

Sciences and Arts

SA 1000 - Sciences and Arts Explorations

Exploration of majors and related career opportunities. Includes an introduction to University resources such as the Career Center, presentations by experts, an examination of individual interests and abilities, opportunities for discussion and reflection, and guidance in choice of appropriate courses.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): General Sciences and Arts

Systems Admin. Technology

SAT 1200 - Introduction to Programming

Introductory course in C/C++ programming. Topics include top-down analysis of problems, structured programming, control statements, loops, and functions, arrays, and pointers. Basic concepts of object-oriented programming (classes, objects, function overloading) will also be introduced.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Industrial Technology, Computer Network & System Admn; Must be enrolled in one of the following Class(es): Freshman, Sophomore

SAT 1610 - Computer and OS Architecture

Fundamentals of computer organization, operating system architecture, PC/WS major subassemblies, PC and server configuration planning, power interfaces, system assembly/set-up, connection of peripherals, installing fundamental operating system software, system testing/debugging and planning and installation of application software portfolio.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn

Pre-Requisite(s): SAT 1200

SAT 1700 - Computer-Cyber Ethics/Policy

Ethical, privacy, liability, and regulatory compliance issues in managing computer and network administrations. Other topics include the digital ID debate, biometrics, computer use policy, privacy statements, P3P, security policy, FCC mandates, state utility commission mandates, W3C, standards development bodies.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn

SAT 2343 - Network Administration I

Introduction to basic networking concepts and implementation. Topics include OSI model, subnetting, network addressing, data encapsulation, network topologies, administration UNIX and NT systems running TCP/IP, and basic configuration of networking hardware including cabling, bridges, routers, and other communications.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Fall

Pre-Requisite(s): SAT 1610

SAT 2511 - MS System Administration I

Microsoft server software installation and configuration. Development of system interface scripts to perform tasks specific to client/server applications. Other topics include RDP, directory services, device drivers, SLIP/PPP, and SAN/NAS access.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Spring

Pre-Requisite(s): SAT 2343

SAT 2711 - Unix & Linux Administration I

Study of networked systems in Linux and UNIX. Topics include Linux file system administration, Bash shell, system initialization and X windows, Linux processes management, print and log administration, compression, system back up/restore, network services (FTP, NFS, Samba) and security (firewall) configuration.

Credits: 4.0

Lec-Rec-Lab: (0-3-3)

Semesters Offered: Fall, Summer

Pre-Requisite(s): SAT 1200

SAT 3200 - Storage Area Networking

Study of distributed network storage methods, that is iSCSI, DAS, NAS, and SAN technologies. Other topics include storage and computer virtualization, configuration management, storage farms, backup and recovery.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Pre-Requisite(s): SAT 2511 and SAT 2711

SAT 3210 - Database Management

Introductory course on database management. Topics include the essential concepts, principles, and techniques of modern database systems. Administration of latest RDBMS, such as Oracle and SQ2 language.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Summer

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn

Pre-Requisite(s): SAT 2511 and SAT 2711

SAT 3343 - Network Administration II

Study of network devices in various architectures. Topics include routing protocols, TCP/IP, access-lists, remote network structures, network topologies, telnet and SSH authentication, switch programming, VLAN and STP configuration, IP traffic control, network troubleshooting and WAN

encapsulation.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Spring, Summer

Pre-Requisite(s): SAT 2343

SAT 3511 - MS System Administration II

Advanced MS administration functions. Topics include TCP/IP infrastructures, managing storage, grid and clustered computing, configuring print servers, Windows terminal server, MS system tuning, remote access, and back up and recovery from failures.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Pre-Requisite(s): SAT 2511

SAT 3711 - Unix & Linux Administration II

Advanced study of UNIX and Linux OS. Topics include system management, installation and maintenance, network security, data integrity, and enterprise infrastructures such as identity management, authentication, authorization and directory services.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring, Summer

Pre-Requisite(s): SAT 2711

SAT 3812 - Network Security Engineering I

Planning and managing system security in a TCP/IP converged enterprise network environment. Topics include security architecture, attack methods and counter-measures, patch management, performance monitoring, security management tools, best practices, policy management, virus scanning, security protocols, intrusion detection, firewalls, and SSL/TLS.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Pre-Requisite(s): SAT 2511 and SAT 2711

SAT 3820 - Mobile Computing & FCC Regulations

Evolution of the wireless communications, standards, and regulations. Topics include IEEE 802.11b/a/g Physical & MAC Layer Standards, Site Survey, WLAN Security and Vulnerabilities, Troubleshooting, Personal, Metropolitan, and Wide Area Wireless Networks (Bluetooth, WiMax, Cellular & Satellite Networks).

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Spring, Summer

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn

Pre-Requisite(s): SAT 3812

SAT 4240 - VoIP Engineering

Voice over IP (VoIP) engineering and design. Topics include call and session protocols such as SIP, H.323, IAX and MGCP; VAD and PLC; common practical issues such as call redirection; codec integration and quality of service measurements.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring - Offered alternate years beginning with the 2010-2011 academic year

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn

Pre-Requisite(s): SAT 2511 and SAT 2711 and SAT 3343

SAT 4310 - Advanced Scripting Programming

Emphasizes advanced portions of scripting programming, testing, implementation and documentation (i.e. PERL, PHP, Python and Shell Scripting). Other topics include language syntax data and file structures, input/output devices, file and graphical user interfaces.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn

Pre-Requisite(s): SAT 1200 and SAT 2511 and SAT 2711

SAT 4343 - Network Engineering

Topics include router and switch flow control; VoIP, compression and load balancing; VPN networks involving MPLS, IPSEC and PPP; advanced access-list configuration; AAA; Kerberos; TACACS; Firewalls; and configuration of advanced routing protocols.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring - Offered alternate years beginning with the 2009-2010 academic year

Pre-Requisite(s): SAT 3343

SAT 4480 - Senior Project I

Capstone course requiring the application of knowledge gained in lower division courses. Projects are team oriented, require weekly progress

reports, and culminate with a final report and oral presentation.

