Information Systems Management

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Courses

Visit online course listings to view semester offerings for T81 INFO (https://courses.wustl.edu/CourseInfo.aspx?sch=T&dept=T81&crslvl=5:8).

T81 INFO 506 Fundamentals of Information Technology
This course is designed to provide a comprehensive survey of the information technology field. The enterprise relies heavily on information technology to generate value, efficiency, and effectiveness. As such, organizational leaders must ensure that the enterprise transforms to keep pace in the competitive environment. Globalization, mergers and acquisitions, and the proliferation of new business and operating models require management to continuously reconsider technology infrastructures, organizational structures, process re-engineering, outsourcing, innovation, technology effectiveness, and the creation and management of data and knowledge. Given these challenges and opportunities, the IT professional has never been more crucial to organizational success. In this context, students will become familiar with core IT concepts, processes, and technology and gain an increased understanding of the crucial role of IT in the modern enterprise. Credit 3 units.

T81 INFO 517 Operational Excellence & Service Delivery
This course examines needed management skills and processes for the efficient and effective functioning of IT infrastructure and operational environments to deliver the right set of services at the right quality and at the right costs for internal and external users and customers. Specific emphasis is placed on understanding the roles of IT operations, including system administration, network administration, help desk services, asset management, DevOps, and reporting. Students will study the application of industry best practice frameworks for the management of IT infrastructure, operations, and development. Frameworks covered include the Information Technology Infrastructure Library (ITIL) and Control Objectives for Information and Related Technology (COBIT). Through the application of continuous service improvement, students will understand the IT service life cycle and be able to assess the effectiveness of processes and services. Credit 3 units.

T81 INFO 540 IT Architecture & Infrastructure
This course will demonstrate the importance of understanding organizational strategies and goals and then designing and deploying an information technology (IT) infrastructure that supports those strategies and goals. The course will showcase how fundamental IT building blocks are integrated in meaningful ways in order to support IT services that drive core business outcomes. Through a hands-on enterprise architecture design project, students will learn to design IT infrastructure in a rational, innovative, and cost-effective manner. We will cover a range of enterprise architecture design considerations that are commonly faced by organizations as they enhance their services, launch new products, or expand to new markets. Credit 3 units.

T81 INFO 552 Special Topics in Information Technology
The course material for this course varies among offerings, but this course generally covers advanced or specialized topics in emerging topics in information technology, data science, and cybersecurity. Credit 3 units.

T81 INFO 558 Applications of Deep Neural Networks
Deep learning is a group of exciting new technologies for neural networks. Through a combination of advanced training techniques and neural network architectural components, it is now possible to create neural networks of much greater complexity. Deep learning allows a neural network to learn hierarchies of information in a way that is like the function of the human brain. This course will introduce the student to computer vision with Convolution Neural Networks (CNN), time series analysis with Long Short-Term Memory (LSTM), classic neural network structures and application to computer security. High Performance Computing (HPC) aspects will demonstrate how deep learning can be leveraged both on graphical processing units (GPUs), as well as grids. Focus is primarily upon the application of deep learning to problems, with some introduction mathematical foundations. Students will use the Python programming language to implement deep learning using Google Tensorflow and Keras. It is not necessary to know Python prior to this course; however, familiarity of at least one programming language is assumed. This course will be delivered in a hybrid format that includes both classroom and online instruction. Recommended completion of T81 577. Credit 3 units.

T81 INFO 563 IT Governance & Risk Management
This course shows how the design and implementation of an IT governance system can transform IT from an expense to a profitable investment. Essential to IT governance is risk management. In this regard, students will learn key aspects of managing risk, including risk identification, risk quantification, risk monitoring, risk control, and risk mitigation. Particular focus is placed on project risk management and understanding the process of risk identification, assessment, prevention, mitigation, and recovery. The course will also cover the roles of IT governance, auditing, and control of the confidentiality, integrity, and availability of data. Credit 3 units.
T81 INFO 570 Leadership Seminar for Technology Professionals
This seminar is designed to develop the leadership capacity of professionals working in the information technology (IT) and cybersecurity fields. Although domain expertise plays an important role in the success of a technology professional, it is when this expertise is integrated with the ability to lead people that the merely competent transform into multidimensional force multipliers for the organization. In this course, students will participate in an immersive seminar-based learning experience targeted toward professional and personal development on a range of essential leadership skills. Students will benefit from interaction with industry experts in the IT and cybersecurity fields and receive coaching support to achieve professional and personal goals. Each student will complete a series of self-assessments and multi-rater assessments as well as a personal leadership development plan to gain insight and build competencies critical to effective leadership. Topics include creating a shared vision, strategy development, building and sustaining a healthy culture, essentials of finance and budgeting, driving results, energizing people for performance, innovation, emotional intelligence, navigating organizational politics, managing up, negotiations, stress resilience, talent coaching and development, effective communication, and time management.
Credit 3 units.

