishing, and professional practices at the Architectural Association (AA) in London under the chairmanship of Alvin Boyarsky. Through a focused study of the international network of AA notables in the 1970s and 80s -- Zaha Hadid, OMA/Rem Koolhaas, Bernard Tschumi, Daniel Libeskind, Peter Eisenman, John Hajduk, Peter Cook, Robin Evans, and others -- the seminar will establish a broader relationship between architectural theory and practice. The course will integrate a set of primary theoretical texts with a selection of AA Publications, illuminating the



relationship between architecture and theories of image production, collection, and dissemination. Course requirements include weekly reading summaries, discussions, in-class presentations, and a research paper. Open to graduate and upper-level undergraduate students. Fulfills History/Theory elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5418 Eero Saarinen & the Gateway Arch

Eero Saarinen's winning competition entry in the 1947 Jefferson National Expansion Memorial (JNEM) competition marked the acceptance of modern architecture for large public commissions in the United States. After its completion in 1965, the Arch became a beloved symbol of the entire St. Louis region and one of the most visited tourist sites in America. With lectures, field trips, and research exercises, this seminar will examine the design of the Arch within a wider context of the histories of St. Louis, of Eero Saarinen and of modern American architecture in the 20th century.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5419 The Critical Evolution of Modern Architecture: CIAM, Team 10, and Other Modern Traditions

A graduate seminar exploring the critical evolution of the modern movement in architecture, from the founding of the CIAM (International Congresses of Modern Architecture) in 1928 to the emergence, within and parallel to CIAM, of what has sometimes been called the Other Tradition of modern architecture, which involved both the work of pivotal individual practitioners, as well as the emergence of collective movements, most particularly Team 10, from 1953-82; a series of regional schools of architecture, from 1945-65; and the Neo-Rationalist movement, from 1966-90. The seminar will also explore the work of selected contemporary practices that exemplify the critical evolution of modern architecture. Each class meeting will involve lectures by the two professors regarding the critical evolution of modern architecture, as well as brief student presentations on specific post-WWII projects. The lectures and presentation will form the basis of discussions of the architectural and urbanistic ideas of Le Corbusier, Josep Lluís Sert, Alvar Aalto, Ernesto Rogers, Aldo van Eyck, Jacob Bakema, Alison and Peter Smithson, Candilis-Josic-Woods, Paul Rudolph, William Wurster, Craig Ellwood, Giancarlo de Carlo, Louis Kahn, Colin St John Wilson, Aldo Rossi, as well as contemporary practitioners such as Fumihiko Maki, Charles Correa, Herman Hertzberger, Rafael Moneo, and others. Analytical methods employed in the student presentations will address contextual, cultural, material, constructive, and experiential attributes of buildings.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Spring

ARCH 5421 New Vision: Designing for New Tools

This course is a research project between the School of Architecture and the Computer Science Department at Washington University in St. Louis. The course starts with lectures on fundamentals of architectural perception with spatial context and Computer Vision based 3D modeling methods. We will introduce state-of-the-art imaging applications on tablets and PCs, and explain the underlying technologies. The final project/research is to develop digital models and translations of an un-built architectural project through experimental visual tools that will alter 3D modeling with Computer Vision as aids. This interdisciplinary course offering will have a potential to significantly broaden the interests and knowledge of our students in both departments, and create new research and education opportunities at an interesting intersection of two different fields.

Credit 3 units.

ARCH 5422 The Architectural and Urban History of St. Louis

This 1.5-credit course will introduce students to the architectural and urban history of the St. Louis region. Topics covered, often with field trips, will be indigenous settlement of the region, the French and Spanish colonial history, and US settlement since 1803. Students will learn about the territorial and architectural transformations of the area, including the impacts of industrialization and suburban growth. Class requirements will be two papers and an in-class presentation.

Credit 1.5 units.

Typical periods offered: Spring Half B, Spring Half A, Spring, Fall Half B, Fall Half A, Fall

ARCH 5424 Programmatic Choreographies

A seminar exploring multiple venues to understand the program of a building as a strategy for design which operates in support of place, context, circumstance, environment, and form, etc. The formulation of programmatic strategies will be based by critically using conventional programs, but understood not as a list of room names, but rather as scenarios of human action based on protocols of use, choreographies of movement, alternatives for gathering, and their subsequent required area of occupation. Each of these scenarios will be explored as opportunities to expand the possibilities of the inhabitation of space in order to enhance the experience of architecture. As such, Program is understood as a powerful instrument of inquiry and pre-design which can make effective transitions into calibrated design operations. The course will include lectures and exercises where each of these scenarios will be presented, discussed and given as tests of analytical and strategic propositions. The deliverables will be shown as power point presentations to test the student's ability to communicate effectively through verbal, graphic and written information. Each of the exercises will be printed at the end of the course as the final deliverable. There will be readings (limited) in support the class discussions. Students enrolled in Design Thinking are encouraged to register for this seminar since it will provide important support to Design Thinking requirements.

Credit 1.5 units.

Typical periods offered: Fall, Spring

ARCH 5425 From the Inside Out: Public Health & the Built Environment

The built environment has contributed to and advanced public health and safety since the era of 2200 BCE when Hammurabi, the founder of the Babylonian Empire, proclaimed the 'Code of Hammurabi.' This code called for construction of 'firm houses' that would not collapse on their owners and for the imposition of severe penalties on constructors whose buildings collapsed. The same basis of care and prudent practice is in force today in building design, construction, environmental engineering, and community and urban design in order to protect public health and safety and the natural environment. This Transdisciplinary Problem Solving course will discuss issues in the US and within a global context of housing, healthy communities, sustainable design, environmental quality, and occupational health and safety. Students will prepare a health impact assessment (HIA) for a selected building or community development site. Prerequisite or corequisite for MPH Program Students: S55-5005 or permission of instructor.

Credit 3 units.

ARCH 5426 Depth of Surface: Building Envelope More Than Skin Deep

The choice of construction systems, material selection and addressing performance requirements must be a generative act, not a reactive application. What are the possibilities for Depth of Surface to exploit the tension between internal criteria and external forces in a conceptual context? This seminar will explore how the overall form and performance of a building envelope can come together within a specific conceptual context. We will identify and address criteria for

a building envelope that is to meet environmental expectations and requirements in the Twenty-First Century. Depth of Surface is divided into three distinct parts aimed at enabling design investigations.

Students are actively encouraged to select an aspect of their current studio project to explore methods of developing and clarifying their conceptual intent -- we will explore generative processes, productive 'loops' of form and performance, in which there are no pre-conceptions in the investigation of the technical and the aesthetic.

Prerequisites: Building Systems I/Structures I/Climate & Light. An enthusiasm for (and knowledge of) physical and digital modeling, and analysis tools: you will be asked to test some of the environmental implications of your building environment strategies by employing Ecotect software at various scales.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5427 Monte Carlo Seminar: Drawing the Body, Imagining the City

In 1969, Archigram released one of their most iconic, yet probably also most enigmatic projects - Features: Monte Carlo. A mixed-use proposal for a performance and recreational space, it was both a building blueprint and a discursive device that operated on the scale of the human body and the city. It wove together issues of bodily and environmental wellness and performance, critically engaging the complexities of emerging global culture: mass media, entertainment industry and various environmental issues. The seminar will revisit these questions through a combination of theoretical texts and projects, challenging the students to unpack the environment as a complex cultural, social and technological construct. The rich cultural history of Monaco will serve as a springboard for these conversations - from the projects by Charles Garnier, Le Corbusier, Archigram and Yona Friedman to the wide-reaching experiments in modern art, design and dance of the Ballet Russe, including its avant-garde choreography by Serghei Diaghilev, stage set designs by Pablo Picasso and costume designs by Leon Bakst, Monaco sustained a highly innovative level of cultural production that was often eclipsed by its socio-economic peculiarities. By unpacking these innovations within a larger historical and theoretical context informed by the texts of Walter Benjamin, Reyner Banham, Dean MacCannell and others, the seminar will draw together bodily experiences and global cultures in modern cities. Open to graduate and upper-level undergraduate students. Fulfills History/Theory elective requirement.

Credit 3 units.

ARCH 5428 Confluences: Understanding the St. Louis Area

This three-week course will focus on visiting and documenting St. Louis area sites to assist students develop their degree projects.

This region has a long and complex history of settlement by Native Americans, Europeans, and African-Americans, and many layers of urban and environmental history. The course will emphasize site-specific research methods and documentation of the built and natural environment, understood as part of historical, social, technological, and cultural phenomena. Possible areas to be examined include downtown; North St. Louis; Carondelet; the confluence of the Missouri and Mississippi rivers; Laumeier Sculpture Park and adjacent areas; and other parts of the region. There will be several lectures on regional history and architecture and a visit to the Missouri Historical Society Library and Research Center. Students will present possible sites for their degree projects for site visits and class discussion and will then develop a detailed final research paper and presentation.

Credit 3 units.

Typical periods offered: Summer

ARCH 5429 Alvar Aalto and Contemporary Architecture: Comparative Critical Analyses of Built Works

A graduate seminar employing comparative critical analyses to explore ten works of the Finnish architect Alvar Aalto (1898-1976) and works by ten contemporary architects that share disciplinary ordering principles with the works of Aalto, selected from a list including Alvaro Siza, Steven Holl, Tod Williams and Billie Tsien, John and Patricia Patkau, Juha Leiviska, Sverre Fehn, Sheila O'Donnell and John Tuomey, Jorn Utzon, Eduardo Souto da Moura and Fuensanta Nieto and Enrique Sobejano. Aalto was one of the most influential of the second generation of Modern architects, and this course will explore the architectural ordering principles structuring his work, how these were often derived both from Aalto's response to the Nordic environment and from Aalto's insights into the works of his predecessors, and the manner in which these ordering principles have been employed by contemporary architects. Analytical methods employed in the course will cover the full range of contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on Aalto's focus on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use, as well as the poetics A graduate seminar employing comparative critical analyses to explore ten works of the Finnish architect Alvar Aalto (1898-1976) and works by ten contemporary architects that share disciplinary ordering principles with the works of Aalto, selected from a list including Alvaro Siza, Steven Holl, Tod Williams and Billie Tsien, John and Patricia Patkau, Juha Leiviska, Sverre Fehn, Sheila O'Donnell and John Tuomey, Jorn Utzon, Rafael Moneo, and Fuensanta Nieto and Enrique Sobejano. Aalto was one of the most influential of the second generation of Modern architects, and this course will explore the architectural ordering principles structuring his work, how these were often derived both from Aalto's response to the Nordic environment and from Aalto's insights into the works of his predecessors, and the manner in which these ordering principles have been employed by contemporary architects. Analytical methods employed in the course will cover the full range of contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on Aalto's focus on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use, as well as the poetics of construction, or the way in which a building is built, and of what materials it is made, and how all these combine to construct the experience of those who inhabit it. Following introductory lectures by the faculty, each of the subsequent ten class meetings will consist of a presentation of a selected pairing of buildings, one by Aalto and one to three by a contemporary architect, to be presented by teams of two students. Students will be evaluated on both the quality of their individual presentations, and on the quality of their participation in the class discussions. Documentation of presentations are due at the end of the semester.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall, Spring

ARCH 5430 Contested Edge: River - City Couplings

This seminar will investigate the contested edge between the Mississippi River and the adjacent occupied land - between development and commerce based on our human needs and desires and a river indifferent to our presence. Over one hundred years ago, Twain warned us about the futility of our attempts to control the volatile Mississippi River: Ten thousand River Commissions cannot tame that lawless stream, cannot curb or confine it, cannot say to it, Go here or Go there, and make it obey. For reasons of river navigation, irrigation, hydropower, and flood protection, the river has been dammed, straightened, deepened, and segregated from its natural floodplain. These massive engineering feats have caused severe and perhaps irreparable ecological damage by upsetting natural flooding cycles, disrupting flows, draining wetlands, and inundating habitats. The results, while temporarily beneficial to some communities, are the progressive intensification of floods and the destruction of riparian zones. Traditional static infrastructures will continue



to play a necessary role but cannot adequately handle increased floods and droughts resulting from global warming and our own intransigence. Rather than continually building harder and higher to protect communities from high waters, knowing from experience that the wild Mississippi will continually topple our efforts, this seminar will explore gentler, smoother transitions between land and water, city and river. Looking toward a more resilient condition, we will explore this ecological crisis as an opportunity for constructing a more livable, coupled, edge as a continuum between river and settlement - one requiring us to bend, accommodate, refrain, and think more creatively and strategically. The work of the seminar will be to create both a River Manual and to initiate an interactive web repository of data, strategies, maps, history, river city coupling examples, focused on the Mississippi River at the St. Louis region. Students will contribute with research, mapping, graphic design, and web construction.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall

ARCH 5433 The Observer & the Observed

This seminar is intended to put students in contact with the urban and architectural culture or cultures in South America. The discovery and observation of the many local ways of doing and thinking will take place through observation of the urban landscape and the appreciation of concrete works by local architects. Activities will be focused on critical observation of the urban context and architecture, including the development of graphic exploration instruments and techniques. The relation between the observer and the observed will be intensified through graphic exploration. In this way, the seminar will purposefully avoid published written criticism as a way to approach the cases and bodies of work to be studied. This will be in order to construct a vision more closely attached to the practice of design and the confrontation with concrete design issues and less 'contaminated' by pre-established historical or theoretical interpretation. The choice of case studies coincides with the array of buildings to be visited in field trips in Buenos Aires, Brazil, and Uruguay. Buildings and practices to be 'observed' will represent different scales, different degrees of intervention and the construction of different landscapes. The seminar is based in three class settings: site visits, professor and guest lectures, and in class presentations and discussion. Rather than a cold, systematized, technical instruction on graphics, the development of personal observation/drawing tools and techniques is stressed. This includes sketching on the site and redrawing assignments based on personal sketches.

Credit 1 unit.

Typical periods offered: Fall

ARCH 5434 Tactical Urbanisms

Over half of the world's population is now living in cities. Another half of the world is living in poverty. Urban slums and informal developments account for a growing, but overlooked majority in this new paradigm. By learning how these communities organize and prosper despite overwhelming disadvantage, the seminar will seek to empower students with the ability to enable the explosive growth of the developing world on its own terms. Through a focused series of case studies and readings in cultural theory, multiple images of the city will emerge—where the built environment is responsive and representative of the people it serves, and the global economy of which it is part. The course is divided into two parts. Part I will investigate communities that act and build on their own behalf, bottom-up urbanisms that arrive with limited input from the design community. Part II will investigate responses, negotiations, and proposals from the design community, and address issues of developmental planning, scalability, and professional responsibilities when working with or in such environments. Requirements: attendance at all class sessions and participation in class discussions; each student will be responsible for summarizing and presenting concepts, conclusions, and questions for discussion from the required

texts, and will conduct one such class presentation during the semester; participation in school-wide Urban Design Symposia; midterm paper discussing a 'tactical urbanism' not discussed in class, topic of the student's choice with the agreement of the instructor; final research paper with original graphic content, expanding on the themes and topics developed at midterm, and project responsible design opportunities. Fulfills Urban Issues elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5435 Historic Preservation: Honoring the Past While Designing for the Future

This course will examine the historic preservation movement by looking at its history, successes and failures throughout the United States and by discussing specific examples in the St. Louis area over the past few decades. The course will examine, define and make intelligible the various types of laws, regulations, codes, and policies used in the United States that affect new construction and the rehabilitation of older structures. As more and more structures, landscapes, districts and townscape begin to fall under one or more types of historic preservation codes, it is helpful for an architect to have a basic knowledge of these regulations. Each class session will discuss a specific timeframe, chronologically examining the structures and landscapes that defined individual eras in the history of the city. Specific examples of historic preservation efforts for each era will be examined in depth. Subject-matter experts in the preservation field as well as contractors and architects will make appearances during the semester to discuss their successes and failures and to have a dialog with the class.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Spring

ARCH 5436 Reconsidering the Margin: Places of Meeting, Spaces of Transformation

The financial crisis of 2008 and subsequent recession exposed the frailty of conventional modes of practice. The freezing of credit markets set off a contraction of increasingly bureaucratized creative fields such as architecture and fine arts and led to massive layoffs and underemployment. This extreme disruption coincides with an ongoing governmental disengagement from social assistance. The combination of the surplus of talent left by immobilized corporate practice and the vacuum created by a retreating government presents an opportunity to reconsider practice for a new generation in a way that engages a broader set of issues and problems. The seminar builds upon existing relationships and a body of previous engagement in the Pagedale community while laying the groundwork for new action. This seminar challenges traditional modes and focuses of creative effort to arrive at a radical new form for creative practice. By challenging common assumptions and using creative production to confront the challenges facing residents and decision-makers, the course seeks to break down physical and disciplinary boundaries to achieve a radical new production. The seminar will include the following: examination of entrenched assumptions by students and community members through reading and discussion; involvement in the community, including volunteer work and civic participation; research into pressing issues that will culminate in a creative project; and dissemination of information to both classmates and the community as a whole. This course is open to disciplines outside of architecture. Students in Art and Social Work are encouraged to register. The course will meet periodically in the community. This course fulfills the Urban Issues or MUD Track elective requirement.

Credit 3 units. Arch: GAMUD, GAUI Art: CPSC

ARCH 5440 Architecture and Film

The seminar course will examine the inter-relationships between architecture and film; how architecture plays a significant role in film and how thinking cinematically may influence architecture. Lecture will focus on film works by Tarkovsky, Hitchcock, Kubrick and Antonioni among others. Film analysis and presentation required.

Credit 1.5 units.

ARCH 5441 Architecture, Photography, and Film

This seminar examines the relationships between the image of architecture in photography and film, with an emphasis on film and architecture. Films studied include documentaries and dramas. Themes of the frame (camera -- window -- painting), space (actual and virtual, inhabited and narrative) and point of view, montage, composition, color, light and shadow will all be studied through critical readings and discussion, viewing of films, and formal analysis of the spatial and formal structure of filmmakers who portray or depict architecture as a primary narrative element in their work. Films studied include examples starting with the early experiments of Russian filmmakers, the Weimar era, Hitchcock, Godard and the New Wave, Tati, Kubrick, Wenders, and more recent directors.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5442 Surface of Affect/Effect

This course is a digital design and fabrication seminar that introduces the notion of architecture affecting human senses as well as the effects generated by the architectural entity. The affective ability will focus on tactility since it is the sense perceived by the entire body and opticality due to the visual nature of architecture. Both affect and effect focus on the surface as a plane of contact between people and their architectural environment. The class will develop digital modeling techniques that will lead to the development of physical prototypes that explore dynamic conditions responding to environmental variables that continually modify the visual and tactile boundary of the surface as division between a person and the exterior environment. In particular, the class will develop surfaces that explore physical movement, implied movement, and perceived movement. The course will involve readings and discussion along with the production of digital and physical prototypes. The class is a prelude to the digital fabrication studio in the spring 2015, but not a prerequisite for the studio. Students enrolled in this seminar will receive priority placement in the studio.

Credit 3 units.

ARCH 5443 Cite Conditions

A seminar exploring multiple venues to understand and inspire pre-design strategies based on: A critical observation of the context: The formulation of hypothesis of understanding based on the circumstantial, the factual, the interpreted, the imagined, and the edited, through a series of case studies, such as Sites with histories, unexpected Sights and philosophical, cinematographic and literary Cites. The course will include lectures and 3 exercises where each of these case studies will be presented, discussed and given as tests of analytical and poetic comprehension. Each exercise will be based on a specific location within the larger St. Louis region. The deliverables will be shown as power point presentations to test the student's ability to communicate effectively through verbal, graphic and written information. Each of the three exercises will be printed at the end of the course as the final deliverable. There will be readings (limited) in Philosophy and/or Art criticism to support the class discussions. Students enrolled in Design Thinking are encouraged to register for this seminar since it will provide important support to Design Thinking requirements.

Credit 1.5 units.

Typical periods offered: Fall, Spring

ARCH 5444 Neighborhood, City, Society: Urban Change in the American Industrial City

This course will explore the way that cities evolve in the face of changing social, economic, and political conditions. Focusing on the historical development of American industrial cities and regions, the class will examine how theoretical approaches to understanding the role of politics, social conditions, and design interventions in the ways cities change and develop. By focusing on neighborhoods in Saint Louis, the course will explore how local urban development has addressed suburbanization, urban renewal, the loss of industry, decrease in population, and recent process of investment and gentrification. The course will use fieldwork and archive-based case study research to trace the historical and contemporary forces that are shaping particular neighborhoods within Saint Louis in relationship to similar phenomena in other cities such as New York, Chicago, Detroit, and other rust belt cities. The project-based group and individual assignments will help students build research skills in historical archive research, urban statistical data processing, social apping, and case study presentation. Fulfills History/Theory elective requirement. Fulfills Urban Issues elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5445 The Architecture of Medicine

This seminar will offer students in architecture and engineering an overview of issues involved in the planning and design of facilities for medicine and the problem-solving design process required in projects of this type. Medical-based building uses include laboratories (e.g., biomedical sciences, instrumentation, clinical); inpatient facilities (e.g., hospitals, rehabilitation centers, in-patient surgery, blood bank, pathology); and medical facilities (e.g., outpatient surgery and procedure, radiology). The course will examine the problem-solving process and specific design issues of buildings designed for medical science and treatment. It will show the opportunities for integrating sustainable principles in the design. The problem-solving process will start with programming, follow with planning exercises, and focus on engineering issues for the design process. Students will go on five tours to see interesting local facilities that provide good examples of functional design for medical uses listed above. Examples of potential local tours include WUSM's Mallinckrodt Institute of Radiology, BJC Hospital facilities, and SLU-SOM's clinical research laboratory (J. Baum designed). The course will review examples of buildings for medicine by notable national and international architects, as well as interesting well-executed buildings of note and where sustainable design has been incorporated into the design. The objective of reviewing existing buildings will be to investigate the technical challenges posed by the function and use of the building. Because we will generally not be able to find much on the problem-solving process and specific design issues of these buildings, the students' investigations will be limited to what is published.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5446 Public Health & the Built Environment

The built environment has advanced public health and safety throughout history. Building design, engineering, and construction today require knowledge of a wide range of public health and environmental science issues. In this seminar, students will investigate impacts of public health on building design and community development with regard to U.S.A. building codes, sustainable design, environmental quality, chronic disease mitigation, infectious disease control, and U.S.A. occupational health and safety standards and specific applications to healthcare, science and education, and food production facilities. Students will write two research papers on built-environment topics of their choice.

Credit 3 units.

ARCH 5447 From the Bottom Up: A Grassroots Approach to Healthy Communities & Neighborhoods

We spend more than 90% of our lives indoors (National Research Council 1981), yet we know much more about ambient environmental factors and health than we do about the built environment and health. The built environment is defined as buildings, homes, places of business, work places, schools, food stores, public spaces, parks and recreational areas. It extends to electric transmission lines, waste disposal facilities, transit arrangements, roads, utilities, fixtures, and all other man-made entities that form the physical characteristics of a community. In sum, it includes the places where we live, work, and play, places that keep us moving, communicating and functioning, i.e., nutrition and physical activity environments, streetscapes, transportation environments, and everything in between. How we design and build where we live has changed dramatically over the past century. In the early 1900s, urban areas tended to be compact and communities were walk-able, with a central business district and a mix of housing and services. Then, connections between urban design and health and disease were more clearly recognized, and planners and public health practitioners often worked together to deal with problems related to poor sanitation and housing conditions. Increasing movement away from such urban locales over the last 50 years led to lower-density developments, segregation of land uses, and extensive roadway construction. Today, this trend, sometimes referred to as urban sprawl, is characterized by huge increases in urbanized land area and vehicle miles traveled [U.S. Environmental Protection Agency (EPA) 2001a]. These changes have both direct and indirect impacts on our environment and on public health. The major themes that will be presented and discussed are Sustainable Design, Landscape and Sustainable Sites Initiative, Passive Survivability, Universal Design and Building Codes, Engineering-Urban Infrastructure. Considerable emphasis will be given to social considerations in neighborhood development and residential design. During the entire fall term students will explore, examine, and explain the neighborhood in which the students currently live in the St. Louis region, and document their research in a comprehensive report. The course requires students to write the Where I Live report and to present their findings in class. There is no final examination.

Credit 3 units.

ARCH 5449 House and Home: Habits and Habitation

House and Home are broad categories of thought that have multiple meanings. The words encompass not only terms of building, belonging, and place, but also terms of order, action, and affection. The house has also been the site of conception and invention for the architectural projects of many significant modern master architects. In many contemporary practices, house and home have retained many ideas of these masters. However, many practices have simultaneously probed new meanings that investigate the relationship between habits and habitation with investigations of gender, sexuality, and political order. This course fulfills the History/Theory elective requirement.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall, Spring

ARCH 5450 Material / Practice

The seminar will provide each student a heightened understanding of material translation and detailing strategies that amplify conceptual design intent and that is sympathetic to the needs of professional practice. Content will endeavor to examine, at an advanced level, the intersections of design strategies with modes of professional practice. The semester will begin with an investigation of emerging practice trends, researching impacts on collaboration models, design approach, delivery methods and construction. The course will then shift to analysis and translation of conceptual design thought through to

material, performative and experiential realization. Critical speculation of the underlying modes of practice and project delivery will parallel the analysis. The semester will conclude with material and detailing discourse in support of each student's studio work. Seminar dialogue will examine the overlap of practice and project delivery through the lens of design-thinking in lieu of the traditional lens of risk management. Where possible the course will bring-forth experts from leading practices around the United States.

Credit 3 units.

ARCH 5451 Principles of the Virtual Design and Construction (VDC) Process

Virtual Design and Construction (VDC) is the use of multidisciplinary performance assessing models of the design/construct/own-operate process to support a variety of objectives. Intended for students who wish to explore the optimization potential of the VDC process, this course investigates VDC as managers/leaders in the Built Environment. The course focuses on developing models of integrating all perspectives: Design (architects/engineers/consultants), Construction (managers, contractors, sub-contractors), Business (develop, own, operate) to overcome the technological and institutional changes and challenges of implementing VDC. Students will develop and implement fair-minded critical thinking problem solving techniques to advance contemporary decisions to improve virtual collaboration while reducing fragmentation and interoperability.

Credit 3 units.

ARCH 5452 Painting Into Architecture: Shared Speculations On the Nature of Modern Space, 1900 to Present

A graduate seminar exploring the rich tradition within the Modern arts since 1900, where shared concepts of space, order and perception have been engaged in parallel developments in the pedagogy and practice of painting and architecture. The major part of the course will consist of the examination of these shared principles through their 'educational deployment' in selected schools of art and architecture around the world, as well as in their 'practical implications and applications,' exemplified through a series of selected pairings of architects and painters, from the early Modern period and from contemporary practice. Three types of parallels between individual painters and architects are proposed to be found with the Modern tradition: 'parallels in practice,' an actual relationship of contemporary equals; 'parallels across time,' an actual albeit one-way relationship of chronologically distant practitioners; 'parallels of principle,' a purely speculative relationship of contemporary equals on non-crossing paths. Introductory lectures and required readings will examine the pattern of shared principles through their 'critical engagement' in the writings of Jose Ortega y Gasset, Sigfried Giedion, Colin Rowe, Robert Slutzky, Yves Alain Bois, and John Berger, among others. Following the introductory lectures, each class will consist of a student presentation of 'educational deployment,' and two presentations of 'practical implications and applications' (artist/architect pairings), one by a student and one by the professor. Among the painters and architects to be examined are Le Corbusier, Paul Klee, Carlo Scarpa, Richard Diebenkorn, Steven Holl, Ben Nicholson, David Chipperfield, Richard Paul Lohse, Aldo van Eyck, Robert Slutzky, Peter Eisenman, Georges Braque, Alvar Aalto, Josef Albers, Louis Kahn, Piet Mondrian, Tod Williams and Billie Tsien, Sean Scully, Herzog and Du Meuron, Mario Radice, Giuseppe Terragni, Fritz Glarner, Henri Ciriani, etc.. Students, working in teams of two, will be responsible for researching and analyzing one example of 'practical implications and applications,' and one example of 'educational deployment' (from list provided); preparing two in-class presentations, and providing summary documentation. Open to graduate students in architecture, art, and art history. Fulfills Graduate Architecture History/Theory

elective requirement; enrollment limited to 20. The course, and the syllabus of examples that will be engaged in the classes, originates in the book-length study, *Spatial Speculations*, currently being written by Professor McCarter.

Credit 3 units.

ARCH 5454 Dynamic Architectural Visualization

Spatial animation for architecture urban design, landscape and interior design is being used as an everyday design process. This powerful dynamic media allows designers to fully understand and comprehend the totality of natural phenomena and spatial perception within the digital environment. This course explores the basic aspects of design and producing digital animations. Students develop storyboards in terms of clarity of storyline, time curves, motion paths, and advanced rendering techniques. Key frame and interpolation techniques are developed to aid the editing process. This course also covers video editing as a creative tool combining audio and visual manipulation.

Each student will engage in dynamic perception through assemblage of time, space, and emotional aspects of cinemetic experience.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5455 Design At an Impasse: The Experience of Lina Bo Bardi

This seminar will address timely conceptual and practical issues about architecture by studying the design and theoretical works of Italian-born Brazilian architect, Lina Bo Bardi (1914-1992). As one of the very few prominent women architects in the twentieth-century, she articulated many important questions that remain open in contemporary architecture. Her work ranged from editorial to curatorial projects, from furniture to urban design, and from new buildings to restoration and adaptive reuse projects. The title of this course refers to a posthumous book she organized in the later years of her life, in which she addressed the dilemmas of designing in a world in which basic human needs and shared social values are often at odds with the pervasiveness of individualism, images and commodities in a globalized Western culture. The seminar will be divided in three modes: lectures, individual research, and an exhibition project. Lectures will focus on a comprehensive approach to her life, work, and ideas. Individual research will focus on analyzing specific works organized by categories with access to both secondary and primary sources. The results of the research will be incorporated into a curatorial project for a pilot exhibition investigating the significance of her legacy to contemporary architects and designers. Fulfills History/Theory elective requirement.

Credit 3 units.

ARCH 5457 Carlo Scarpa and Contemporary Architecture: Comparative Critical Analyses of Built Form

A seminar course examining the works of Carlo Scarpa (1906-1978), one of the most important second generation modern architects, whose works, though designed for the unique context of the Veneto region of Italy, nevertheless continue to exercise considerable influence on contemporary architecture around the world. Student teams will present analyses of a total of ten of Carlo Scarpa's built works, as well as analyzing the relation to Scarpa's works that can be found in the works of ten contemporary practices: Tod Williams + Billie Tsien, Steven Holl, Richard Murphy, Bridget Shim + Howard Sutcliffe, John Tuomey + Sheila O'Donnell, Shin Takamatsu, John and Patricia Patkau, Kathryn Dean/Dean-Wolf, Sverre Fehn and Tom Kundig/Olson-Kundig. Analytical methods employed in the student presentations in the course will cover the full range of contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use, as well as the poetics of construction, or the way in which a building is built, and of what materials it is made, and how all these combine to construct the

experience of those who inhabit it. Following introductory lectures by the professor, and introduction of the analytical methods and graphic standards, each of the subsequent ten class meetings will consist of two student-team presentations of architectural analyses, one building by Carlo Scarpa and selected buildings from a contemporary practice. Each team of two students will make two presentations, one in the first half of the semester, and one in the second half of the semester. Readings from the textbook and other sources will be assigned, to be discussed during each class. Individual research papers, as well as hardcopy and CD's of the two in-class presentations will be due at the end of the semester. Fulfills Master of Architecture History and Theory Case Study Elective Distribution requirement.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall

ARCH 5459 Aldo van Eyck and Contemporary Architecture

A graduate seminar employing comparative critical analyses to explore ten works of the Dutch architect Aldo van Eyck (1918-1999) and works by ten contemporary architects that share disciplinary ordering principles with the works of van Eyck, selected from a list including Giancarlo da Carlo, Herman Hertzberger, Fumihiko Maki, Lacaton and Vassal, Tod Williams and Billie Tsien, Yvonne Farrell and Shelley McNamara (Grafton Architects), Wang Shu and Lu Wenyu (Amateur Architects), Francis Kéré, Emiliano Lopez and Monica Rivera (Lopez-Rivera), and Mauricio Pezo and Sofia von Ellrichshausen (Pezo von Ellrichshausen). Van Eyck's works and writings were fundamental to the emergence of Team 10 in the late 1950s as the center of the critical evolution of modern architecture in the second half of the 20th century. Van Eyck's concepts, the vernacular of the heart, the constant and constantly changing, the aesthetics of number, the house is a like a small city, the shape of the in-between, labyrinthian clarity, space in the image of man is place, and time in the image of man is occasion, and architecture as built homecoming will be used to structure the seminar, which will explore these architectural ordering principles characterizing van Eyck's work, and the manner in which these ordering principles have been employed by contemporary architects. Analytical methods employed in the course will address the contextual, cultural, material, constructive, and experiential attributes of buildings, with particular emphasis on the manner in which the spaces of a building are ordered by the patterns of occupation and the poetics of use, as well as the poetics of construction, or the way in which a building is built, and how these combine to construct the experience of those who inhabit it. Following introductory lectures by the faculty, each of the subsequent ten class meeting will consist of a presentation of a selected pairing of buildings, one by van Eyck and one by a contemporary architect (along with a career overview), to be presented by a team of two students. Students will be evaluated on both the quality of their individual presentations, and on the quality of their participation in the class discussions.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Spring

ARCH 5460 Critical and Creative Algorithms

Algorithms play an essential role in contemporary creative design. They are sketches using step-by-step logic. Algorithms are also complicated, invisible components of global information systems. They are devices of surveillance and control. This course combines a historical study of computation and systems design with programming workshops and contemporary readings from critical algorithm studies. Is a computer like a brain? How is programming like using a foreign language? Students will learn about the history of computer hardware and software, how they were used by artists and architects in the twentieth century, and how algorithmic sketches can be used today in various creative design workflows. From recipes and poetry to



machine learning and large language models, students will study algorithmics from the perspectives of the humanities, sciences, and creative design. Final projects will combine creative form making with research and writing.

Credit 3 units.

Typical periods offered: Spring

ARCH 5461 Women in Architecture

This research seminar will examine how women have shaped the field of architecture as practitioners, critics, researchers, and clients over the last two centuries, situating their work and their ideas within the canon of modern architecture through diverse historical and theoretical frameworks. It will trace the genealogical threads of key female figures in relation to international schools of thought, exploring the ways in which they contributed to the representation and production of space in the modern world. This seminar will also examine feminine discourses that both converged with and diverged from the dominant discourses of the field in order to shed light on the historical and cultural contexts that defined women's roles as architects and as consumers of architecture. The course will cover key female figures in the field of architecture, including: Louisa Tuthill, Louise Blanchard Bethune, Sophia Hayden Marion Mahoney, Julia Morgan, Charlotte Perriand, Jacqueline Tyrwhitt, Catherine Bauer, Jane Drew, Minette de Silva, Cathrine Beecher, Miho Hamaguchi, Allison Smithson, Denise Scott-Brown, Adele Santos, Zaha Hadid, and others. Final project will be an exhibition.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Fall, Spring

ARCH 5462 Degrowth: Theories of Design for an Abundant World

What will the world look like beyond the climate crisis? What will be the role of designers? In recent years, social theorists and economists have become increasingly convinced that the global economy cannot continue to grow forever. To live sustainably with an equitable distribution of resources, some consumption will need to be reduced -- this is the argument of the degrowth movement. What will this mean for architecture? Will adaptive reuse replace the construction of new buildings? Will architects engage in the design of global systems (geoengineering)? Will philosophies of minimalist asceticism surge in popularity? What can we learn from indigenous societies with traditions of living within relative ecological balance? This course engages directly with economic, ecological, and design theories that ought to be relevant in the years ahead, as the profession of architecture adjusts to a world beyond perpetual growth. Analysis of contemporary projects will be paired with a history of architecture that places special emphasis on modernism, counter-cultures, and systems/ecological design.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Fall

ARCH 5463 Narratives in Design

This course provides tools to design students across disciplines, who would like to extend their critical thinking knowledge and curatorial studies in design by engaging topics and experts related to the Sam Fox School public lecture series. Starting from an understanding of design as a culture, the course will help students to frame their ideas and interests and learn how to unfold the work of designers in a crafted and mature way. Through a series of interactive workshops, students will collaboratively find topics of interest in the different disciplines and will find who better can exemplify those interests. This will help the lecture committee to set up the lecture series and will give more agency to the students during our lecture guests visits.