Credits: 3.0

Lec-Rec-Lab: (0-0-6)

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Computer Network & System Admn; Must be enrolled in one of the following Class(es): Junior, Senior

SAT 4541 - Windows 2000 Directory Services

Advanced concepts of planning and implementing enterprise services including LDAP directory service, Microsoft Active Directory and Kerberos in an enterprise environment. The course covers the concept of sustainability, green computing and best practices in industry.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Summer

Pre-Requisite(s): SAT 3511(C) and SAT 3711

SAT 4600 - Web/App Server Administration

In depth study of Apache web server, Microsoft Internet Information Server (IIS) and email services. Topics include server configuration, load balancing, connecting to the Internet, web security and administration, communication media, HTTP, fault tolerance, and proxy servers.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring

Pre-Requisite(s): SAT 3511 and SAT 3711

SAT 4812 - Network Security Engineering II

Cryptographic, authentication, key distributions, and e-commerce security protocols. Security protocol properties: authentication, secrecy, integrity, availability, non-repudiation, atomicity, certified delivery; crypto-protocol attacks; security protocols design, implementation and analysis. Email, IP, and wireless security, virtual private networks, firewalls, content filtering, network security policies, and intrusion detection.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring

Pre-Requisite(s): SAT 3812

SAT 4880 - Senior Project II

Capstone course requiring the application of knowledge gained in lower division courses. Projects are team oriented, require weekly progress reports, and culminate with a final report and oral presentation.

Credits: 3.0

Lec-Rec-Lab: (0-0-6)

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of instructor required; Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SAT 4480

SAT 4996 - Special Topics in Computer Network Systems Administration

Selected additional topics of interest in Computer Network Systems Administration based on student and faculty demand and interest. May be a tutorial, seminar, workshop, project, or class study.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Computer Network & System Admn; Must be enrolled in one of the following Class(es): Senior

SAT 4997 - Independent Study in Computer Network Systems Administration

Independent study of an approved topic under the guidance of a Computer Network Systems Administration faculty member. May be either an academic, design, or research problem/project.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Must be enrolled in one of the following Major(s): Computer Network & System Admn; Must be enrolled in one of the following Class(es): Senior

SAT 4998 - Undergraduate Research in Computer Network Systems Administration

An undergraduate research experience in Computer Network Systems Administration. Under the guidance of a CNSA faculty member, students work on a selected/approved research problem or work directly with faculty on active research projects/grants. May require more than one semester to complete.

Credits: variable to 6.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Computer Network & System Admn; Must be enrolled in one of the following Class(es): Senior

Social Sciences

SS 1001 - Orientation to the Social Sciences

Introduction to departmental requirements, relevant university resources, careers in social sciences and history, skill expectations, and portfolio development; assessment of current knowledge.

Credits: 1.0

Lec-Rec-Lab: (1-0-0)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Social Sciences, Liberal Arts with History Opt, Anthropology

SS 1002 - Orientation to Legal Careers

An introduction to how one becomes an attorney, what it is like to be an attorney, and the career options available to attorneys.

Credits: 2.0

Lec-Rec-Lab: (2-0-0)

Semesters Offered: Spring

SS 2100 - World Peoples & Environments

Introduction to two major disciplines, anthropology and geography, that focus on human diversity and the human relationship to environment and resources. Emphasizes patterns of culture and nature at different scales of human organization.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

SS 2200 - Prehistory and Archaeology

Introduction to the methods of archaeology and the contributions of the discipline to understanding of world prehistory. Topics include the ways archaeologists discover and excavate sites, the analysis of archaeological artifacts and features, human evolution, and the patterns of world prehistory.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

SS 2400 - Introduction to Human Geography

This course introduces students to concepts, problems, and case studies that make up the study of human geography: the spatial differentiation and organization of human activity, environmental sustainability, and the role of space and place in our everyday lives.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): UN 1002

SS 2500 - The American Experience

Covers selected topics related to historical development of American culture and society. Topics include American Revolution, slavery and Civil War, Jacksonian democracy, the West, urbanization and immigration, technology, work, Progressives and expertise, World War I, wealth and leisure, Americans and politics, mass communications and media, and the Great Depression.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

SS 2550 - Themes in Western Civilization

Overview of the evolution of Western civilization. Reviews the major themes and movements that have influenced Western civilization, the factors that have contributed to its distinctiveness, and its impact on other civilizations.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

SS 2600 - American Government & Politics

Outlines the principles and logic of American Government and politics and explores contemporary issues in national and state government.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

SS 2610 - Introduction to Law and Society

Examining the civil and criminal justice system to explain how law informs yet is shaped by political, economic, and social forces. This course covers issues such as individual rights, the jury system, tort law, legal reform movements and constitutional interpretation.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2006-2007 academic year

Pre-Requisite(s): UN 1002(C) or UN 1003(C)

SS 2700 - Introduction to Sociology

Introduces students to the way that sociologists think about different components of society. Topics include the family, religion, markets, organizations, political systems, and educational systems. Also covers the source of individual values, beliefs, and attitudes.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Summer

SS 3100 - Developing Societies

An overview of the developing world. Asks "What is development?" in ecological, human, and economic terms. Explores variation among developing societies and elements of internal differentiation, including cultures, regions, classes, and genders. Emphasizes active student exploration of strategies for change, including technology, business, and political transformations.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2000-2001 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3200 - Historical Archaeology

Introduction to historical archaeology. Topics include the methods of historical archaeology, theoretical approaches, and sources of evidence. Emphasizes archaeological contributions to understanding of the American past, and the contributions of historical archaeology to an alternative view of American history and culture.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2008-2009 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3210 - Field Archaeology

Practical experience and training in the methods and techniques of field archaeology. Selected readings are followed by active participation in site survey, testing, excavation, record keeping, and analysis. Students benefit through involvement in ongoing research projects.

Credits: variable to 8.0; Repeatable to a Max of 8

Semesters Offered: Summer

Pre-Requisite(s): SS 2200

SS 3211 - Ethnographic Methods

Field-based course that surveys basic concepts of ethnography and applies them in a class-based research project. Provides practical experience in field observation, interviews, oral history, field notes, and write-up of research.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2007-2008 academic year

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): UN 2002

SS 3220 - Archaeological Sciences

Introduction to the archaeological sciences, including geo/bioarchaeology and materials science. Lectures emphasize connections between field and laboratory, and scientific and environmental perspectives on the world's peoples and cultures, both ancient and industrial. Students undertake hands-on exploration through course laboratory component.