T81 INFO 574 Foundations of Analytics
The steeply decreasing costs of gathering, storing, and processing data have created a strong motivation for organizations to move toward "data-driven" approaches to problem solving. As such, data analytics continues to grow rapidly in importance across industry, government, and nonprofit organizations. This course seeks to equip students with a wide range of data analytics techniques that serve as the foundation for a broad range of applications, including descriptive, inferential, predictive, and prescriptive analytics. Students will learn the process of building a data model as well as a variety of analytics techniques and under what situations they are best employed. Through lectures and practical exercises, students will become familiar with the computational mathematics that underpin analytics; the elements of statistical modeling and machine learning; model interpretation and assessment; and structured and unstructured data analysis. Students will also undertake a project to build an analytical model using a "real-world" data set.
Credit 3 units.

T81 INFO 575 Enterprise Data Management
Organizations have begun generating, collecting, and accumulating more data at a faster pace than ever before. The advent of "Big Data" has proven to be both opportunity and challenge for contemporary organizations who are awash in — even drowning in — data but starved for knowledge. Unfortunately, organizations have not developed comprehensive enterprise data strategy and management (EDM) practices that treat data as a strategic imperative. EDM is a comprehensive approach to defining, governing, securing, and maintaining the quality of all data involved in the business processes of an organization. EDM enables data-driven applications and decision making by establishing policies and ownership of key data types and sources. The ultimate goal is to create a strategic context for the technology underpinnings of data life cycle management and to ensure good stewardship of an organization's data.
This course will cover the critical components of building an enterprise data strategy, including but not limited to data strategy, data governance, data security, data architecture, data quality, data ownership, and metadata management.
Credit 3 units.

T81 INFO 576 Analytics Applications
This course builds on the content taught in Enterprise Data Management and Foundations of Data Analytics. It focuses on the strategic, operational, tactical, and practical use of data analytics to inform decisions within an organization across a range of industry and government sectors as well as within organizational functions. Students will be introduced to specific analytics techniques that are used currently by practitioners in areas of diagnostic, descriptive, predictive, and prescriptive analytics. Students will learn the critical phases of analytics including data preparation, model development, evaluation, validation, selection, and deployment. In so doing, students will learn to apply data analytics in order to optimize organizational processes, improve performance, and inform decision-making. Recommended completion of T81 574.
Credit 3 units.

T81 INFO 577 Applied Data Science for Practitioners
Organizations are rapidly transforming the way they ingest, integrate, store, and serve data and perform analytics. In this course, students will learn the steps involved with designing and implementing data science projects. Topics addressed include ingesting and parsing data from various sources, dealing with messy and missing data, transforming and engineering features, building and evaluating models, and visualizing results. Using Python as well as tools such as Numpy, Pandas, and Scikit-learn, students will complete a practical data science project that addresses the entire design and implementation process. Students will also become familiar with the best practices and current trends in data science, including writing elegant code, documenting and version controlling, creating reproducible research in container platforms, and working in a cloud environment. Upon completion of the course, students will emerge equipped with data science knowledge and skills that can be applied from day one on the job. Recommended completion of T81 INFO 574.
Credit 3 units.

T81 INFO 585 Capstone
This capstone course is the culmination of the Masters of Information Systems Management program. The capstone project provides the opportunity for students to employ the knowledge and skills they have gained from their course work in a rigorous and systematic manner. Projects are sponsored by external corporate, government, and non-profit organizations, and they provide the opportunity for students to deliver meaningful research and recommendations for "real-world" IT challenges and problems.
Credit 3 units.

T81 INFO 599 Applied Research Study
Applied Research Study (ARS) is an advanced, project-based course designed to allow students to develop in-depth knowledge and further their education building on the education offered in the Programs. Applied research is a type of examination looking to find practical solutions for existing problems. These can include challenges in the workplace, education, and society. Students collaborate with an adjunct
faculty advisor to collect data. Findings are applicable and may be implemented upon completion of a study. Applied research focuses on answering one specific applied research question for a client or sponsor. Applied Research Study must have prior approval of a faculty sponsor and the Program Director. Credit 3 units.