Credit 1.5 units.

ARCH 5464 The Island We Eat I: Seeding Resilience in Puerto Ricos Food Future

A recipe is more than the food it is made of: the geography of our dinner spills off of the plate. The Island We Eat seeks to explore the relationship between food systems and their geomorphology, climate, infrastructure, time and culture. During the 20th century, the transformation of global food production and its processes have homogenized most of the Earth's productive landscapes, diminishing their complexity and impoverishing their ecosystems. This transformation has been so thorough and pervasive that it is increasingly difficult to imagine how things could be any other way. This course will be divided in two parts; each part is 1.5 credit hours. Students can take The Island We Eat I or The Island We Eat II or both. Those two parts will help build the history of the past, present and future of food systems in the island of Puerto Rico. Each part will be run independently even if the work will built up at the end. Even if Puerto Rico is the perfect environment to grow food, and if the weather, soil and water make the island the perfect environment, the reality is that the island is currently importing more than 80% of the food that people consume. Since we are facing a growing uncertain future in food production and distribution, we will question why Puerto Rico cannot build a more resilient food future. The Island We Eat I will explore more global and large-scale facts that impact the island food systems. The Island We Eat II will explore which diet and its production can help to build the food sovereignty of the Caribbean island. This is a thinking through drawing course where the research will need to be criticized through the act of drawing across scales.

Credit 1.5 units.

Typical periods offered: Spring

ARCH 5465 The Island We Eat II: Seeding Resilience in Puerto Ricos Food Future

A recipe is more than the food it is made of: the geography of our dinner spills off of the plate. "The Island We Eat" seeks to explore the relationship between food systems and their geomorphology, climate, infrastructure, time and culture. During the 20th century, the transformation of global food production and its processes have homogenized most of the Earth's productive landscapes, diminishing their complexity and impoverishing their ecosystems. This transformation has been so thorough and pervasive that it is increasingly difficult to imagine how things could be any other way. This course will be divided in two parts; each part is 1.5 credit hours. Students can take "The Island We Eat I" or "The Island We Eat II" or both. Those two parts will help build the history of the past, present and future of food systems in the island of Puerto Rico. Each part will be run independently even if the work will built up at the end. Even if Puerto Rico is the perfect environment to grow food, and if the weather, soil and water make the island the perfect environment, the reality is that the island is currently importing more than 80% of the food that people consume. Since we are facing a growing uncertain future in food production and distribution, we will question why Puerto Rico cannot build a more resilient food future. "The Island We Eat I" will explore more global and large-scale facts that impact the island food systems. "The Island We Eat II" will explore which diet and its production can help to build the food sovereignty of the Caribbean island. This is a thinking through drawing course where the research will need to be criticized through the act of drawing across scales.

Prerequisite: A46 560D (The Island We Eat I)

Credit 1.5 units.

Typical periods offered: Spring

ARCH 5466 The Japan House Workshop

The Japanese house has long been the subject of considerable fascination and debate by writers and architects both in and out of Japan who found inspiration in its materials, structural systems, and aesthetics. But what are the characteristics that define a Japanese

house? And how have ideas about what it should be and how it should work changed over time? This course introduces students to studies of Japanese dwellings by architects such as Bruno Taut, Kon Wajiro, and Shinohara Kazuo, familiarizing students with the key texts that sought to define and contest the parameters of aesthetics in Japanese domestic architecture. Through short readings and weekly discussions, students will learn about the formation of the "Japanese House" as an idea in the context of Japan's encounter with the West and how this idea influenced modernist design both at home and abroad in complex and sometimes contradictory ways. The workshop component of this seminar focuses on a key turning point in Japanese residential design, first through a structured study of key architectural elements, and second through a deeper examination of a specific residence using original drawings and photographs. The results of this research will culminate in an end-of-semester exhibition of drawings and models that showcases Japanese residential design at a point of transition.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall, Spring

ARCH 5467 Building a Foundation for a Career - the First 6 Months

This seminar will explore the transition from school to practice that occurs within the last 3 months of school, and the next 3 months after graduating. Much of your focus thus far has been on understanding the history and theory of architecture, and designing, drawing, and modeling individual projects for studio. So how do you translate these essential skills to professional practice and begin the process of establishing yourself as a designer and architect? How do you build a resume by leveraging the creative work you've already completed? How do you create a portfolio and resume that accurately depict not only your skills, but also your interests? And finally, how do you leverage your skills early to establish a strong foundation for the career you want? In this seminar, we will address the questions above, and you will learn how to put together award submissions, set up an NCARB record, and navigate the basic fundamentals of the licensure process. We will also discuss collaboration, work-life balance, aligning your passions and skills with potential career paths, and successfully transitioning from academia and practice.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5468 East Asian Urbanisms

This seminar surveys the history of East Asia's great cities through the lens of social, urban, and architectural change from pre-modern to modern times. It explores how the ever-shifting geopolitical landscape of East Asia shaped the trajectory of the region's urban morphology, with each week devoted to a specific topic. Tracing the flow of knowledge, ideas, and technologies across borders, the seminar addresses such themes as the influence of the Chinese cultural sphere on the design of pre-modern capitals outside of China; the emergence of Japanese castle towns; the social and architectural impact of semi-colonialism in treaty-port cities; and the top-down planning carried out by imperial Japan in Manchuria. At the same time, we will consider what these larger forces meant for the daily lives of the people who had to live with their consequences and for the broader ecologies that both shaped and were reshaped by urban growth. Weekly lectures will introduce students to principles and policies that shaped the built environment of major metropolitan centers from Beijing to Seoul to Tokyo, while in-class discussions will draw from a broad range of readings, stories, and visual sources that bring cities, and their inhabitants, to life. For the final project, students will write and illustrate a historical narrative of a city and time of their choice based on their own research.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Spring

ARCH 5469 Challenging Cultural Assumptions Women in Architecture, 1827-1960

This course will examine the significant contributions of women as architects and designers in the decades prior to 1960. Women designers in the post-Hadid era are far better known than the pioneer architects who will be examined in this course. The first American building designed by a woman was constructed in 1827, and by 1910 there were 50 women working professionally as architects in the United States. Myths about them include that they did not have successful careers, that they got few commissions, and that they did not make lasting contributions to architecture. The truth is that although they had an uphill struggle to compete with the men who dominated the profession - and sought to exclude them - women nevertheless made significant contributions to the prairie and international styles, worked successfully within beaux-arts and various stylistic revivals, and designed everything from homes to commercial, industrial and civic buildings - even a capital city. They invented new systems for housing and more efficient materials, like the K-brick. This course will provide details regarding gendered design theory which included kitchenless houses, cooperative home clusters, and significant opinions on urban renewal and city planning. A non-gendered lens will be applied to what makes a design - and a designer - great. This includes an examination of why women's designs have often been undervalued or erased in criticism, popular perception, the media and classroom instruction. Students will be encouraged to research and write a short paper about a woman or a group of women and their contribution(s) to architecture.

Credit 1.5 units.

Typical periods offered: Spring

ARCH 5550 Digital Reuse

From Rauschenberg's Combines to the ancient architectural notion of spolia, the intelligent reuse of discarded or neglected material is a rich preoccupation in art and architecture. Practices of quilting, collage, montage, and kintsugi not only produce intricate and beautiful artifacts but also chart a fertile intellectual ground with deep epistemological implications. Today, AI, machine vision, reality capture, and 3D scanning and printing have changed the calculus of reuse, allowing artists and designers to apply emerging fields of research toward adaptive and generative armatures for reassembling loose fit or misfit material into new contemporary wholes. This course will introduce students to the theoretical, cultural, and technical foundations of applying digital technologies and generative processes to the reuse of waste, reclaimed materials, and adapted contexts. We will see waste as a dataset amenable to digital transformation, with material, geometric, and assembly constraints embedded in AI and computational processes. The course will be taught through a combination of theoretical, critical, and historical lectures, rigorous technical workshops, punctual guest lectures, and field trips, with topics including 3D scanning, AI classification, generative geometry, and composite material design. The course will equip students to apply emerging digital technologies to imagine new, elevated, recombinant futures with radical reuse.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5555 Computational Form

Form is an endlessly rich category of visual, architectural, and sculptural creation, capable of poetic surprise and unruly enigmas. Yet to realize ambitious and intricate architectural and sculptural forms, practitioners must command a combination of geometric, computational, and material concepts and techniques. This course is a forum to develop formal virtuosity through the medium of sheet material (rigid and pliable) and the methods of computational design. Using a combination of AI vibecoding (C# and Python), GenAI models, and procedural tools such as Houdini, and Grasshopper, we will interrogate the interplay between form, pattern, and material



constraints in sheet material (paper, fabrics, wood, sheetmetal). In the process, students will be introduced to powerful geometric and computational concepts such as the multiscalar meshes, voxelizations, tetrahedralizations, discrete differential maps, and developable and warped surfaces. The course will open a library of techniques for describing and disciplining complex geometry that expand the student's capacity to achieve ambitious forms that hover at the edge of possibility.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 5710 Special Topics

This is a special topics course in Architecture.

Credit 1-3 units.

Typical periods offered: Fall, Spring

ARCH 5810 Independent Study

Prerequisite: Sponsorship by an instructor and permission of the Dean of the School of Architecture. Credit: To be determined in each case.

Maximum credit: 5 units.

Credit 5 units.

Typical periods offered: Summer

ARCH 5811 Independent Study

Prerequisite: Sponsorship by an instructor and permission of the Dean of the School of Architecture. Credit: To be determined in each case.

Maximum 5 units.

Credit 9 units.

Typical periods offered: Spring, Summer

ARCH 5920 Building Visits (Barcelona)

In this 3-credit seminar, students will experience first-hand a careful selection of exemplary contemporary architecture conceived through environmental and social considerations. The seminar is divided into two parts; the first is based on case-studies, and the second is a Spring Break architecture travel. The first part consists of a series of lectures delivered by prominent guest practitioners on a single work (in or near Barcelona), followed by a visit with the architect to the building. Through on-site drawing analysis and other exercises, students will unfold the diverse design logics embedded in the building (urban, landscape, energy, material, tectonic and social) to grasp the work holistically. The Spring Break trip will similarly engage with exemplary built works and offices outside of Spain and within Europe.

Credit 3 units. Arch: GACS

Typical periods offered: Spring

ARCH 5921 Barcelona City Seminar: History, Evolution, and Current Debates (Barcelona)

This seminar aims to familiarize students with urban concepts and themes, such as urban fabric, public space, buildability, scale, paths and streets, mixed-use, density, mobility flows, zoning, urban renewal, gentrification, etc., and provide them with basic tools to describe, analyze and articulate proposals in urban contexts. Through field visits, theoretical sessions, debates, and practical exercises, the spectrum of urban issues and themes will be examined with Barcelona as an example and a living laboratory.

Credit 3 units. Arch: GAUI

Typical periods offered: Spring

ARCH 5922 What Does the Museum Look Like? (Barcelona)

The Museum, as an architectural typology and emblematic cultural device, is undergoing an intense transformation. This seminar aims to shed light on this typology and the role that museum architecture has as a mechanism to activate present-day communities. Students will conduct research through this type of contemporary culture condenser, which keeps digitalization and globalization. It will also consider the idea that a museum is not only a display or receptacle dedicated to established areas or disciplines such as the arts, science, sports, and industry, among others. The research methodology will analyze and deploy seminal case studies to revisit and propose alternatives for the Museum's evolution as an architectural device for contemporary culture. The course will address and discuss different topics such as the idea of destabilizing the Museum as an institution, dealing with conflict as a positive, alternative way to generate content, and thinking about this typology as a place mainly dedicated to positive interaction, discussion, service and exchange within the community. To compare and acquire a global perception of a constellation of museum types, specific graphic standards will be used to represent the analysis and deployment of case studies. These analyses, as well as the results of the discussions and pieces of work produced during the seminar, could result in a small publication.

Credit 3 units. Arch: GARW

Typical periods offered: Spring

ARCH 5990 Training and Development in Practice

Training and Development in Practice is a practicum offering students who qualify the opportunity to participate in an internship, or professional immersion experience. While the structure of the course affords student participants a great measure of autonomy as far as the scheduling and work demands associated with their internship, the course will provide a framework for every student to proactively set reasonable learning/experiential objectives and assess the completion of these objectives by the end of the course period. Over the duration of the Summer, students and the course facilitator will meet one on one, either in person or by remote webcam. Students will complete biweekly assignments to support professional development and reflection upon progress made towards goals. Students may enroll in ARCH 5990 a maximum of three times. Credits earned from ARCH 5990 will not count toward fulfilling a students' degree requirements.

Credit 0.5 units.

Typical periods offered: Summer

ARCH 6005 Workshop 1: Studio Methods

For incoming MARCH 2 and returning MARCH 3 students, this intensive workshop will focus on preparation for ARCH 6010 core studio. Activities will include tutorials, hands-on demonstrations, and skill-building exercises.

Credit 1.5 units.

Typical periods offered: Fall Intersession

ARCH 6010 Architectural Design III

The third of a three-semester sequence of design studios. Continues examination of issues raised in ARCH 5010 and ARCH 5020. All students initially register for section 01. The studio coordinator will assign students to sections at the start of the semester and students will change their section registration at that time.

Credit 6 units.

Typical periods offered: Fall

ARCH 6020 Architectural Design V

This is a graduate options studio. All students initially register for section 01. Studio section assignments will be made through a lottery process at the start of the semester and students will change their section registration at that time.

Credit 6 units.

Typical periods offered: Fall, Spring

ARCH 6025 Architectural Design V (Barcelona)

This is a graduate options studio for students studying abroad in Barcelona, Spain.

Credit 6 units.

Typical periods offered: Spring

ARCH 6030 Architectural Design VI

This is a graduate options studio.

Credit 6 units.

Typical periods offered: Fall, Spring

ARCH 6150 Design Culture

This course will provide an overview of historical and contemporary design issues, including (but not limited to) graphic design, communication design, industrial design, furniture design, film, and animation. Lectures, films, and readings will deepen students' knowledge of how different design practices complement and enrich architecture and broaden their understanding of how history, philosophy, and technology have shaped different design movements.

Credit 1.5 units.

Typical periods offered: Fall

ARCH 6320 Environmental Systems II

We as architects have to analyze and address complex issues and relationships, synthesize them, and then make them manifest through clear design strategies. Building systems must reconcile solar heat gain, glare control, daylight levels, thermal insulation, ventilation, acoustics, air quality, structure and fabrication - all in relation to the scale and comfort of the human body. The development of environmental systems into a clear, comprehensive, and elegant design solution cannot be an afterthought; it must be a synthesized and integral part of the design process, with a clear strategy that operates at multiple scales. Building upon the passive strategies explored in Environmental Systems I, this course will lay the foundation for the integration of active environmental systems with enclosure, space, and the requirements for human occupation. This will be done through the study of climate, air, temperature, water, light, sound, and energy. Each topic will be assessed against problems, principles, possibilities and potential. This course focuses on how important it is to consider active systems as part of an integrated design strategy addressing both FORM and PERFORMANCE throughout the design process.

Credit 3 units.

Typical periods offered: Spring

ARCH 6521 Theories of Modern Art and Architecture

This intensive reading, research, and writing seminar will present theories of art and architecture from the 19th to the 21st century in their historical contexts through a set of in-depth investigations of selected topics. Some knowledge of history and theory is integral to contemporary understandings of the disciplines of art, art history, and architecture. To foster a historical understanding of theories of modern art and architecture, we will discuss a selection of key texts, divided into three sections: theoretical sources of modern art and architectural history in the 19th century; theories of modernism, from the formalist to the Marxist; postmodern critiques of modernism, in such areas as feminist theory and poststructuralism. The legacy of modernism is deep, broad, and ongoing, as evidenced by the local example of the Pulitzer Foundation for the Arts in St. Louis.

Such expressions of a modernist outlook are still vital today, while continuously changing environmental, social and technological challenges demand a better understanding of the history and theory

of modern art and architecture. Class visits to Sullivan and Adler's Wainwright Building (1890-91), Eero Saarinen's Arch at the Jefferson National Expansion Memorial (completed 1964), Tadao Ando's Pulitzer Foundation (2001), and Fumihiko Maki's Kemper Museum of Art (2006) will be integral to the work of the course.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 6523 Project Design Realization: From Concept to Construction

Advanced study of professional practice topics focusing particularly on project management, construction documents production, and construction phase services and responsibilities of the architect. Students will select a project, which they have produced previously in design studio and will create construction documents for this project. Likewise, the individual projects will be used to discuss project management processes and construction administration. This is not a technology course, but rather focuses on concepts and systems used by the architectural profession to describe architectural designs for the purpose of bidding the project, and creating a legally binding document on behalf of architectural clients.

Credit 3 units.

ARCH 6524 Historic Preservation/Urban Design

This class will explore the history and current practice of historic preservation in the United States and will relate them to local issues of contextual architecture, sustainable development, cultural tourism and urban design. Emphasis will be placed on the practical knowledge needed to participate professionally in historic preservation: how to evaluate the associative and architectural significance of a property or district, how to provide legal protection and redevelopment incentives for historic resources, how to appropriately restore, rehabilitate, adapt and add to historic buildings and how to incorporate historic preservation into the sometimes-contentious framework of community planning. The course will focus on readings, student discussion and case studies that draw extensively on real preservation situations in the region including trips to the innovative Cupples Warehouse and Bohemian Hill projects, the endangered Old North St. Louis neighborhood and a charrette in the Central West End.

Credit 3 units. Arch: CAST, GACS, GAMUD, GAUI

Typical periods offered: Fall

ARCH 6525 Creators of Worlds: The History of Production Design for Motion Pictures

There are many cases where fictional architecture influenced real architectural tastes, which can be seen especially during the Art Deco era of the 1930s and with the use of midcentury modern architecture in the 1950s. When we watch films we forget that someone designed the Millennium Falcon, the lairs James Bond villains inhabit, the houses, newsrooms, hotels and dance halls, and the creepy castles where monsters lived. We forget that practicing architects were lured to the movies by Hollywood, Bollywood, British Film studios, Toho Film and others with their high pay scales. Although production designers for the most part come from graphic arts and stage backgrounds, they designed some of the most influential – and visible – architectural ideas of the past 100 years. The course would discuss outstanding designs which will attune the student to the use of color, pattern, texture and materials in a built environment, while highlighting the importance of lighting to set off a superior design. The course may be useful in terms of sparking ideas in the students, or as a new and different way to watch movies, or for a career, for well-paying jobs are available in this field. My bachelor's degree was in filmmaking, so this topic has been a lifelong preoccupation. The course would cover the history of production design from silent films to Barbie and Oppenheimer.

Credit 1.5 units.

Typical periods offered: Fall, Spring



ARCH 6610 Implicit Visions From the Underlands

For many reasons, we tend to turn away from what lies beneath. But now more than ever we need to understand the Underland. "Force yourself to see more flatly," orders Georges Perec in *Species of Spaces*. "Force yourself to see more deeply," I would counter. The Underland is vital to the material structures of contemporary existence, as well as to our memories, myths, and metaphors. It is a terrain with which we daily reckon and by which we are daily shaped. Yet we are disinclined to recognize the Underland's presence in our lives or to admit its disturbing forms to our imaginations. Our flat perspectives feel increasingly inadequate to the deep worlds we inhabit and to the deep time legacies we are leaving (Robert Macfarlane). The first installment of the "Media Mediating Material Relations" seminar series addresses the Underlands and seeks ways to visualize, materialize, and ultimately manifest in the surface environment the many forces flowing deeply yet affecting us daily. The course is made of reading discussions and presentations and a Delivery of the semester long fabrication/visualization project. This project is directly correlated to the topics presented in the class.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall, Spring

ARCH 6670 The History of Pedestrian Campus Design in North America

This course will trace the historical forms and uses of universities before the nineteenth century, beginning with those organized around arcaded courtyards. The oldest universities in North America, such as those in Mexico City (founded as Tenochtitlan in 1325), used this model. In the English-speaking colonies of North America, early colleges such as Harvard College (1636) were sited on the edge of town in free-standing masonry buildings set amidst trees. This pattern was further developed by Thomas Jefferson in his design for the University of Virginia (1817-22), which was then widely imitated for the many campuses built thereafter. The seminar will also examine some of the large US campuses which began to be appear after 1880, notably at Stanford University (1885), Columbia University (1896), and Washington University in St. Louis (1898). By the 1930s, modern ideas of campus design arrived with campuses by Frank Lloyd Wright and Ludwig Mies van der Rohe, and the even more ambitious National Autonomous University of Mexico (UNAM), designed by a team of architects that included Mario Pani and Enrique del Moral (1955). We will also examine some of the many campuses that followed, including buildings on the WashU campus that have offered varied models of pedestrian campus design in light of the social and pedagogical ideas that inspired them.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Fall, Spring

ARCH 6810 Independent Study

Prerequisite: Sponsorship by an instructor and permission of the Dean of the School of Architecture. Credit: to be determined in each case. Maximum credit: 5 units.

Credit 5 units.

Typical periods offered: Fall

ARCH 6811 Independent Study

Prerequisite: Sponsorship by an instructor and permission of the Dean of the School of Architecture. Credit: to be determined in each case.

Credit 9 units.

Typical periods offered: Spring

ARCH 6901 Theories & Methods of Historical Research

What is architectural history? This is an advanced reading, writing and discussion seminar intended to better prepare students for research in the history and theory of architecture and urbanism. It is based on the premise that since contemporary design practices are not only data-driven, neutral and ahistorical, the ways that designers' conceptualize their work can benefit from a historically-informed understanding of how various approaches to architectural history have emerged over time. It seeks to consider how architecture and architectural history have been understood in the past, and how the development of the discipline informs contemporary research in architectural history by examining how recent and contemporary historians of the built environment do their work.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Fall

ARCH 7005 Workshop 2: Research and Project Methods

For returning MArch 2 and MArch 3 students, this intensive workshop will focus on preparation for the upcoming year. Activities will include lectures and workshops on research and drawing methods.

Credit 1.5 units.

Typical periods offered: Fall Intersession

ARCH 7010 Architectural Design VII

This is a graduate options studio. All students initially register for section 01. Studio section assignments will be made through a lottery process at the start of the semester and students will change their section registration at that time.

Credit 6 units.

Typical periods offered: Fall, Spring

ARCH 7015 Architectural Design VII (Barcelona)

This is a graduate options studio.

Credit 6 units.

Typical periods offered: Spring

ARCH 7120 Design Thinking: Research and Design Methods

Covers the fundamentals of project planning, proposal writing and alternative research and design methods. All students initially register for section 01. The studio coordinator will assign students to sections at the start of the semester and students will change their section registration at that time.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 7130 Pre-Design Seminar

This course will cover issues related to the critical examination of pre-design, providing students with an understanding of the steps and strategies behind the initiation of an architectural project. Topics include site condition analysis, zoning and code regulations, typological research, programming and fiscal management.

Credit 1.5 units.

Typical periods offered: Fall, Spring

ARCH 7220 Professional Practice I

Develops awareness and understanding of architectural practice including the relation of the profession to society as well as the organization, management and documentation of the process of providing professional services. Covers the areas of 1) project process & economics, 2) business practice & management, and 3) laws and regulations.

Credit 3 units.

Typical periods offered: Spring

ARCH 7340 Advanced Building Systems

The capstone course in the technology sequence. The course is comprised of a series of lectures related to technical theory, an analysis of technical precedent and an integration exercise. The lectures focus on structure and enclosure systems, active and passive climate control systems, natural and artificial lighting systems, mechanical and electrical services for buildings. During the first half of the course, students conduct the analysis of technical precedent in architecture exercise. Technical precedents will be analyzed relative to their performance characteristics and their relationship to other technologies in the building. During the second half of the semester, students conduct an integration exercise. Students will identify with the help of the instructor, a schematic design suitable for development. Technical systems will be selected based on architectural issues, performance characteristics and systems integration.

Credit 3 units.

Typical periods offered: Fall

ARCH 7401 Advanced Professional Practice

Advanced study of professional practice topics focusing particularly on firm management and project management. Firm-related topics will include starting a practice, financial management, marketing, staffing and risk management. Project-related topics will include fee negotiation, project structures and participants, scheduling, use of AIA contracts and management documents, and construction document systems. Prerequisite: A46 646 Professional Practice I.

Credit 3 units.

ARCH 7520 Degree Project

Independently initiated design and research projects based on Design Thinking (ARCH 7120) Proposal to fulfill final requirements for degree award. All students initially register for section 01. The studio coordinator will assign students to sections at the start of the semester and students will change their section registration at that time.

Credit 6 units.

Typical periods offered: Fall, Spring

ARCH 7610 Thesis Research

Thesis research course for the Master of Science in Architectural Studies.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 7611 Thesis Research

Thesis research course for the Master of Science in Architectural Studies.

Credit 3 units.

Typical periods offered: Fall, Spring

ARCH 7615 Thesis

Credit 6 units.

Typical periods offered: Fall, Spring

Landscape Architecture

LANDARCH 5110 Landscape Architecture Design Studio I

This core studio explores design principles common to architecture and landscape architecture as well as their own specificity. A series of problems will focus on the relation of component to space through conceptual, analytical, formal, and perceptual investigations.

Credit 6 units.

Typical periods offered: Fall

LANDARCH 5111 Landscape Representation I: Hand Drafting, Drawing, & Sketching

The beginning course in the representation sequence will introduce students to freehand and mechanical representation as a means for developing and communicating design ideas. Students will build a basic understanding of orthographic drawing typologies and traditional drawing materials. Emphasis is placed on development of observational skills, building a design vocabulary, basic drawing skills, and the techniques of landscape architecture and architectural representation.

Credit 3 units.

Typical periods offered: Fall

LANDARCH 5120 Landscape Architecture Design Studio II

In this core studio, students will develop a spatial understanding of landscape architecture through a series of exercises of varying scale and complexity. Building design skills incrementally, students will acquire facility with the manipulation of ground plane and the elaboration of vegetation and material strategies at both site and urban scales. The studio will foster an appreciation of landscape architecture as a systemic construct with formal, ecological and social implications.

Credit 6 units.

Typical periods offered: Spring

LANDARCH 5121 Landscape Representation II: Digital Tools

In the second course of the MLA representation series, students will be introduced to digital landscape illustration with a focus on representation of the phenomenological. This course will explore hybrid representation combining hand-drawing and digital techniques, diagramming as dynamic process (using tools such as Adobe After Effects), landscape entourage techniques, and their implementation within traditional architectural drawings, such as plan, section, elevation, and perspective. Focus will be placed on exquisite craft, intelligent methods of creation and clarity of conveyance. Open to all graduate and undergraduate students interested in representing site and landscape, with the permission of the instructor.

Credit 3 units.

Typical periods offered: Spring

LANDARCH 5221 Plants & Environment

Students will learn to identify plants found in the natural communities and built environments of Missouri and the Midwest, both exotic and native, in order to form a base palette of landscape plants for the region. In addition to learning the plants' spatial characteristics, students will gain a basic understanding of the biological factors and horticultural practices influencing plant growth. While addressing the roles of individual species and selections, plants are also examined as parts of an interdependent community. The final goal will be to assess, and begin to practice, the appropriate use of plants in landscape design.

Credit 1.5 units.

Typical periods offered: Fall



LANDARCH 5222 Grading + Landform

This introductory course in earthwork and grading combines the study of historical and contemporary landforms in designed landscapes and artworks with the technical aspects of surveying, contours, formulas, drainage and graphic representation. Students will gain a basic understanding of three-dimensional form, contour manipulation, the concept of drainage, and the relationship between planting and landform. The observation, measuring, and experience of landform in case studies will demonstrate how topography shapes our perception and use of space.

Credit 1.5 units.

Typical periods offered: Fall

LANDARCH 5231 GIS for Site Design

This course module will introduce GIS mapping software and its application to methods used in site planning and design. The focus of this half-semester course is to understand the potential of GIS to visualize, analyze and utilize complex data. Students will learn techniques and tools in ArcGIS software, and explore how these can be applied to projects specific to individual sites. This course will introduce new skills and analytical complexity while building upon previously learned representation techniques.

Credit 1.5 units.

Typical periods offered: Spring

LANDARCH 5232 Planting Design

The Planting Design module builds upon the Plants and Environment class, applying and expanding the vocabulary of plant material to understand the definition and construction of landscapes. Students will gain an awareness of planting typologies and strategies through function (micro-climate control, water consumption, hardiness) and perception (shade, color, density, texture). A series of design exercises will inform strategic plants specification in order to suit, define, or reinvent landscape typologies--from parks and gardens to green roofs and restorative landscapes. Conceptual thinking and an understanding of management and sustainability are emphasized.

Credit 1.5 units.

Typical periods offered: Spring

LANDARCH 5330 Landscape Ecology

Effective and sustainable design requires knowledge of the unique combination of systems, processes, and organisms that define specific regions, as well as the basic principles governing ecosystems. Applied ecology and design must also consider the role of human cultural interactions in shaping these systems. This course provides a broad understanding of ecological concepts focused through the genesis, character, and cultural relationships of contemporary ecosystems. Students will learn to use concepts of ecology, conservation biology, evolutionary theory, and natural and cultural history to determine the factors and system constraints influencing the design of landscapes. The course focuses on local ecosystems: their origins, composition, process regimes, and historic and contemporary cultural interactions. Through this immersion in local landscapes and habitats, students will gain an understanding of biological systems and ecological concepts, and acquire the tools to inform ecologically relevant and sustainable design anywhere in the world. The class incorporates lectures, guest presentations, field trips, and extensive readings and class discussions, along with assignments combining research and analysis in a design context.

Credit 3 units.

Typical periods offered: Spring

LANDARCH 5340 Landscape Technology

Throughout the world of spatial design, there has been a strong resurgence of interest in landscape methods as a comprehensive and innovative approach towards defining and engineering sites. Techniques of working the land engage dynamic processes, molding conditions and creating forms in order to control erosion, conserve water, and minimize human impacts. As such, landscape methods have created new standards of performance for sites of all sizes and circumstances. Accordingly, this course, intended for students across disciplines, presents an integrated approach to site planning through the intensive study of applied landscape systems. The material covers the spatial and functional systems of designed landscapes and their associated computational and technical aspects: micro- and macrograding, path alignment, and drainage calculation. Through studying these techniques, students will learn to implement and quantify water management, microclimate manipulation, and low-impact circulation, parking, and servicing. The principles and methods are presented through short lectures and supported by case studies, class workshops and design exercises, tying theory to practical applications.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5401 Videography for Designers

This seminar course will examine the practice of capturing, producing and analyzing moving images as a method of inquiry for design. We will focus on the analytical and communicative qualities of time-based media [recorded sequences, video, slideshows, animation, simulation, remote sensing, etc.] as a human-landscape intermediary that has the ability to alter understanding and evaluation of the environment. We will explore techniques from a range of disciplines - art, design, sociology, anthropology, etc. The course will meet weekly for brief lectures/presentations to direct our inquiries, discussion of foundational readings and ideas, media workshops, screenings, local field trips, and/or student presentations of work. Throughout the semester, students will generate brief, exploratory work that focuses on methods and techniques, and a larger, final project that engages the themes of the course. Open to all graduate and upper level undergraduate students, a goal of the course is to blur boundaries between art and design, and to capitalize on their various approaches. No experience with video, animation, or other software is required - only the desire to explore and incorporate time-based methods into individual processes.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5402 Cinematic Landscapes: The Making of

Watch movies. Talk about movies. Analyze the making of movies. Make a movie. Climate-themed movies. Post-apocalyptic movies. Meet in technology. Learn to scientifically use drones. Learn to scientifically use LIDAR. Use these tools in your climate-themed movie. Sculpt stories in time, supported by sound. This course will focus on the analysis of landscapes and cities as portrayed by popular cinema. How eidetic portrayals of nature and cities are circulated by popular cinema. Stories through which the values, common referents, public concepts, and memes of a culture materialize through the construction of movies. Interior to the semester there is an interdisciplinary workshop. Four-day fieldwork with Geology Assistant Professor Alex Bradley. Map and produce digital representations at 2-cm resolution of a mountainside scoured by a burst reservoir. This class is divided into three parts: watch, learn, and make. Watch: Each week, students will be asked to watch one movie and one director's commentary, often referred to in the bonus features as the making of. Learn: Students will study the methods and techniques used to create settings, props, and storyboards in the service of a sound vision. Make: Students will synthesize digital and analogue time-based media tools (sound and video) to make a movie thematically based on climate change.

Credit 3 units.

Typical periods offered: Spring

LANDARCH 5403 Landscape On Structure

This course will examine materials and technologies for landscapes on Structure—green roofs and vertical gardens, among others. Through a series of case studies, students will gain an understanding of the relationships between structure (architecture and infrastructure) and substrate, soil, water, and plants. Topics covered include innovative planting and urban streetscape systems, and infrastructural adaptation and re-use. Exercises will range from analytical diagrams of construction methods to design concepts for living systems adapted to a variety of structural and environmental conditions. Open to students in architecture, landscape architecture, and urban design.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5406 Spatial Practices I: Productive Landscapes

This course is a traveling, field-based seminar that asks questions of the meaning, economy, and politics of the built environment. This summer's inaugural seminar will be organized around the productive landscapes of the Midwest, with a critical eye toward the changing natures, cultures, and infrastructures of the countryside. We will visit a range of sites that reveal the tensions within agriculture and conservation, from the last unturned remnant prairie of Dunn Ranch to the genetic laboratories of Monsanto; from heirloom seed savers to agromanagement institutions. The orientation of this seminar is to frame the countryside not as idyll or antidote to an urban condition, but as a constituent part in its production. Participants will be introduced to a range of interpretive methods with an eye toward rendering the landscape - its meanings, textures, and processes - more legible. Readings from natural history, geography, art, ecology, and economics will help frame an historical understanding of the changes on the land, while cartographic and field surveys provide insight into how these changes inhere and accumulate in the landscape of the present. We will be on the road the entire duration of the seminar, discussing readings, staying in small towns, and producing field recordings as we go. This experimental seminar is ultimately an effort in reading the landscape we inhabit and interpreting the cultural geography of our milieu. Fulfills Natural Systems elective requirement for Master of Landscape Architecture students.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5407 Case, Trace, Displace: Dialogue Between River and City

This seminar will explore methods of sensing, recording, interpreting, translating, and visualizing environment data with particular emphasis on experience at the human scale. The focus topic will be on the relationship between river and city. In the first phase of the seminar, students will begin by researching precedent projects, technologies, and techniques for sensing and gathering data from the environment.