Credits: 4.0

Lec-Rec-Lab: (3-0-3)

Semesters Offered: Fall - Offered alternate years beginning with the 2006-2007 academic year

Pre-Requisite(s): SS 2200 and (UN 1002 or UN 1003)

SS 3230 - Archaeology of Industry

The study of industrial heritage using archaeological and historical perspectives. Covers theories, methods, and techniques by means of lectures, readings, and case studies. Students conduct original research, generally on Copper Country industrial sites, under the guidance of the instructor.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): SS 2200

SS 3240 - Reading the Landscape: Anthropology, Geography, History

Landscape is a lens through which scholars study people, environment, and place. The concept transcends traditional disciplinary boundaries. Students will read and discuss different approaches to landscape, with special focus upon anthropological, geographic, and historical perspectives.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2007-2008 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3250 - Human Origins & Evolution

A human evolution course focusing upon a summary of general bio-anthropological principles of evolutionary change, the current fossil record evidencing human evolution, and the consequences of human evolutionary change for modern human variability, health, and behavior.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2007-2008 academic year

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): UN 1002 or UN 1003 or SS 2100

SS 3260 - Latin American Cultural History

This course examines the diverse, but interconnected, cultures of Latin America. The class will examine the sources and patterns of particular cultural traditions, while at the same time understanding the trajectory of social, political, and economic transformations throughout the region.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2009-2010 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 1002 or UN 1003

SS 3270 - Archaeology of the African Diaspora

Forced into slavery, the 'scatterlings' of Africa adapted and struggled to thrive in the New World. Archaeologists studying the Diaspora generally examine: ethnogenesis and blending of identity, migration, structural inequalities, and the construction of race and racism.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2009-2010 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3300 - Environmental Problems

An examination of local, regional, and global contemporary environmental problems. Critical consideration of underlying social, historical, and economic causes. Case studies drawn from topics such as global warming, ozone depletion, groundwater pollution, solid waste disposal, deforestation, and resource depletion. Studies proposed solutions and their impacts.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring, Summer

Pre-Requisite(s): UN 2002

SS 3400 - Contemporary Europe

Examination of the landscapes and cultures of modern Europe. Emphasizes cultural patterns and diversity, environmental quality, economic development, and forces of economic and political unification. Examines urbanization, industry, population, nationalism, and political change through regional examples.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer - Offered alternate years beginning with the 2002-2003 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3410 - World Resources & Development

Examination of the human geography and resources of various world regions. Emphasizes factors affecting prospects for development, including population dynamics, natural resource endowment, social and cultural systems, and spatial structure of society. Case studies of individual countries supplement general concepts and theories.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer - Offered alternate years beginning with the 2001-2002 academic year

Pre-Requisite(s): UN 2002

SS 3500 - Modern American History

A broad survey of American history from World War II to the present.

Credits: 3.0

Lec-Rec-Lab: (2-0-3)

Semesters Offered: Spring, Summer

Pre-Requisite(s): UN 1002 or UN 1003

SS 3505 - Military History of the U.S.

History of the American military and its place in American society in both peace and war from the colonial period until the present.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring

Pre-Requisite(s): UN 1002 or UN 1003

SS 3510 - History of American Technology

Survey of the technological changes that transformed a rural, agrarian America into an urban, industrialized nation. Focuses on how America's social values and geographical situation influenced the direction taken by its technology and engineering community and how America's industrialization, in turn, had significant effects on American society.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring, Summer - Offered alternate years beginning with the 2006-2007 academic year

Pre-Requisite(s): UN 2002

SS 3511 - History of Science in America

Examines the development of scientific enterprises in the U.S. from the colonial period through the present day. Emphasizes institutional bases of science and the place of scientific activities within American society.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2005-2006 academic year

Pre-Requisite(s): UN 2002

SS 3515 - History of American Architecture

Survey of North American architecture from prehistoric times to the present. Focuses on principal architectural styles, building types, and construction technologies. Also examines ideas about architecture to understand the American past.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): UN 1002 or UN 1003

SS 3520 - U.S. Environmental History

Examines how human interaction with physical environment has changed in North America over the last four centuries. Topics include uses of land by Native Americans, changes associated with European colonization, incorporation of natural resources into industrial economy, early conservation and preservation movements, and environmental concerns accompanying urbanization and industrialization.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2000-2001 academic year

Pre-Requisite(s): UN 2002

SS 3530 - The Automobile in America

Examines the automobile in diverse ways, seeing it as a complex product to be manufactured, as a stimulus to reshaping the environment, as an object that has altered social behavior, and as a problem solver and problem maker.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Summer

SS 3540 - History of Michigan

The history of Michigan from before European settlement to the present.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Summer - Offered alternate years beginning with the 2001-2002 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3541 - The Copper Country

Examines the social, labor, and technological history of the Copper Country from the frontier era until the shutdown of the mines.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

SS 3550 - Europe to 1650

History of Europe from earliest times to 1650.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): UN 1002 or UN 1003

SS 3551 - Europe in the Modern Era

A study of European history from 1650 to the present.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): UN 1002 or UN 1003

SS 3552 - Renaissance & Reformation

The history of Europe from 1300 to 1650.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2002-2003 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3560 - History of England I

The social, economic, and political history of England to 1714.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): UN 1002 or UN 1003

SS 3561 - History of England II

History of England from 1714 to the present, including political, social, and economic developments in the period of Britain's greatest influence in the world.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): UN 1002 or UN 1003

SS 3570 - History of Canada

Political, social, economic, and cultural development of Canada from earliest European settlement to the present.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): UN 1002 or UN 1003

SS 3580 - Technology and Western Civilization

An overview of the evolution of technology in Western civilization from classical antiquity to mid-twentieth century. In addition, the course looks at ways technology influenced development of Western civilization and ways values of Western civilization have conditioned Western technology.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2000-2001 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 3600 - American Foreign Policy

Explores the nature, sources, and institutions associated with the making of American foreign policy, paying attention to explanations for American behavior and to current problems for policy. Reviews major events in U.S. diplomatic history.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2000-2001 academic year

Pre-Requisite(s): SS 2600 or UN 2002

SS 3610 - International Law

Explores the principles, content, and logic of public international law, the law of nations. Students brief cases, prepare longer briefs to defend a side in a moot case, and engage in a moot court.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2000-2001 academic year

Pre-Requisite(s): UN 2002

SS 3620 - International Environmental Technology Policy

Explores the relationship between markets and government policies in moving national economies and corporations toward "greener" technology choices. Topics may include industrial ecology, regulation, innovation, and pollution prevention. Course employs examples from U.S., Canada, EU, and Japan. When possible, students work on a real-life project for a client.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2001-2002 academic year

Pre-Requisite(s): UN 2002

SS 3630 - Environmental Policy and Politics

A broad survey of how environmental policy making actually works in the U.S. Covers both environmental policy processes and politics, and the major environmental policies themselves for control of air pollution, water pollution, hazardous wastes, and other major environmental problems.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): UN 2002

SS 3640 - Selected Topics in Cyber-Law

Applies legal and ethical principles to evolving computer technology. Explores current legal issues such as surveillance, privacy, free speech, crime, encryption, on line contracting, intellectual property and censorship, as well as legislative efforts to resolve these and other computing dilemmas.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2005-2006 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

Pre-Requisite(s): UN 2002(C)

SS 3650 - Intellectual Property Law, Technology, Society and Innovation

Principles of intellectual property law, addressing legal and contemporary policy issues in copyright, trademark and patent and how the law impacts the balance between property protections, technological innovation and public access. Emphasizes learning through lectures, case studies and simulations.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2006-2007 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

SS 3655 - Equality, Law, and Justice in the United States: Topics in Race, Class, and Gender

Explore legal construction of equality through the lens of ethnicity, sexuality, gender, and class. Discuss Supreme Court cases, legislation, news and film on issues such as right to privacy, reproduction, family, education, employment, free speech, free exercise, and criminal justice.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2011-2012 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): SS 2600(C) or SS 2610 or UN 2002(C)

SS 3660 - American Constitutional Law

Introduces the U.S. Constitution and how it has been interpreted by the Supreme Court over time. Explores historical, social and political consequences of major constitutional themes such as federalism, judicial review, and evolving view of individual rights and liberties.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2005-2006 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 2002 or SS 2600

SS 3670 - Technology & Governance

This course will enable students to wrestle with the political and legal implications of emergent technology and science in modern societies. Readings will be drawn from contemporary and historical jurisprudence sources, relevant scientific and technical publications, and science studies literature.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2008-2009 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): SS 2600 or SS 2610

SS 3700 - Industry and Society

Examines how the development of modern industry has transformed society by creating a new class of individuals (industrial workers), a new form of the enterprise (the modern industrial enterprise), and a new form of the state (the industrial state).

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2002-2003 academic year

Pre-Requisite(s): UN 2002 or SS 2700

SS 3710 - Social Problems

Examines both the social construction of social problems and substantive problems confronting modern society by considering the distinct understandings of social problems offered by the two major theoretical traditions in sociology and analyzing specific macro and micro social problems.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring, Summer - Offered alternate years beginning with the 2002-2003 academic year

Pre-Requisite(s): UN 2002 or SS 2700

SS 3720 - Social Psychology

Survey of social, cultural, and cognitive influences on individual and group behavior. Introduces attitude formation, social conformity, personal perception, aggression, cooperation, and interpersonal and intergroup relations.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring, Summer

Pre-Requisite(s): UN 2002 or PSY 2000

SS 3740 - Sociology of Family

Survey of marital and family relationships, which includes an examination of sex roles, courtship and mate selection, marital adjustment, sexual behavior, parenting, divorce, and the social forces that bring about changes in family patterns. Assumes familiarity with Social Sciences concepts and methods.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 2002 or SS 2700

SS 3750 - Social Inequality

A critical assessment of social and cultural processes associated with group-based or categorical patterns of inequality. Examines the creation, persistence, and attempts at reduction of structured inequality based on categorical factors such as social class, race, ethnicity, and gender. May explore other significant sources of social inequality.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2001-2002 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 2002 or SS 2700

SS 3760 - Human Dimensions of Natural Resources

Uses sociological concepts to cover facets of human relationships to natural resources, including human values, beliefs, and attitudes regarding the environment; rural resource-dependent communities; natural resource professions and expert knowledge; and the history of American perspectives on the environment.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

SS 3800 - Energy Technology and Policy

The many roles of energy in our energy-dependent world, focusing on fuel and technology choices, trends, and policies. Emphasizes current energy dilemmas and environmental challenges, such as the risk of global climate change. Field trips to local solar homes and energy companies.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2001-2002 academic year

Pre-Requisite(s): UN 2002

SS 3801 - Science, Technology, & Society

Examines the relationship between science, technology, society, and the environment. Topics may include effects of technologies such as computers, biotechnology, and chemicals on society and nature, science and technology policy, and the history of technology and its global consequences.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 2002

SS 3810 - Anthropology of Science and Technology

An anthropological study of technological developments and scientific knowledge in different cultures. Examines how modes of thought in the 20th century have influenced the development of science and technology in the West. Utilizes case studies from anthropology to compare Western and non-Western approaches to scientific observation and technological choice.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2001-2002 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 2002

SS 3820 - Ethical, Legal and Societal Implications (ELSI) of Nanotechnology

Exploration of the implications of molecularism—the perception of atoms and molecules as new targets of governance through precise engineering—brought about by emergent nanotechnology and nanoscience.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2007-2008 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

Pre-Requisite(s): UN 2002

SS 3890 - Industry & the World Economy

Examines the impact of industry and industrial transformations at the local, regional, state, national, and global level. Analyzes topics such as the process of technological transformation, the modern corporation, the environmental consequences of industry, and the corporation and the nation state.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2001-2002 academic year

Pre-Requisite(s): UN 2002 or SS 2700

SS 3910 - Histories and Cultures

Covers selected topics in world history, geography, or anthropology. Important concepts are the relationship between societies and regional geography, the sources and patterns of major cultures, and transformations of social, cultural, political, and economic institutions over time. May be repeated if topic differs.

Credits: 3.0; Repeatable to a Max of 9

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand

Pre-Requisite(s): UN 1002 or UN 1003

SS 3920 - Topics in Anthropology/Archaeology

Survey of a major branch of American anthropology or archaeology, or a specific time period or region. Topics may include North American prehistory, experimental archaeology, applied anthropology, economic anthropology, or other specialized themes. Readings will emphasize both theoretical and substantive contributions. May be repeated if topics differ.

Credits: 3.0; Repeatable to a Max of 9

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand

Pre-Requisite(s): SS 2100 or SS 2200

SS 3930 - Environmental Issues

Covers different environmental issues from year to year. Examples include air pollution, water pollution, endangered species, public land management, and toxics. Each course provides an in-depth exposure to the course topic, covering its sociopolitical and environmental components. May be repeated if topic differs.