These may include, but are not limited to, GIS techniques, DIY devices, and processing methods. A combination of analog/digital and traditional/innovative explorations is encouraged. In the second phase, students will develop a strategy to record, interpret and translate environment data for the purpose of analyzing relationships between the landscape and human experience. In the final stage, students will test their ideas and develop a method to express these relationships through prototypes that can be deployed into the landscape. The course will consist of lecture/discussion sessions, field research, and working sessions. Students will be expected to conduct and document research based on the information presented in class, to create theoretical proposals, develop simulations and visual documentation, and craft prototypes inspired by a site at the St. Louis riverfront.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5408 Mapping the Metropolitan Mississippi

This seminar explores the relationship of city to river through reading, recording, and mapping. Students will document their research, create proposals, and develop simulations and/or prototypes for a site on the St. Louis riverfront. Methods of inquiry will combine hand-recording, photography, GIS techniques and DIY devices. The course will alternate discussion sessions, field research, and lab. Open to all graduate students; undergraduates require the instructor's approval. Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5409 Emergence in Landscape Architecture

This course investigates the roles of emergence theory in landscape architectural discourse. For the purposes of the course, emergence is considered as the development of new and/or different conditions as a result of disturbance. Disturbance can take many forms, and the phenomena that are subject to disturbance are many and varied. Landscapes are continually disturbed by social, economic, and physical irruptions, but cognitive structures, perceptual frameworks and cultural values are also subject to turbulence that, as with landscape disturbance, often leads to innovation, novelty and resilience. The course will explain what emergence theory is, where it comes from, how it relates to environmental design in general, and how it has - or could - change the way we design human and nonhuman inhabitations. Through readings, presentations and discussions, students will be able to connect the rise of emergence theory in cultures of contemporary thought to its application in practice. The main theme of the course is the potential for emergence theory to enable us to relate qualitatively different modes of existence (human; nonhuman) to each other and through the connections thus established improve the lifeworlds of all. The structure of the course is based around ten key concepts of emergence, as follows: open systems, situation, initial conditions, assemblage, nature cultures, difference, field theories, disturbance, morphogenesis, formless. Each student will investigate one of these concepts and present their findings to the class.

Credit 3 units. Arch: ECOL

Typical periods offered: Fall, Spring

LANDARCH 5411 Critical Spatial Practice: Art / Architecture / Landscape / Urbanism

Critical Spatial Practice reads the history of art, architecture, landscape, and urbanism across the grain in an effort to tease out latent affinities and to heighten meaningful antagonisms. In particular, this class takes a critical look at the ways in which creative practice has situated itself in relation to politics, power, society, and space, while maintaining a certain autonomy from each of these registers. Themes such as historic and collective memory; empire and war; publics and counterpublics; city and countryside; institutions and the everyday; will all be central tropes as we ask questions of what, exactly, provokes one to make. Each of these disciplines shares a certain projective and critical orientation to the world-but what is it that makes their methods so distinct? What might we learn from knowledge of these differences? Where do shared passions break down? As critical practitioners, we look to make sense of the world-while our search for meaning may take radically different forms. Throughout the term, we will be focusing on a range of projects, movements, artists/practitioners, and groups that take seriously the situatedness of their work. We will cover practices that might fall under more recognized categories, such as performance, land art, ecology, social practice, everyday urbanism, pedagogy, curation, and installation. We will interrogate the modes of production as well as modes of distribution that creative practitioners work within and



against. We will look at the history of artists and designers engaging the built and natural worlds in ways that exceed the disciplinary frameworks of their time. From the Dada excursions to the Situationist Derives, from the urban representation of the CIAM grille to the urban choreography of Daniel Buren, and from the Romantic geography of Humboldt to the displaced geography of the Atlas Group. Throughout, we will be reading foundational texts-theoretical, historical, and methodological-that help situate these projects and movements within their contemporary milieu. By focusing on the context of these practices, this course has its eye on the many conceptual elisions and canonical lacunas that emerge in disciplinary-specific histories from the early 20th century to the present-while also operating as a retroactive genealogy of the aspirations of the Sam Fox School. Weekly meetings will be structured around an organizing theme with related readings, screenings, and viewings. Each class will consist of a short lecture by the instructor framing the topic, a student presentation weaving a network of thought around a single specific work/project and subsequent discussion. Final projects will critically engage the themes of the course as students produce a publication, installation, video, or performance that takes a position.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5412 American Cultural Landscapes

Whether we are designing buildings, landscapes or neighborhoods, we are working on a cultural landscape - a place built from customs, memories, histories and associations as much as visual design itself. This course provides an overview of American cultural landscapes and their alteration, through readings, visual art, site visits and field surveys. Symbolic, utilitarian, architectural, scenographic or personal meanings will be explored alongside site histories. Throughout the semester, the course will interrogate the concept of vernacular landscapes, more broadly defined as landscapes of everyday life. From roadsides to homesteads to tourist attractions to landfills to urban neighborhoods, vernacular landscapes define the image of America to large extent. Readings will unpack the contingencies between design, economics, cultural politics, agriculture, consumption and technology that inscribe culture across the land. Course work will be informed by the work of geographers, historians, writers, preservationists, filmmakers and visual artists. J.B. Jackson and Lucy Lippard's theories about the cultural uses of land will be anchors. Along the way, course readings and experiences (including field work) will make stops along the way to examine local landscapes including a radioactive landfill, the neighborhoods of Detroit, the wild west, Appalachian terrain, the Mississippi River, the Sunset Strip, the Buffalo Bayou in Houston and more. The course will pose a taxonomy of the types of cultural landscapes while presenting various methods for decoding, recording, interpreting, preserving and altering these places.

Credit 3 units. Arch: GARW, RW

Typical periods offered: Fall, Spring

LANDARCH 5413 Rethinking Design Standards: Materials, Details, and Maintenance

How does the design process account for the temporal nature of constructed landscapes? How should landscape architects practice with the future of their project sites and designs in mind? With the increasingly urgent need to minimize carbon emissions and extraction processes, landscape architects must reevaluate standard practice to consider how their designs are weathering and engaging with local environments over time. Key to this review are material selection, detail design, and maintenance processes, all of which determine a project's sustainability five, 10, or 50 years from when it is originally constructed. In this course, students will be pushed to question the current standards of landscape practice to design for the current moment in climate change and environmental justice. Through lectures, readings and research, students will first gain an understanding of what these standards are and their ultimate

weathering processes to then develop their own design proposals and modifications to these standards. Ultimately, design standards become the design project. The course is exploratory and experimental in nature, so students are encouraged to bring their own questions of the profession and research ideas. Master of Landscape Architecture students and Landscape Architecture minors have priority. Students will be registered for the course from the waitlist by the Registrar's Office.

Credit 3 units. Arch: ECOL

Typical periods offered: Spring

LANDARCH 5414 The Unruly City

The history of the American city is the history of conquering the unruly: real estate parcels, neighborhoods, buildings, and even people that represent decay, obstacles to capital, unlawfulness or disorder. Designers denigrated unruliness in the pursuit of modernization in the 20th century, but today seem more conflicted on the constitution and remedies for disorder. Is disorder in the eye of the beholder? What disrupts urban life more, the broken windows of vacant houses or the arrival of an upscale grocery in a poor neighborhood? Neighborhoods that have lost most of their population and buildings, or new football stadiums offered as economic and architectural solutions to blight? Programs of housing, urban planning, infrastructural urbanism, zoning, policing, historic preservation and mass transportation have impacts that can either squelch or protect the unruly. No design is not political. This course examines the divergent definitions of order and disorder that are shaping contemporary approaches to urban planning, governance and cultural production. This seminar digs into these questions, using the classic debate between Robert Moses and Jane Jacobs over the future of New York City as an entry point into urban political and economic ideas that engage concepts of order and disorder. We will cover readings by Sennett, Agamben, Mouffe, Negri & Hardt, Baldwin, Fanon, Certeau, Harvey, Zukin and others. This course will be place-based at Sumner High School in The Ville neighborhood of St. Louis, a historically Black neighborhood. The class will arrange a carpool to the teaching location and engage the community with real-world examination of course themes throughout the semester.

Credit 3 units.

Typical periods offered: Spring

LANDARCH 5415 Integrated Planting Design

This course focuses on both the cultural, environmental, scientific and the technical aspects of planting design. The course will be taught in 3 modular sessions: Horticulture and the Science of plants; Typologies and design such as bosque, grove, glade, allee, meadow, wetlands, hedgerow, etc., and their origins in productive landscapes, application to contemporary landscape architecture; and the Practical hands-on experience in the field with both design documentation to installation techniques. The course will offer several field trips to experience urban revitalization, various design typologies, sustainable land use, reclamation, and restoration.

Credit 3 units. Arch: ECOL

Typical periods offered: Spring

LANDARCH 5416 Vacant/Wild/Ruined: Feral Urbanism

What urban design practices are needed in areas that have declined, that are in decline, or that simply are not growing? What if we let the city decline or go wild? What if we look at decay, ruin, wilderness and depopulation as something other than a crisis? This seminar examines experimental urban land management and preservation practices that embrace systems of emergent, wild and unexpected urbanism but that also raise questions of austerity and democratic rights to the land. With foundational readings as a guide, students will explore topics of state landbanking and autonomous land trusts, managed depletion (including St. Louis' infamous Team Four memorandum), wilderness conservation and greenway creation, agricultural land reclamation,

homesteading in and deconstruction of vacant buildings, tactics for fighting absentee owners, and experimental preservation practices. Starting with grounding readings in principles of the American orientation to wilderness, ecological vitality and urbanism, the seminar explores the modern history of efforts to harness decline, vacancy, depletion and no-growth as productive forces. The seminar will root itself in Old North St. Louis, a neighborhood in St. Louis that has lost more than 60% of its peak population but that has continued to thrive. Students will work on projects serving Old North's ongoing efforts to harness urban conditions for a sustainable, just and vibrant future. Credit 3 units. Arch: CAST, ECOL, GACS, GAUI Art: CPSC

Typical periods offered: Spring

LANDARCH 5417 Introduction to Arboriculture

Trees play a significant role in the overall ecosystem of our planet. They function both globally as well as microscopically. By better understanding the anatomy, physiology, growth habits and needs of trees, we can make more informed decisions as designers. There are finite, quantifiable aspects to how a tree develops, yet there are also environmental and human factors that can disturb or interrupt normal functions and patterns. It is the charge of the designer to delve into the science of trees in order to better inform our design solutions and make appropriate sustainable choices.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5418 Trees, Soils, & Systems: Introduction to Arboriculture

Trees play a significant role in the overall ecosystem of our planet. They function both globally as well as microscopically. There are finite, quantifiable aspects to how a tree develops, yet there are also environmental and human factors that can disturb or interrupt normal functions and patterns. It is the charge of the designer to delve into the science of trees in order to better inform our design solutions and make appropriate sustainable choices. The course objectives are to make the student familiar with the anatomy of trees, to understand soils and their effects on trees and vice versa, to increase their abilities to identify trees, especially during the winter months, to understand the business of how trees are managed, whether it be growing, maintenance or specification of appropriate local nursery stock and to gather knowledge of trees and their relationship in our sustainable environment. Each class will have an informal lecture component that will present the latest in technologies of arboriculture practices. The class readings and assignments will correspond with the lecture topics and a subsequent discussion will follow or be intertwined into the lecture presentation itself. The application of the information will be in clear, concise weekly exercises. There will be several field trips to the Missouri Botanical Garden, a trip to Forest Park to look at the varied tree habitats and what worked and what is not working, as well as a trip to a local tree nursery.

Credit 3 units. Arch: ECOL

Typical periods offered: Fall

LANDARCH 5419 Borders, Boundaries, Nations

Lines on the land can determine our political rights, our ethnic identities, and our inhabitation abilities. Landscapes become the records of the powers of statecraft, the instruments of territorial division, the customs of inhabitants, the contests of politics, and the symbols of society. This course examines the development of landscape as the record of the political subject against the nation state and the ways in which ordinary inhabitation of land entangles each of us with large political structures. This entanglement is productive; cultural agency can change, topple or expand nations. The course will track borders and boundaries from the Delmar Divide to the Iron Curtain to the U.S./Mexico border. Students will review interpretive practices, including cultural geography, historic preservation, political

economy, critical landscape study, and artistic production. Field outings will draw out the power structures that create, sustain, erase, and alter landscapes with national identities. Student work will include response writing, visual analysis, and a final project illustrating the state power play occurring in what could look like a very ordinary landscape.

Credit 3 units. Art: CPSC

Typical periods offered: Fall

LANDARCH 5420 Weathering, Maintenance, and Care in Public Landscapes

How does the design process account for the temporal nature of constructed landscapes? How should landscape architects practice with the future of their project sites and designs in mind? With the increasingly urgent need to create communal spaces that are both ecologically beneficial and socially just, landscape architects must reevaluate standard practice to consider how their designs are engaging with local environments and communities over time. In this elective course, students will look closely at the materials and details of local community spaces to understand how such spaces are weathering in St. Louis and then to imagine how they could be cared for in the future. Rather than the temporary, Instagram activations popular in the public realm, students will evaluate the longevity and permanence of a space and ask how this reflects the level of investment in our communities. Through site drawings, conversations, readings, and a final design project, students will connect intimately with their surroundings in St. Louis as well as with the effects of time on our public landscapes.

Credit 3 units. Arch: ECOL Art: CPSC

Typical periods offered: Spring

LANDARCH 5421 History of Regional & Urban Planning

As the culmination of the landscape history/theory sequence, this class traces the progress of urban and regional planning since the 19th century, paying particular attention to the emergence of landscape and ecology as means of generating and structuring large-scale plans. Over this period, planning has developed as much through ideological argument as through successive built forms. Accordingly, we will examine approaches to the physical and conceptual ordering of the city and region ranging from critical texts to finished projects, and from design culture to official practices.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5422 Territorial Contexts

The scope of planning operations has steadily widened over the course of the twentieth century, from metropolitan areas to expansive natural and cultural regions. At the same time, designers have increasingly aimed to synthesize vastly complex data in order to analyze project sites and their wider contexts. This course examines the ongoing intersection of geography and design, through analytical methods combining spatial measure with demographic, environmental, and economic data. Students will build on the lineage of geographical inquiry in planning, from Cerda and Haussmann to the theories of Patrick Geddes; from Lewis Mumford, Benton MacKaye, and Clarence Steins' Regional Planning Association of America to CIAM; and from the experiments of Buckminster Fuller to the ecological determinism of Ian McHarg. In addition to responding to weekly readings, students will revisit large-scale analytical works through new methods of mapping and modelling.

Credit 3 units.

Typical periods offered: Fall, Spring



LANDARCH 5423 Mapping: Infrastructural Environments

The seminar focuses on two components that play a critical role in the spatial organization of the built environment: maps and infrastructure. One visual and two-dimensional, the other operational and three-dimensional, both address the complex relationship among nature, culture and technology. The first part of the course concentrates on the cultural history of mapping space to gain a better understanding of current spatial practices. We will closely study maps produced by geographers, planners and architects (such as Alexander von Humboldt, Guy Debord, Kevin Lynch, Ian McHarg) to trace the historic relations between representation, map making, iconography and the modern city. The second part of the seminar will explore the projective possibilities of mapping as a strategy to decode and visualize often hidden infrastructural networks that, over the past two centuries, have become a backbone of the modern metropolis. With the aim of developing a geospatial understanding of complex interactions among infrastructural systems, socio-economic relationships and ecological flows, students will individually work on creating original cartographic information. Through speculation and experimentation, we will explore new forms of mapping that both assist the design process and serve as a tool for communicating spatial concepts with broader audiences. Taken as a whole, the seminar will examine the discourse on mapping and its relations to power, agency, vision, ideology, and creativity.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 5424 Seeds

Seeds have much to teach us as metaphor and material to explore ecologies, landscapes, biodiversity, biomimicry, technology, engineering, climate change and food systems. Through selective breeding, seeds and plants have been bred to produce desired characteristics since the dawn of humanity. This has been so successful that the codependency between seeds and humans has grown and never been more evident than in agribusiness today. From the Svalbard Global Seed vault to Bayer/Monsanto this course will use seeds to investigate historic and contemporary ideas about food and life on this planet.

Credit 3 units. Arch: ECOL

Typical periods offered: Fall

LANDARCH 5426 Thinking Through Soil

Every material process that shapes the construction of the built environment passes through the soil at some point. In Thinking Through Soil, we will use the process of soil formation as an interpretive category to examine this passage, and engage more broadly with the geos of design. The course will begin with seminar-style discussions around key texts that frame an analytical approach to the science and politics of soil knowledge. We will then invent new digital workflows to reveal and visualize socio-ecological relationships through their permeabilities, porosities, politics, and material contingencies at multiple scales. These workflows will be interdisciplinary, experimental, and self-guided. The seminar will act as a laboratory where a common theme is examined from multiple perspectives.

Credit 3 units. Arch: ECOL

Typical periods offered: Fall, Spring

LANDARCH 5810 Independent Study

Independent Study in Landscape Architecture.

Credit 3 units.

Typical periods offered: Fall, Spring

LANDARCH 6110 Landscape Architecture Design Studio III

This studio investigates the planning and design of a post-industrial site in Saint Louis city, through reclamation strategies and an understanding of the site's ecological, historical, and cultural underpinnings. Students will propose a design that addresses both the specificity of site and the larger environment through conceptual and analytical research. Examination of program, infrastructure, natural processes and reclamation will lead to a generative process to shape the landscape at multiple scales -- from urban context to site concepts to personal experience.

Credit 6 units.

Typical periods offered: Fall

LANDARCH 6111 Visualizing Ecological Processes

This course focuses on building skills in 3D modeling, animation and simulation to add 4D (time) processes into analysis, experimentation and presentation. Following the introduction and basic skills preparation, the course will focus on aspects important to creating animations and illustrations that depict landscape environments and dynamic processes. Projects will explore graphics techniques from various visual arts industries in order to expand the repertoire of skills. Techniques incorporating 3ds Max, After Effects, ArcGIS, Photoshop and/or Illustrator will be examined to illustrate chronological, phenomenological, experiential and conceptual ideas in design. Course projects will focus on development of narrative and emphasize the art of storytelling as they pertain to representation and illustration of design intent.

Credit 3 units.

Typical periods offered: Fall

LANDARCH 6120 Landscape Architecture Design Studio IV

The final studio in the core sequence operates within an expanded spatial and conceptual framework. Students will engage the complexities of the large-scale site to explore, critique, and re-engineer ecological, architectural, socio-economic, and ideological systems. A studio site characterized by environmentally sensitive conditions, culturally significant features, and encroaching urbanization will lead to choices between the management of existing resources and development. To achieve this, students will progress from the analysis and mapping of the site to the generation of innovative program strategies. Finally they will develop those strategies into schematic design proposals. Throughout, landscape is treated as figure instead of ground, serving as a agent to structure and mediate between natural and human communities.

Credit 6 units.

Typical periods offered: Spring

LANDARCH 6360 Landscape Architecture History & Theory

Current work in landscape architecture draws from a wider range of references than conventional landscape gardening, engaging the deeper roots of urban design, planning, and infrastructure in order to create spaces that fully integrate with and inform the surrounding context. Accordingly, this course broadens the field of historical inquiry, taking in topics ranging from cultural understandings of space to the design of sacred sites, military installations, and water systems. The survey begins with prehistoric settlements and ends with the dawn of professionalized landscape design in the 19th century. Students will work through class discussion and writing projects to trace the cultural currents linking the first endeavors in land-making to today's practice.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall

LANDARCH 6370 Modern and Contemporary Landscape Architecture

This course examines significant theories and discourses in modern landscape architecture that have informed contemporary modes of practice. Organized around specific topics and lenses (such as site, ecology, art, and sustainability), the course aims to provide a number of critical perspectives on the relevance of landscape architecture as a cultural practice. Readings and discussions will supplement lectures to trace back contemporary ideas to the late 19th and early 20th centuries. We will look at how broader transformations in social, environmental, economic and technological realms have affected discourse in landscape. To this end, students will be introduced to definitions that distinguish between landscape as a medium, landscape as an ideology, and landscape as a profession. Through weekly reviews of seminal projects and built works, we will examine significant styles, movements and design principles in landscape architecture. The course incorporates field trips and presentations by visitors, as well as applied research. It is open to both undergraduate and graduate students in the disciplines of landscape architecture, urban design and architecture.

Credit 3 units. Arch: CAST, GACS

Typical periods offered: Fall, Spring

LANDARCH 7110 Landscape Architecture Design Studio V

The first comprehensive landscape architecture studio concentrates on the development of students' own capacities for project design and elaboration. A situation is selected for strategic development reasons and the question of potential is opened, formulated and critiqued. Students develop flexible scenarios for project development, and alternative projections are investigated. Interactive thresholds between ecological design, environmental justice and individual imaginaries are proposed and negotiated.

Credit 6 units.

Typical periods offered: Fall

LANDARCH 7120 Landscape Architecture Design Studio VI

The second comprehensive studio investigates a specific design problem to a high level of articulation and resolution. The problem is identified by the studio instructor, and students are empowered to develop generative processes based on a conceptual framework of their own devising. Emphasis is on the inculcation of novel, energetic, and rigorous design inquiries that defy pragmatic constraints at the same time as establishing new forms of landscape architectural practice.

Credit 6 units.

Typical periods offered: Spring

LANDARCH 7380 Research in the Landscape: Methods and Practices

This course is intended to cultivate the research methods essential to practice and study in the landscape today. As the culmination of the landscape history/theory sequence, we will build on prior curricular study and experience in research to create coherent frameworks for the theory and practice of research. In such a way, we will form an overview of the varied ways by which useful information can be derived from existing sources in order to advance the design and study of landscapes. Students will engage and practice a variety of research activities including archival research, textual and visual interpretation, on-site environmental analysis, and social survey. Working with a high degree of independence and initiative, students will engage scholarly works both as objects of critical reflection and as potential models for their own explorations. Though open to all design students, this course will optimize prior experience with ecology, GIS, and the discipline of landscape architecture.

Credit 3 units.

Typical periods offered: Fall

LANDARCH 7390 Professional Practice for Landscape Architecture: Business, Practice & Management

Advanced study of professional practice topics focusing on firm management and project management for landscape architecture projects. Firm-related topics will include starting a practice, financial management, legal structures, marketing, staffing, professional ethics and risk management. Project-related topics will include fee negotiation, project structures and participants, scheduling, use of contracts and management documents, and construction document systems. Course activities will include project site visits and visits to local firms with landscape architecture design services.

Credit 3 units.

Typical periods offered: Spring

LANDARCH 7391 Professional Practice for Landscape Architecture Workshop

Students receiving dual degrees in the Master of Landscape Architecture and the Master of Architecture programs will be required to complete A46 646 Professional Practice in the Architecture curriculum. Additionally, dual-degree students will be required to complete A48 6451 Professional Practice for Landscape Architecture Workshop. This 6-part workshop includes several of the sessions presented in A48 645 Professional Practice for Landscape Architecture, in particular, visits and sessions held at local Landscape Architecture firm offices. Study of professional practice topics focuses on firm management and project management for landscape architecture projects. Firm-related topics will include starting a practice, marketing, staffing, professional ethics and risk management. Project related topics will include fee negotiation, project structures and participants, scheduling, use of contracts and management documents, and construction document systems.

Credit 1 unit.

Typical periods offered: Spring

Urban Design

URBDES 5300 Regenerative Futures: Neighborhoods, Landscapes and Buildings

This seminar will investigate the theory and practice of regenerative design as the means to create thriving and emergent futures for the built and natural urban systems focused at the scales of neighborhood, public space and landscape, and buildings. Regenerative design is the means to build co-evolutionary and self-organizing integrated local and regional living autopoietic systems that grow the capabilities necessary for living systems to increase in complexity, diversity, capacity to support all life, and the potential to change to provide future options. The seminar participants will research and review existing and speculative regenerative projects as a means to develop and apply regenerative design strategies to a local neighborhood of choice.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5402 Confronting Urbanization: The Interactive Tissue of Urban Life

This course invites architecture and urban design students to explore the urban condition through the lenses of its interactive tissue -- a tissue that includes smartphones, the World Wide Web, credit cards, highway systems, airports, sidewalks, and indoor plumbing. Within this frame of reference, students are encouraged to investigate, unearth, and document with surgical precision the emergent interrelationships between actors, the agency through which actors engage with the

interactive tissue, and the ways in which these actors and relationships shape and influence one another. With the understanding that ideas are generated through speculation, projection, and experimentation, we will use the third dimension as a point of departure toward the fourth dimension of time, and we will aspire to the fifth dimension of lived experience. It is most welcomed that students bring their curiosity to the course, that they are interested in being investigative, and that they are open to various mediums ranging from reading theories of urbanization, drawing, and experimenting with physical/interactive objects to using projection as a tool to document their research in both analog and digital formats. The final product of this course will be a presentation during which students will present their research through multiple media outlets, which may include drawings, installation work, or moving images.

Credit 3 units. Arch: GAMUD, GAUI Art: CPSC

Typical periods offered: Fall, Spring

URBDES 5403 Public Space and City Life: Contemporary Discourses On Public Space

The redefinition of the role and form of public space is fundamental to contemporary architecture and urbanism. The current debate ranges from the need to re-establish public space based upon historic precedent or sociological principles to the notion that public space is dead. This course will explore this debate through readings from philosophy, social and architectural theory, and the investigation of select public spaces. This course fulfills the MUD Track and Urban Issues elective requirement. Master of Urban Design students and Urban Design minors receive priority. Students will be registered for the course from the waitlist by the Registrar's Office.

Credit 3 units. Arch: GAMUD, GAUI Art: CPSC

Typical periods offered: Fall, Spring

URBDES 5405 Emergent Urbanisms

This course surveys emergent models of urbanization in globalizing cities that thus far defy categorization or exist peripherally in studies of urban form. The goal of the course is to equip students with the theoretical and historical background, the analytical tactics, and the critical awareness necessary to reposition themselves as designers in these increasingly challenging contexts. Through case study examples and supporting readings, the course will decipher the formal, social, and environmental effects of particular processes defining new urban spatial configurations in city-regions around the globe. Most of these processes are driven by discourses of 'efficiency,' such that urban forms are increasingly inflected by economic operating systems, as they are subsequently detached from traditional concerns of livability and public interest. Emerging urban assemblages include: massive manufacturing warehouse landscapes or logistical distribution centers and 'aerotropolis' transit hubs as well as those spaces left behind by regional restructuring: de-urbanizing (or deliberately erased) environments which contradictorily 'enable growth' in other areas (or over the same areas); and the informal settlements that emerge more spontaneously on the margins of mainstream urban policy. Students will use their understanding of these spatial and logistical configurations to project creative models for re-direction or engagement. Sources and analytical tactics will be drawn from across fields including design, sociology, geography and history. Fulfills Urban Issues elective requirement., MUD-Track elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

URBDES 5407 City Life and Urban Worlds: An Introduction to the Urban Humanities

The urban humanities is an inter-/anti-disciplinary project that brings together theory, practice, and methods from fields in architecture, urban design, and the humanities to interrogate the urban condition. In this core course, we will delve into key theorists, texts, and methods

that inform the urban humanities through seminars, site visits, and design projects. We will debate emerging perspectives in critical urban theory and then explore the applicability of these positions in St. Louis through mapping, street ethnography, and subtraction. In addition, this seminar is designed to introduce urban scholars from across the humanities and design fields to each other. Participants will be encouraged to experiment, trade, and engage in dialogue across their fields. What, we will ask, is the status of the urban commons in an era of enclosures and privatization? What can postapocalyptic cyberpunk from Lagos teach us about smart cities? How do built environments get their politics? Can these politics be redirected or subverted?

Credit 3 units. Arch: GAMUD, GAUI Art: CPSC

Typical periods offered: Spring

URBDES 5408 Developing Sustainable Urban Communities

Across the country, there is a drive to develop high-quality, economically and racially diverse, vibrant and sustainable urban communities. St. Louis is no exception to this trend. For reasons of sustainability, poverty alleviation and city building, community leaders and public officials in St. Louis are working to develop neighborhoods and communities that incorporate these factors. Developing Sustainable Urban Communities is a project-based course for graduate students and advanced undergraduates which asks interdisciplinary groups of students to contribute solutions to substantively and politically challenging place-based urban redevelopment challenges in St. Louis. Students will work in small teams to develop their projects over the course of the semester through research, dialogue with a team of interdisciplinary faculty, examination of relevant case studies, and engagement with client organizations in the community. Course participants will choose one of three semester-long projects, the subject of which will be developed by course instructors and client organizations in advance of the semester. The course will meet both on-campus and at various community sites. For MSW Program SED Concentration students, this course fulfills the SED concentration Practice Methods requirement. Enrollment is limited to 24 students with prior coursework in community development, urban design or related fields. Preference is given to graduate architecture and social work students; other students will be admitted by permission of the instructor. Upon registering in the course, please send the instructor a brief statement (1-2 paragraphs) about your interest in the course and previous coursework or experience that has prepared you for participation.

Credit 3 units. Arch: GAMUD, GAUI Art: CPSC

Typical periods offered: Fall, Spring

URBDES 5410 Ordinance: Territorial Rules & Urban Administration

What is the link between rules and form? What is the relationship between form and politics? This course will essay an administrative history of the built environment, taking as its starting point the rules, codes, ordinances, laws, and guidelines that shape the landscape. We will turn a critical yet curious eye towards historic and contemporary case studies that shape or are shaped by a robust regulatory framework—from the French Forest Ordinance of 1669 to the work of MVRDV and contemporaries. We will examine both the built results and the theories and philosophies of design by which they are animated. In the arc of our readings, we will seek to link our territorial, urban, and architectural understanding with broader historical and economic moments. In addition to carrying out readings, discussions, and analyses, students will work towards ORDONNANCE, a collective publication that will historicize and diagram this administrative impulse.

Credit 3 units.

Typical periods offered: Fall, Spring

URBDES 5411 Land Arch Urb: Landscapearchitectureurbanism

New Disciplinary Dynamics: Blurs and Exchanges. Over the past decade, the various professions engaged in the construction of the built environment have been investigating (both in theory and practice) a specific and deliberate blurring, hybridization, and expansion of the traditional semantic and historical categories of landscape, architecture, and urbanism in an attempt to confront changing situations, environments, and cultures. Across geographical and cultural boundaries, the proliferation of projects (speculative and built) and essays appearing in recent years makes this phenomenon more than a passing trend or the product of individual reflection. Architecture, for example, as a conventional discipline with its own tasks, internal logic, and modus operandi has become so heterogeneous that it can no longer adequately authenticate its products from within the limits of its historical category. The same holds true of the allied fields of landscape and urbanism. Strict disciplinary boundaries are no longer capable of attending to the complexity of contemporary demands produced by mobility, density, de-urbanization, hybrid programs, changing uses, and ecological concerns. The contemporary world forcibly imposes the need for greater flexibility and indeterminacy and for new techniques of practice that are anticipatory, receptive to change, and capable of opening an aperture to the future. This course will explore these disciplinary slippages and hybrid contacts between until now distinct categories through essays and built or speculative works.

Credit 3 units. Arch: CAST, GACS, GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5412 Everyday Urbanism: Global and Local Practices

This course explores how qualities of urbanism are shaped through the aggregation of consistent, repetitive building typologies which subsequently gain difference and character over time through occupation by varied cultures, rituals, and behaviors. Among the relevant methodologies to study the relationship between built form and urban quality are those developed by John Stilgoe, who reads the history and culture of a place in terms of repeated features of development, and Tsukamoto Yoshiharu, founder of Atelier Bow-Wow, who notes how changes in the building typologies of Tokyo have had significant impacts of the public realm of the city. Observations derived from this form of research have a direct impact on how we understand the temporal and experiential qualities of the city, and subsequently, design. Open to upper-level undergraduate students and graduate students.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Spring

URBDES 5415 European/Contemporary/Urban Public Spaces

The aim of this seminar is to describe and understand contemporary urban public space in Europe from the late 20th century to the present, as well as to anticipate possible future developments. The seminar will examine this complex subject by investigating the following complementary topics: historical considerations of elements of public space generation; the continually evolving definition of public space; possible boundaries between urban, non-urban, and landscape; scale and other parameters (density, urban fabric); physical and geometrical magnitudes of urban public space; social and political parameters; and other non-apparent/non-physical conditions. Barcelona, Amsterdam and Berlin will be used as examples of cities able to produce celebrated qualified and diverse public spaces. In addition, a series of 12 relevant case studies will be examined. The possibility of mutual interactions with American cities will be considered, using St. Louis as a reference. The educational objectives of the course are to provide some tools and basic knowledge to understand, analyze, and propose a contemporary public space. We will learn how to distill the various elements that compose 'urbanity,' and to recognize the interactions between them. Fulfills Urban Issues elective requirement.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5417 Advanced Seminar in Urban Sustainability II

This seminar will investigate the practices and measures by which sustainable urbanism is produced, substantiated, and evaluated, both projectively and retrospectively. Cities, where the majority of our resources are both spent and conserved, are sites of great contestation and negotiation where competing interests between status quo solutions and those that reinvent the urban paradigm are critical battlegrounds for a healthy, equitable and lasting future. In recent years, efforts have been made to quantify the "success" of individual buildings, neighborhoods and systems, but a holistic framework for deep evaluation evades those attempting to design, lead, and invest in cities. This course will consider: competing factors at play in the efforts towards sustainable urban production; existing evaluation metrics of sustainable cities and their dire shortcomings; emerging practices of cross-silo, cross-agency, and interdisciplinary urban work attempting to produce new, model paradigms; competing and complementary objectives and evaluations of sustainable, successful, and resilient cities, among other models. Consideration of firms, agencies, non-profits and quasi-public interest groups as well as scholarly, research-based efforts proposing evaluative and projective alternatives will be studied with a particular focus on contrasting contexts. The objective is not to develop a quantitative scoring system for cities, which results in superficial and reductionary grades, but to empower design and research students to understand the value added propositions of holistic urban thinking as a new paradigm for 21st-century cities.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5419 Urban Morphology & Metabolism

This research seminar investigates the art and science of the city as a complex self-organized system using the urban morphology and metabolism methodology to create design conditions for the sustainable, resilient and regenerative city. Urban morphology focuses on the physical form and use of the built environment, the processes and actors shaping cities, as well as the experiential, social, economic and human health consequences of urban form. Urban metabolism investigates the networked levels and flows of resource and material consumption and use within the urban environment and the impacts on finite global resources. This seminar will discuss the history, conceptual framework and current standards of practice within each of the methods, and the key interrelationships to reveal the fundamental links between urban form and flow and the social, economic and environmental performance of cities. This course is required for the Doctor of Sustainable Urbanism students and is open to all MArch, MLA and MUD students. Fulfills an Urban Issues and MUD elective requirement. Permission from the instructor required for undergraduates.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5420 Ideas in Urbanism

Although the form of cities has reflected the planned and unplanned patterns of human habitation for thousands of years, the origin of the Western urban design discourse officially starts with the 1956 conference intended to discuss the fate of architects in the formation of cities. That fate is still negotiated across the disciplines of architecture, landscape architecture, urban design and planning, as is the very role and definition of what urban design is and what urban designers do. This course explores the critical ideas and seminal texts that define this urban design discourse with a particular emphasis on the proliferation of numerous urbanisms grappling with 21st-century visions of technology, temporality, environmentalism and justice. Grounded in big ideas and critical readings, Ideas in Urbanism

explores the world views and intellectual lineages of authors and their seminal texts in an effort to understand how the production, reproduction, contestation, and creation of urban ideas and the cities they produce has led to urbanism now, and to speculate on where urbanism might be tomorrow. This course is open to all MArch, MLA and MUD students. Undergraduates may enroll with permission. MUD students have priority. Students will be enrolled from the waitlist.