Credits: 3.0; May be repeated

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand
Pre-Requisite(s): UN 2002

SS 3940 - World Affairs

The study of current issues and themes in world affairs and of significant world tension areas. Detailed examination of central issues in selected recent regional or international conflicts or high profile internal problems in selected countries.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand

Pre-Requisite(s): UN 2002

SS 3950 - Topics in American History

Examines an important theme, topic, or era in the development of American society, ranging from the colonial era up to the present. May include such topics as the Vietnam War, sports in America, American vernacular architecture, or urban America, all from a historical viewpoint. May be repeated if topic differs.

Credits: 3.0; Repeatable to a Max of 9

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand

Pre-Requisite(s): UN 1002 or UN 1003

SS 3960 - International Experience

Offers a means for crediting students for specific activities in study abroad programs that immerse them in foreign culture, society, and intellectual settings. It is applicable to varied study abroad and exchange programs offered by MTU.

Credits: variable to 9.0; Repeatable to a Max of 9

Semesters Offered: On Demand

SS 3990 - Topics in the Social Sciences

Examines an important theme or topic in the social sciences, such as social theory, work and society, or the engineer in American society. May be repeated if topic differs.

Credits: variable to 3.0; Repeatable to a Max of 9

Semesters Offered: On Demand

Pre-Requisite(s): UN 2002

SS 4000 - Independent Study

Independent study of topic of special interest with assistance and supervision from appropriate faculty.

Credits: variable to 3.0; Repeatable to a Max of 9

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of instructor required

SS 4001 - History of Social Thought

An intensive survey of the literature of 19th-20th century history of social thought, including the writings of Marx, Durkheim, Weber, and other prominent anthropologists, sociologists, and political philosophers.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2006-2007 academic year

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): UN 2002

SS 4010 - Social Science Methods

Covers basic concepts and methods used in conducting empirical research in the social sciences. Topics include research design, hypothesis testing, measurement of concepts, and computer-based data analysis. Assumes familiarity with Social Sciences concepts.

Credits: 4.0

Lec-Rec-Lab: (3-1-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2000-2001 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): UN 2002 and (PSY 2720 or MA 2720 or BA 2100)

SS 4020 - Methods of Teaching Social Studies

Application of learning and instructional theories and practice to the teaching of social studies. Emphasis will include application of state and national education standards and relevant assessment strategies for social studies. Requires admission in the Teacher Education program by the Department of Education.

Credits: 2.0

Lec-Rec-Lab: (0-2-0)

Semesters Offered: Spring

Restrictions: Permission of department required; May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

Pre-Requisite(s): ED 4700(C)

SS 4030 - Senior Seminar in Anthropology

Capstone course for anthropology majors. Students examine career and graduate studies in anthropology and prepare proposal for senior research project.

Credits: 2.0

Lec-Rec-Lab: (0-2-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Senior

Co-Requisite(s): SS 4990

Pre-Requisite(s): UN 2002

SS 4100 - American Indian Political Issues

Exploration of contemporary relationships among American Indians and members of non-Indian communities, focusing on economic resource issues and on the relationship between tribes and other political entities, with emphasis on the Great Lakes region.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2007-2008 academic year

Pre-Requisite(s): UN 2002

SS 4200 - Environmental Anthropology

A seminar on the study of culture and politics in marginal environments and disadvantaged communities. Draws upon research in anthropology and geography to examine the interaction in the Americas, Asia, Africa, Europe, the Pacific, and the Arctic.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand

Restrictions: May not be enrolled in one of the following Class(es):
Freshman

Pre-Requisite(s): SS 2100

SS 4210 - Global Change in Culture and Society Since 1400

Explores the increasing interconnectedness of world cultures since 1400. The course examines the social, economic, and political changes that accompanied the rise of world capitalism from multiple theoretical perspectives. Themes include colonialism, agency, resistance, world-systems theory, and globalization.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2007-2008 academic year

Restrictions: May not be enrolled in one of the following Class(es):
Freshman

Pre-Requisite(s): UN 1002 or UN 1003

SS 4220 - Method & Theory in Archaeology

This course explores themes concerned with the intellectual development of archaeology, including research methods, theoretical concepts, and problems that have characterized the history of the discipline. Particular emphasis is placed on the broader social contexts in which archaeology has developed.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2009-2010 academic year

Restrictions: May not be enrolled in one of the following Class(es):
Freshman, Sophomore

SS 4500 - Historiography

The history of historical writing from Herodotus to the present.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring - Offered alternate years beginning with the 2001-2002 academic year

Pre-Requisite(s): UN 1002 or UN 1003

SS 4510 - Sustainable Futures I

Covers introductory and intermediate concepts of Sustainable Development. Explores methods/tools for assessing sustainability (economic, environmental, societal impacts) of current and emerging industrial technologies. Explores relationships between government policies and markets for introducing sustainable technologies into national economies and corporations.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Class(es):
Freshman, Sophomore

Pre-Requisite(s): UN 2002

SS 4635 - Environmental Diplomacy and Law

This course delves into the international law associated with environmental issues. Students begin with the treaty language and associated jurisprudence (if any) and then move to how the treaty was negotiated, adapted by national governments, and used in political discourse.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2009-2010 academic year

Restrictions: Must be enrolled in one of the following Class(es):
Sophomore, Junior, Senior

Pre-Requisite(s): SS 3610(C)

SS 4900 - Seminar in Social Sciences

An intensive seminar study of a topic of importance and special interest in the social sciences. Topics could focus on the history of anthropological theory or on world religious systems in comparison. May be repeated if topic differs.

Credits: variable to 3.0; Repeatable to a Max of 9

Semesters Offered: On Demand

Pre-Requisite(s): UN 2002

SS 4910 - Senior Orientation and Assessment

Assessment of learning and preparation for post-graduate work, professional training, or graduate school.

Credits: 1.0

Lec-Rec-Lab: (1-0-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Social Sciences, Liberal Arts with History Opt, Anthropology; May not be enrolled in one of the following Class(es): Freshman, Sophomore

SS 4920 - Internship Experience

Internship, on or off campus, providing appropriate practical, professional experience in an area related directly to a student's course of study. Students work under professional supervision. Requires a written evaluation of the work.

Credits: variable to 6.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of department required; Must be enrolled in one of the following Major(s): Liberal Arts with History Opt, Social Sciences

SS 4921 - Washington Experience - Professional Practicum

Practicum participants experience professional hands-on learning as intern in governmental, public-interest, non-profit, or national organization in DC or select cities abroad. Internship placements made through approved affiliate institution providing placements, mentorship, supervision, classes, orientation, and housing for MTU's DC interns.

Credits: variable to 15.0; Repeatable to a Max of 15

Semesters Offered: On Demand

Restrictions: Permission of department required

SS 4990 - Directed Study in Anthropology

An original study of an anthropological problem, including literature search, data collection, and analysis, culminating in a research report.

Credits: 2.0

Lec-Rec-Lab: (0-2-0)

Semesters Offered: Spring

Restrictions: Permission of instructor required; Must be enrolled in one of the following Class(es): Senior

Co-Requisite(s): SS 4030

Service Systems Engineering**SSE 2100 - Introduction to Service Systems Engineering**

Introductory course covers the evolution of service systems engineering within the broader context of the engineering disciplines. Careers and professional practice within the discipline will be explored. Topics include systems analysis and design, introduction to quality tools and service systems engineering examples.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

SSE 2300 - Service Systems Dynamics and Design

Introduces system dynamics principles and explores the effect of system structure and variable interactions on system behavior. Waiting line theory is introduced. Other topics include simulation, mental models, socio-technical systems, rational decision-making, and design.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): MA 3710(C) or MA 2720(C)

SSE 3200 - Analysis and Design of Web-based Services

The strategy behind developing web-based service systems will be the focus of the course. Topics will include flowcharting, cost estimating, performance measurement, database management, and alpha and beta testing. A semester project will illustrate the use of these tools.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): (CS 1121(C) or CS 1131(C)) and SSE 2300(C)

SSE 3400 - Human Interactions in Service Systems

Service system customers and employees can benefit from user-centered design. This course explores both the psychological and physical characteristics of human beings, as well as cultural influences on their behavior. It introduces data collection methods such as surveys, focus groups, and structured interviews. It then presents how to apply human factors principles to the design process.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): PSY 2000 and (MA 3710(C) or MA 2720(C))

SSE 3500 - Service System Operations

Focuses on the operation of service systems in a customer-focused environment. Topics will include work measurement, performance management, and process evaluation and improvement. Supply chain, demand management and lean practices will also be introduced.

Credits: 3.0
Lec-Rec-Lab: (3-0-0)
Semesters Offered: Fall
Pre-Requisite(s): MA 3710 or MA 2720

SSE 3600 - Optimization and Adaptive Decision Making

Techniques in optimization and adaptive decision making will be introduced. The fundamentals in linear, integer, and goal programming will be applied to real-world problems with a service systems focus. Adaptive decision making techniques including Bayesian analysis, fuzzy systems, and neural networks will also be investigated.

Credits: 3.0
Lec-Rec-Lab: (3-0-0)
Semesters Offered: Spring
Pre-Requisite(s): (MA 2320 or MA 2321 or MA 2330) and (MA 2720 or MA 3710)

SSE 4300 - Project Planning and Management for Engineers

The various stages in a project life cycle will be defined and explored such as planning, metrics, execution, completion, and maintenance. Basic tools such as CPM, PERT, Gantt, and budgeting will be introduced. Change assimilation in the context of project management will also be discussed. Not open to students with credit in BA3620.

Credits: 3.0
Lec-Rec-Lab: (3-0-0)
Semesters Offered: Fall
Pre-Requisite(s): MA 2720 or MA 3710

SSE 4600 - Managing Risk

Risk definition and identification in terms of financial, human, legal, and physical constraints will be introduced. Techniques for analyzing and managing risk such as FMEA and Reliability studies will be covered. Other topics will include risk elimination, mitigation, and tolerance.

Credits: 3.0
Lec-Rec-Lab: (3-0-0)
Semesters Offered: Fall
Pre-Requisite(s): MA 2720 or MA 3710

Surveying

SU 1500 - Data Collection Systems

Familiarization to modern data collectors used in conjunction with total stations, GPS receivers, and digital levels. Transferring and displaying survey data within various systems. To include job creation, file types, feature codes, data entry, and COGO routines.

Credits: 1.0
Lec-Rec-Lab: (0-0-2)
Semesters Offered: Fall
Restrictions: Must be enrolled in one of the following Major(s): Surveying Engineering

SU 2000 - Intro to Surveying

Surveying topics will include distance measurements, leveling, angles, directions, traversing, horizontal and vertical curves, percent grade, and coordinate geometry. GIS topics will include sources of GIS data, spatial data models, GIS data structures, GIS topology, as well as query and feature selection in GIS.

Credits: 2.0
Lec-Rec-Lab: (0-1-2)
Semesters Offered: Fall, Spring

SU 2150 - Fundamentals of Surveying

Introduction to surveying principles as applied to the measurement of distances, directions, and elevations. Topics include taping, leveling, traversing, topographic surveys, construction surveys, U.S. public land surveys, the use of modern instrumentation, and computer applications.

Credits: 4.0
Lec-Rec-Lab: (0-2-6)
Semesters Offered: Fall

SU 2220 - Route and Construction Surveying

Study of the geometry and field stake-out techniques of circular curves, spiral curves, compound curves, reverse curves, equal-tangent vertical curves, and unequal-tangent vertical curves. Other topics include horizontal and vertical alignment design, earthwork quantities and mass diagrams.

Credits: 3.0
Lec-Rec-Lab: (0-3-0)
Semesters Offered: Spring
Pre-Requisite(s): SU 2150

SU 2260 - Survey Computations

Introduction to the PLSS system and cadastral management software. Utilizing Mathcad software to perform survey related computations for coordinate forms, intersections, resections, conformal transformations and Least Squares adjustment.

Credits: 3.0
Lec-Rec-Lab: (0-3-0)
Semesters Offered: Spring
Pre-Requisite(s): SU 2150

SU 3110 - Surveying Field Practice

Survey projects from field to finish using current surveying equipment and software. Basic statutes and ethics governing the practice of surveying. Projects cover level networks, horizontal control, design surveys, construction layout, section subdivision, map and report preparation.

Credits: 4.0
Lec-Rec-Lab: (0-2-6)
Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 2260 and SU 2220

SU 3180 - Boundary Surveying Principles

Interpretation of property descriptions used to establish land boundaries. Resolving conflicts in boundary descriptions as well as conflicts in evidence. Review doctrines pertaining to transferring title, the role of the surveyor in issuing opinions on boundary location in boundary disputes.