Credit 3 units. Arch: GAMUD, GARW, GAUI, RW

Typical periods offered: Fall

URBDES 5421 Infrastructural Urbanism

The first two decades of the 21st century have brought a range of new forms of urban thinking in response to the challenges of climate change, wealth disparity, and the growing obsolescence of our urban systems. Infrastructural urbanism pulls from many disciplines and movements to build a theory around systems-based urban thinking that is inclusive rather than elitist, flexible rather than rigid, bottom up as well as top down, ecological as well as economical, and outcome-driven rather than object-focused. In this course, we will explore the history and theory of this emergent urban movement; identify and analyze relevant case studies; and explore three strategies for achieving next-generation infrastructure, with a particular focus on Los Angeles): broadening the process, transforming the prototype, and measuring what matters.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall

URBDES 5422 Ecological Economics

This course is designed to give students an appropriate graduate-level understanding of the fundamental assumptions, the conceptual novelties, and the distinctive tools of analysis that comprise the emerging discipline of ecological economics, and to explore the role this new paradigm is playing in the movement toward a sustainable society. Standard economics--the neoclassical model--sees the economy as the whole that contains all other values; nature has value because some people will pay to experience it or to enjoy its services. Ecological Economics reverses that relationship by acknowledging the environment, not the economy, as the containing whole. This it does through its grounding in the laws of energy--the laws that model the behavior of both natural and built systems. (While matter can be recycled, energy can't. No machine can take its own exhaust outputs as fresh inputs; no animal can survive by eating its own excrement.) Fulfills Urban Issues elective requirement. Fulfills MUD Track elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

URBDES 5423 Informal Cities: The Future of Global Urbanism

This seminar will research the morphology & the morphogenesis of the Informal City as it evolves to be an integral phenomenon of global urbanism, and the corresponding economic, social, architectural and urban theory. Today, one billion people live in informal cities (36% of the world's population) and this is expected to grow another one billion over the next 30 years. As it is currently evolving, the informal city is an urban phenomenon set up within the planned city's territory and increasingly an integral part of it -- often comprising up to 75% of the city and one of the elements of urban morphology that shapes city design. Thus, it is no longer possible to accept a concept of the informal city that centered on negative parameters (ghettos/slums/poverty/crime, etc.), but there is a need to find sustainable spatial solutions to integrate these settlements into the formal urban/architectural tissue leading to the dissolution of urban and symbolic boundaries between the informal areas and formal districts. To this end, the course will review various architecture and urban strategies and projects of informal urbanism in Asia, Africa and South America supported with an optional field trip to South America favelas/barrios

in order to define a place of action for architects and urbanists in the informal city. The course fulfills the Urban Issue elective requirement for the M.Arch degree. Undergraduate enrollment is allowed by arrangement with the instructor.

Credit 3 units. Arch: GAMUD, GAUI Art: CPSC

Typical periods offered: Fall

URBDES 5424 Alternative Atlas: STL

Spatial narratives have been historically dominated by those with wealth and power. But their very wealth and power was built on the backs of an army of others, often unnamed, unmarked, and uncompensated. There is a growing effort to tell those stories and mark the physical spaces of their presence and the acts of violence and oppression enacted on their bodies and communities. If a traditional atlas claims some degree of neutrality and objectivity - clearly impossible in any mapping - the Alternative Atlas overtly exposes, decodes and displays silenced truths. Inspired by traditional tour guides, maps, signs and itineraries, this course aims to unearth and represent the deeper foundations of the complicated city of St. Louis and its immediate region. Combining uncomfortable thinking, deep research and thick mapping, the goals of the course are to spatialize this hidden palimpsest. Alternative Atlas: STL is an interdisciplinary seminar that invites a wide range of perspectives and epistemological frameworks to examine, expose, and visualize - in other words, map - this complicated American city. The mapping of St. Louis's past, present, and future is an ongoing project; this particular semester will incorporate new partnerships with artists, curators, storytellers, and technologists working to collect, capture, and represent the present future for public viewing.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5601 Theories & Methods of Architecture, Landscape and Urbanism Research

This seminar focuses on the fundamentals of transdisciplinary empirical research in architecture, landscape and urbanism design and urbanism. Through studying research examples, it examines the entire research process from conducting literature review and precedent studies, generating research question and hypothesis, creating study design, collecting and analyzing data with valid and reliable research tools, to communicating findings. A survey of quantitative and qualitative research methods used in disciplines such as social sciences, public policy, public health that are relevant to environmental issues is provided to address the application of research methods on a wide range of problems in architecture, landscape and urbanism. The seminar enables students to effectively engage in empirical research (including research assistantship) as well as the practice of evidence-based design. This course is required for the Doctor of Sustainable Urbanism students and is open to all MArch, MLA and MUD students. Permission from the instructor required for undergraduates. Master of Urban Design students receive priority. Students will be registered for the course from the waitlist by the Registrar's Office.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Spring

URBDES 5602 Theories & Methods of Sustainable Urbanism

This seminar focuses on the fundamentals of transdisciplinary research in sustainability as it applies to the design, development and management of cities. The objective is to introduce students to fundamental research methods of urban sustainability including methods to: analyze the impact of urbanization on natural systems; understand the physical organization of cities; analyze the effect of socio-economic trends on cities; apply analytical systems to understand the performance of urban elements; and how various scales of the city contribute to sustainability. This course is required

for the Doctor of Sustainable Urbanism students and is open to all MArch, MLA and MUD students. Fulfills an urban design and urban elective requirement. Permission from the instructor required for undergraduates.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 5800 Research Methods for a Changing Global Climate

This course explores urban research methodologies with a lens on climate change resilience. Students will navigate qualitative and quantitative research techniques, gaining the skills to assess and inform urban interventions for climate resilience. Students will engage with interdisciplinary methods and practices, incorporating local knowledge and design practices to understand and mitigate the complex socio-environmental dynamics of climate change such as heat island effect, health impacts, and urban flooding in coastal cities like Bangkok or New Orleans. Coursework guides students in formulating critical research questions and developing sustainable, evidence-based approaches that contribute to making our cities more livable, sustainable, and resilient in the face of climate change. Ultimately, students will be equipped to contribute meaningfully to the discourse on urban climate resilience. Course will meet in-person May 20 - June 14 and July 15 - August 9, with four weeks of related field work conducted between in-person learning sessions.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Summer

URBDES 6150 Informal Cities Workshop

This seminar will research the morphology & the morphogenesis of the Informal City as it evolves to be an integral phenomenon of global urbanism, and the corresponding economic, social, architectural and urban theory. Today, one billion people live in informal cities (36% of the world's population) and this is expected to grow another one billion over the next 30 years. As it is currently evolving, the informal city is an urban phenomenon set up within the planned city's territory and increasingly an integral part of it—often comprising up to 75% of the city and one of the elements of urban morphology that shapes city design. Thus, it is no longer possible to accept a concept of the informal city that centered on negative parameters (ghettos/slums/poverty/crime, etc.), but there is a need to find sustainable spatial solutions to integrate these settlements into the formal urban/architectural tissue leading to the dissolution of urban and symbolic boundaries between the informal areas and formal districts. To this end, the course will review various architecture and urban strategies and projects of informal urbanism in Asia, Africa and South America supported with a field trip will help to further understand and define a place of action for architects and urbanists in the informal city. The course fulfills the Urban Issue elective requirement for the M.Arch degree. The completion of both the Informal Cities (fall semester, 1 unit) and the Lively City (spring semester, 2 units) masterclasses may fulfill the Urban Issues elective requirement for MArch students.

Credit 1 unit. Arch: GAUI

Typical periods offered: Fall

URBDES 6160 Lively City: Behavioral Studies & Public Space Design

Working in small groups, students will acquire new perspectives and skills that put people and their needs at the heart of the creative process of re-imagining and transforming cities. Livability, lively cities, public life, and other concepts describing inviting, vibrant, and stimulating urban environments are frequently communicated in new visions for the future of cities today, but they are the most often unrealized components of design projects. This focus on urban life is a direct reaction to the urban realities created in the 20th century, where increases in our standards of living and the associated city building processes have created areas in which large and increasing numbers of people have become isolated from each other, both

socially and geographically. Despite our new awareness for the need to plan for a shared and intensified urban life in sustainable cities, we continue to have difficulty understanding exactly what this urban life is, how much of it we truly want and need, and how we can reconcile the often conflicting and simultaneous needs of people for privacy and social stimulation.

Credit 2 units. Arch: GAUI

Typical periods offered: Spring

URBDES 6210 Metropolitan Urbanism

The seminar course will investigate the morphology and morphogenesis of the contemporary American metropolitan urban condition. The investigation will attempt to define and understand the changing pattern, form, priorities and use of the metropolitan transect from the central city to the rural fringe. The objective of the course is to understand the history of the American city in terms of the indeterminate tensions, complexity and richness of morphological layering and traces in the urban landscape, as a basis for critical practice.

Credit 3 units. Arch: GAUI

Typical periods offered: Fall

URBDES 6220 Metropolitan Development

This course explores pluralist, pragmatic and progressive planning strategies for American urbanism. It will provide students with an introduction to the design and planning of American cities in the context of this country's democratic tradition, its multi-cultural society, and the particular morphology of its urban areas. Contemporary American cities have urbanized in unprecedented and distinctive ways that suggest the creation of a unique urban culture, despite the seeming globalization of urban trends, or the apparent universalization of urban forms. Identifying the role design can play in this culture requires a lucid appraisal of the context in which metropolitan development takes place. Four study modules will introduce basic issues in planning law, real estate finance, urban economics and environmental planning through lectures and research projects, as well the presentation of Metropolitan St. Louis development case studies by professional and political leaders.

Credit 3 units. Arch: GAUI

Typical periods offered: Fall

URBDES 6230 Metropolitan Sustainability

This seminar will investigate contemporary theory and practice of the design and development of sustainable regions, cities, communities, infrastructures and landscapes. By 2050 three-quarters of the world's population will be living in cities and with cities being the world's largest consumer of resources and a focus of climate change impact, it will be the design of cities that frame the essential theory and practice of sustainability. Consideration will be given to the definition and reasons for the sustainability paradigm; conceptual frameworks for urban sustainability; indicators & measures of sustainability; different sustainability functional categories (water, air, food, energy, transportation, social capital, equity, development patterns & density, etc.); and various approaches to urban sustainability including Regenerative Urbanism, Healthy Cities, Ecological Urbanism, Eco-Urbanity, Resilient Cities, Smart Cities, LEED ND, the Natural Step, ICLEI and ZED Cities.

Credit 3 units. Arch: GAUI

Typical periods offered: Spring

URBDES 6240 Rethinking Urban Futures

This course examines the evolving discourse on urbanism through systems thinking, emphasizing the interconnected social, ecological, and economic forces that shape cities. Drawing on critical perspectives from diverse disciplines, it invites students to explore how urbanism



can respond to the urgent and complex challenges of climate change, social justice, and societal polarization. Central to this exploration is the development of new imaginaries—innovative ideas that envision urban futures as equitable and regenerative. The seminar challenges dominant paradigms in urbanism, including the role of anthropogenic agency in shaping environments, EuroAmerican views of Nature, and reliance on technocratic solutions to ecological crises. Students will identify opportunities to disrupt entrenched inequities and create adaptive strategies that center justice and regeneration as principles for rethinking urban futures. Through critical readings, discussions, collaborative projects, and alternative media—film, fiction, podcasts—students will engage with foundational and emerging ideas in urbanism to inspire imaginative responses to today's challenges. Together, we will examine how design practices have historically reflected systems of power while envisioning strategies that prioritize equity, sustainability, and resilience. This course fosters a community of learning dedicated to reimagining urban systems and crafting transformative approaches for more just and inclusive futures.

Credit 3 units. Arch: GAMUD, GARW, GAUI, RW

Typical periods offered: Fall, Spring

URBDES 6401 Advanced Seminar in Urban Sustainability I

This seminar will investigate contemporary theories and methods of sustainable urbanism. Cities are increasingly the means through which a sustainable future for the anthropocene era is constructed. Within the sustainable urbanism paradigm cities are understood as complex self-organizing open systems responding to socially constructed processes, conflicting values, natural resource limitations, extreme natural phenomena, man-made hazards, climate change and competing economic interests that inform urban change, design and development. Consideration will be given to the history, definition and reasoning for the urban sustainability paradigm; the theoretical constructs of sustainability, resiliency, adaptation and regeneration for post-carbon cities; the methods of analysis and measurement for urban sustainability; and the design of cities for livability, social inclusion, environmental performance, cultural diversity and economic equity. The course fulfills an Urban Design and Urban Issues elective for MUD, MArch & MLA degrees.

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Fall, Spring

URBDES 6402 Contemporary Practices of Sustainable Urbanism

This seminar will investigate those contemporary practices of Sustainable Urbanism that exemplify a concern for locality, place, culture, community and authenticity. Sustainable urbanism is understood not as a pre-defined goal or form, but as a contested territory involving socially constructed processes, conflicting values and competing interests that dictate urban change and the consumption of urban space all mediated through the practice of urban design. To this end, different methodological approaches to urban sustainability will be investigated, including LEED ND, ZED Cities, Regenerative Urbanism, The Natural Step, Eco-Urbanity, Resilient and Smart Cities. The research project of the seminar will focus on the Delmar Loop/ Parkview Gardens neighborhood, which was recently awarded a HUD/DOT Sustainable Communities Grant with the intent that the students develop a Sustainable Urban Design Plan and Code for the area. This course will be augmented with presentations by local practitioners of sustainability plans and include an optional site visit to Portland, OR and/or Vancouver, Canada to fully investigate and understand the respective city's implementation of sustainable urbanism. Undergraduate enrollment is allowed by arrangement with the instructor. Fulfills Urban Issues elective requirement. Fulfills MUD Track elective requirement.

Credit 3 units.

Typical periods offered: Fall, Spring

URBDES 6990 Urban Design Research Theories & Methods

This course reviews contemporary theories of urban design and introduces qualitative and quantitative research concepts, methods and practices for the analysis, design and implementation of urban interventions as well as identifying critical questions for the practice of urban design. The goal of urban design is to contribute to maintaining and making our cities livable, sustainable and resilient for the future. As such, urban design will be understood in the context of a highly dynamic and complex cross-cultural, socio-economic, political, and technological condition. Knowledge from this course will be integrated into the studio course

Credit 3 units. Arch: GAMUD, GAUI

Typical periods offered: Summer

URBDES 7011 Elements of Urban Design

The first in a three-semester sequence of design studios for students in the Master of Urban Design program.

Credit 6 units.

Typical periods offered: Fall

URBDES 7013 Metropolitan Design Elements

The second in a three-semester sequence of design studios for students in the Master of Urban Design program.

Credit 6 units.

Typical periods offered: Spring

URBDES 7014 Global Urbanism Studio

This final semester of the Master of Urban Design program is an opportunity to synthesize concepts related to urban policy, social justice, morphology, and environmental sustainability from previous semesters into comprehensive, immersive, and research-inspired urban design proposals sited in climate-vulnerable mega-cities. Spanning from the scale of the street to the complexity of regional systems, the studio, in collaboration with international partners, focuses on the physical ramifications of social, political, environmental, and historical forces over time and the way urban design intervenes in those systems to create more equitable, sustainable, and livable cities.

Credit 6 units.

Typical periods offered: Summer

Sam Fox School of Design & Visual Arts

The Sam Fox School of Design & Visual Arts is a unique collaboration in architecture, art, and design education, linking professional studio programs with one of the country's finest university art museums in the context of an internationally recognized research university.

The Sam Fox School is composed of the College of Architecture, the Graduate School of Architecture & Urban Design, the College of Art, the Graduate School of Art, and the Mildred Lane Kemper Art Museum.

Website:

<http://samfoxschool.washu.edu>



Master's Degrees

The Graduate School of Architecture & Urban Design's degree programs include a range of curricula for students with a variety of educational backgrounds, professional degree needs and career ambitions.

We offer the following degree programs:

- Master of Architecture: MArch 3 (p. 69) (six semesters; 105 credits)
- Master of Architecture: MArch 2 (p. 71) (four semesters; 75 credits)
- Master of Landscape Architecture: MLA 3 (p. 73) (six semesters; 90 credits)
- Master of Landscape Architecture: MLA 2 (p. 73) (four semesters; 60 credits)
- Master of Urban Design (p. 75) (three semesters; 42 credits)
- MS in Advanced Architectural Design (p. 77) (three semesters; 36 credits)
- MS in Architectural Studies (p. 77) (30 credits)

Most states require that individuals hold an accredited professional degree in order to become an architect. The National Architectural Accrediting Board (NAAB) accredits two types of degrees: (1) the Bachelor of Architecture (not offered by this College of Architecture), which requires a minimum of five years of study; and (2) the Master of Architecture, which requires a minimum of three years of study following an unrelated bachelor's degree or two years of study following a related pre-professional bachelor's degree. These professional degrees are structured to educate those who aspire to registration/licensure as architects.

Our Master of Architecture degree, offered as the three-year MArch 3 program and the two-year MArch 2 program, is an NAAB-accredited professional degree. The school's NAAB accreditation status was evaluated and confirmed in the spring of 2018. All MArch programs at Washington University are STEM-designated.

Dual Degrees

For graduate students who want to broaden their education at the graduate and post-professional levels, the Graduate School of Architecture & Urban Design offers several dual degree programs in conjunction with other divisions of Washington University in St. Louis. To apply for a dual degree program, students must submit separate applications to both programs. Each program makes admission decisions independently. Degrees are awarded concurrently when the requirements for both programs have been fulfilled. The dual degree programs currently available are as follows:

- Master of Architecture/Master of Public Health (p. 77) (MArch/MPH)
- Master of Business Administration/Master of Architecture (p. 78) (MBA/MArch)

- Master of Construction Management/Master of Architecture (p. 78) (MCM/MArch)
- Master of Landscape Architecture/Master of Architecture (p. 79) (MLA/MArch)
- Master of Landscape Architecture/Master of Urban Design (p. 79) (MLA/MUD)
- Master of Social Work/Master of Architecture (p. 79) (MSW/MArch)
- Master of Social Work/Master of Urban Design (p. 79) (MSW/MUD)
- Master of Urban Design/Master of Architecture (p. 79) (MUD/MArch)

Master of Architecture

The MArch 3 is a six-semester, professional curriculum for students holding baccalaureate degrees with majors in architecture and majors other than architecture. This 105-credit program leads to a professional, STEM-designated, and National Architectural Accrediting Board (NAAB)-accredited Master of Architecture degree.

The MArch 3 sequence commences with a two-week preparatory pre-semester orientation before students begin three semesters of core studios and seminars. The last of the core studios is ARCH 6010 International Housing Studio, in which students join the MArch 2 (two-year program) cohort. Students progress into two semesters of Advanced Architectural Design Studios and conclude, in their sixth and final semester, with ARCH 7020 Degree Project.

Calculus and physics are required as prerequisites for enrollment.

The MArch 2 is a four-semester, professional curriculum for students holding baccalaureate degrees with majors in architecture. This 75-credit program leads to a professional, STEM-designated, and National Architectural Accrediting Board (NAAB)-accredited Master of Architecture degree.

Placement in this curriculum is highly selective and based on prior preparation and coursework in architecture and on the quality and complexity of work in an applicant's portfolio.

The MArch 2 sequence commences with a two-week preparatory orientation and pre-semester studio before students enter ARCH 6010 International Housing Core Studio in the fall semester and join the MArch 3 cohort. Students progress into two semesters of Advanced Architectural Design Studios, culminating in their fourth and final semester with ARCH 7020 Degree Project.

At the heart of the graduate curriculum is the Advanced Architectural Design Studio sequence. Each semester, students choose from a diverse array of studios that reflect the varied research interests of our faculty and visiting practitioners. These studios focus on cultivating strong conceptual design skills, critical thinking, and a commitment to environmental sustainability. Students learn to thoughtfully integrate technical skills and represent architectural narrative, experimenting with a combination of analog techniques and emerging digital technologies.



Among these options are the Comprehensive Options Studios, where students enhance their abilities for design experimentation and integration of structure, material systems, and responses to climate and environmental challenges. In their final semester, students test their ability to engage a critical agenda while integrating technical, social, and environmental concerns through the Degree Project, a self-initiated endeavor based in St. Louis.

Informing and enriching the studio experience is a robust offering of courses in architectural history and theory, building technology, structural principles, professional practice, urban design, landscape architecture, ecology, emerging digital media, fabrication technologies, and socially engaged practice. These seminars draw on our exceptional faculty expertise across programs to foster interdisciplinary fluency, equipping students to engage in critical debate and tackle contemporary challenges.

The ultimate goal is for students to develop their own tools, strategies, and methodologies, along with strong technical resourcefulness and an independent critical position on the making of architecture in the world.

Master of Architecture: MArch 3

The MArch 3 is a six-semester, professional curriculum for students holding baccalaureate degrees with majors in architecture and with majors other than architecture. This 105-credit program leads to a professional, STEM-designated, and National Architectural Accrediting Board (NAAB)-accredited Master of Architecture degree.

The MArch 3 sequence commences with a two-week preparatory pre-semester orientation before students begin three semesters of core studios and seminars. The last of the core studios is the International Housing Studio (ARCH 6010) where students join the MArch 2 (two-year program) cohort. Students progress into two semesters of Advanced Architectural Design Studios and conclude, in their sixth and final semester, with the Degree Project (ARCH 7020).

Calculus and Physics are required as prerequisites for admission.

Waiver Requirements

Students admitted to the MArch 3 program have the opportunity to waive the following courses:

- ARCH 3340 Building Systems
- ARCH 4340 Structures I
- ARCH 4350 Structures II
- ARCH 2210 Architectural History I: Antiquity to Baroque
- ARCH 2220 Architectural History II: Architecture Since 1880

- ARCH 4320 Architectural History III: Advanced Theory
- ARCH 3310 Environmental Systems I
- LANDARCH 2030 Shared Ecologies

Students must obtain a waiver prior to the semester in which they would normally be expected to take the course that is being waived. In other words, students may not skip a required course on the assumption that they will receive a waiver for it in the future.

Any such waiver requires evidence that the student had adequate exposure to the required material as part of their previous academic experience. Course waivers will only be granted for an equivalent course or a combination of courses completed satisfactorily to meet NAAB-accredited student performance criteria. Equivalence is measured in terms of both content and assignments. Waivers will not be granted for courses taken Pass/No Pass. To be eligible for a waiver, prior coursework must have been passed with the equivalent of a grade of C or higher. Grades for waived courses will not appear on the student's Washington University record and will not figure into the student's GPA.

Up to 6 credits (two courses) of waivers can be applied toward required degree credits. If more than two waivers are granted, the student must earn an equivalent number of general elective credits in place of the courses being waived. Courses that have been waived or previously completed as an undergraduate at Washington University cannot be repeated for credit.

Website:

<https://samfoxschool.wustl.edu/academics/college-of-architecture/master-of-architecture>

Faculty

For a list of faculty members, please refer to the Architecture faculty page (p. 40).

Degree Requirements

The list below includes the required courses for the MArch 3 degree. The order in which students take their courses may vary. A sample curriculum can be found at the MArch 3 Curriculum website. Students admitted to the MArch 3 program have the opportunity to waive some courses. For more information about waivers, refer to the MArch 3 Overview (p. 69).

Students in the class of 2029 and beyond must fulfill the following degree requirements. For class of 2027 and class of 2028 academic requirements, consult Prior Bulletins (p. 8).



Requirements: 105 credits

Code	Title	Units
Fundamentals		
ARCH 5110	Architectural Representation I (March 3)	3
ARCH 5120	Architectural Representation II (M.Arch 3)	3
ARCH 6005	Workshop 1: Studio Methods	1.5
ARCH 6150	Design Culture	1.5
ARCH 7130	Pre-Design Seminar	1.5
ARCH 7005	Workshop 2: Research and Project Methods	1.5
ARCH 7120	Design Thinking: Research and Design Methods	3
ARCH 7220	Professional Practice I	3
LANDARCH 2040	Shared Ecologies and Design	3
Design Studios		
ARCH 5010	Architectural Design I (March 3)	9
ARCH 5020	Architectural Design II (March 3)	9
ARCH 6010	Architectural Design III	6
ARCH 6020 Architectural Design V* or ARCH 6025 Architectural Design V (Barcelona)*		6
ARCH 7010 Architectural Design VII* or ARCH 7015 Architectural Design VII (Barcelona)*		6
ARCH 7520	Degree Project	6
History & Theory		
ARCH 2210	Architectural History I: Antiquity to Baroque	3
ARCH 2220	Architectural History II: Architecture Since 1880	3
ARCH 4230	Architectural History III: Advanced Theory	3
History/Theory Research & Writing Elective	Courses tagged GA Research & Writing	3
History/Theory Elective	Courses tagged GA Research & Writing or GA Case Studies	3
Architectural Technology		
ARCH 3310	Environmental Systems I	3
ARCH 3340	Building Systems	3
ARCH 4340	Structures I	3
ARCH 4350	Structures II	3
ARCH 6320	Environmental Systems II	3
ARCH 7340	Advanced Building Systems	3
Electives		

Urban Issues Elective	Courses tagged GA Urban Issues	3
General Electives	Courses at the 3000-level or above excluding CAPS	6
Total Credits		105

* At least one studio must be comprehensive. Students enrolled in a qualifying studio will be administratively registered for a 0-credit course, ARCH 6000 Comprehensive Studio.

Master of Architecture Studio Grade Requirement

Students in the MArch 3 program must earn a cumulative studio grade point average (GPA) of 2.5 or higher by the end of the 5010/5020 first-year core studio sequence. Students who do not fulfill this cumulative studio GPA requirement must repeat at least one of the first-year core studios and raise their cumulative studio GPA to 2.5 or higher before being permitted to enroll in their final core studio, 6010. If a student still has a cumulative studio GPA below 2.5 after repeating 5010 and/or 5020, they will be dismissed from the Master of Architecture program.

Students in the MArch 3 program must earn a cumulative studio GPA of 2.6 or higher by the end of the complete core studio sequence (5010/5020/6010). Students who do not fulfill this cumulative studio GPA requirement must take a leave of absence in the spring semester, repeat the 6010 studio the following academic year, and raise their cumulative studio GPA to 2.6 or higher before being permitted to enroll in the vertical/options studio sequence. If a student still has a cumulative studio GPA below 2.6 after repeating 6010, they will be dismissed from the Master of Architecture program.

Master of Architecture Comprehensive Studio Requirement

All Master of Architecture graduate students must take one Comprehensive Options Studio and earn a minimum grade of B- before entering Degree Project.

Master of Architecture Degree Project

ARCH 7520 Degree Project must be completed during the student's final semester. Students should not register for additional coursework once Degree Project has been completed. Students should plan to complete all outstanding degree requirements during their Degree Project semester. Any exceptions to the Degree Project studio requirement must be approved in writing by the program chair for graduate architecture.



Master of Architecture Degree Project Grade Requirement

In order to enroll in ARCH 7520 Degree Project, graduate students must have earned a cumulative studio GPA of 2.7 or above. Students who have not fulfilled this cumulative studio GPA requirement must repeat an options studio and raise their cumulative studio GPA to 2.7 or higher before being permitted to enroll in Degree Project.

The option to repeat a studio is contingent on a student having met the requirements of Academic Probation. A suspension or dismissal that is a result of the Academic Probation policy takes precedence over this Studio Grade Requirement policy.

Courses

For a list of available courses, please refer to the Courses (p. 41) section of the Graduate School of Architecture & Urban Design in this *Bulletin*.

Study Abroad

Students pursuing a Master of Architecture degree have the opportunity to participate in a study abroad program that provides an immersive experience in a city distinguished by its architecture, social policies, urbanism, and public space. Students complete the 6025 or 7015 comprehensive architecture studio during the semester-long program.

MArch students with 6010 status or higher in the semester prior to study, in good academic standing, and a cumulative grade-point average of 3.0 or higher can sign up to study abroad. Priority is given to students with higher studio levels and GPAs.

- For first-semester students without a Washington University GPA, the cumulative GPA on the official transcript(s) from their previous institution(s) will be used.
- GPA scores are pulled from the Washington University Student Information System on the day of the sign-up and updated the first week of each semester.
- GPAs will not be recalculated after the first week of each semester.
- Students can participate in one study abroad program

Master of Architecture: MArch 2

The MArch 2 is a four-semester, professional curriculum for students holding baccalaureate degrees with majors in architecture. This 75-credit program leads to a professional, STEM-designated and National Architectural Accrediting Board (NAAB) accredited Master of Architecture degree.

Placement in this curriculum is highly selective and based on prior preparation and coursework in architecture and on the quality and complexity of work in an applicant's portfolio. To be considered for placement in the MArch 2 program, students must have completed an Architectural History course that covers the following topics: Greco Roman Classicism, European Middle Ages, Renaissance + Baroque, 18th-/19th-century Neoclassicism, and the Industrial Revolution. Students are also expected to have been exposed to non-Western content, such as Pre-Columbian, Islamic, South Asian, or East Asian. Calculus and physics are also required as prerequisites for admission.

The MArch 2 sequence commences with a two-week preparatory presemester studio and orientation before students enter the International Housing Core Studio (ARCH 6010) in the fall semester, joining the MArch 3 (three-year program) cohort. Students progress into two semesters of Advanced Architectural Design Studios, culminating in their fourth and final semester with the Degree Project (ARCH 7020).

Waiver Requirements

Students admitted to the MArch 2 program have the opportunity to waive the following courses:

- ARCH 3340 Building Systems
- ARCH 4340 Structures I
- ARCH 4350 Structures II
- ARCH 2220 Architectural History II: Architecture Since 1880
- ARCH 4320 Architectural History III: Advanced Theory
- ARCH 3310 Environmental Systems I
- LANDARCH 2040 Shared Ecologies and Design

Students must obtain a waiver prior to the semester in which they would normally be expected to take the course that is being waived. In other words, students may not skip a required course on the assumption that they will receive a waiver for it in the future.

Any such waiver requires evidence that the student had adequate exposure to the required material as part of their previous academic experience. Course waivers will only be granted for an equivalent course or a combination of courses completed satisfactorily to meet NAAB-accredited student performance criteria. Equivalence is measured in terms of both content and assignments. Waivers will not

be granted for courses taken Pass/No Pass. To be eligible for a waiver, prior coursework must have been passed with the equivalent of a grade of C or higher. Grades for waived courses will not appear on the student's Washington University record and will not figure into the student's GPA.

Up to 6 credits (two courses) of waivers can be applied toward required degree credits. If more than two waivers are granted, the student must earn an equivalent number of general elective credits in place of the courses being waived. Courses that have been waived or previously completed as an undergraduate at Washington University cannot be repeated for credit.

Faculty

For a list of faculty members, please refer to the Architecture faculty page (p. 40).

Degree Requirements

The list below includes the required courses for the MArch 2 degree. The order in which students take their courses may vary. A sample curriculum can be found on the MArch 2 Curriculum website. Students admitted to the MArch 2 program have the opportunity to waive some courses. For more information about waivers, refer to the MArch 2 Overview (p. 71).

Students in the class of 2028 and beyond must fulfill the following degree requirements. For class of 2027 academic requirements, consult Prior Bulletins (p. 8).

Requirements: 75 credits

Code	Title	Units
Fundamentals		
ARCH 6005	Workshop 1: Studio Methods	1.5
ARCH 6150	Design Culture	1.5
ARCH 7005	Workshop 2: Research and Project Methods	1.5
ARCH 7120	Design Thinking: Research and Design Methods	3
ARCH 7130	Pre-Design Seminar	1.5
ARCH 7220	Professional Practice I	3
LANDARCH 2040	Shared Ecologies and Design	3
Design Studios		
ARCH 6010	Architectural Design III	6
ARCH 6020 Architectural Design V* or ARCH 6025 Architectural Design V (Barcelona)*		6
ARCH 7010 Architectural Design VII* or ARCH 7015 Architectural Design VII (Barcelona)*		6
ARCH 7520	Degree Project	6
History & Theory		

ARCH 2220	Architectural History II: Architecture Since 1880	3
ARCH 4230	Architectural History III: Advanced Theory	3
History/Theory Elective	Courses tagged with GA Research & Writing or GA Case Studies	3
Architectural Technology		
ARCH 3310	Environmental Systems I	3
ARCH 3340	Building Systems	3
ARCH 4340	Structures I	3
ARCH 4350	Structures II	3
ARCH 6320	Environmental Systems II	3
ARCH 7340	Advanced Building Systems	3
Electives		
General Electives	Courses at the 3000-level or above excluding CAPS	6
Urban Issues Elective	Courses tagged with GA Urban Issues	3
Total Credits		75

* At least one studio must be comprehensive. Students enrolled in a qualifying studio will be administratively registered for a 0-credit course, ARCH 6000 Comprehensive Studio.

Master of Architecture Studio Grade Requirement

Students in the MArch 2 program must earn a minimum studio grade of B– in the 6010 studio. If a student does not receive a B– grade or better in the 6010 studio, they must take a leave of absence in the spring semester and repeat the 6010 studio the following academic year. If a student has not received a B– or better after repeating the 6010 studio, they will be dismissed from the Master of Architecture program.

The option to repeat a studio is contingent on a student having met the requirements of Academic Probation. A suspension or dismissal that is a result of the Academic Probation policy takes precedence over this Studio Grade Requirement policy.

Master of Architecture Comprehensive Studio Requirement

All Master of Architecture graduate students must take one Comprehensive Options Studio and earn a minimum grade of B– before entering Degree Project.



Master of Architecture Degree Project

ARCH 7520 Degree Project must be completed during the student's final semester. Students should not register for additional course work once Degree Project has been completed. Students should plan to complete all outstanding degree requirements during their Degree Project semester. Any exceptions to the Degree Project studio requirement must be approved in writing by the program chair for graduate architecture.

Master of Architecture Degree Project Grade Requirement

In order to enroll in ARCH 7520 Degree Project, graduate students must have earned a cumulative studio grade point average (GPA) of 2.7 or above. Students who have not fulfilled this cumulative studio GPA requirement must repeat an options studio and raise their cumulative studio GPA to 2.7 or higher before being permitted to enroll in Degree Project.

The option to repeat a studio is contingent on a student having met the requirements of Academic Probation. A suspension or dismissal that is a result of the Academic Probation policy takes precedence over this Studio Grade Requirement policy.

Courses

For a list of available courses, please refer to the Courses (p. 41) section of the Graduate School of Architecture & Urban Design in this *Bulletin*.

Study Abroad

Students pursuing a Master of Architecture degree have the opportunity to participate in a study abroad program that provides an immersive experience in a city distinguished by its architecture, social policies, urbanism, and public space. Students complete the 6025 or 7015 comprehensive architecture studio during the semester-long program.

MArch students with 6010 status or higher in the semester prior to study, in good academic standing, and with a cumulative grade-point average of 3.0 or higher can sign up to study abroad. Priority is given to students with higher studio levels and GPAs.

- For first-semester students without a Washington University GPA, the cumulative GPA on the official transcript(s) from their previous institution(s) will be used.
- GPA scores are pulled from the Washington University Student Information System on the day of the sign-up and updated during the first week of each semester.
- GPAs will not be recalculated after the first week of each semester.
- Students can participate in one study abroad program.

Master of Landscape Architecture

The graduate program in landscape architecture leads to a professional Master of Landscape Architecture (MLA) degree. Two- and three-year degree options accommodate students with design and other undergraduate degrees. The landscape program further develops cross-disciplinary connections among architecture, urban design and visual arts in the Sam Fox School.

The program in landscape architecture focuses on the three subjects of design, ecology, and urbanism. The transformative process of design — linking cultural, historical, and technological investigations — forms the pedagogical basis for research. Ecology informs design practice to address a multiplicity of scales and natural systems within the environment. Urbanism serves as a terrain of contemporary landscape practice. As heirs to design, ecological, and urban traditions, landscape architects are uniquely suited to articulate a spatial vision for today's environment. This three-pronged approach is geared to develop the students' critical and conceptual abilities and to prepare them to become leaders within professional and academic spheres.

The curriculum is centered on studio teaching supported by instruction in technology, history, and theory. Following the core sequence of design studios and classes, students are encouraged to develop their own research interests through advanced design studios and electives. Interdisciplinary and international option studios foster a multiplicity of perspectives leading to a research-based degree project (thesis or independent study). In addition, students have opportunities to further their investigations within and beyond the school through teaching and research assistantships and scholarships.