Credits: 3.0
Lec-Rec-Lab: (0-3-0)
Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 2260

SU 3250 - Geodetic Adjustments Theory

Presents errors in surveying measurements and their effect on computed values. Discusses analysis of measurements and errors based on statistical principles and presents adjustment techniques based on least squares principle.

Credits: 3.0
Lec-Rec-Lab: (0-3-0)
Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): (MA 2320 or MA 2321 or MA 2330) and (MA 2720 or MA 2710 or MA 3710) and MA 3160 and SU 2260

SU 3540 - Geospatial Information Technology with Elements of Field Cartography

Application of GIS technology methods for processing surveying data obtained in the field. Concepts of interoperability and metadata organization are considered. Includes map projection review and 2D and 3D cartographic data visualization.

Credits: 4.0
Lec-Rec-Lab: (0-3-3)
Semesters Offered: Spring

Pre-Requisite(s): MA 3710

SU 3560 - Geospatial Imaging Interpretation

Remote sensing methods applied to interpretation of topographic features from aerial and satellite imagery. Accuracy and applicability of remote sensing tools, imagery domains, operational work flows of remotely sensed imagery in field reconnaissance, map renovation, change detection and various essential applications.

Credits: 3.0
Lec-Rec-Lab: (0-2-2)
Semesters Offered: Spring
Restrictions: Permission of department required
Pre-Requisite(s): PH 2200

SU 4003 - GIS Technology Fundamentals

Course provides review of Geographic Information Systems applications and analysis. Includes core concepts such as data acquisition and management, topology, accuracy, metadata, output, quality control, analysis methods, new and traditional software options, web mapping, and GIS implementation/management for research and production.

Credits: 1.0
Lec-Rec-Lab: (1-0-0)
Semesters Offered: On Demand

SU 4010 - Geospatial Concepts, Technologies, and Data

High level review of geospatial data acquisition systems, sensors, and associated processing technologies. Course considers geospatial metadata generation principles, interoperability, and major tools for manipulation with geospatial data. Course may help in transition of non-geospatial majors to geospatial field.

Credits: 3.0
Lec-Rec-Lab: (3-0-0)
Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering

SU 4060 - Geodesy

Concepts of astronomy and geodesy that are relevant to the practice of surveying. Covers theory, field techniques, and computations involved in the determination of true north, an introduction to the figure of the earth and its geometric and physical characteristics, geodetic datums, and coordinate systems.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

Pre-Requisite(s): SU 3250

SU 4100 - Geodetic Positioning

Introduces the instruments and procedures used in surveying projects that require a high order of accuracy. Discusses some conventional instruments and techniques but the greater emphasis is on GPS techniques.

Credits: 3.0

Lec-Rec-Lab: (0-2-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 4060(C)

SU 4140 - Photogrammetry

Basic principles of photogrammetry and its role as a technology for spatial data collection. Use of photogrammetry in the fields of surveying, engineering, and geographic information management will be discussed.

Credits: 3.0

Lec-Rec-Lab: (0-2-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 2260

SU 4180 - Land Subdivision Design

Introduces the physical, economic, and social aspects of optimum land use within the framework of state and local regulations of land divisions, condominiums, mobile home parks, and residential subdivisions.

Credits: 3.0

Lec-Rec-Lab: (0-2-1)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 3180 and CMG 3200

SU 4900 - Capstone Design Project

An engineering design project which integrates multiple aspects of previous surveying coursework while working with an industry partner. Includes project description, project planning, field work, office analysis, computer-aided design, final project completion and oral presentation skills.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Spring

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4996 - Special Topics in Geospatial Technologies

Selected additional topics of interest in Geospatial Technologies based on student and faculty demand and interest. May be a tutorial, seminar, workshop, project, or class study.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4997 - Independent Study in Geospatial Technologies

Independent study of an approved topic under the guidance of a Surveying Engineering faculty member. May be either an academic, design, or research problem/project.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4998 - Undergraduate Research in Geospatial Technologies

An undergraduate research experience in Geospatial Technologies. Under the guidance of a Surveying Engineering faculty member, students work on a selected/approved research problem or work directly with faculty on active research projects/grants. May require more than one semester to complete.

Credits: variable to 6.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4999 - Professional Practice Seminar

A review of all elements of the NCEES Fundamentals of Land Surveying examination, which leads to licensure as a professional land surveyor.

Credits: 1.0; Graded Pass/Fail Only

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Technology

TE 1020 - Technology Computer Applications

Introductory course intended to develop knowledge of computer modeling techniques such as solid modeling, spreadsheet, word processing, presentation, and project time line software utilized throughout the technology curriculum.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Summer

TE 2000 - Directed Study in Technology

Students undertake a directed study in an approved technology topic under the guidance of a School of Technology faculty member. The course of study will be academic in nature and is decided upon between the student and the faculty member.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor and department required; Must be enrolled in one of the following College(s): School of Technology; Must be enrolled in one of the following Class(es): Freshman, Sophomore

TE 3600 - Quality Techniques

This course offers an in depth examination of the key elements of quality systems used by organizations. Topics will include cause and effect analysis, loss prevention, process control, vendor management, advanced quality planning and policy analysis.

Credits: 3.0

Lec-Rec-Lab: (0-2-1)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): MA 2720(C)

TE 3956 - Industrial Safety Management

Occupational safety and health standards and codes. Hazard recognition, accident costs, accident prevention, ethics and administration.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

TE 4200 - Leadership in Complex Organizations

This senior level course explores the traditional and emerging models of leadership as they exist in contemporary organizations. Topics will include organizational theory, critical theory, leadership development, and organizational learning.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

TE 4580 - Facilities Planning, Layout and Process Flow

This course examines the methods used to collect and analyze the necessary data in designing an efficient manufacturing facility. Attention will be given to site and equipment selection, layout and flow analysis.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Senior

TE 4590 - Production Planning and Control

This course studies the modern methods for the systematic planning and control of operations necessary to produce a product or service.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Senior

TE 4996 - Special Topics in Technology

Selected additional topics of interest in Technology based on student and faculty demand and interest. May be a tutorial, seminar, workshop, project, or class study.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following College(s): School of Technology; Must be enrolled in one of the following Class(es): Senior

TE 4997 - Independent Study in Technology

Independent study of an approved topic under the guidance of a School of Technology faculty member. May be either an academic, design, or research problem/project.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following College(s): School of Technology; Must be enrolled in one of the following Class(es): Senior

TE 4998 - Undergraduate Research in Technology

An undergraduate research experience in Technology. Under the guidance of a School of Technology faculty member, students work on a selected/approved research problem or work directly with faculty on active research projects/grants. May require more than one semester to complete.