The landscape architecture program draws on a unique set of institutional, regional, and international resources available at the Sam Fox School. St. Louis functions as a laboratory for understanding and testing ecological and urban theories at the local scale, from brownfield reclamation to urban agriculture systems. Washington University's outstanding programs in Environmental Studies, Environmental Engineering, and American Culture Studies expand curricular offerings in ecology, technology, and landscape studies, and the internationally renowned Missouri Botanical Garden serves as an exceptional tool of research and teaching. Finally, through the extensive international offerings of the school, students experience different landscapes, cultures, and cultures of practice.



Website: <https://samfoxschool.washu.edu/academics/college-of-architecture/master-of-landscape-architecture>

Faculty

Chair

Derek Hoeflerlin
MArch, Yale University

For a list of faculty members, please refer to the Architecture faculty page (p. 40).

Degree Requirements

Master of Landscape Architecture Degree — MLA 3

The list below includes the required courses for the three-year MLA program in their recommended sequence.

Students in the class of 2029 and beyond must fulfill the following degree requirements. For class of 2027 and class of 2028 academic requirements, consult Prior Bulletins (p. 8).

Requirements: 90 Credits

Code	Title	Units
Year 1: Fall		
LANDARCH 2040	Shared Ecologies and Design	3
LANDARCH 5110	Landscape Architecture Design Studio I	6
LANDARCH 5111	Landscape Representation I: Hand Drafting, Drawing, & Sketching	3
LANDARCH 5221	Plants & Environment	1.5
LANDARCH 5222	Grading + Landform	1.5
Year 1: Spring		
LANDARCH 5120	Landscape Architecture Design Studio II	6
LANDARCH 5121	Landscape Representation II: Digital Tools	3
LANDARCH 5231	GIS for Site Design	1.5
LANDARCH 5232	Planting Design	1.5
LANDARCH 5330	Landscape Ecology	3
Year 2: Fall		
LANDARCH 5340	Landscape Technology	3
LANDARCH 6110	Landscape Architecture Design Studio III	6
LANDARCH 6111	Visualizing Ecological Processes	3
LANDARCH 6360	Landscape Architecture History & Theory	3
Year 2: Spring		
LANDARCH 6120	Landscape Architecture Design Studio IV	6

LANDARCH 6370	Modern and Contemporary Landscape Architecture	3
Ecological Elective*	Courses tagged with GA Ecological Elective	3
Elective	Courses at the 3000 level or above (excluding CAPS)	3
Year 3: Fall		
LANDARCH 7110	Landscape Architecture Design Studio V	6
LANDARCH 7380	Research in the Landscape: Methods and Practices	3
Ecological Elective*	Courses tagged with GA Ecological Elective	3
Elective	Courses at the 3000 level or above (excluding CAPS)	3
Year 3: Spring		
LANDARCH 7120	Landscape Architecture Design Studio VI	6
LANDARCH 7390	Professional Practice for Landscape Architecture: Business, Practice & Management	3
Electives	Courses at the 3000 level or above (excluding CAPS)	6
Total Credits		90

* The elective sequence may change from year to year, depending on offerings from the MLA, MArch, and MUD programs. The program office determines which courses fulfill this requirement. Students are required to complete a minimum of two ecological systems electives.

Master of Landscape Architecture Degree — MLA 2

The list below includes the required courses for the two-year MLA program in their recommended sequence.

Students in the class of 2028 and beyond must fulfill the following degree requirements. For class of 2027 requirements, consult Prior Bulletins (p. 8).

Requirements: 60 Credits

Code	Title	Units
Year 1: Fall		
LANDARCH 2040	Shared Ecologies and Design	3
LANDARCH 5221	Plants & Environment	1.5
LANDARCH 5222	Grading + Landform	1.5
LANDARCH 6110	Landscape Architecture Design Studio III	6
LANDARCH 6111	Visualizing Ecological Processes	3
Year 1: Spring		
LANDARCH 5231	GIS for Site Design	1.5



LANDARCH 5232	Planting Design	1.5
LANDARCH 5330	Landscape Ecology	3
LANDARCH 6120	Landscape Architecture Design Studio IV	6
LANDARCH 6370	Modern and Contemporary Landscape Architecture	3
Year 2: Fall		
LANDARCH 5340	Landscape Technology	3
LANDARCH 7110	Landscape Architecture Design Studio V	6
LANDARCH 7380	Research in the Landscape: Methods and Practices	3
Ecological Elective*	Courses tagged with GA Ecological Elective	3
Year 2: Spring		
LANDARCH 7120	Landscape Architecture Design Studio VI	6
LANDARCH 7390	Professional Practice for Landscape Architecture: Business, Practice & Management	3
Ecological Elective*	Courses tagged with GA Ecological Elective	3
Elective	Courses at the 3000 level or above (excluding CAPS)	3
Total Credits		60

* The elective sequence may change from year to year, depending on offerings from the MLA, MArch, and MUD programs. The program office determines which courses fulfill this requirement. Students are required to complete a minimum of two ecological systems electives.

Studio Grade Requirement

Master of Landscape Architecture Studio Grade Requirement

Students must achieve a minimum average of B– in the core sequence in order to enter the 7000-level studio sequence. Students who do not fulfill this requirement may be permitted to repeat LANDARCH 6110 Landscape Architecture Design Studio III or LANDARCH 6120 Landscape Architecture Design Studio IV. If a student still fails to meet the B– average after taking an additional 6000-level studio, they will be dismissed from the Master of Landscape Architecture program.

The option to repeat a studio is contingent on a student having met the requirements of Academic Probation. A suspension or dismissal resulting from the Academic Probation policy takes precedence over this Studio Grade Requirement policy.

Courses

For a list of available courses, please refer to the Courses (p. 41) section of the Graduate School of Architecture & Urban Design in this *Bulletin*.

Master of Urban Design

Students with a professional or pre-professional degree or the equivalent in architecture, urban planning, or landscape architecture may apply for admission to this program, which leads to the Master of Urban Design (MUD) degree. This degree is awarded upon completion of a three-term graduate curriculum devoted to urban design.

The program leads to a STEM-designated Master of Urban Design degree with an emphasis on the physical design of the built environment, including issues of environmental sustainability and social justice.

The Master of Urban Design degree can be combined with study in other degree programs at Washington University, including architecture, landscape architecture, public health, and social work. To learn more, visit the Dual Degrees webpage.

These combined programs are of particular value to those who want to pursue an interdisciplinary approach to architecture and urban design and to prepare for a wide array of diverse career opportunities.

Website: <https://samfoxschool.washu.edu/academics/college-of-architecture/master-of-urban-design>

Faculty

Chair

Linda C. Samuels, RA, PhD
PhD, University of California, Los Angeles

For a list of faculty members, please refer to the Architecture faculty page (p. 40).

Degree Requirements

Candidates for a Master of Urban Design (MUD) degree are required to complete a total of 42 credits. Coursework covers the history and theory of urban form; urban sustainability; morphology and metabolism of urban form; basic tenets of urban planning; ecological systems; infrastructural urbanism; spatial justice; and community-engaged design. Coursework is spread over the fall, spring, and summer semesters. In addition to required seminars, three urban design studios (including an immersive international travel studio) and a fall and spring workshop (the latter being a one-week field trip) are required.



Students in the class of 2027 and beyond must fulfill the following degree requirements. For past requirements, consult Prior Bulletins (p. 8).

Requirements: 42 Credits

Code	Title	Units
Fall		
URBDES 6150	Informal Cities Workshop	1
URBDES 6210	Metropolitan Urbanism	3
URBDES 6220	Metropolitan Development	3
URBDES 7011	Elements of Urban Design	6
Elective	Any course tagged GA MUD Track	3
Spring		
URBDES 6160	Lively City: Behavioral Studies & Public Space Design	2
URBDES 6230	Metropolitan Sustainability	3
URBDES 7013	Metropolitan Design Elements	6
Elective	Any course tagged GA MUD Track	3
Elective	Any course tagged GA MUD Track	3
Summer		
URBDES 6990	Urban Design Research Theories & Methods	3
URBDES 7014	Global Urbanism Studio	6
Total Units		42

The studio sequence begins with a community-focused project in St. Louis, next investigates a growing North American city (such as Los Angeles, New York, or Atlanta) through systems-based thinking and design, and culminates in the required Global Urbanism Studio: an immersive study abroad experience in collaboration with global design and sustainability experts. Each year, the Global Urbanism studio is sited in a fast-growing city to study in depth and compare and contrast with other relevant global cities. These selected cities are marked by an active culture and a lively arts and design scene; their urban fabric is challenged by rapid growth, environmental stresses, social complexity, and the need for creative responses to the changing global climate. Recent studios have been located in Mexico City, Bangkok, Shanghai, Singapore, Tokyo, Johannesburg, and Dubai. This studio typically begins with two to three weeks of research and study, followed by five to eight weeks immersed in the selected cities — living, researching, observing, and designing. A concurrent research methods course teaches students how to conduct rigorous, thoughtful, and independent research on cities under social and environmental pressures.

The summer Global Urbanism studio builds upon the required fall workshop, focused on the study of informal cities, and the immersive spring break Lively City course in places such as Copenhagen, London, or Miami, focused on public space research and design. This sequence is intended to prepare students for a rapidly urbanizing world in which they will be developing projects with different relevant strategies and

design approaches for cities that have hybrid conditions of formal and informal urbanism and varying social and environmental design challenges. This studio is further supported by lectures on the history and theory of global urbanism, as well as a robust visiting international guest lecturer program that provides valuable local insight into the cultural, artistic, and social conditions of the city.

Master of Urban Design Studio Grade Requirement

A MUD student wishing to take the summer urban design studio (URBDES 7014 Global Urbanism Studio) must have earned a minimum average grade of B- or better in the first two urban design studios (URBDES 7011 Elements of Urban Design and URBDES 7013 Metropolitan Design Elements). Students who do not fulfill this minimum requirement must repeat URBDES 7011 Elements of Urban Design and/or URBDES 7013 Metropolitan Design Elements. If a student has not fulfilled this minimum requirement after repeating URBDES 7011 Elements of Urban Design and/or URBDES 7013 Metropolitan Design Elements, they will be dismissed from the Master of Urban Design program.

The option to repeat a studio is contingent on a student having met the requirements of Academic Probation. A suspension or dismissal that is a result of the Academic Probation policy takes precedence over this Studio Grade Requirement policy.

Master of Urban Design Combined Degree Programs

The MUD program offers a series of combined degree programs, including the following:

- Combined Degrees in the Sam Fox School of Design & Visual Arts
 - MUD/Master of Architecture (p. 79)
 - MUD/Master of Landscape Architecture (p. 79)
- Combined Degrees With Other Schools at Washington University
 - MUD/Master of Social Work (p. 79)

These combined degree programs are of particular value to those who want to pursue an interdisciplinary approach to architecture and urban design. They prepare the student for a wide array of diverse career opportunities.

Courses

For a list of available courses, please refer to the Courses (p. 41) section of the Graduate School of Architecture & Urban Design in this *Bulletin*.



MS in Advanced Architectural Design

This 36-credit, three-semester program leads to a post-professional Master of Science in Advanced Architectural Design (MSAAD) degree. The program allows individuals to pursue advanced design studies, research, and teaching preparation.

Individualized schedules for students are varied and include an advanced design studio each semester.

Anyone who holds a BArch or MArch degree from a National Architectural Accrediting Board-accredited degree program in the United States or Canada may apply. Applicants who do not have this required background should apply to our MArch program.

Students must fulfill the following degree requirements.

Requirements: 36 Credits

Code	Title	Units
ARCH 6020	Architectural Design V	6
ARCH 6030	Architectural Design VI	6
ARCH 7010	Architectural Design VII	6
General electives	Courses at the 3000-level or above (excluding CAPS)	18
Total Units		36

Website: <https://samfoxschool.washu.edu/academics/college-of-architecture/master-of-science-in-advanced-architectural-design>

MS in Architectural Studies

This 30-credit, two-semester program provides the opportunity for students to engage in a research specialization or focus beyond that possible within the professional degree programs. Two areas of study are currently available: Architectural Pedagogy and the History and Culture of Architecture.

The Master of Science in Architectural Studies (MSAS) program is open to students with an undergraduate degree in architecture and students enrolled in another degree program in the Graduate School of Architecture & Urban Design. Academic advisors help students craft a unique curriculum that builds toward individual research goals

culminating in a thesis project. Students take courses within the Sam Fox School and across the university, allowing them to construct a broad foundation for their research. The thesis project allows for research on a wide variety of topics in architectural pedagogy, history, and theory, and it is the apex of the program.

Admission requires an application that includes a portfolio, transcripts, a statement of purpose with a specific research focus for the proposed program of study, and three letters of recommendation. Admission to the program requires a faculty member to accept responsibility as the academic advisor to supervise the proposed coursework and thesis. If pursuing the MSAS alongside another degree in the Graduate School of Architecture & Urban Design, the degrees are conferred simultaneously when the requirements for both programs have been met.

Students must fulfill the following degree requirements.

Requirements: 30 Credits

Requirements	Units
Thesis Research (ARCH 7610)	3
Thesis (ARCH 7615)	6
Seminars, directed research, and independent study*	21
Total Units	30

* A maximum of 15 units can be "double counted" for both the MArch, MLA, or MUD program and the MSAS program. Decisions regarding course credit to be "double counted" will be made by the academic advisor. All coursework must be at the 3000-level or above and cannot be taken from WashU Continuing & Professional Studies (CAPS).

Website: <https://samfoxschool.washu.edu/academics/college-of-architecture/master-of-science-in-architectural-studies>

Dual Degree: MArch/MPH

This program fulfills the requirements of two professional degrees: the **Master of Architecture** (MArch) and the **Master of Public Health** (MPH). This partnership between the Sam Fox School and the Brown School prepares graduate architecture and public health students to understand the built environment through a public health lens.

Similar in mission, architects and public health professionals are responsive to the needs and societal changes impacting communities, institutions, and individuals by transforming communities at the intersection of complex public health issues and the built environment. The built environment is a key factor in public health outcomes,

including injury prevention, obesity, climate change and natural disasters. Architects are looking at new ways to enhance health as they design environments that promote physical, mental and social well-being through buildings, neighborhoods and cities.

The MArch/MPH program requires 139 units for those entering the three-year MArch program (i.e., those without a Bachelor of Science in architecture) and 109 units for those admitted to the two-year MArch program.

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees>

Dual Degree: MBA/MArch

Offered in conjunction with Washington University's Olin Business School, this dual-degree program prepares architects to be both thoughtful designers and effective managers and developers by combining the **Master of Architecture** (MArch) degree with the **Master of Business Administration** (MBA) degree. Career opportunities that stem from this dual-degree arrangement can be found in the architecture, business and development professions as well as in community development and planning, housing development and public policy. Students may start their initial year in either school.

Students entering the MArch 2 program who have also been admitted to the MBA program will need three to four years of graduate work to complete the MArch/MBA dual-degree program. The requirements and duration of study for students admitted to other MArch programs are determined on a case-by-case basis.

For more information, contact Olin Business School:

Director of Admissions
Olin Business School
Washington University in St. Louis
CB 1133
One Brookings Drive
St. Louis, MO 63130
Phone: 314-935-7301 or 1-888-622-5115 (in the continental U.S.)
Email the Olin MBA program (mba@olin.wustl.edu)
Olin Business School website

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees/march-mba/>

Dual Degree: MCM/MArch

The **Master of Construction Management/Master of Architecture** (MCM/MArch) dual degree program prepares architectural students for the diverse roles within today's multidisciplinary design/construction process. The curriculum incorporates traditional construction themes with multidisciplinary topics such as business, finance and law. Lectures and labs provide students with an environment for practical application utilizing best practices that address current issues and developments in the industry. The MCM degree focuses on enhancing the student's technical, management and leadership capabilities through specialized courses featuring comprehensive and authentic case studies and projects. The course of study is designed to provide a focused, intensive examination of critical issues within construction management.

In addition to the regular MCM curriculum, the MCM/MArch dual degree program includes a unique course: the MCM/MArch Capstone Project. In this course, students apply constructability principles — cost, time, risk, value, quality management, methods and systems — to their final MCM degree project.

The MCM program requires 30 units of study, in addition to any prerequisite work that may be required. Some of the 30-unit requirement or prerequisite course work may be met through courses taken in the MArch program.

To enroll in the dual degree program, students already enrolled in the MArch program must complete the necessary MCM application procedures and meet with Steve Bannes, Director of Graduate Studies in Construction Management.

Enrollment in construction management courses is limited to one course per semester for all students who have not yet completed their architecture degree. Students who do not intend to pursue the dual degree but who take courses in the construction management program may be charged additional tuition for those courses.

Questions concerning the *MArch portion* of this program should be addressed to Chandler Ahrens, Student Advisor, MCM/MArch program, at cahrens@samfox.wustl.edu.

Questions concerning the *MCM portion* of this program should be addressed to Lisa Peppers, Assistant Director of Academic & Student Services, Graduate Studies in Construction Management, at peppers@wustl.edu.

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees/march-mcm>



Dual Degree: MLA/MArch

This dual-degree program fulfills the requirements of two professional degrees: the **Master of Architecture** (MArch) and the **Master of Landscape Architecture** (MLA). Students engaged in the dual curriculum will significantly expand their general design culture by interweaving courses in landscape and architecture. They will understand design as a systemic enterprise, and they will acquire the skills needed to operate across disciplines and scales. Students must be admitted to both programs in order to pursue a dual MLA/MArch degree.

The length of study is dependent upon the MArch and MLA programs in which the student is enrolled.

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees>

Dual Degree: MLA/MUD

This dual degree program fulfills the requirements of the **Master of Landscape Architecture** (MLA) and the **Master of Urban Design** (MUD). Students must be admitted to both the MLA program and the MUD program in order to pursue this dual degree.

The length of study is dependent upon the MUD and MLA programs in which the student is enrolled. Typically, students with no prior design degree will need 3.5 years to complete the dual MLA/MUD degree. Students in the MLA 2 program will need 3 years to complete the dual MLA/MUD degree.

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees>

Dual Degree: MSW/MArch or MSW/MUD

The Sam Fox School's Graduate School of Architecture & Urban Design and the Brown School offer a unique dual degree program for students who already have a Bachelor of Science in architecture (although those with other degrees/majors who are willing to pursue a longer program of study may do so) as well as for social work students who want to increase their awareness of the role of physical environs in the welfare of their clientele.

This program links the concerns of physical design with those of social welfare and practice. The intent of the program is to educate and prepare architects and urban designers to understand the built and urban environments through the lens of social work values and to be responsive to the emotional, social, and physical needs of individuals, families and communities. The dual degree opens career opportunities in community development and planning, housing rehabilitation and residential design for populations at risk, such as people who are developmentally disabled, elderly or economically disadvantaged.

Students entering the **Master of Architecture** (MArch 2) program who also have been admitted to the **Master of Social Work** (MSW) program will need three and a half to four academic years of study split between the Graduate School of Architecture & Urban Design and the Brown School. Students admitted into the **Master of Urban Design** (MUD) and **Master of Social Work** (MSW) program spend a minimum of two semesters in the Graduate School of Architecture & Urban Design completing the MUD requirements and four semesters in the Brown School completing the MSW requirements. For both the MArch/MSW and MUD/MSW dual-degree programs, students may start their initial year in either school.

For more information, contact the Brown School:

Office of Admissions & Recruitment
The Brown School
Washington University in St. Louis
MSC 1196-251-46
One Brookings Drive
St. Louis, MO 63130
Phone: 314-935-6676
Email Brown School admissions (brownadmissions@wustl.edu)

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees/march-mud-msw>

Dual Degree: MUD/MArch

This dual degree program prepares architects to be cognizant of the larger urban context of architectural practice and to extend their expertise into another discipline. Students entering the MUD/MArch program complete a substantial portion of the design studios for the **Master of Architecture** (MArch) prior to completing the **Master of Urban Design** (MUD) studios, which are then followed by the MArch Degree Project. Other course requirements in urban design theory are typically spread out over the entire study period. The length of study is dependent upon the MArch program (MArch 3 or MArch 2) in which the student is enrolled, but participation in the MUD/MArch program typically adds an additional semester and summer to the student's curriculum.

Website: <https://samfoxschool.wustl.edu/academics/college-of-architecture/dual-and-joint-degrees>

Degrees Offered

Master's Degrees

- Master of Architecture: MArch 3 (p. 69) (six semesters)
- Master of Architecture: MArch 2 (p. 71) (four semesters)
- Master of Landscape Architecture (p. 73)
- Master of Urban Design (p. 75)
- MS in Advanced Architectural Design (p. 77) (three semesters)
- MS in Architectural Studies (p. 77) (30 credits)

Dual Degrees

- Master of Architecture/Master of Public Health (p. 77) (MArch/MPH)
- Master of Business Administration/Master of Architecture (p. 78) (MBA/MArch)
- Master of Construction Management/Master of Architecture (p. 78) (MCM/MArch)
- Master of Landscape Architecture/Master of Architecture (p. 79) (MLA/MArch)
- Master of Landscape Architecture/Master of Urban Design (p. 79) (MLA/MUD)
- Master of Social Work/Master of Architecture (p. 79) (MSW/MArch)
- Master of Social Work/Master of Urban Design (p. 79) (MSW/MUD)
- Master of Urban Design/Master of Architecture (p. 79) (MUD/MArch)

Administration

Aki Ishida

Director, College of Architecture and Graduate School of Architecture & Urban Design
Sam and Marilyn Fox Professor
MSAAD, Columbia University

Chandler Ahrens

Chair, Graduate Architecture
Associate Professor
MArch, University of California, Los Angeles

Derek Hoeferlin

Chair, Landscape Architecture
Raymond E. Maritz Professor of Architecture
MArch, Yale University

Linda C. Samuels

Chair, Urban Design
Director, Sustainable Design and Environmental Justice
Professor
PhD, University of California, Los Angeles

Admission Procedures

Application Guidelines

Application guidelines and instructions for all Sam Fox School graduate degree programs are available on the Graduate Admissions website. Applications are accepted for fall entry only.

Non-Discrimination Policy

Washington University encourages and gives full consideration to all applicants for admission, financial aid, and employment. The university does not discriminate in access to, treatment in, or employment in its programs and activities on the basis of race, color, age, religion, sex, sexual orientation, gender identity or expression, national origin, veteran status, disability, or genetic information.

Criteria for Eligibility

Master of Architecture (MArch)

- Bachelor's degree in architecture or equivalent academic preparation with a minimum GPA of 3.0.
- Satisfactory completion of one course in college calculus and one course in college physics.
- GRE scores are *not* required.
- Advanced placement: Applicants with a background in architecture are considered for advanced placement based on design portfolio evaluation and the extent of their previous architectural studies. To be considered for advanced placement, students must have completed an Architectural History course that covers the following topics: Greco Roman Classicism, European Middle Ages, Renaissance + Baroque, and 18th/19th century Neoclassicism and the Industrial Revolution. Advanced placement leads to a two-year course of study for qualified applicants.

Master of Landscape Architecture (MLA)

- Bachelor's degree in landscape architecture or equivalent academic preparation with a minimum GPA of 3.0.
- GRE scores are *not* required.
- Advanced placement: Applicants with a background in architecture or landscape architecture are considered for advanced placement based on design portfolio evaluation and the extent of their previous relevant studies. Advanced placement leads to a two-year course of study for qualified applicants.



Master of Urban Design (MUD)

- Completed professional or pre-professional degree in architecture, landscape architecture, or planning with demonstrated ability in spatial design and visual, analytical, and critical thinking.
- Minimum GPA of 3.0.
- GRE scores are *not* required.

Master of Science in Advanced Architectural Design (MSAAD)

- Bachelor of Architecture (BArch) degree or a Master of Architecture (MArch) degree from an NAAB-accredited degree program in the United States or its international equivalent.
- Minimum GPA of 3.0.
- GRE scores are *not* required.

Master of Science in Architectural Studies (MSAS)

- Completed undergraduate or graduate degree in architecture or current enrollment in another graduate-level architecture program within the Graduate School of Architecture & Urban Design.
- Minimum GPA of 3.0.
- GRE scores are *not* required.

Dual Degree Programs

- Dual degree candidates for programs fully within the Graduate School of Architecture & Urban Design must fulfill the eligibility requirements for each program comprising the dual degree.
- For a dual degree that combine studies with a program outside of the Graduate School of Architecture & Urban Design, candidates must fulfill the eligibility requirements for each program and be admitted separately into both programs.

Application Materials

Admissions decisions are based on a thorough review of all application materials. Application materials may be submitted over time. However, all parts of the application, with the exception of the letters of recommendation, must be received by the application deadline. No applicant will be offered admission into a Graduate School of Architecture & Urban Design program until all required materials have been received.

Master of Architecture (MArch)

- Resume or curriculum vitae
- Transcripts from all previous higher education institutions attended
- Two personal essays addressing the application prompts

- Portfolio demonstrating architecture, design, or visual art work
- Three references
- English language proficiency test scores (if applicable)

Master of Landscape Architecture (MLA)

- Resume or curriculum vitae
- Transcripts from all previous higher education institutions attended
- Two personal essays addressing the application prompts
- Portfolio demonstrating architecture, design, or visual art work
- Three references
- English language proficiency test scores (if applicable)

Master of Urban Design (MUD)

- Resume or curriculum vitae
- Transcripts from all previous higher education institutions attended
- Two personal essays addressing the application prompts
- Portfolio demonstrating architecture, design, or visual art work
- Three references
- English language proficiency test scores (if applicable)

Master of Science in Advanced Architectural Design (MSAAD)

- Resume or curriculum vitae
- Transcripts from all previous higher education institutions attended
- Two personal essays addressing the application prompts
- Portfolio demonstrating architecture, design, or visual art work
- Three references
- English language proficiency test scores (if applicable)

Master of Science in Architectural Studies (MSAS)

- Resume or curriculum vitae
- Transcripts from all previous higher education institutions attended
- Statement of purpose with a specific research focus for the proposed program of study
- Portfolio demonstrating architecture, design, or visual art work
- Three references
- English language proficiency test scores (if applicable)

Dual Degree Programs

- Within the Graduate School of Architecture & Urban Design, three dual degree options are available:
 - Master of Architecture + Master of Urban Design
 - Master of Architecture + Master of Landscape Architecture
 - Master of Landscape Architecture + Master of Urban Design
- Dual degree candidates submit one application with one set of application materials addressing the candidate's potential for accomplishment in further study in both programs.

Dual Degree Programs: Combined Studies

- Dual degree programs are also offered in conjunction with other divisions of WashU, including Business Administration (MBA), Construction Management (MCM), Social Work (MSW), and Public Health (MPH).
- Dual degree candidates for combined studies must submit applications to both programs and be granted admission to each program. Application materials for the architecture and urban design applications are outlined above.

International Student Admissions

Applicants to any graduate program within the Graduate School of Architecture & Urban Design for whom English is not the native language must provide verification that they have sufficient English language proficiency to succeed in the academic program. Options and procedures for demonstrating English language proficiency are outlined in detail on the WashU Office for International Students & Scholars webpage.

Phone: 314-935-2740
Email: samfoxgradadmissions@wustl.edu
Website: <https://samfoxschool.washu.edu/admissions#graduate>

Policies

Policies & Guidelines

Academic Honors and Awards

- *Graduate Honors.* Graduate honors may be awarded to students receiving the Master of Architecture, Master of Landscape Architecture, or Master of Urban Design degree as determined by academic performance. Such students will receive the degree "with honors."
- *American Institute of Architects (AIA) Medal.* Each year, the American Institute of Architects (AIA) Medal is awarded to a member of the graduating Master of Architecture class in recognition of scholastic achievement, character and promise of professional ability. The graduate student so honored receives an engraved medal.
- *Association of Licensed Architects Student Merit Award.* The Association of Licensed Architects (ALA) presents this award to acknowledge a student, chosen by the director of Architecture, who has exhibited exemplary achievement throughout their academic tenure.
- *Alpha Rho Chi Medal.* Alpha Rho Chi, a national social fraternity in architecture, awards a medal to a graduating sixth-year student who has shown an ability for leadership, performed willing service for the Graduate School of Architecture & Urban Design, and demonstrated promise of real professional merit.
- *Degree Project Book Award.* Each Degree Project faculty selects one student to be recognized for achievement in the studio.
- *Excellence in Craft Award.* This award is given to a member of the graduating class, either undergraduate or graduate, to recognize outstanding achievement in craft.
- *Faculty Book Awards.* These awards are given for recognized achievement in individual programs as voted on by the faculty.
- *Frederick Widmann Prize.* In honor of Frederick Widmann, architect and philanthropist, one graduating member from each undergraduate and graduate class is selected based on merit in design.
- *Hugh Ferriss Award for Architectural Drawing.* This award honors Hugh Ferriss (Washington University in St. Louis class of 1911 and Honorable Master of Architecture in 1928), a distinguished architect and renderer. A book award is given to a graduating student, either undergraduate or graduate, who has excelled in architectural drawing in any medium.
- *James Walter Fitzgibbon Prize.* Mrs. James Fitzgibbon and friends of the family established a fund to honor Professor Fitzgibbon's memory and to recall his long and distinguished service on the faculty of Architecture. The annual income from this fund provides for the Fitzgibbon Prize, given to a 3000- to 7000-level student who has the winning solution to a one-day sketch problem.



- *St. Louis Community Partnership Award.* This award is given to one graduating student in recognition of their deep and reciprocal relationships and partnerships in the St. Louis Community.
- *Civic Engagement Award.* This award is given to one graduating student to recognize deep engagement with systemic social, economic, and/or environmental issues through their work and efforts.
- *William Tao Prize.* Established by William K.Y. Tao (PE, alumnus, emeritus trustee and affiliate professor at Washington University), the William Tao Prize provides an award to a graduating graduate student who has demonstrated excellence in the understanding and application of building systems in architecture, including illumination, electrical and mechanical engineering, and energy-efficient design.

Academic Integrity

Students and members of the faculty of the university have an obligation to uphold the highest standards of scholarship. Plagiarism and other forms of cheating will not be tolerated. When the student has violated the integrity of the academic community, an instructor may recommend that the student be brought before the Committee on Academic Integrity. A list of university policies can be found on the website of the University Registrar.

Academic Probation and Dismissal

A master's student in the Graduate School of Architecture & Urban Design will be placed on academic probation under any of the following circumstances:

- The student has a cumulative GPA below 2.70.
- The student has a semester GPA below 2.50.
- The student receives a studio grade below B–.
- The student fails to make Satisfactory Academic Progress (SAP) as outlined below.

This policy applies to any semester, including summer, in which a student is enrolled in either a studio or at least 9 units.

Students on academic probation must successfully complete all courses for which they are enrolled *and* earn a semester GPA of at least 2.70. Successful completion is defined as follows:

- The student must earn a B– or above in studio courses.
- The student must earn a C– or above in all non-studio courses.
- Incomplete (I) and withdrawal (W) grades after the drop deadline are *not* considered successful completion.

Additional academic expectations will be determined on an individual basis by the chair of the student's program. A student on academic probation who fails to meet the minimum established academic expectations will be suspended and may be dismissed by Faculty Committee.

A student will be removed from academic probation when all of the following criteria are met:

- The student has raised their cumulative GPA above 2.70.
- The student has raised their cumulative studio GPA above 2.70.
- The student has no outstanding Incomplete grades.
- The student has successfully retaken and passed all courses for which non-passing grades were previously received.

Adjustment of Admission Placement

The duration of graduate study varies according to prior preparation and course work in architecture as well as the quality and complexity of work in an applicant's portfolio. The Graduate School of Architecture & Urban Design reserves the right to place students at the level the Admissions Committee deems appropriate on the basis of portfolio evaluation, transcript evaluation, and overall preparation for the intensity of the design curriculum. Advanced placement is highly selective. Appeals to placement must be completed before the end of pre-semester course work.

Applying for Program Completion

Students are responsible for applying for program completion in Workday in order to have the degree conferred. No degree will be awarded if this task has not been completed by the appropriate deadlines. Students who do not complete their degree requirements by their intended graduation date must reapply for the next graduation date.

Attendance

Regular attendance at all classes and studio meetings is expected. The instructor of each course is allowed to decide how many absences a student may have and still pass the course. Instructors are expected to give reasonable consideration to unavoidable absences and to the feasibility of making up work that has been missed. Students are expected to explain to their faculty the reasons for any absences and to discuss with them the possibility of making up missed assignments.

Course Enrollment Minimums

Each course must have a minimum enrollment of eight students or it will be canceled.

Credits and Grades

Credits are assigned to courses based on measures of time in class and academic activities, and engagement between instructors and students, defined in university policy (p. 17). Grade points per course are calculated by multiplying the number of units of a course by the grade points earned. The Undergraduate Study page details the grades and grade points in use.

Minimum Grade Requirement

Students in the Graduate School of Architecture & Urban Design must complete all required courses with a grade of C– or better. This includes required History & Theory, Urban Issues, Urban Design, and Ecological Systems electives.

Students who receive grades lower than a C– in a required course or studio may be required to take a leave of absence before being allowed to return to repeat the course or studio during the following academic year.

Studios may have particular requirements. Students should refer to the studio grade requirements for their individual program.

Minimum Grade Point Average

Master's students in the Graduate School of Architecture & Urban Design are required to have a minimum grade point average of 2.7 to graduate.

Pass/No Pass Option

Students in the Graduate School of Architecture & Urban Design may take one nonrequired course on a pass/fail basis each semester. Required courses — including History & Theory, Urban Issues, Urban Design, and Ecological Systems electives — do not count toward degree requirements if taken Pass/No Pass.

Incomplete Grades

Students who, following the last day for withdrawal from courses, experience medical or personal problems that make the satisfactory completion of course work unlikely may request a grade of I (incomplete). Students in this situation must take the following steps:

1. Contact the instructor before the final review, critique or exam to discuss the request.
2. If the instructor consents, confirm a due date for outstanding work.

The instructor is under no obligation to award a grade of I (incomplete).

Incomplete grades in all architectural design studios must be removed by the first day of classes of the following semester. Failure to remove the I (incomplete) grade will prevent the student from continuing in another architectural design studio.

In all other courses, the grade of I (incomplete) must be removed no later than 120 days after the final grade deadline. Upon failure to make up an incomplete grade within 120 days, the student will automatically receive an F in the course. Students will not be allowed to continue in courses that require prerequisites if the prerequisite has a grade of I (incomplete). A student who carries more than 9 units of grades of I (incomplete) may be declared ineligible to re-enroll.

F grades for a semester may be changed only through the last day of classes of the following semester.

Repeating a Course

Most courses are designed to be completed once, and credit may only be earned once. A student may retake such a course if a higher grade is required, for example if the initial final grade is below that required to apply to major requirements. Students may not register themselves for another instance of a course in which the initial final grade is a B or higher, an incomplete, a successful audit, or a Pass. For a student retaking a course, credit is only given once and both grades earned remain on the record, but only the higher grade is used to compute the grade point average. An R notation is added to identify the retaken course.

Some courses are eligible to be repeated, such as internship or thesis. Students eligible to take them may register themselves for additional instances.

Independent Study

Opportunities for independent study are available to graduate students. Registration in an independent study requires the student to submit a written proposal and to obtain the approval of the sponsoring faculty, advisor, and program chair. Approved proposals must be submitted to the Sam Fox Office of Curriculum and Academic Operations by the semester course add deadline. Proposals received after the deadline will not be considered.

A maximum of 3 units can be taken per semester. Independent study cannot replace architectural design studios or other required courses.

A maximum of 9 units may be applied to degree requirements from the following areas: physical education, lessons, and/or independent studies.

Curricular Practical Training (CPT)

Students in the Graduate School of Architecture & Urban Design may only participate in CPT internships during the summer. CPT internships will not be approved during the fall and spring semesters.

Students participating in CPT must be enrolled in ARCH 5990 Training and Development in Practice. Enrolled students pay 0.5 credit tuition for the course. Students who receive a failing grade are not eligible to participate in CPT during subsequent summers.



Units earned for ARCH 5990 Training and Development in Practice will not be counted toward the total necessary for the completion of any degree.

Students interested in registering for CPT should contact the Office for International Students and Scholars (OISS) and the Sam Fox Office of Curriculum and Academic Operations.

Electives

In order to count as elective credit in the Graduate School of Architecture & Urban Design for master's programs, a course must be at the 3000 level or higher.

Students in the Graduate School of Architecture & Urban Design are not permitted to enroll in WashU Continuing & Professional Studies (CAPS) courses.

Graduate students may not register for Construction Management courses in the McKelvey School of Engineering Sever Institute unless they have been admitted to the Master of Construction Management (MCM/MArch) dual degree program. The only exception is CNST 5573 Fundamentals in Construction Management, which can be taken as an elective by any student in the Graduate School of Architecture & Urban Design. Students who enroll in Construction Management courses without admission to the MCM program will be assessed additional tuition for these courses.

Before registering for an MBA course, students must submit a "Request for Non-MBA Student to Take an MBA Course" form to the Olin Business School.

English Language Support Courses

All incoming international students will be automatically enrolled in English Language Support courses that meet during the summer before programs begin. During the first week of the fall semester, students will be reviewed for eligibility to waive further English Language Support courses. Any student who needs continued support will be enrolled in additional workshops. These courses are required, but they do not count toward degree requirements. These courses are free of charge to the student; however, any student who withdraws from or fails a needed course will be billed additional tuition.

Enrollment Status

Definitions of *full-time study*, *half-time study*, and so on are based on federal regulations. Enrollment status impacts eligibility for campus services as well as Washington University's reporting obligations. Alignment with policies in financial aid, international student services, student health insurance, VA benefits, and athletics is critical.

Washington University's definition for full-time graduate study is at least 9 credit-bearing units (semester hours) per term. Units taken under the audit grade option do not factor into enrollment status calculations, so they cannot count toward the 9 units required for full-time enrollment.

Grievance Procedures

The dynamic and creative studio culture at the heart of the Sam Fox School strives to be safe and inclusive for all members of our community. Our faculty, staff, and students join together in their commitment to creating learning environments of mutuality and respect. When concerns or disagreements arise about conduct, grading, or other matters in the Colleges of Art and Architecture, policies exist for pursuing proper resolution.

Grade Dispute Policy

The Sam Fox School aims to provide each student with a fair assessment of their academic work and studio. Students have the right to dispute their overall course grade (not individual assignments) if they believe that grade does not accurately reflect the quality of their work. A grade dispute must be submitted to the faculty member who assigned the grade within 30 days of receipt of the grade. The Sam Fox School stresses that every effort to resolve such a dispute be made by the faculty and student involved. A student's eligibility for advancement in sequential course work requires timely resolution of the grade dispute. If the student is a graduation candidate, the dispute process must comply with the Intent to Graduate submission deadlines set forth by the Office of the University Registrar or else the degree conferral will be delayed by one semester or until resolved.

In general, the dispute process will occur and be resolved as follows:

1. The student presents their question about the grade in writing to the faculty member and clearly states the reasons for questioning the grade.
2. The faculty member and the student review the grading procedures as stated in syllabus and discuss the determining factors of the student's grade.
3. If the case is not resolved between the student and the faculty member, the student may put forth their complaint in writing with supporting evidence to the chair of the academic program, with a copy given to the faculty member involved with the dispute. The student should provide all of the course syllabus and materials relevant to the assigned grade within two weeks of the complaint. If a conflict of interest exists between the student and the chair (e.g., the chair is teaching the course), the case will be referred to another chair in the Sam Fox School or to the director of the College.
4. The chair of the academic program will review the materials. The chair will resolve the dispute by working with the faculty member and the student to arrive at a determination.

Integrity and Ethical Conduct

Washington University and Sam Fox School of Design and Visual Arts are committed to the highest ethical and professional standards of conduct and consider these to be integral to their mission of the promotion of learning. To maintain these standards, the university relies on each community member's ethical behavior, honesty, integrity, and good judgment. Each community member should demonstrate respect for the rights of others, and each community member is accountable for their own actions.

Washington University policies state that members of the university community can expect to be free from discrimination and harassment. Students, faculty, staff, and outside organizations working on campus are required to abide by specific policies prohibiting harassment, which are posted on the Compliance and Policies page of the university's website.

Should a situation arise in which a member of our community believes they have cause to file a grievance, there are two categories of grievance to consider: academic and non-academic. Academic grievances can either be when a student challenges a course grade or when a fellow student or faculty member feels a matter of academic integrity is at issue.

Student grievances filed to challenge a grade that the student feels has been given incorrectly must follow the procedures outlined in the Grade Dispute Policy above.

Academic integrity grievances are made when a faculty member or fellow student feels a student has compromised the environment of honesty and ethics in the school. Academic integrity infractions follow the procedures laid out in the Sam Fox School and University policies and are managed in the Sam Fox School by the Academic Integrity Officer. Please refer to Washington University's Academic Integrity Statement for additional information.

Non-Academic Concerns

If a member of our academic community feels that the ethical and safe environment of the classroom has been compromised, for whatever reason, they may seek guidance through the school's Faculty-Student Mediator. Students may also consult Washington University's Grievance Policy and Procedures for Allegations by Undergraduate Students Against Faculty. In addition, University Resources available for support include the following:

- Title IX (for issues related to discrimination, sexual harassment, and sexual violence)
- Mental health concerns (Student Health Center)
- Drug and alcohol concerns (Student Health Center)
- Immediate physical/mental health concerns (Washington University Police Department)
- Center for Diversity & Inclusion (for issues related to bias, prejudice, or discrimination)

Leaves of Absence

Graduate students in the Sam Fox School may request a voluntary leave of absence for up to one year (or two semesters) when individual professional, medical, or personal circumstances warrant it. Petitions are reviewed and approved by the student's program chair/director. Any requests extending beyond one year will be reviewed on a case-by-case basis.

Students must submit a written request for a leave of absence *no later* than three weeks prior to the start of the upcoming semester. There is no guarantee that requests received after the deadline will be reviewed.

In the case of a medical leave of absence (MLOA), a medical recommendation is required from the Student Health Center before a student will be permitted to take an MLOA and before returning from an MLOA. Additional policy information, MLOA request forms, and MLOA reinstatement forms are available on the MLOA page of the Student Affairs website.

International students requesting a leave of absence must contact their Office for International Students and Scholars (OISS) advisor to discuss how the leave might affect their visa status.

Students returning from a leave of absence must submit a request for reinstatement at least six weeks prior to the desired semester of return. Withdrawn students requesting readmission must submit a written request and an updated portfolio by the same deadlines.

If a student decides to take a leave of absence without first having received approval, they will be considered withdrawn from Washington University. If a withdrawn student wishes to return within one year, they must submit an official request for readmission to the appropriate program chair/director. Students who are withdrawn from the university for longer than one year must submit an updated portfolio to be reconsidered for admission.

Students who are on a leave of absence for medical, mental health, academic, family, personal or any other reason are not eligible to participate in a registered student group, hold a student group leadership position, or attend/plan a student group sponsored event as a representative of said student group. Depending on the type of leave and any corresponding policy restrictions, students on a leave of absence may or may not be able to attend campus-wide events as a guest of a current Washington University student.

Minimum and Maximum Course Loads

Master of Architecture students are permitted to enroll in a maximum of 21 credits in a semester. All other graduate students in the Graduate School of Architecture & Urban Design are permitted to enroll in a maximum of 18 credits in a semester.



An enrollment above 21 units will be charged at the established university rate per additional unit and must be approved by the director or graduate program chair. Required English language courses will not incur additional tuition charges if the student receives a passing grade.

Students must be registered for a minimum of 12 units. Partial load enrollment is possible when circumstances warrant it and requires permission of the director.

Retention of Student Work

The Graduate School of Architecture & Urban Design reserves the right to retain any student work submitted for course credit. Normally this work will be returned to the student at the end of the semester, except that which has been retained for publications, exhibitions, or accreditation reviews. It is highly recommended that students photographically reproduce or electronically store their work in order to keep a record of their work.

Satisfactory Academic Progress

The minimum GPA requirements needed to maintain eligibility for Satisfactory Academic Progress are dictated by the specific program of study. In each case, per the requirements of 34 C.F.R. 668.34(a)(4)(ii), the federal student aid program requires a minimum of a C average to maintain eligibility for aid, but an individual degree or certificate program may have a higher minimum GPA for federal Satisfactory Academic Progress.

Students must proceed at a pace that enables them to finish their degree within the appropriate time limit. All students must maintain a "pace" of $66\frac{2}{3}\%$ (for the number of credits earned divided by the number of credits attempted).

Student Conduct

Students are expected to comply with the rules and regulations of the University. See the University Student Conduct Code and the Graduate School of Architecture & Urban Design Studio Culture Policy (PDF) for more information.

Transfer Credit

The Graduate School of Architecture & Urban Design does not award transfer credit at the graduate level. Instead, graduate students who have already completed part of the professional curriculum at another institution are placed at the appropriate level of the professional curriculum by the Admissions Committee.

Financial Information

Financial Aid

The Sam Fox School of Design & Visual Arts strives to provide financial assistance to as many students as possible. Financial aid packages most often consist of a combination of fellowships or scholarships, teaching and/or technical assistantships, and loan assistance.

An application for financial aid will have no effect on decisions for admission to the Graduate School of Architecture & Urban Design. Financial aid awards, including merit-based scholarships, are identified through the admissions process and are based on separate considerations of academic excellence, architectural ability and financial need. Instructions for applying for financial aid are available on our Financial Aid webpage.

Through the Sam Fox Ambassadors Graduate Fellowship Program, the School will award 10 full-tuition scholarships each year to outstanding candidates for graduate study. Ambassadors will also receive an annual \$1,000 creative activity and research stipend. The tuition waiver and stipend will be renewed annually for Ambassadors in good standing. Ambassadors will be selected from top applicants to the following degree programs: Master of Architecture, Master of Fine Arts in Visual Art, Master of Fine Arts in Illustration & Visual Culture, Master of Landscape Architecture, and Master of Urban Design. Recipients will demonstrate exceptional potential for advanced studies and creative research in their discipline. In addition to the tuition waiver and stipend, Ambassadors will participate in a series of events each year designed to build deep and meaningful connections across disciplines that advance their creative work and scholarship.

A full list of merit-based scholarships and university-wide fellowships is available on the Sam Fox School website.

Fellowship, scholarship, and assistant in instruction awards are renewable for subsequent years of study for students in good standing. Students must reapply for loan assistance each year. Instructions for applying for financial aid are available on our Financial Aid webpage.

Financial Obligations

Washington University reserves the right to change the fees stated or to establish fees at any time without prior written notice. Whenever changes or additions are made, they become effective with the next payment due.

Students are responsible for fulfilling their financial obligations to the university. If a student account becomes overdue, a late payment fee will be assessed, and a hold will be placed on the account. Students with a poor payment history may be restricted from utilizing certain payment options or receiving tuition remission until course credit has been earned. Non-payment of tuition and other expenses due to the university will be cause for exclusion from class or refusal of graduation, further registration, or transfer credit. In addition,

students are liable for any costs associated with the collection of their unpaid bills, including but not limited to collection agency costs, court costs, and legal fees. Past due amounts can also be reported to a credit bureau.

Withdrawals and Refunds

Students wishing to withdraw for any reason from the Graduate School of Architecture & Urban Design before the end of the semester should consult with the program chair. No such withdrawal will be official until the request in writing has been approved and the appropriate changes have been made in the student's record.

A written request for a refund must be submitted to the Sam Fox Office of Curriculum and Academic Operations for consideration. Tuition adjustments will be processed based on information received and according to the schedule below. Materials fees for Graduate School of Architecture & Urban Design courses will not be refunded after the course drop period for the semester.

For any student whose medical condition makes attendance for the balance of the semester impossible or medically inadvisable, the university will make a pro rata refund of tuition as of the date of withdrawal when the date occurs prior to the twelfth week of classes, provided that the condition is verified by the Student Health Center or a private physician. The date of withdrawal may correspond to the date of hospitalization or the date on which the medical condition was determined.

Withdrawal Date	Refund
Within the 1st or 2nd week of classes	100%
Within the 3rd or 4th week of classes	80%
Within the 5th and 6th week of classes	60%
Within the 7th or 8th week of classes	50%
Within the 9th or 10th week of classes	40%
After 10th week of classes	0%

Summer Withdrawals and Refunds

The Sam Fox School reserves the right to cancel a course if it has not enrolled enough students by the first day of class. If a course is canceled, all enrolled students will be notified and dropped from the class, and they will not be charged tuition and fees.

If a course is not canceled, a student may be released from their obligation to pay full tuition and fees by canceling their registration according to the schedule below:

Withdrawal Date	Refund
Prior to the first class meeting	100% tuition + fees
Prior to 15% of published meeting dates	100%
Prior to 30% of published meeting dates	80%
Prior to 45% of published meeting dates	60%
Prior to 60% of published meeting dates	40%
After 61% of published meeting dates	0%

Requests for refunds must be made in writing to the Sam Fox Office of Curriculum and Academic Operations.

Students may drop a summer course without penalty through the 80% tuition refund deadline, and they may withdraw from a course through the 40% tuition refund deadline.

Cross-School Interdisciplinary PhD Programs

There are certain graduate programs that span more than one school at Washington University. Please visit the following pages to learn more about these programs:

- Division of Biology & Biomedical Sciences (p. 89)
- Division of Computational & Data Sciences (p. 102)
- Institute of Materials Science & Engineering (p. 105)

Division of Biology & Biomedical Sciences

The Roy and Diana Vagelos Division of Biology & Biomedical Sciences at Washington University offers exceptional doctoral education at one of the nation's preeminent biomedical research centers. The Division includes 11 doctoral programs:

- Biochemistry, Biophysics, & Structural Biology
- Biomedical Informatics & Data Science
- Cancer Biology
- Computational & Systems Biology
- Developmental, Regenerative, & Stem Cell Biology
- Immunology
- Molecular Cell Biology
- Molecular Genetics & Genomics
- Molecular Microbiology & Microbial Pathogenesis
- Neurosciences
- Plant & Microbial Biosciences

A collaborative, interdisciplinary approach to research and education is a hallmark of Washington University and the Division. As a university-wide consortium, the Division transcends departmental lines and removes traditional boundaries of scientific fields. Faculty and graduate students regularly cross disciplines, devising novel questions and approaches that might otherwise go unexplored. The Division consists of over 700 PhD and MD/PhD students, with more than 700 faculty members from 39 departments.

Washington University in St. Louis provides unique opportunities for translating basic science into practical application. In addition, the Division's associations with internationally prominent local institutions provide exciting opportunities. Students in the biomedical sciences enrich their work with the clinical perspective of our outstanding

medical school; students also benefit from our close affiliation with the internationally renowned Missouri Botanical Garden, as well as the Saint Louis Zoo, the Tyson Research Center, the National Great Rivers Research & Education Center, and the Donald Danforth Plant Science Center.

To help prepare graduates for careers in academia, government, industry or another field of their choice, educational opportunities are offered for skill development and career exploration. The Division offers a career-planning curriculum where students can pursue noncredit elective credentials to build transferable professional skills in four areas that apply to a wide variety of scientific careers: leadership, entrepreneurship, science communication, and teaching. Through the Next Generation of Science Scholars, students are provided networking and community-building events, professional development seminars, and scientific community outreach opportunities. Professionals from a variety of fields (e.g., biotech startups, patent law) provide presentations and Q&A sessions to students throughout the year. In addition, the DBBS holds partnerships with groups such as the Center for Teaching and Learning, the Center for Career Engagement, and student organizations such as ProSPER, InPrint, the Balsa Group, and the Young Scientist Program. Students have multiple opportunities to develop experiences relevant to their future career goals.

DBBS students can reference the DBBS Student Handbook for student guidelines across all Division programs.

Email: DBBS-Info@email.wustl.edu

Website: <http://dbbs.wustl.edu>

Faculty

Associate Dean for Graduate Education

Steven Mennerick

John P. Feighner Professor of Neuropsychopharmacology, Professor of Psychiatry, Associate Dean for Biology and Biomedical Sciences, Professor of Neuroscience
PhD, Washington University in St. Louis

Associate Directors

Eric Herzog

Professor of Biology, Professor of Neuroscience, Viktor Hamburger Distinguished Professor
PhD, Syracuse University

Heather True

Professor of Cell Biology and Physiology, David English Smith Professorship in Medicine
PhD, University of Illinois-Urbana-Champaign

Faculty Program Directors: Biochemistry, Biophysics, & Structural Biology

Thomas Brett

Associate Professor of Medicine, Associate Professor of Biochemistry and Molecular Biophysics, Associate Professor of Cell Biology and Physiology

PhD, University of Nebraska – Lincoln

Eric Galburt

Associate Professor of Biochemistry and Molecular Biophysics
PhD, University of Washington

Faculty Program Directors: Biomedical Informatics & Data Science

Philip Payne

Professor of Medicine, Director, Institute for Informatics, Professor, Professor of Computer Science and Engineering, Associate Dean for Health Information and Data Science for the School of Medicine, Chief Scientist for the School of Medicine, Janet and Bernard Becker Professor of Medicine

PhD, Columbia University

Po-Yin Yen

Associate Professor of Medicine, Division of General Medicine & Geriatrics, Associate Professor, Goldfarb School of Nursing, Barnes Jewish College

PhD, Columbia University

Faculty Program Directors: Cancer Biology

Grant Challen

Professor, Division of Oncology, Department of Medicine
PhD, University of Queensland, Brisbane, Australia

Jason Weber

Professor, Departments of Medicine, Cell Biology & Physiology, and Biology

PhD, Saint Louis University

Faculty Program Directors: Computational & Systems Biology

Gautam Dantas

Professor of Pathology and Immunology, Co-Division Chief - Division of Laboratory and Genomic Medicine, Professor of Biomedical Engineering, Professor of Molecular Microbiology, Professor of Pediatrics, Conan Professorship in Laboratory and Genomic Medicine
PhD, University of Washington – Seattle

Nancy Saccone

Associate Professor of Genetics
PhD, Brown University

Faculty Program Directors: Developmental, Regenerative, & Stem Cell Biology

Mayssa Mokalled

Associate Professor of Developmental Biology
PhD, UT Southwestern Medical Center at Dallas

Andrew Yoo

Phil and Sima Needleman Distinguished Professor of Developmental Biology

PhD, Columbia University

Faculty Program Director: Immunology

Eynav Klechevsky

Associate Professor of Pathology and Immunology
PhD, Israel Institute of Technology, Haifa, Israel and The Baylor Institute for Immunology Research

Faculty Program Directors: Molecular Cell Biology

Ben Major

Alan A. and Edith L. Wolff Professorship in Cell Biology and Physiology, Professor of Cell Biology and Physiology, Professor of Otolaryngology
PhD, University of Utah

Maria Remedi

Professor of Medicine and Cell Biology & Physiology
PhD, National University of Cordoba, Argentina

Faculty Program Directors: Molecular Genetics & Genomics

John Edwards

Associate Professor of Medicine
PhD, Columbia University

Jim Skeath

Professor of Genetics, Assistant Dean Academic Pathway Programs
PhD, University of Wisconsin – Madison

Faculty Program Directors: Molecular Microbiology & Microbial Pathogenesis

Megan Baldrige

Associate Professor of Medicine, Associate Professor of Molecular
Microbiology
MD/PhD, Baylor College of Medicine

Andrew Kau

Associate Professor, Division of Allergy and Immunology, Associate
Division Chief - Research
MD/PhD, Washington University in St. Louis

Faculty Program Directors: Neurosciences

Martha Bagnall

Associate Professor of Neuroscience
PhD, University of California – San Diego

Alexxai Kravitz

Associate Professor of Psychiatry, Interim Division Director for
Basic Neuroscience, Associate Professor of Neuroscience, Associate
Professor of Anesthesiology
PhD, University of Pennsylvania

Faculty Program Directors: Plant & Microbial Biosciences

Barbara Kunkel

Professor of Biology, Associate Chair of Undergraduate Education
PhD, Harvard University

Xuehua Zhong

Professor of Biology, Dean's Distinguish Professorial Scholar
PhD, The Ohio State University

DBBS mentors and educators are key to our training mission. Those who serve as primary mentors are DBBS Program Members, and others who participate in the educational mission are General Members.

Visit the DBBS website to learn about DBBS Faculty Membership or to search DBBS Faculty by last name, program, or expertise.

Degree Requirements

- Biochemistry, Biophysics, & Structural Biology, PhD
- Biomedical Informatics & Data Science, PhD
- Cancer Biology, PhD
- Computational & Systems Biology, PhD
- Developmental, Regenerative, & Stem Cell Biology, PhD
- Immunology, PhD
- Molecular Cell Biology, PhD
- Molecular Genetics & Genomics, PhD
- Molecular Microbiology & Microbial Pathogenesis, PhD
- Neurosciences, PhD
- Plant & Microbial Biosciences, PhD

Courses

For questions about course listings, please email
dbbscurriculum@wustl.edu.

BBS 5011 Ethics & Research Science

This course prepares DBBS graduate students to analyze and address ethical and professional issues across the range of their professional roles and responsibilities. The primary goals are for students to recognize complex situational dynamics and ethical issues and to develop professional and ethical problem-solving skills. The course examines ethical challenges related to research design and data collection, management, ownership, security, sharing, analysis, interpretation, and reporting while providing practical guidance on these issues. The course also examines the fundamentals of the broader research environment, including principles of ethics in genetics and human and animal subjects research, regulatory issues in biological and biomedical research, publication and authorship, and collaboration in science.

Credit 1 unit.

Typical periods offered: Spring Half B, Spring Half A, Spring, Spring Intersession, Summer

BBS 5014 Biotech Industry Innovators

Late one Friday afternoon in April 1976, the late venture capitalist Robert Swanson met with biochemist Herb Boyer, PhD, at his UCSF lab. Swanson had requested 10 minutes of Boyer's time; when the meeting ended, three hours later, the foundations had been laid for the formation of Genentech, the first biotechnology company, and the beginnings of the biotechnology industry. This course, The Basics of Bio-Entrepreneurship, investigates issues and choices that inventor/scientists encounter when considering the applications and commercialization of early stage scientific discoveries. This course is intended for anyone interested in working in the medical device, life-, bio-, or pharma-sciences industries as a founder, scientist, entrepreneur, manager, consultant, or investor. It focuses on the decision processes and issues that researchers and their business partners face when considering how a discovery might best be moved from academia to successful commercialization.

Credit 3 units.

Typical periods offered: Fall, Spring

BBS 5053 Immunobiology I

Immunobiology I is taught by the faculty members of the Immunology Program. This course covers in depth modern immunology and are based on Janeway's Immunobiology 10th Edition textbook. The topics include: basic concepts in immunology, innate immunity: the first lines of defense, the induce responses of innate immunity, antigen recognition by B-cell and T-cell receptors, the generation of lymphocyte antigen receptors, antigen presentation to T lymphocytes and signaling through immune system receptors.

Credit 4 units.

Typical periods offered: Fall

BBS 5054 Immunobiology II

Immunobiology II is taught by the faculty members of the Immunology Program. This course covers in depth modern immunology and are based on Janeway's Immunobiology 10th Edition textbook. The topics include: the development and survival of lymphocytes, T cell-mediated immunity, the humoral immune response, dynamics of adaptive immunity, the mucosal immune system, failures of host defense mechanisms, allergy and allergic diseases, autoimmunity and transplantation, and manipulation of the immune response.

Credit 4 units.

Typical periods offered: Spring

BBS 5068 Fundamentals of Molecular Cell Biology

This is a core course for incoming graduate students in Cell and Molecular Biology programs to learn about research and experimental strategies used to dissect molecular mechanisms that underlie cell structure and function, including techniques of protein biochemistry. Enrolling students should have backgrounds in cell biology and biochemistry. The format is two lectures and one small group discussion section per week. Discussion section focuses on original research articles.

Credit 4 units.

Typical periods offered: Fall

BBS 5075 Introduction to Coding and Statistical Thinking for Genetics and Genomics

This course is designed for first-year DBBS students who have had little to no prior experience in programming or statistics. The course will cover common statistical practices and concepts in the life sciences, such as error bars, summary statistics, probability and distributions,

and hypothesis testing. The class will also teach students basic programming skills for statistical computation, enabling them to retrieve and analyze small and large data sets from online databases and other sources.

Credit 2 units.

Typical periods offered: Fall

BBS 5084 Single Molecule Biophysics Journal Club

Molecular motors in the cell harness chemical energy to generate mechanical work in a host of processes including cell motility, DNA replication and repair, cell division, transcriptional regulation, and intracellular transport. The purpose of this course is to discuss recent advances in the field of molecular motors. Special emphasis will be placed on understanding and critically evaluating single molecule studies. The course will consist of both journal club presentations and small group discussions.

Credit 1 unit.

Typical periods offered: Spring

BBS 5098 Graduate Research Fundamentals

This course introduces first-year Ph.D. students to the foundational skills, knowledge, and habits of mind required of successful independent biological scientists: 1) Social dynamics in the scientific research enterprise 2) Epistemology and ethics of bio research methods 3) Development and communication of research questions and results 4) Interdisciplinary scientific thinking. Class sessions and homework introduce these topics; major assignments prompt student to connect them with the broader scope of graduate training in lab rotations, course work, and interdisciplinary scientific seminars. The interactive, student-driven class structure facilitates autodidactic development while integrating small group activities and peer mentoring from advanced DBBS students.

Credit 0.5 units.

Typical periods offered: Fall

BBS 5123 Experimental Hematopoiesis Journal Club

Journal club in which papers that describe significant advances in the field of experimental hematopoiesis are discussed. Students are expected to present one paper per semester and attend the weekly (1 hour) session.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5137 TriMED: Membrane Excitability and Disease

TriMED consists of seminars, work-in-progress talks and journal club presentations. It meets Monday lunchtime (1-2pm, with lunch provided) from Jan - end April and from Sept - end November (1 credit each semester). Any student signed up for credit has to attend regularly and make one half hour presentation (either of their own research, or of a paper). The attendees are a mix of students, post-docs and faculty, but the goal is for trainee experience. The course is designed to fulfil interest in membrane proteins or signaling, ion channels, electrophysiology, neurobiology or excitability more broadly.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5138 Journal Club for the Molecular Mechanism of Aging

Why do we age? What causes aging? How is our life span determined? This journal club will address such fundamental, but challenging questions of aging and longevity. Recent studies on aging and longevity are now unveiling regulatory mechanisms of the complex biological phenomenon. We'll cover the latest progress in this exciting field



and stimulate discussions on a variety of topics including aging-related diseases. One hour of paper presentation or research talk and discussion per every two weeks. Registered students are expected to have at least one presentation for 1 unit credit.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5146 Principles and Applications of Biological Imaging

Principles and Applications of Biological Imaging will introduce the interdisciplinary nature of the imaging sciences and conduct a comprehensive survey of the array of interrelated topics that define biological imaging. The course will cover the basics of the optical, magnetic resonance, CT, SPECT and PET imaging modalities, and microscopy, while focusing on applications of imaging to different disease states, such as oncology, neurology, cardiology and pulmonary diseases.

Credit 3 units.

Typical periods offered: Fall

BBS 5147 Contrast Agents for Biological Imaging

Contrast Agents in Biological Imaging will build the chemistry foundations for the design and use of contrast agents in imaging applications such as nuclear medicine, magnetic resonance imaging (MRI) and optical imaging. The course will include lectures on the design of radiopharmaceuticals for gamma scintigraphy and positron emission tomography, MRI contrast agents and agents for optical imaging, including bioluminescence and fluorescence microscopy. One year of general chemistry, one semester of organic chemistry required.

Credit 3 units.

Typical periods offered: Spring

BBS 5148 Metabolism Journal Club

The purpose of the Metabolism Journal Club is to introduce the graduate students to advanced topics spanning the biochemistry, cell biology and genetics of cellular and whole body metabolism. Under the guidance of the course directors, students will select recent topical articles for discussion in the weekly journal club. Students will be expected to provide a succinct introduction to the topic and lead discussion of the data presented in the journal article. Students will be evaluated on the basis of their presentation and their participation in the seminar throughout the semester.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5152 Rad Journal Club (Regeneration, Aging, and Development)

Focuses on developing a dialog around current topics in developmental and regenerative biology at the molecular, cellular and systems levels.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5191 Pathobiology of Human Disease States

Three human disease states will be discussed in detail. Topics will include background clinical and epidemiological information, followed by a detailed examination of the molecular and cellular events that underlie the disease state. Examples of pertinent topics include Alzheimer's disease, AIDS, leukemia, cystic fibrosis, sickle cell anemia, diabetes, etc.

Credit 2 units.

Typical periods offered: Fall

BBS 5192 Cancer Biology Journal Club

This journal club covers current papers in molecular oncology, cancer genetics and contemporary molecular biology. Presentations will be given by students, post-docs and faculty, then discussed.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5196 Special Emphasis Pathway in Cancer Biology

This course is designed to present pre- and postdoctoral trainees with an organized educational format to explore major contemporary topics in cancer biology. The elective will provide an integrated view of cancer research including basic science, translational science, and clinical investigation. Approximately 60 minutes will be devoted to a didactic presentation by a faculty member with interaction by the participants. The remaining 30 minutes will be used to discuss a pivotal research paper from this field, preselected by the faculty member. Outside reading (30-60 min/week) will be required.

Credit 2 units.

Typical periods offered: Spring

BBS 5201 Membrane Protein Biophysics Journal Club

Cells are encapsulated by lipid bilayers providing a physical barrier for the passage of charged molecules and ions in and out of the cell. The proteins that reside within this layer of oil are called membrane proteins, and they act as the molecular gatekeepers, controlling the passage of ions, nutrients, waste products and signaling elements, across cell membranes. This journal club focuses on examining key literature in the field that investigates how membrane proteins fold, adopt certain structures, and how they function inside of the strange environment of the lipid membrane. The papers will be selected from biophysical studies that combine new and notable research with key historical work, for a broad perspective of the science being conducted in this complex and emerging field. Special emphasis will be placed on emerging topics, such as regulation of protein function by lipid composition, membrane protein synthesis and folding, cutting-edge developments in membrane biophysics. The course will consist of both journal club presentations, as well as small group discussions in the form of chalk-talks.

Credit 1 unit.

Typical periods offered: Spring

BBS 5217 Special Topics in Microbial Pathogenesis

Primarily for graduate and MSTP students, this course involves oral presentation and discussion of current research articles on pathogenic microorganisms (bacteria, viruses, parasites, and fungi). Discussion will include design of specific aims for research proposals. Emphasis will be on literature that addresses the cellular and molecular basis of host-pathogen interactions. Students are expected to prepare all articles covered and to participate actively in each discussion. Class meets twice per week for 1.5 hours each.

Credit 2 units.

Typical periods offered: Spring

BBS 5224 Molecular, Cell and Organ Systems

This course will introduce Ph.D. and MSTP students to fundamental problems in cell and molecular biology at the systems level. The course is divided into 5 themes: 1) microbial systems; 2) organ development and repair; 3) cardiovascular system and disease; 4) tumor & host systems; and 5) metabolic systems and disease. Topics within each theme highlight current research concepts, questions, approaches and findings at the molecular, cellular and physiological levels. Students will write an original research grant proposal on a topic of their choosing in one of the 5 themes. Students will critique proposals anonymously in an NIH-like study section.

Credit 3 units.

Typical periods offered: Spring

BBS 5235 Genetics Journal Club

This journal club will be focused on the Genetics department seminar series. Students will present one or a few recent papers by the seminar speaker scheduled for that week. Students will provide a brief written evaluation (on a form that will be provided) of their peers' presentations, and the faculty advisors will meet with each student after the presentation to provide feedback.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5255 Experimental Skeletal Biology Journal Club

The journal club, which meets weekly, focuses on cellular and molecular biology of the skeleton. Emphasis is placed on gaining insights into normal skeletal homeostasis as well as systemic disorders of bone. Papers presented for review are selected from the most competitive journals. Participants are encouraged to think outside of the box and discuss novel molecular discoveries that may impact bone cell function.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5272 Advanced Topics in Immunology

This course uses a journal club format to discuss contemporary issues in the cell and molecular biology of the immune system. Discussions focus on the use of current approaches to analyze the cellular and molecular basis of immunity. Topics include mechanisms of antigenic specificity, diversity, cell communication, differentiation, activation, and effector activity.

Credit 2 units.

Typical periods offered: Fall

BBS 5282 Chromatin Structure and Gene Expression

This special topics course will use *Epigenetics* ed. by Allis, Jenuwein, Reinberg, and Caparros (2007, Cold Spring Harbor Laboratory Press) as the organizing text. Each week a faculty member will provide a background lecture on an important topic or model system, and a student will present and lead discussion of a paper from the current scientific literature related to the previous week's background lecture. Topics to be considered will include background on chromatin structure, histone modifications and histone variants; epigenetic regulation in yeast, other fungi, ciliates, flies, mammals and plants; dosage compensation in different systems; DNA methylation and imprinting in mammals; stem cells, nuclear transplantation and reprogramming; and the epigenetics of cancer and other human diseases (some variation in topics in different years). Students enrolled in the course will be required to present one paper and to come prepared to each session, with a question for discussion.

Credit 2 units.

Typical periods offered: Spring

BBS 5284 Current Research in Chromatin, Epigenetics and Nuclear Organization

This journal club considers papers from the current literature on chromatin structure and function, with an emphasis on regulation of transcription, epigenetics and genomics. Presentations are given by students, postdocs and faculty, with discussion by all. Students enrolled for credit are expected to attend regularly, and to present a minimum of one paper during the term, with consultation and critique from the faculty.

Credit 1 unit.

Typical periods offered: Spring

BBS 5285 Current Topics in Human and Mammalian Genetics

This course aims to provide both biologists and those with mathematical backgrounds with a basis in mammalian genetics. The course will include the following modules: Nucleic acid biochemistry; Gene and chromosome organization; Introduction to Human Genetics; Mutations and DNA repair; Cancer Genetics; Genomic methodologies; Biochemical genetics; Murine Genetics; Epigenetics; Neurodegenerative diseases; Mitochondrial disorders; Pharmacogenetics; Introduction to human population genetics; Applications of modern human genetics; Introduction to web-based informatics tools for molecular genetics. One of the required courses in the Quantitative Human Statistical Genetics graduate program.

Credit 3 units.

Typical periods offered: Fall

BBS 5288 Special Topics in Molecular Genetics

A special topics course with lectures and discussion on the molecular basis of cancer including cell cycle regulation, tumor suppressor genes, tumor invasion, angiogenesis, immune evasion, resistance to apoptosis, signaling, imaging, gene expression, chromosomal translocations, and viral oncology.

Credit 2 units.

Typical periods offered: Spring

BBS 5303 Protein NMR Journal Club

This journal club covers the recent literature on protein NMR with a focus on using NMR to study protein function, NMR dynamics, and novel methods that expand the range of systems accessible to solution NMR studies. Students, postdocs and faculty discuss a recent paper and present background information on the relevant technical aspects of NMR. Students receive 1 credit for participation and presenting one paper.

Credit 1 unit.

Typical periods offered: Fall

BBS 5311 Dynamics in Mesoscopic Molecular Systems

This course will provide a background in the theory of the dynamics of mesoscopic systems and introduction to methods for measuring the dynamics of these systems. It will include measurement methods, some of which are in common use and others that have only recently been introduced. This course would be useful for biophysics students and others that are interested in molecular processes and mechanisms in small systems such as cells.

Credit 3 units.

Typical periods offered: Spring

BBS 5312 Macromolecular Interactions

This course will cover equilibria, kinetics and mechanisms of macromolecular interactions from a quantitative perspective. Thermodynamics, multiple binding equilibria (binding polynomials), linkage phenomena, cooperativity, allostery, macromolecular assembly, analysis of binding isotherms, enzyme catalysis and mechanism, steady-state and pre-steady-state kinetics, kinetic simulation, and isotope effects.

Credit 3 units.

Typical periods offered: Spring

BBS 5318 DNA Repair

This course is an advanced graduate course that explores all aspects of DNA damage and the cellular responses to DNA damage. It is designed for graduate students who have a working knowledge of chemistry, molecular biology and cellular biology, and for interested postdocs and researchers. Specific topics that will be covered are: The chemical basis



of DNA damage, specific DNA repair mechanisms, cell cycle responses to damage, translesion DNA replication and mutagenesis, and human diseases related to defects in DNA damage response. The course consists of a lecture module, open to all, and a discussion module for registered students. In addition, several invited speakers in the field of DNA repair will give seminars and meet with registered students for discussion. Students will present and discuss research papers. Grades will be given based on student presentation and participation. Prerequisite: Permission of instructor.

Credit 2 units.

Typical periods offered: Spring

BBS 5319 Molecular Foundations of Medicine

This course will cover fundamental aspects of biochemistry and cell biology from a medical perspective. The course begins with a treatment of protein structure and the function of proteins in the cytoskeleton and cell motility. The principles of enzyme kinetics and regulation are then discussed and basic pathways for the synthesis and metabolism of carbohydrates and lipids are introduced. This leads in to a discussion of membrane structure and the function cellular organelles in biological processes including energy production, protein degradation and protein trafficking.

Credit 3 units.

Typical periods offered: Fall

BBS 5327 Optical Spectroscopy: Theory and Applications

Spectroscopic methods to be covered include fluorescence, both ensemble and single molecule, and absorption (circular dichroism); fluorescence correlation spectroscopy will also be discussed. The quantum chemistry /physics behind these methods will be reviewed.

Credit 2 units.

Typical periods offered: Fall

BBS 5328 Structural Biology Journal Club

Multi-laboratory research colloquia for DBBS graduate students focused on structural biology and complementary biophysical techniques. Course credit requires student presentation for credit.

Credit 1 unit.

Typical periods offered: Spring

BBS 5336 Computational Biophysics Journal Club

This course covers a combination of classic and recent publications on computational methods for studying biomolecules. Students participating for credit will be required to present at least once.

Credit 1 unit.

Typical periods offered: Spring

BBS 5357 Chemistry and Physics of Biomolecules

This course covers three major types of biomolecular structures: proteins, nucleic acids, and membranes. Basic structural chemistry is presented as well as the biophysical techniques used to probe each type of structure. Selected topics covered include protein folding, protein design, X-ray crystallography, NMR spectroscopy, nucleic acid bending and supercoiling, nucleic acid:protein interactions, RNA folding, membrane organization, fluidity, permeability and transport, and membrane channels. The weekly discussion section will cover problem sets and present current research papers. This is one of the required courses for the biochemistry and for the molecular biophysics graduate programs. Prior course work in biochemistry and physical chemistry is recommended but not required.

Credit 3 units.

Typical periods offered: Fall

BBS 5358 Biochemical and Biophysical Investigations of Infectious Diseases Journal Club

Biochemical and biophysical approaches continue to advance as powerful approaches to the understanding of human disease processes. This journal club covers recent papers in which these approaches address aspects of infectious diseases or inflammation. Students who enroll for credit will be expected to participate in weekly presentations and to present one to two papers along with accompanying background information.

Credit 1 unit.

Typical periods offered: Spring

BBS 5392 Molecular Microbiology & Pathogenesis

Course is devoted to studying microorganisms, particularly those that cause disease, with an emphasis on the molecular interactions between pathogens and hosts. First third of the course focuses on virology, second third on bacteriology and the last third on eukaryotic pathogens.

Credit 4 units.

Typical periods offered: Fall, Spring

BBS 5393 Molecular Virology Journal Club

Journal club covering a broad range of topics in virology with an emphasis on pathogenesis or molecular biology of medically important viruses. A minimum of one student presentation with faculty critique.

Credit 0.5 units.

Typical periods offered: Fall, Spring

BBS 5397 Current Literature in Microbiology

Presentations by students on a broad range of topics of current interest in microbiology. The course will emphasize presentations and discussion skills. Credit requires attendance and participation at all sessions and one presentation.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5412 Tropical and Molecular Parasitology

Graduate level seminar course focusing on current scientific literature in molecular parasitology. The journal club will meet biweekly during the Fall and Spring semesters. Students will attend both semesters in order to receive one credit. The seminar series will run jointly with a research conference in Tropical and Molecular Parasitology. Outside speakers will be invited for the seminar series to emphasize important developments in tropical medicine and molecular parasitology. In advance of the invited speakers, topics will focus on their previous research publications.

Credit 0.5 units.

Typical periods offered: Fall

BBS 5417 Hematology Division Journal Club: Current Topics in Cellular, Molecular, and Stem Cell Biology

This journal club covers a broad range of topics of current interest, including the fields of biochemistry, molecular biology, cell biology, developmental biology, and immunology. Speakers usually give a brief background to introduce the topic and then focus on one-two papers from the current literature. Presentations are given by graduate students, post-doctorates, and faculty. Each attendee presents two-three times per year. Participants are expected to attend all the sessions. This journal club was founded in 1966.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5425 Immunology of Infectious Diseases Journal Club

The goal of this Journal Club (JC) is to provide 2nd year students in MMMP program a platform to discuss new and emerging concepts on mechanisms by which host immune responses mediate protection against infectious diseases. This exercise will also enable the student who attend the fundamental Immunology course to apply their knowledge to understand the basis for immunology of infectious diseases. The format will include faculty who will select cutting-edge papers and head the discussion during the JC session.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5426 ID Gateway: Translational and Public Health Aspects of Basic Infectious Disease Research

This course provides an opportunity for students, postdoctoral fellows, infectious disease fellows and faculty to explore issues at the interface between patient care, public health and basic research in the area of microbial pathogenesis.

Credit 2 units.

Typical periods offered: Spring

BBS 5445 DNA Metabolism Journal Club

Presentation of current research papers in DNA replication, DNA repair, and DNA recombination, with an emphasis on basic biochemical and biophysical approaches.

Credit 1 unit.

Typical periods offered: Spring

BBS 5456 Advanced Crystallography

The advanced course in Protein Crystallography will address all aspects of modern protein crystallography including fundamentals of crystallography, the derivation of the structure factor and electron density equation, symmetry and space groups, direct methods, isomorphous replacement, molecular replacement, data collection, and crystal growing theory and techniques. Prerequisite, Physical Chemistry & Bio 5325 Protein Structure and Function. Two class hours per week.

Credit 2 units.

Typical periods offered: Spring

BBS 5469 Biochemistry, Biophysics, and Structural Biology Seminar

Student presentation of Biochemistry, Biophysics or Structural Biology topic. Second Year Students present from literature; senior students give formal research seminar. Attendance required of all BBSB Graduate Students.

Credit 0.5 units.

Typical periods offered: Fall, Spring

BBS 5480 Nucleic Acids & Protein Biosynthesis

Fundamental aspects of the structure, biosynthesis, and function of nucleic acids and the biosynthesis of proteins. Emphasis on mechanisms involved in the biosynthetic processes and the regulation thereof. Lecture course supplemented with student discussions of research papers.

Credit 3 units.

Typical periods offered: Fall

BBS 5483 Human Genetic Analysis

Basic Genetic concepts: meiosis, inheritance, Hardy-Weinberg Equilibrium, Linkage, segregation analysis; Linkage analysis: definition, crossing over, map functions, phase, LOD scores, penetrance, phenocopies, liability classes, multi-point analysis, non-parametric analysis (sibpairs and pedigrees), quantitative trait analysis,

determination of power for mendelian and complex trait analysis; Linkage Disequilibrium analyses: allelic association (case control designs and family based studies), QQ and Manhattan plots, whole genome association analysis; population stratification; Quantitative Trait Analysis: measured genotypes and variance components. Hands-on computer lab experience doing parametric linkage analysis with the program LINKAGE, model free linkage analyses with Genehunter and Merlin, power computations with SLINK, quantitative trait analyses with SOLAR, LD computations with Haploview and WGAViewer, and family-based and case-control association analyses with PLINK and SAS. The methods and exercises are coordinated with the lectures and students are expected to understand underlying assumptions and limitations and the basic calculations performed by these computer programs. Auditors will not have access to the computer lab sessions.

Credit 3 units.

Typical periods offered: Fall

BBS 5484 Genetics and Development of C. Elegans Journal Club

Students will present a research paper (or present their current thesis research) and the appropriate background material.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5487 Genetics and Genomics of Disease

The course will cover the use of genomic and genetic information in the diagnosis and treatment of disease, with an emphasis on current practice and existing gaps to be filled to achieve precision medicine. Areas of discussion include: bioinformatics methods; assessment of pathogenicity; use and curation of disease variant databases; discovery of incidental findings; genomics applications in Mendelian disease, complex traits, cancer, pharmacogenomics, and infectious disease; design of clinical trials with genetic data; ethical and policy issues.

Credit 2 units.

Typical periods offered: Fall, Spring

BBS 5488 Genomics

This course is designed for beginning graduate students who want to become familiar with the basic concepts and applications of genomics. The course covers a wide range of topics including how genomes are mapped and sequenced as well as the latest computational and experimental techniques for predicting genes, splice sites, and promoter elements. High throughput techniques for ascribing function to DNA, RNA, and protein sequences including microarrays, mass spectrometry, interspecies genome comparisons, and genome-wide knock-out collections will also be discussed. Finally, the use of genomic techniques and resources for studies of human disease will be discussed. A heavy emphasis will be put on students acquiring the basic skills needed to navigate databases that archive sequence data, expression data and other types of genome-wide data. Through problem sets, the students will learn to manipulate and analyze the large data sets that accompany genomic analyses by writing simple computer scripts. While students will become sophisticated users of computational tools and databases, programming and the theory behind it are not covered in this course.

Credit 4 units.

Typical periods offered: Spring

BBS 5489 Human Genetics Journal Club

In this biweekly journal club on Human Genetics we will present and discuss current cutting edge papers in human and mammalian molecular genetics. Students learn presentation skills, how to critique a paper and how to interact with a very active and critical audience. Any person interested in the current state of the art in Human



Genetics may attend this course. It is a requirement that all students wishing to earn credit in this course must present a 1.5 hour journal club talk and must regularly attend and participate in the journal club throughout the year.

Credit 0.5 units.

Typical periods offered: Fall, Spring

BBS 5491 Advanced Genetics

Fundamental aspects of organismal genetics with emphasis on experimental studies that have contributed to the molecular analysis of complex biological problems. Examples are drawn primarily from yeast, nematodes, fruit flies, mouse, and humans. Students will conceive and write an original research proposal with a substantial genetics component; the learning goal is to build skills in developing hypotheses from the literature and designing experimental approaches to test those hypotheses.

Credit 3 units.

Typical periods offered: Spring

BBS 5496 Seminar in Computational Molecular Biology

Students present current research papers and the appropriate background material in the field of Computational Biology. Arts & Sciences students must take this course for credit; Engineering students must take this course Pass/No Pass.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5499 Cancer Informatics Journal Club

This journal club will explore current topics in cancer informatics. Current literature will be reviewed for advanced cancer genome analysis methods, statistics, algorithms, tools, databases, and other informatics resources.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5500 Medical Genetics

A significant portion of the first-year course in basic medical genetics devoted to human and clinical genetics, with emphasis on how genomic information will transform the practice of medicine. Topics covered include population genetics; molecular basis of mutations; human functional genomics; mouse models of human disease; pharmacogenomics; metabolic defects. Lectures, small group discussions, patient information session.

Credit 2 units.

Typical periods offered: Spring

BBS 5501 Biology of the Visual System

The purpose of the course is to provide a fascinating view of vertebrate eye development, anatomy, physiology and pathology. Topics to be covered include the molecules that control eye formation, ocular stem cells, the physiology of transparency, hereditary ocular diseases, phototransduction, the neurobiology of the retina and central visual pathways, age-related eye diseases, and many others. The course is open to all second year graduates students and above. Ophthalmology residents and postdocs with an interest in vision are strongly encouraged to attend.

Credit 3 units.

Typical periods offered: Fall

BBS 5505 Independent Study in Fundamentals of Molecular and Microbial Genetics

This literature-based course will introduce students to seminal and current studies in molecular and microbial genetics. Students will read and present a minimum of 12 landmark papers that helped shape our understanding of molecular and microbial genetics. Emphasis will be placed on students' ability to comprehend and explain these studies via chalk talks. All presentations will be given by students.

Credit 2 units.

Typical periods offered: Fall, Spring

BBS 5507 Genome Engineering Methods and Applications

This course will cover the basic principles of genome engineering with emphasis on Cas9/CRISPR technology. It will consist of discussion sessions in which students will present assigned manuscripts followed by a general discussion of the topic directed by the instructor. The course will cover the mechanisms of genome editing using host DNA repair systems, the function of Cas9, and how Cas9 can be harnessed to introduce defined mutations into almost any genome. The use of Cas9 to activate or repress genes, alter chromatin modifications, and the application of these Cas9 systems to conducting genome-scale screens in mammalian cells as well as its use in studying cell fate will be highlighted. Finally, we will study how Cas9 methodologies can be used to introduce disease-associated variants into pluripotent stem cells (e.g. iPSCs) that can be differentiated into disease-relevant cell for use in functional genomic studies.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5512 Diseases of Membrane Transport & Excitability

Classes will consider the molecular basis of the disease as well as animal models and current clinical studies. Addressing studies from the level of basic biophysical and molecular properties of the underlying ion channels/transporters, to the cellular defects, to organ and animal outcomes and therapies., which will encourage and force students to develop their ability to integrate understanding at multiple levels. Students will be introduced to emerging ideas in clinical diagnosis, management and treatment, when appropriate, clinical specialists will allow student participants to directly observe and participate in the clinical experiences.

Credit 2 units.

Typical periods offered: Spring

BBS 5513 ITVS Project Building

The overall goal is to have intense guidance to construct a grant/fellowship application. Students should expect to have a near completed F30/F31 application by the end of this course. Students will study previous F30/F31 applications and sit on a mock panel to review real world grants from their peers. They will use this experience to understand the reviewers perspective when writing fellowships and grants in the future. Students will draft all portions of a research proposal with feedback from their peers, the course instructor and faculty mentors.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5540 Neural Sciences

An integrated course dealing with the structure, function and development of the nervous system. The course will be offered in the Spring of the first year Medical School calendar.

Credit 5 units.

Typical periods offered: Spring

BBS 5543 Oral Presentation of Scientific Data

Practical course on how to prepare and present scientific data to an audience. Meets once a week for 90 minutes.

Credit 1 unit.

Typical periods offered: Spring

BBS 5571 Cellular Neurobiology

This course will present a fully integrated overview of nerve cell structure, function and development at the molecular and cellular level. Broad topics to be covered include gene structure and regulation in the nervous system, basic neurophysiology, presynaptic and postsynaptic mechanisms of chemical neurotransmission, sensory transduction, neurogenesis and migration, axon guidance and synapse formation. Three 90 minute lectures plus one 75 minute paper discussion section per week. There will be four exams, as well as weekly quizzes.

Credit 6 units.

Typical periods offered: Fall

BBS 5572 Principles of Medicinal Chemistry

Overview of basic principles of medicinal chemistry covering drug targets and concepts of metabolism, efficacy and potency as relevant to drug design.

Credit 3 units.

Typical periods offered: Fall

BBS 5577 Synapses Journal Club

Synaptic function and malleability are fundamental to nervous system function and disease. This is an advanced seminar in the development, structure, and function of the synapse in health and disease. It is a natural extension of topics covered in Bio 5571. It may be primarily of interest to students in the Neurosciences Program, but also to students in MCB, Development, Biochemistry, Computational Biology, and Molecular Biophysics. Generally a topic for the semester helps focus the group; past topics have included Synapses and Disease, Neurotransmitter Transporters, Glutamate Receptors, Dendrites, GABA receptors. Participants (students, postdocs, and faculty) alternate responsibility for leading critical discussion of a current paper. Active participation offers the opportunity for students to hone their critical thinking and presentation skills. Students enrolling for credit will be expected to attend each week, to lead discussion once per semester and to provide written critiques (1-2 pages each) of two papers.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5617 Development Biology PhD Program Seminar

In response to student feedback for additional training in Developmental Biology obtained from surveys and group meetings, we propose a new seminar course in Developmental Biology. This once a week course will introduce student in the Developmental, Regenerative, and Stem Cell Biology PhD Program both to the classical embryological experiments that define key concepts in developmental biology, such as cellular fields, equivalence groups, cytoplasmic determinants, and the more modern experiments that uncovered the genetic and molecular basis of these processes. In general, the classes will be individual sessions on professional development, such as scientific presentation, how to navigate graduate school, etc.

Credit 1 unit.

Typical periods offered: Fall

BBS 5619 Advanced Cognitive, Computational, and Systems Neuroscience

This course will develop critical thinking and analysis skills with regard to topics in Cognitive, Computational and Systems Neuroscience. Course format will be a series of modules composed of intensive, faculty-led case studies on interdisciplinary topics at the intersection of psychology, computation and neuroscience. The goal will be to highlight the benefits of integrative, interdisciplinary approaches, by delving into a small set of topics from a variety of perspectives, rather than providing a survey-level introduction to a broader set of topic areas. Modules will involve a combination of lectures and student-led discussion groups, with students further expected to complete a multi-disciplinary integrative final review paper. Case-study topics will vary somewhat from year to year, but are likely to include some of the following: temporal coding as a mechanism for information processing, coordinate transformations in sensory-motor integration, mechanisms of cognitive control, motor control strategies including application to neural prosthetics, and memory systems in health and disease.

Credit 3 units.

Typical periods offered: Fall

BBS 5622 Cognitive, Computational, and Systems Neuroscience Project Building

The goal of this course is to help students in the CCSN Pathway develop the critical thinking skills necessary to develop and implement high quality, interdisciplinary research projects. Throughout the course of the semester, each student will develop a research plan in their chosen area of interest. The plan will be developed in consultation with at least two faculty members (from at least two different subdisciplines within the pathway) as well as the other students and faculty participating in the course. The culmination of this course will be for each student to produce an NIH-style grant proposal on the research project of their choosing. For most students, this will serve either as their thesis proposal or a solid precursor to the thesis proposal. The course will be designed to help facilitate the development of such a research plan through didactic work, class presentations, class discussion, and constructive feedback on written work. The course will begin with a review of written examples of outstanding research proposals, primarily in the form of grant submissions similar to those that the students are expected to develop (i.e., NRSA style proposals, R03 proposals). Review of these proposals will serve as a stimulus to promote discussion about the critical elements of good research proposals and designs in different areas. Each student will be expected to give three presentations throughout the semester that will provide opportunities to receive constructive feedback on the development and implementation of research aims. The first presentation (towards the beginning of the semester) will involve presentation of the student's general topic of interest and preliminary formulation of research questions. Feedback will emphasize ways to focus and develop the research hypotheses into well-formulated questions and experiments. The second presentation will involve a more detailed presentation of specific research questions (along the lines of NIH-style Specific Aims) and an initial outline of research methods. The final presentation will involve a fuller presentation of research questions and proposed methods. Feedback, didactic work, and group discussion throughout the semester will include guidance on critical components of the development of a research plan, including how to perform literature searches, formulate testable hypotheses, write critical literature summaries, and design experiments and analyses. The course will meet once a week, with faculty members from different tracks within the Pathway present at each meeting. This will allow students to receive feedback from several perspectives.

Credit 3 units.

Typical periods offered: Fall, Spring

BBS 5646 First-Year Fundamentals

This course will provide a two-part introduction to neuroscience research fundamentals. Namely, it will introduce elementary statistical analysis for neuroscience research as well as grant writing to support neuroscience-related research. Enrollment is limited to first-year neuroscience students.

Credit 0.5 units.

Typical periods offered: Spring

BBS 5648 Coding and Statistical Thinking in the Neurosciences

Students are introduced to scientific programming in Python. Students will learn common programming constructs and how to visualize and analyze data. Coding will be integrated into a statistics curriculum introducing summary statistics, probability distributions, simulation and hypothesis testing, and power analysis for experimental design.

Credit 3 units.

Typical periods offered: Fall, Spring

BBS 5651 Neural Systems

The course will consist of lectures and discussions of the sensory, motor and integrative systems of the brain and spinal cord, together with a weekly lab. The lectures will present aspects of most neural systems, and will be given by faculty members who have specific expertise on each topic. The discussions will include faculty led group discussions and papers presented and discussed by students. The labs will include human brain dissections, examination of histological slides, physiological recordings, behavioral methods, computational modeling, and functional neural imaging.

Credit 6 units.

Typical periods offered: Spring

BBS 5663 Neurobiology of Disease

This is an advanced graduate course on the pathology of nervous system disorders. This course is primarily intended to acquaint Neuroscience graduate students with a spectrum of neurological diseases, and to consider how advanced neuroscientific approaches may be applied to promoting recovery in the brain. Topics will be presented by Washington University faculty members and include: neurooncology, stroke, retinal disease, perinatal brain injury, neurodegenerative disorders, neuroinflammation, epilepsy, and psychiatric disorders. The class will meet for 2 hours each week. Each session will be led by a faculty guest with expertise in a specific neurological or psychiatric disease. In the first hour, the speaker will discuss clinical manifestations and pathophysiology. Where possible, the clinical presentation will be supplemented with a patient demonstration or videotape. After a 30 minute break for pizza and soda, the second hour will follow a journal club format. Two or three students will review current papers assigned by the speaker or course director. This course is offered in alternate years. Prerequisite: Introductory neuroscience course at the graduate or medical school level.

Credit 2 units.

Typical periods offered: Spring

BBS 5678 Clocksclub

Clocksclub focuses on recent advances in the study of biological timing including sleep and circadian rhythms. Participants discuss new publications and data on the molecules, cells and circuits underlying daily rhythms and their synchronization to the local environment. Students registered for this journal club will lead a discussion once during the semester.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5702 Current Approaches in Plant and Microbial Research

This course is designed to introduce graduate students and upper-division undergraduates to contemporary approaches and paradigms in plant and microbial biology. The course includes lectures, in-class discussions of primary literature and hands-on exploration of computational genomic and phylogenetic tools. Evaluations include short papers, quizzes, and oral presentations. Over the semester, each student works on conceptualizing and writing a short NIH-format research proposal. Particular emphasis is given to the articulation of specific aims and the design of experiments to test these aims, using the approaches taught in class. Students provide feedback to their classmates on their oral presentations and on their specific aims in a review panel.

Credit 4 units.

Typical periods offered: Spring

BBS 5703 Experimental Design and Analysis in Biological Research

In-depth exploration of landmark and current papers in genetics, molecular and cell biology, with an emphasis on prokaryotes and eukaryotic microbes. Class discussions will center on such key discoveries as the chemical nature of genetic material, the genetic code, oxygen producing light-spectrum, cell-cell signaling, transcriptional regulation, the random nature of mutation, and cell cycle regulation. Emphasis will be placed on what makes a good question or hypothesis, expedient ways to address scientific problems, and creative thinking. The last third of the course will consist of student-run seminars on selected topics to increase proficiency in the synthesis of new material and public presentation skills.

Credit 2 units.

Typical periods offered: Fall

BBS 5723 Seminar in Plant and Microbial Bioscience

This course emphasizing presentation skill and critical analysis counts towards the PMB Graduate Program's journal club course requirement. Students will be responsible for dividing and presenting 30 current research publications selected by the course masters. In addition to assembling brief PowerPoint presentations providing background and significance for their assigned articles, students are expected to provide classmates with a 1 page primer and short list of relevant references

Credit 2 units.

Typical periods offered: Fall, Spring

BBS 5801 Biochemistry & Molecular Biophysics Seminar Journal Club

This will be a journal club-based seminar course mirroring the topics covered by Biochemistry and Molecular Biophysics (BMB) seminar speakers during the concurrent semester. Students will present a paper published by one of the BMB seminar speakers one-week ahead of that speaker's seminar. This will allow students and faculty to become more familiar with the research programs of BMB invited speakers, likely stimulating discussion within the Q&A period after the seminar, as well as during informal meet-the-speaker lunch sessions. Students will be evaluated on their journal club presentation, attendance and class participation.

Credit 1 unit.

Typical periods offered: Spring

BBS 5840 Climate Change Reading Group

The Climate Change Reading Group is made up of multi-disciplinary faculty and students from multiple institutions in St Louis: WUSTL, UMSL, SLU, Missouri Botanical Garden, Danforth Center, and more. Many of us in different labs, departments, and institutions around STL are actively investigating aspects and effects of climate change; this reading group provides a venue for interacting with others in the community. Subject matter within the context of Climate Change will

be chosen each week by a different presenter. Students can join this reading group for 1 credit if they agree to read all papers, actively participate in discussions, find and present one high quality scientific paper on climate change in the field of their choice and moderate the discussion of this paper. The students will be evaluated on their participation, their understanding of the issues, and their presentation. Credit 1 unit.

Typical periods offered: Spring

BBS 5850 Seminar in Floristic Taxonomy

This weekly seminar provides an introduction to/overview of Plants, each semester progressively covering orders and families in a sequence derived from the Angiosperm Phylogeny Website (<http://www.mobot.org/MOBOT/Research/APweb/welcome.html>); in Spring 2015, the seminar will cover several crown orders of the monocots, including grasses and relatives. Weekly presentations include a summary of all relevant information (molecular, chemical, anatomical, embryological, morphological, ecological, geographical, historical/paleontological, etc.) about the plant group under consideration, review of the classification/phylogeny of the group, examination of fresh and/or preserved specimens, and discussion of relationships, human uses, and other relevant aspects of the biology of that group. Credit will be contingent on one (or two) seminar presentation(s) per student, regular attendance and active participation in group discussions.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5866 Communicating Science: Writing for Multiple Audiences

This course introduces strategies for writing effectively and communicating scientific research to a variety of audiences. Students will learn to reduce jargon, explain scientific concepts in common language, write clearly and concisely, and use sentence structure to maximum efficiency. Written assignments emphasize the significance and innovation in scientific research that appeal to broad audiences, including: the general public, students, policy makers, grant reviewers, and journal editors. This course meets biweekly and consists of lectures and small group sessions. You must enroll in both the lecture session (section 1) and a small group (section A, B, C, or D).

Credit 1 unit.

Typical periods offered: Spring

BBS 5867 Career Planning for Biological Scientists

This course will guide you through nationally recognized and evidence-based career exploration curricula. It is intended for DBBS Ph.D. students and bioscience postdocs who want to jump-start career planning and professional skills needed for a broad range of scientific careers. Topics include self-assessment, career exploration, and goal-setting for long-term success. You will work on a team to research the scientific career path of your choice. Each team will study the specific required knowledge, skills, and attributes of their career interest or employment sector. As part of this research project, you will complete a simulated job exercise and network with alumni or local leaders in your chosen field, gaining valuable real-world insights and creating essential professional connections.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5900 Research

Enrolled students will meet in-person with faculty for a minimum of 1 hour per week. Pass/No Pass Only.

Credit 12 units.

Typical periods offered: Fall, Spring, Summer

BBS 5902 Introduction to the Scholarship of Teaching and Learning

In this course, advanced graduate students and postdocs in STEM will 1) learn the fundamentals of the Scholarship of Teaching and Learning (SoTL)-which is the practice of developing, reflecting on, and evaluating teaching methods to improve student learning, 2) Develop a working knowledge of SoTL, which draws on research in education, STEM education, and cognitive science, 3) Understand how SoTL can lead to the dissemination of new knowledge to a broad audience of educators through publication and presentations., and 4) Develop the central elements of a SoTL project. These elements include articulating questions about classroom teaching that can be addressed in a SoTL research project; developing working hypotheses in response to the questions; designing an evaluative plan, including specific research methods, the type of data to be collected, and how the data will be analyzed in relation to the hypotheses; identifying and understanding necessary procedures to obtain IRB approval for the research.

Credit 1 unit.

Typical periods offered: Spring

BBS 5910 Nano Topics in Biology and Biomedical Sciences

This course will expose students to advanced topics, methods, and skills in biomedical sciences. The course will rapidly fill gaps in student knowledge in areas that are relevant to their research and or professional development. Each section of the course will be offered independently, sometimes in coordination with existing journal clubs and other seminars. Some sections will focus on technique; others will be theoretically or conceptually focused. Each section will be led by a faculty member drawn from DBBS in an area of their expertise. Objectives include deepening students knowledge and skill sets in critical thinking, experimental design, and technical prowess as related to the specific themes of each section.

Credit 0.5-1 units.

Typical periods offered: Fall, Spring

BBS 5911 Seminar in Biology & Biomedical Sciences

These seminars cover the recent literature in various areas not included in other courses, or in more depth than other courses. Credit to be arranged.

Credit 12 units.

Typical periods offered: Spring

BBS 5915 Teaching Practice in Biology & Biomedical Sciences

Students serve as teaching assistants for undergraduate and graduate level courses. Faculty-supervised activities include: lecture preparation and presentation; leading discussion and problem-solving sessions; laboratory instruction.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5922 Entering Mentoring

This course is a series of facilitated discussions aimed at developing and improving mentoring skills for those involved in supervising undergraduate research experiences. It is designed for postdocs and graduate students who are or will be 'bench mentors' for undergraduates doing Bio 500 and/or Summer Research. Participants will receive Entering Mentoring materials, including articles and worksheets to facilitate mentoring interactions with their mentee, plus several resource books relevant to mentoring. They will develop a mentoring philosophy statement, work on specific assignments designed to improve their relationship with their mentee and share their present and past experiences as mentors and mentees. Bench mentors will be eligible for a travel award to help defray expenses for attending a meeting with their mentee, if that student wins one of the HHMI SURF travel awards (4-5 awarded annually) or is otherwise being supported to present at a scientific meeting. Graduate students

and postdocs do NOT need to be mentoring a student at the time of the course; it is open to all with an interest in mentoring now or in the future. Note: The sessions will be held either at the beginning of the day or the end of the day at the Danforth campus. Once registration closes, an email will be sent to those registered to poll for the best days & times.

Credit 1 unit.

Typical periods offered: Fall, Spring

BBS 5923 Foundations in Cancer Biology

This basic cancer biology class is designed to provide a didactic foundation into cancer biology principles. These will include tumor suppressors & oncogenes, DNA damage pathways, protein modifications, tumor progression, metastasis, tumor microenvironment and numerous other topics relevant to cancer biology.

Credit 3 units.

Typical periods offered: Fall

BBS 5928 Experimental Cancer Biology

This basic cancer biology class is meant to coincide with the Foundation course. Topics will be discussed in parallel with Foundation course topics but from the perspective of the laboratory experimentalist. Experimental details will provide the basis for understanding how to ask and answer important questions in the cancer biology laboratory.

Credit 3 units.

Typical periods offered: Fall

BBS 5940 Foundations in Cancer Biology and Experimental Cancer Biology

This advanced course will teach the clinical perspective of cancer biology using topics from oncology, radiation biology, radiology, pathology, immunology and surgery. Students will learn to write a grant proposal that includes a clinical trial element while also shadowing physicians in a real cancer clinical setting.

Credit 3 units.

Typical periods offered: Spring

BBS 5989 Advanced Topics in Neuroscience

This course will expose upper-level and postdoctoral students to advanced topics and methods in neuroscience. The course will rapidly fill gaps in student knowledge in areas that may be relevant to new directions in thesis work or interest areas. Each section of the course will be offered asynchronously, sometimes in coordination with existing journal clubs and other seminars. Each section will meet for two hours per week for three weeks. Sections may start with a didactic component or a review paper, but they will quickly delve into the discussion of primary papers curated by faculty and covering a focused topic. It is expected that papers will cover both historical and current contexts. Some sections will focus on technique; others will be conceptually focused. Each section will be led by a faculty member drawn from the Neuroscience program in an area of their expertise. Objectives include deepening critical thinking, statistical knowledge, experimental design, and technical prowess.

Credit 0.5-1 units.

Typical periods offered: Fall, Spring

BBS 5999 Independent Work

This course is designed for individual students wishing to explore indepth specialized areas of literature or technology with one or more faculty members. Credit will vary with the amount of work and discussion, but cannot be more than 3 credits.

Credit 3 units.

Typical periods offered: Fall, Spring

BBS 9000 Full-Time Graduate Research/Study

Full-Time Graduate Research/Study

Credit 0 units.

Typical periods offered: Fall, Spring, Summer

BBS 9001 Full-Time Graduate Study in Absentia

Full-Time Graduate Study in Absentia

Credit 0 units.

Typical periods offered: Fall, Spring, Summer

BBS 9002 Full-Time Graduate Study Extension

Full-Time Graduate Study Extension

Credit 0 units.

Typical periods offered: Fall, Spring, Summer

Policies

The Vagelos Division of Biology & Biomedical Sciences has more than 700 students with access to over 700 faculty mentors with whom they may perform their dissertation work. This unparalleled flexibility results from the joint governance of DBBS by the Washington University School of Medicine and the School of Arts & Sciences — a 50-year-old model that fosters the most impactful science executed at the boundaries of fields, programs, disciplines, schools and departments. A hallmark of DBBS is our commitment to interdisciplinary collaboration. By transcending traditional academic boundaries, our programs consistently earn top-tier national and international rankings.

In this interdisciplinary environment, graduate students are governed by policies and guidelines established by the university, the School of Medicine, and DBBS. The policies identified here and elsewhere in this *Bulletin* are not to be considered a complete list. However, every attempt has been made to identify the location of those policies that affect most or all students in DBBS.

The University Policies (p. 17) page in this *Bulletin* outlines regulations for both graduate and undergraduate students. For further details, please consult the Office of the University Registrar website and the University Policies page of the WashU website. Graduate students are encouraged to review the specific policy categories relevant to their degree programs.

All DBBS students must follow the University PhD Policies & Requirements (p. 31) as set forth by the Provost's Office.

Degrees in DBBS are conferred by the School of Medicine; hence, students must follow the applicable policies as set forth by the school, including the relevant PhD Program Policies & Guidelines.

DBBS students can reference the DBBS Student Handbook for student guidelines across all Division programs.

Division of Computational & Data Sciences

The Division of Computational & Data Sciences (DCDS) at Washington University in St. Louis trains students interested in problems from across a range of disciplines that share a common reliance on data and computing.

The introduction of now-standard tools from statistical analysis and hypothesis testing transformed the practice of natural and social science in the mid-20th century. Emerging tools from computational and data science have the potential to bring about an even larger transformation of scientific practice, especially in the social sciences. The questions raised by data generated by and about human behavior are engaging and profound. However, many if not most of these questions can only be tackled using a multidisciplinary approach that combines a deep knowledge of the capabilities and operation of data science techniques with the domain expertise needed to apply them effectively to the problems under consideration.

Doctoral students in Computational & Data Sciences receive strong methodological training in modern computational and statistical methods, and they also acquire expertise in a particular social science application area.

The program is inherently interdisciplinary and brings together leading experts from across the university who are using data to solve some of the greatest challenges that our world faces today. Faculty include both data and computing experts as well as domain experts from different application areas.

Faculty

Eunhye Ahn

Assistant Professor, Brown School
PhD, University of Southern California

Ruopeng An

Assistant Professor, Brown School
PhD, Pardee RAND Graduate School

Dennis Barbour

Associate Professor, Biomedical Engineering
MD, Johns Hopkins University
PhD, Johns Hopkins University

Deanna Barch

Professor and Chair, Psychological & Brain Sciences
PhD, University of Illinois

Janine Bijsterbosch

Assistant Professor, Radiology
PhD, University of Sheffield

Ryan Bogdan

Associate Professor, Psychological & Brain Sciences
PhD, Harvard University

Todd Braver

Professor, Psychological & Brain Sciences, Radiology, and Neuroscience
PhD, Carnegie Mellon University

Michael Brent

Henry Edwin Sever Professor of Engineering, Computer Science & Engineering
PhD, Massachusetts Institute of Technology

Derek Brown

Associate Professor, Brown School
PhD, Duke University

Sheretta Butler-Barnes

Associate Professor, Brown School
PhD, Wayne State University

David Carter

Associate Professor, Political Science
PhD, University of Rochester

Yixin Chen

Professor, Computer Science & Engineering
PhD, University of Illinois

Dino Christenson

Associate Professor, Political Science
PhD, Ohio State University

Brett Drake

Professor, Brown School
PhD, University of California, Los Angeles

Ted Enamorado

Assistant Professor, Political Science
PhD, Princeton University

Randi Foraker

Associate Professor of Public Health, Brown School
PhD, The University of North Carolina at Chapel Hill

Patrick Fowler

Track Chair, Social Work & Public Health
Associate Professor, Brown School
PhD, Wayne State University

Roman Garnett

Assistant Professor, Computer Science & Engineering
PhD, University of Oxford

Aimilia Gastounioti

Assistant Professor, Radiology
PhD, National Technical University of Athens

Chris Gill

Professor, Computer Science & Engineering
DSc, Washington University in St. Louis

Brian Gordon

Assistant Professor, Radiology
PhD, University of Illinois

Roch Guérin

Professor and Chair, Computer Science & Engineering
PhD, California Institute of Technology

Shenyang Guo

Professor, Brown School
PhD, University of Michigan–Ann Arbor

Ross Hammond

Associate Professor, Brown School
PhD, University of Michigan

Jenine Harris

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PhD, Saint Louis University

Chien-Ju Ho

Assistant Professor, Computer Science & Engineering
PhD, University of California, Los Angeles

Josh Jackson

Associate Professor, Psychological & Brain Sciences
PhD, University of Illinois Urbana-Champaign

Nathan Jacobs

Professor, Computer Science & Engineering
PhD, Washington University in St. Louis

Kim Johnson

Associate Professor, Brown School
PhD, University of Minnesota

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Professor, Brown School
PhD, University of California, Berkeley

Brendan Juba

Assistant Professor, Computer Science & Engineering
PhD, Massachusetts Institute of Technology

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Assistant Professor, Anesthesiology
PhD, University of Illinois

Caitlin Kelleher

Associate Professor, Computer Science & Engineering
PhD, Carnegie Mellon University

Wouter Kool

Assistant Professor, Psychological & Brain Sciences
PhD, Princeton University

Matt Kreuter

Professor, Social Work & Public Health
PhD, The University of North Carolina at Chapel Hill

Albert Lai

Associate Professor and Deputy Director, Institute for Informatics
Associate Professor, Computer Science & Engineering
PhD, Columbia University

Calvin Lai

Assistant Professor, Psychological & Brain Sciences
PhD, University of Virginia

Matthew Lew

Assistant Professor, Electrical & Systems Engineering
PhD, Stanford University

Jr-Shin Li

Professor, Electrical & Systems Engineering
PhD, Harvard University

Fangqiong Ling

Assistant Professor, Energy, Environmental & Chemical Engineering
PhD, University of Illinois Urbana-Champaign

Chenyang Lu

Professor, Computer Science & Engineering
PhD, University of Virginia

Christopher Lucas

Assistant Professor, Political Science
PhD, Harvard University

Doug Luke

Professor, Brown School
PhD, University of Illinois

Phillip Marotta

Assistant Professor, Brown School
PhD, Columbia University

Andrew D. Martin

Professor, Political Science and Law
Chancellor, Washington University in St. Louis
PhD, Washington University in St. Louis

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PhD, University of Wisconsin–Madison

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Associate Professor, Political Science
PhD, Duke University

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PhD, Duke University

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PhD, California Institute of Technology

Bruno Sinopoli

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PhD, University of California, Berkeley

Aristeidis Sotiras

Assistant Professor, Radiology
PhD, École Centrale Paris

Fred Ssewamala

Associate Dean for Transdisciplinary Faculty Research, Brown School
PhD, Washington University in St. Louis

Joe Steensma

Professor of Practice, Brown School
EdD, Indiana Wesleyan University

Joshua Swamidass

Associate Professor, Pathology & Immunology
Associate Professor, Biomedical Engineering
MD, University of California, Irvine
PhD, University of California, Irvine

Jessie Sun

Assistant Professor, Psychological & Brain Sciences
PhD, University of California, Davis

Yevgeniy Vorobeychik

Associate Professor, Computer Science & Engineering
PhD, University of Michigan

Chenguang Wang

Assistant Professor, Computer Science & Engineering
PhD, Peking University

Yong Wang

Associate Professor, Electrical & Systems Engineering

Emily Willroth

Assistant Professor of Psychological & Brain Sciences
PhD, University of California, Berkeley

William Yeoh

Track Chair, Computational Methodologies
Associate Professor, Computer Science & Engineering
PhD, University of Southern California

Jeffrey Zacks

Track Chair, Psychological & Brain Sciences
Professor and Associate Chair, Psychological & Brain Sciences
PhD, Stanford University

Shen Zeng

Assistant Professor, Electrical & Systems Engineering
PhD, University of Stuttgart

Ning Zhang

Assistant Professor, Computer Science & Engineering
PhD, Virginia Polytechnic Institute and State University

Xuan Zhang

Assistant Professor, Electrical & Systems Engineering
PhD, Cornell University

Degree Requirements

Upon joining the PhD program, each student is assigned an initial advisor from the DCDS faculty. This advisor meets with the student to assess their background and to advise them on course selection.

All students complete a common core curriculum as well as a domain depth requirement in a social science area. The focus of the first year is on acquiring a common set of tools and an understanding of the ranges and types of problems students may work on as they progress through the program. The entire incoming cohort takes a unique two-semester seminar sequence solely for DCDS students, which includes both general topics and a series of data-driven dives into the types of research questions that may be encountered in each of the domain areas.

Curriculum

Required Core Courses

Please refer to the DCDS Doctoral Student Handbook for the most up-to-date core course requirements.

Domain Depth Tracks

Students will choose one of four focus tracks: Political Science, Psychological & Brain Sciences, Social Work & Public Health, or Computational Methodologies. Please refer to the DCDS Doctoral Student Handbook for the most up-to-date domain depth track requirements.

Further Requirements

Additional requirements for this program are as follows:

- A minimum of 72 credit units beyond the bachelor's level, with a minimum of 37 being course credits (including the core curriculum)
- A minimum of 24 credit units of doctoral dissertation research
- Students must maintain a cumulative average grade of B (3.0 grade-point average) for all 72 credit units.
- Required courses must be completed with no more than one grade below a B–.
- Up to 24 graduate credit units may be transferred with the approval of the Graduate Studies Committee, which is chaired by the director of graduate studies.

In addition to fulfilling the course and research credit requirements, students must do the following:

- Pass a qualifying exam.
- Successfully defend a thesis proposal.
- Present and successfully defend a dissertation.
- Complete a teaching requirement consisting of two semesters of mentored teaching experience.

Institute of Materials Science & Engineering

The Institute of Materials Science & Engineering (IMSE) at Washington University in St. Louis offers a unique, interdisciplinary PhD in Materials Science & Engineering that crosses traditional departmental and school boundaries. The field of materials science and engineering focuses on the study, development and application of new materials with desirable properties, with the goal of enabling new products and superior performance regimes. Disciplines in the physical sciences (e.g., chemistry, physics) play a central role in developing the fundamental knowledge that is needed to design materials for a variety of engineering applications (e.g., mechanical engineering, electrical engineering, biomedical engineering). Building on training that spans from fundamental to applied sciences, materials scientists and engineers integrate this fundamental knowledge to develop new materials and match them with appropriate technological needs.

The IMSE is well positioned to address the needs of a student seeking a truly interdisciplinary experience. The IMSE brings together a diverse group of faculty from departments in Arts & Sciences, the McKelvey School of Engineering, and the School of Medicine. The IMSE also oversees shared research and instrument facilities, develops partnerships with industry and national laboratories, and facilitates outreach activities.

Current focused areas of research and advanced graduate education within the IMSE include the following:

- Artificial intelligence in materials discovery and design
- Biomedical, bio-derived, and bio-inspired materials
- Materials for energy and environmental technologies
- Quantum and photonic materials and devices

Faculty

Director

Katharine M. Flores

Christopher I. Byrnes Professor, Mechanical Engineering & Materials Science
PhD, Stanford University

Professor Flores' primary research interest is the mechanical behavior of high-performance structural materials, with particular emphasis on understanding structure-processing-property relationships in bulk metallic glasses and their composites.

Professors

Jianjun Guan

Professor, Mechanical Engineering & Materials Science
PhD, Zhejiang University

Professor Guan's research interests are in biomimetic biomaterials synthesis and scaffold fabrication; bioinspired modification of biomaterials; injectable and highly flexible hydrogels; bioimageable polymers for MRI and EPR imaging and oxygen sensing; mathematical modeling of scaffold structural and mechanical properties; stem cell differentiation; neural stem cell transplantation for brain tissue regeneration; and bone and cardiovascular tissue engineering.

Marcus Foston

Professor, Energy, Environmental & Chemical Engineering
PhD, Georgia Institute of Technology

Professor Foston's research program seeks to develop innovative and novel routes to exploit and utilize lignocellulosic biomass by taking advantage of materials involved in industries such as agriculture, paper making, and forestry products.

Erik Henriksen

Professor, Physics
PhD, Columbia University

Professor Henriksen's lab research is centered on the properties of electrons confined to two dimensions. This remarkable system has yielded a tremendous amount of interesting and important physics over the past several decades, from the integer and fractional quantum Hall effects to the groundbreaking discoveries of graphene and other atomically thin crystals and especially to the recent realization of the topological nature of the electronic structure of a surprising number of materials both novel and familiar.

Song Hu

Professor, Biomedical Engineering
PhD, Washington University in St. Louis

Professor Hu's research focuses on the development of cutting-edge optical and photoacoustic technologies for high-resolution structural, functional, metabolic, and molecular imaging in vivo and their applications in neurovascular disorders, cardiovascular diseases, regenerative medicine, and cancer.

Vijay Ramani

Roma B. & Raymond H. Wittcoff Distinguished University Professor of Environment & Energy
PhD, University of Connecticut

Vijay Ramani's research interests lie at the confluence of electrochemical engineering, materials science and renewable and sustainable energy technologies. The National Science Foundation, Office of Naval Research, ARPA-E, and Department of Energy have funded his research, with mechanisms including an NSF CAREER award (2009) and an ONR Young Investigator Award (ONR-YIP; 2010).

Srikanth Singamaneni

The Lilyan & E. Lisle Hughes Professor, Mechanical Engineering & Materials Science
PhD, Georgia Institute of Technology

Professor Singamaneni's research interests include plasmonic engineering in nanomedicine (in vitro biosensing for point-of-care diagnostics, molecular bioimaging, nanotherapeutics); photovoltaics (plasmonically enhanced photovoltaic devices); surface-enhanced Raman scattering (SERS)-based chemical sensors, with particular emphasis on the design and fabrication of unconventional and highly efficient SERS substrates; hierarchical organic/inorganic nanohybrids as multifunctional materials; bioinspired structural and functional materials; polymer surfaces and interfaces; responsive and adaptive materials and scanning probe microscopy; and surface force spectroscopy of soft and biological materials.

Fuzhong Zhang

Professor, Energy, Environmental & Chemical Engineering
PhD, University of Toronto

Professor Zhang's research focuses on developing synthetic biology tools and systems for the sustainable production of structurally defined chemicals and high-performance materials. Current research projects include the following: (1) engineering microbial metabolic dynamics and heterogeneity; (2) engineering metabolic pathways to produce structure-defined biofuels and chemicals; and (3) developing microbial factories to produce high-performance materials.

Associate Professors

Peng Bai

Associate Professor, Energy, Environmental & Chemical Engineering
PhD, Tsinghua University, Beijing

Professor Bai's research focuses on the development of next-generation batteries. Knowledge and tools developed in the Bai Group also apply to and benefit the design of other electrochemical energy systems, like supercapacitors and fuel cells.

Mikhail Y. Berezin

Associate Professor, Radiology
PhD, Moscow Institute of Oil and Gas/Institute of Organic Chemistry

Dr. Berezin's lab focuses on the development of novel optically active probes ranging from small molecules to nanoparticles and the development of optical instrumentation for spectroscopy and imaging using knowledge of excited states. The lab's research interest lies in the investigation and application of molecular excited states and their reactions for medical imaging and clinical treatment.

Nathaniel Huebsch

Associate Professor, Biomedical Engineering
PhD, Harvard University

Professor Huebsch's research focus is in basic and translational stem cell mechanobiology, with specific focus on hydrogels to control cell-mediated tissue repair and three-dimensional, iPSC-based heart-in-a-dish models to study the influence of mechanical loading and genetics on arrhythmia and contractility.

Matthew Lew

Associate Professor, Electrical & Systems Engineering
PhD, Stanford University

Professor Lew and his students build advanced imaging systems to study biological and chemical systems at the nanoscale, leveraging innovations in applied optics, signal and image processing, design optimization, and physical chemistry. Their advanced nanoscopes (microscopes with nanometer resolution) visualize the activity of individual molecular machines inside and outside living cells. Examples of new technologies developed in the Lew Lab include (1) using tiny fluorescent molecules as sensors that can detect amyloid proteins; (2) designing new "lenses" to create imaging systems that can visualize how molecules move and tumble; and (3) new imaging software that minimizes artifacts in super-resolution images.

Xianglin Li

Associate Professor, Mechanical Engineering & Materials Science
PhD, University of Connecticut

Professor Li's research interests are in batteries and fuel cells, including direct methanol fuel cells, lithium-oxygen batteries and battery thermal management; transport phenomena in porous media; greenhouse gas emissions and full fuel cycle analysis of fossil fuels; and life cycle assessment and economic analysis of advanced energy techniques, among others.

Mark Meacham

Associate Professor, Mechanical Engineering & Materials Science
PhD, Georgia Institute of Technology

Professor Meacham's research interests include microfluidics, micro-electromechanical systems (MEMS) and associated transport phenomena, with application to design, development and testing of novel energy systems and life sciences tools, from scalable micro-/nanotechnologies for improved heat and mass exchangers to MEMS-based tools for manipulation and investigation of cellular processes.

He is also interested in the behavior of jets and/or droplets of complex fluids during ejection from microscopic orifices, which is critical to applications as disparate as biological sample preparation and additive manufacturing.

Rohan Mishra

Associate Professor, Mechanical Engineering & Materials Science
PhD, Ohio State University

Professor Mishra's research interest is to develop quantitative structure-property correlations in materials starting from the atomic scale. To develop such correlations, his group synergistically combines electronic structure calculations with atomic-resolution electron microscope imaging and spectroscopy. The end goal is the rational design of materials with properties tailored for electronic, optical, magnetic and energy applications. Current research topics include perovskite materials for photovoltaic and optoelectronic applications, novel electrocatalysts, oxidizers, and wide-bandgap semiconductors.

Jai Rudra

Associate Professor, Biomedical Engineering
PhD, Louisiana Tech University

Jai Rudra's lab is interested in the development of nanoscale biomaterials such as nanofibers, nanoparticles, virus-like particles, and hydrogels for engaging the immune system to induce protective antibody and cell-mediated immune responses against diseases such as tuberculosis, melanoma, and flavivirus infections (i.e., West Nile and Zika). He is also investigating the development of vaccines against drugs of addiction such as cocaine.

Chuan Wang

Associate Professor, Electrical & Systems Engineering
PhD, University of Southern California

Professor Wang's research focus is on two-dimensional semiconductor nanoelectronics and optoelectronics, stretchable electronics, printed electronics, and sensors and actuators.

Patricia Weisensee

Associate Professor, Mechanical Engineering & Materials Science
PhD, University of Illinois at Urbana-Champaign

Professor Weisensee's work focuses on understanding the interplay of fluid dynamics, heat transfer, and liquid-solid interactions of droplets and other multi-phase systems. Practical applications of interest are phase change heat transfer for thermal management, thermal storage, water harvesting, metallic additive manufacturing, and droplet interactions with biological and natural systems.

Assistant Professors

Sang-Hoon Bae

Assistant Professor, Mechanical Engineering & Materials Science
PhD, University of California, Los Angeles

Professor Bae's research group focuses on tackling the challenges in materials science with thermodynamics, kinetics, and solid-state physics.

Matthew Bersi**Christopher Cooper**

Assistant Professor, Energy, Environmental & Chemical Engineering
PhD, Stanford University

Christopher Cooper's research at WashU focuses on using dynamic polymers to create responsive, soft materials for applications in energy storage, environmental sustainability, and human health. Through advanced synthesis and characterization, his research group designs polymers with distinct molecular designs and reversible bonds for applications including wearable or implantable electronic devices, recyclable underwater adhesives, soft actuators, and upcycling of industrial plastics. Cooper has published more than 15 peer-reviewed journal articles and given numerous conference presentations and invited talks.

Francisco Lagunas Vargas**Mark Lawrence**

Assistant Professor, Electrical & Systems Engineering
PhD University of Birmingham

Professor Lawrence and his lab are harnessing breakthroughs in nanoscale engineering to push the limits of light-based technologies, targeting applications ranging from all-optical computing and quantum communication to metrology and biosensing.

Kelly Powderly

Assistant Professor of Chemistry
PhD, Princeton University

The Powderly Group seeks to develop and utilize new synthetic pathways to discover extended solids with magnetic, electronic, and non-trivial topological properties of interest in quantum information science and to explore new fundamental bonding in materials.

Sheng Ran

Assistant Professor, Physics
PhD, Iowa State University

Professor Ran's research aims to realize and understand exotic states of quantum materials using combined techniques of bulk crystal synthesis, electric and thermal transport measurements under extreme temperature, pressure and magnetic field conditions, and neutron and high-energy X-ray scattering.

Xi Wang

Assistant Professor, Physics
PhD, Florida State University

Xi Wang's lab utilizes cutting-edge magneto optical and optoelectronic microscopy and spectroscopy to probe and control excitons, electrons, phonons, magnons, and so on in quantum materials for applications in quantum simulation and quantum communication.

Chong Zu

Assistant Professor, Physics
PhD, Tsinghua University

Professor Zu's research interests lie at the interface between atomic, molecular, and optical physics; condensed matter physics; and quantum information.

Degree Requirements

To earn a PhD degree, students must complete the requirements of the McKelvey School of Engineering, along with program-specific requirements. Courses include the following:

- Four IMSE Core Courses (12 units)

Code	Title	Units
MEMS 5610	Quantitative Materials Science & Engineering	3
MEMS 5619	Thermodynamics of Materials *	3
<i>Hard Materials Track:</i>		
MEMS 5620	Kinetics of Materials	3
CHEM 5620	Solid-State and Materials Chemistry *	3
	or PHYSICS 5072 Solid State Physics	
<i>Soft Materials Track:</i>		
MEMS 5608	Introduction to Polymer Science and Engineering	3
MEMS 5614	Polymeric Materials Synthesis and Modification	3

* EECE 5020 Advanced Thermodynamics in EECE may be taken instead with permission of the Director of Graduate Studies.

- Three courses (9 units) from a preapproved list of Materials Science & Engineering electives
- IMSE 8991 IMSE First-Year Research Experience (6 units)
- A minimum of three graduate-level technical elective courses (9 units) in mathematics or any science or engineering department, to reach a total of at least 36 academic credit units
 - A maximum of 3 units of IMSE Journal Club will be permitted toward this requirement.
 - Any 4000-level courses not included on the preapproved list of Materials Science & Engineering electives must be approved by the Graduate Studies Committee.
- A maximum of 12 units of 4000-level courses may be applied toward the required 36 academic credit units. Undergraduate-only courses (below the 4000 level) are generally not permitted and may not be used to fulfill this requirement.
- IMSE 8997 IMSE Graduate Seminar every semester of full-time enrollment
- 18 to 36 units of IMSE 8998 Doctoral Research (Students must identify an IMSE faculty member willing and able to support their dissertation research on a materials-related topic.)
- Students must maintain a grade point average of at least 3.0 for all graded courses and have no more than one grade of B– or below in a core course or a Materials Science & Engineering elective.

Additional program requirements include the following:

- Pass the IMSE Qualifying Examination (oral and written components).
- Identify an IMSE graduate program faculty member willing and able to support the student's dissertation research on a materials-related topic.
- Maintain satisfactory research progress on a topic in materials science and engineering, as determined by the dissertation advisor and the mentoring committee.
- Successfully complete research ethics training by the end of the third semester.
- Successfully complete MTE requirements by the end of the third year.
- Successfully complete the dissertation proposal and presentation, with approval from the dissertation examination committee.
- Successfully complete and defend a PhD dissertation, with final approval from the dissertation examination committee.

Failure to meet these requirements will result in dismissal from the program.

Recommended Course Plan

Year 1

Fall Semester

- IMSE 8997 IMSE Graduate Seminar
- IMSE 8991 IMSE First-Year Research Experience
- MEMS 5610 Quantitative Materials Science & Engineering
- MEMS 5619 Thermodynamics of Materials
 - IMSE will allow EECE 5020 Advanced Thermodynamics in EECE in place of MEMS 5619 Thermodynamics of Materials with permission of the Director of Graduate Studies.
- Hard Materials Track: CHEM 5620 Solid-State and Materials Chemistry
 - An elective may be chosen if the student is taking PHYSICS 5072 Solid State Physics in the spring.
- Soft Materials Track: MEMS 5608 Introduction to Polymer Science and Engineering

Spring Semester

- Begin dissertation research
- IMSE 8997 IMSE Graduate Seminar
- IMSE 8991 IMSE First-Year Research Experience
- Hard Materials Track: MEMS 5620 Kinetics of Materials
- Soft Materials Track: MEMS 5614 Polymeric Materials Synthesis and Modification
- Elective

Summer

- Prepare for IMSE Qualifying Examination (typically taken in August):
 - Written document and oral presentation on research rotation
 - Oral examination on fundamentals from core courses

Years 2 and Beyond

- Complete remaining electives (discuss with dissertation advisor)
- IMSE 8997 IMSE Graduate Seminar
- IMSE 8998 Doctoral Research
- Teaching requirements (to be completed by the end of the third year):
 - Attend two McKelvey preparatory engagement workshops.
 - AI two times at 10 MER units for a total of 20 units.
- Regular meetings (at least once per year) with the mentoring committee
- Dissertation proposal and presentation (fifth semester)
- Dissertation and oral defense

Mentored Experience Implementation Plan

As part of their degree requirements, PhD students must complete a program-defined Mentored Experience Requirement (MER) as per these guidelines. The Mentored Experience Implementation Plan (MEIP) is the written articulation of a program-defined degree requirement for PhD students to engage in mentored teaching activities and/or mentored professional activities, collectively referred to as the *MER*.

Mentored Experience Requirement (MER)

Philosophy of Teaching

Materials scientists and engineers work at the interface between the fundamental physical sciences and application-oriented disciplines. As such, they often need to translate between underlying physical principles governing the performance of a material and the design requirements of a system or device. This translation is inherently two-way; the emergent properties of novel materials enable new, potentially transformative applications, and new devices often require materials with unique (and challenging) property profiles. To facilitate this two-way translation, our PhD graduates must be able to communicate both fundamental and applied concepts to a variety of audiences, including supervisors, subordinates, clients, and co-workers, whose familiarity with the MSE field may range from novice

to expert. Moreover, mentored teaching experiences instill a sense of responsibility, professionalism, and ethical conduct, preparing students to navigate the complex landscape of academia, industry, government, or other research-oriented sectors with confidence and integrity.

Preparatory Engagement

Preparatory Engagement activities are those that represent an introduction to the foundational skills associated with teaching or communication. Pedagogical preparation engagement activities are normally completed before students are permitted to engage in assisting or teaching in a classroom.

Two preparatory workshops are required:

1. McKelvey Teaching Orientation (Canvas Course)
2. McKelvey Teaching Workshop (Canvas Course)

Mentored Teaching Experiences (MTEs)

Assistant in Instruction (AI)

An Assistant in Instruction (AI) is a PhD student who is directly engaged in the organization, instruction, and/or support of a semester-long course *primarily taught by a faculty member*. An AI receives mentorship from a faculty member related to best practices in classroom engagement, instruction in the field, interpersonal engagement, and other relevant skills. Students and mentors complete a mentorship plan prior to the start of each AI experience. To complete each AI assignment and to ensure that it applies toward their degree requirements, students must register for the appropriate course number for each semester of engagement. Refer to the "Required Pathways for Completion" section below for course numbers and details.

Students will AI two times at 10 MER units for a total of 20 units. Students work with their graduate supervisor on the timing and content of those assignments.

Required Pathways for Completion

Students work with their faculty mentor and their Director of Graduate Studies to plan how and when they will complete their MER. Students register during the normal registration period for courses in accordance with one of these approved pathways.

- Preparatory Engagement

EGS 8010	Take two times
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Interdisciplinary Opportunities

Washington University offers courses through interdisciplinary programs that include studies in a variety of disciplines that cross traditional academic boundaries and support academic areas outside of the schools.

- **Interdisciplinary Courses**

Graduate students can speak with their advisors with regard to enrolling in individual courses available outside of their school that may advance their research or professional goals. An internal tuition agreement valid across the university's graduate and professional schools enables interdisciplinary study by allowing enrollment in classes outside of the student's home school. Many undergraduate and graduate courses are available for graduate student enrollment, subject to the following eligibility guidelines:

- The student must be enrolled full-time in a graduate degree program and have the approval of their faculty advisor or administrative officer to take a course outside of their home school.
- Courses will be open to students outside of the discipline only if those students have met the required prerequisites and have the approval of both their department/advisor and the course instructor.
- Finally, courses and students in part-time or "continuing" programs, including WashU Continuing & Professional Studies, are not part of this agreement. Courses that require individualized instruction and/or additional fees (e.g., independent studies, individual music lessons) are also excluded.
- **Teaching Citation — Center for Teaching and Learning**
The Teaching Citation is a professional-development program open to Washington University graduate students. The purpose of the program is to provide formalized pedagogical training to help graduate students prepare for careers that involve teaching. Graduate students who complete the program will participate in a learning community in which they will 1) develop knowledge of effective pedagogy, including evidence-based teaching methods, by completing one Foundations in Teaching and five advanced-level CTL workshops, 2) gain expertise with varied teaching methods by documenting three qualifying teaching experiences, and 3) develop, reflect on, and refine on their teaching approach by writing an engaging teaching philosophy statement. Documenting one's teaching experience includes demonstrating that the required number of teaching hours have been met, attaining faculty or CTL observation and student feedback on one's teaching activities, and writing a self-reflection. The qualifying teaching experiences that can be counted toward the Teaching Citation include, for example, include leading a weekly discussion or recitation subsection, leading regular review- or help-sessions, presenting course lectures, teaching a course independently, and mentoring a student in a research project. Teaching experiences must be approved by CTL staff.

- A limited opportunity for some Washington University students to enroll in courses at Saint Louis University and the University of Missouri–St. Louis is available through the Inter-University Exchange Program (p. 110).
- The Skandalaris Center (p. 111) offers cocurricular programming and practical, hands-on training and funding opportunities to students and faculty in all disciplines and schools.
- The McDonnell International Scholars Academy (p. 113) is an endowed fellowship program that offers generous financial support toward graduate and professional degree studies at Washington University in St. Louis.

Inter-University Exchange Program

The Inter-University Exchange (IE) program between Washington University, Saint Louis University (SLU), and the University of Missouri–St. Louis (UMSL) began in 1976 as an exchange agreement encouraging greater inter-institutional cooperation at the graduate level. Over time, this program has evolved to include undergraduate education. The basic provisions of the original agreement are still in place today, and participation continues to be at the discretion of each academic department or unit.

At Washington University, there are several schools that *do not participate* in this program (i.e., degree-seeking students in these schools are not eligible to participate in the IE program, and courses offered in these schools are not open to SLU and UMSL students attending Washington University through the IE program). They are the School of Law, the School of Medicine, the McKelvey School of Engineering, and the School of Continuing & Professional Studies. The Washington University schools that are open to participation in the IE program may have specific limitations or requirements for participation; details are available in those offices.

The following provisions apply to all coursework taken by Washington University students attending SLU or UMSL through the IE program:

- Such courses can be used for the fulfillment of degree or major requirements. (Students should consult with their dean's office for information about how IE coursework will count toward their grade-point average, units and major requirements.)
- Such courses are not regularly offered at Washington University.
- Registration for such courses requires preliminary approval of the student's major/department advisor, the student's division office or dean, and the academic department of the host university.
- Students at the host institution have first claim on course enrollment (i.e., a desired course at SLU or UMSL may be fully subscribed and unable to accept Washington University students).
- Academic credit earned in such courses will be considered as resident credit, not transfer credit.

- Tuition for such courses will be paid to Washington University at the prevailing Washington University rates; there is no additional tuition cost to the student who enrolls in IE coursework on another campus. However, students are responsible for any and all fees charged by the host school.
- Library privileges attendant on enrolling in a course on a host campus will be made available in the manner prescribed by the host campus.

Instructions

Washington University students must be enrolled full-time to participate in the IE program and have no holds, financial or otherwise, on their academic record at Washington University or at the host institution.

1. The student must complete the IE program application form. Forms are available from the Office of the University Registrar website.
2. The student must provide all information requested in the top portion of the form and indicate the course in which they wish to enroll.
3. The student must obtain the approval signature of the professor teaching the class or the department chair at SLU or UMSL, preferably in person.
4. The student also must obtain the approval signatures of their major advisor at Washington University and the appropriate individual in their dean's office.
5. Completed forms must be submitted to the Office of the University Registrar in the Women's Building a minimum of one week before the start of the term.

Course enrollment is handled administratively by the registrars of the home and host institutions. Washington University students registered for IE coursework will see these courses on their class schedule and academic record with the subject codes SLU and UMSL. Final grades are recorded when received from the host institution. The student does not need to obtain an official transcript from SLU or UMSL to receive academic credit for IE coursework at Washington University.

Contact:	Office of the University Registrar
Phone:	314-935-5959
Email:	registrar@wustl.edu
Website:	http://registrar.wustl.edu/student-records/registration/the-inter-university-exchange-program

Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship

The Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship is the hub of creativity, innovation, and entrepreneurship at Washington University. We believe everyone can be entrepreneurial. Skandalaris provides programming where anyone can explore their creative and entrepreneurial interests, develop an entrepreneurial mindset, and go from ideation to launch.

Mission

The Skandalaris Center fosters and empowers an inclusive community that finds opportunities in problems and transforms ideas into action. We build an ecosystem of education, research, and resources that engages all WashU students, faculty, alumni, and staff as entrepreneurial leaders and collaborators.

Who We Serve

We work with the best and brightest at WashU — the change-makers, thought leaders, and visionaries — to solve the world's problems and meet local needs through innovation and entrepreneurship. As an interdisciplinary center, our initiatives serve students, faculty, staff, and alumni from all levels and disciplines.

Our Initiatives

We develop programs for WashU entrepreneurs, creatives, innovators, and scholars. Our commitment to interdisciplinary innovation and entrepreneurship is motivated by the following beliefs:

- *Everyone can be creative.* We provide hands-on experiences and the creative means to solve problems.
- *Innovation is the backbone of entrepreneurship.* Our opportunities are designed to develop and share new ideas while connecting with other WashU entrepreneurs and innovators.
- *Good ideas are one opportunity away from success.* Our programs are created to help WashU entrepreneurs and innovators access the resources they need to take their ideas to the next level.
- *Knowledge and skills are key to innovation and entrepreneurship.* Our Center offers events and opportunities to help our community of WashU entrepreneurs, creatives, and innovators learn the ins and outs of innovation and entrepreneurship.

Programs and Resources

- **Experts on Call**

This program provides an opportunity for the WashU community to connect with experts in the Skandalaris Center or remotely, free of charge.

- **Honors in Innovation & Entrepreneurship**

Students who have shown exemplary involvement in innovation and entrepreneurship during their time at Washington University are recognized through this program. Honors are earned by accumulating points through a combination of curricular and cocurricular activities.

- **In-Residence Program**

This program provides WashU students, faculty, staff, and alumni with the opportunity to learn from and work with professionals with extensive industry experience.

- **PhD Citation in Entrepreneurship**

This program provides opportunities for PhD students who are interested in developing skills and experiences in the areas of entrepreneurship and innovation.

- **Pivot 314 Fellowship**

The Pivot 314 Fellowship is a year-long program presented by the Office of the Provost and the Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship. Pivot 314 offers graduate students curated programming focused on professional development and on strengthening leadership and communications skills, as well as internship opportunities.

- **Resources**

The Skandalaris Center, Washington University, and external services and resources are available to support innovators and entrepreneurs.

- **Skandalaris Spaces**

Our collaboration space is available for hosting meetings or events. Requests should be made a week in advance.

- **Skandalaris Startup Webinars, Panel Discussions, and Workshops**

These webinars provide an exciting way for alumni to reconnect and share their experiences with entrepreneurship. We also offer free, noncredit workshops designed to encourage creativity, innovation, and entrepreneurship.

- **Startup Venture Promotion**

The Skandalaris Center is happy to help Washington University in St. Louis students, faculty, staff, and alumni with promoting their startup ventures.

- **Student Enterprise Program (StEP)**

StEP provides a unique opportunity for students to own and operate a business on campus that serves the WashU community. Student owners can supplement the valuable business and entrepreneurial skills they learn in the classroom while gaining real-world experience as they manage and lead their own businesses.

- **Student Groups**

There are many organizations that allow students to gain experience and make valuable interdisciplinary connections in the areas of creativity, innovation, and entrepreneurship.

- **Venture Development**

The WashU community is invited to set an appointment with a member of our team for help with ideas and businesses at any stage. We will work with these individuals to brainstorm ideas, strengthen financial models, draft business plans, perfect pitches, and more.

- **Washington University Entrepreneurship Courses**

Courses in entrepreneurship offered across the university are available to students at all levels and in all disciplines.

Competitions

- **IdeaBounce®**

IdeaBounce® is both an online platform and an event for sharing venture ideas and making connections. This is an opportunity for participants to pitch their ideas (no matter how "fresh"), get feedback on them, and make connections. In-person events happen frequently throughout the fall and spring semesters.

- **Skandalaris Venture Competition (SVC)**

The SVC provides expert mentorship to new ventures and startups to ready them for commercializing their ideas, launching, and pitching to investors. Teams will develop materials focused on explaining the ideas that they are working on to a broad audience.

- **Who Can Apply:** Current Washington University students and alumni (within one year of graduation) with an early-stage venture or idea
- **Award:** Up to \$22,500

- **Global Impact Award (GIA)**

The GIA awards WashU-affiliated ventures with inventions, products, ideas, and business models that will have a broad and lasting impact on society.

- **Who Can Apply:** WashU students, postdocs, residents, and alumni who have graduated within the last 10 years
- **Award:** Up to \$50,000

Learn More

Please contact the Skandalaris Center to sign up for our newsletter and for additional information about all programs.

Phone:	314-935-9134
Email:	sc@wustl.edu
Website:	http://skandalaris.wustl.edu



McDonnell International Scholars Academy

The McDonnell International Scholars Academy graduate fellowship program at WashU is dedicated to fostering a dynamic community of scholars chosen based on their ability to emerge as leaders and experts in their fields. The McDonnell Academy offers curated programming that includes a leadership seminar, cohort trips, and presentation skills development. This multifaceted approach cultivates leaders who embrace a global outlook and help drive positive change in their communities and beyond.

The McDonnell Academy provides both financial and programmatic support to enrich the WashU graduate experience. Meaningful participation and engagement are key components of the program. For more information about program benefits, eligibility, and admissions, please visit the Admissions page of the McDonnell International Scholars Academy website.

Website: <https://mcdonnell.wustl.edu/>

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