Credits: variable to 6.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following College(s): School of Technology; Must be enrolled in one of the following Class(es): Senior

University Wide**UN 1000 - Frameworks for Success**

An introduction to University life, exploring ways to become a more effective student focusing on personal and professional habits necessary for success. Topics include academic skill development, time management, and university resources.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall, Summer

UN 1001 - Perspectives on Inquiry

Writing-intensive course which engages students in college level inquiry. Students develop fundamental intellectual habits, understand how to integrate various perspectives on knowledge, and begin to learn how to meet the changing needs of a global, technological, diverse, and environmentally sensitive society.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following Class(es): Freshman

UN 1002 - World Cultures

Examines diversity and change around the globe from perspectives of social sciences, humanities, and arts; explores human experience from prehistory to present. Classroom lectures accompanied by films, live performances, and guest speakers. One complete year of a single foreign language plus World Cultures (UN1003, 1-credit-activities) substitutes for World Cultures.

Credits: 4.0

Lec-Rec-Lab: (3-0-3)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following Class(es): Freshman

UN 1003 - World Cultures Activities

Activities portion of World Cultures. Limited to enrollment by students choosing the modern language option of one full year of a single foreign language to fulfill their World Cultures requirement.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Freshman

UN 1010 - Creating Your Success

Introduction to strategies for creating academic, professional and personal success. Emphasis is on determining individual priorities, improving self-management and developing critical thinking skills. Guided journal writing will be used to explore these strategies.

Credits: 1.0; Repeatable to a Max of 3; Graded Pass/Fail Only

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall, Spring, Summer

UN 1100 - Foundations of Global Leadership

Seminar course designed for participants in the Pavlis program. Offers an introduction to theories of communication relevant to leadership in a global context and examines the relationships among globalization, diversity, culture, communication, and the practices of effective leadership.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall

Restrictions: Permission of instructor required

UN 1200 - Foundations of Environmental Leadership

Seminar course designed for students in the Pavlis program. Builds upon theories of communication covered in UN1100 with particular emphasis on their application to global environmental issues. Examines the role of environmental ethics and sustainability in effective leadership.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Spring
Pre-Requisite(s): UN 1100

UN 1995H - Honors Institute Contract
Credits: 0.0; Graded Pass/Fail Only
Semesters Offered: On Demand

UN 2001 - Revisions: Oral, Written, and Visual Communication

Oral, Written, and Visual Communication. Writing-intensive course which builds on students' previous courses by providing advanced, direct instruction in communication. Students look closely at the communication practices of civic groups and apply what they learn to their own spoken, written, and visual work. Class projects ask students to fit the communications they make to interesting, sometimes difficult, situations and audiences.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following Class(es): Freshman, Sophomore

Pre-Requisite(s): UN 1001 and (UN 1002 or UN 1003)

UN 2002 - Institutions

From families to governments, to markets, to our interactions with the natural environment, institutions organize collective human action. Introduces students to the nature and role of institutions in shaping today's world. Specific topics will vary by section, but all sections address a set of core questions and concepts.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following Class(es): Sophomore

UN 2100 - Foundations of Technological Leadership

Seminar course designed for students in the Pavlis program. Builds upon communication and leadership topics covered in UN1200 with an emphasis on technology in a globalized world. Also theorizes and develops skills essential for effective innovation, entrepreneurship, and creativity.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall

Pre-Requisite(s): UN 1200

UN 2525 - Career Development Foundations

Students will learn the process of career development and planning, which includes self-assessment, decision-making, job search strategies, and awareness of workplace issues.

Credits: 1.0

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Fall, Spring

Restrictions: May not be enrolled in one of the following Class(es): Freshman

UN 2600 - Fundamentals of Nanoscale Science and Engineering

Team-taught introduction to the fundamentals of nanotechnology, emphasizing the interdisciplinary nature of this field. Modern instrumentation, key scientific foundations, and current and potential applications will be discussed. Real and potential societal implications of nanotechnology will be explored.

Credits: 2.0

Lec-Rec-Lab: (1-1-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2007-2008 academic year

UN 2990 - Special Topics - Interdiscip.

The study of interdisciplinary special topics as specified by section title.

Credits: variable to 6.0; Repeatable to a Max of 97

Semesters Offered: On Demand

Restrictions: Permission of instructor required

UN 2995H - Honors Institute Contract

Credits: 0.0; Graded Pass/Fail Only

Semesters Offered: On Demand

UN 3002 - Undergraduate Cooperative Education Laboratory

Credits may count as free or technical electives based on student's academic department. Requires 2.20 GPA or better, registration with the Office of Cooperative Education, and acceptability by a recognized employer. Transfer students must have completed at least one full-time semester on the MTU campus.

Credits: variable to 2.0; May be repeated

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of instructor and department required; May not be enrolled in one of the following Level(s): Graduate; Must be enrolled in one of the following Class(es): Sophomore, Junior, Senior

UN 3100 - Foundations of Ethical Leadership

Seminar course designed for participants in the Pavlis program. Builds

upon topics covered in UN2100 with an emphasis on the principles of ethical leadership. Covers topics of ethics in communication, technology, the environment, and economics in today's interconnected, globalizing world.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall

Pre-Requisite(s): UN 2100

UN 3200 - Global Technological Leadership

This course, designed for students in the Pavlis program, covers topics of leadership including personality traits, interpersonal skills, leadership styles, teamwork, situational leadership, and decision making. Offers practical experience in project development, communication, and leadership development.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): UN 3100

UN 3404 - Cultural Awareness

This course, designed for students in the Pavlis program, allows students to explore the culture of their international experience. Students will gain insight into working with and learning from different cultures to see the world and their leadership roles in new ways.

Credits: 2.0

Lec-Rec-Lab: (0-1-1)

Semesters Offered: Summer

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Co-Requisite(s): UN 3405, UN 3406

Pre-Requisite(s): UN 3200

UN 3405 - Language Fundamentals

This course, designed for students in the Pavlis program, provides an opportunity for students to explore the basic and essential elements of language spoken in the host country using online resources and native speakers to facilitate leadership development abroad.

Credits: 2.0

Lec-Rec-Lab: (0-0-6)

Semesters Offered: Summer

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Co-Requisite(s): UN 3404, UN 3406

Pre-Requisite(s): UN 3200

UN 3406 - Language of Business, Technology, and the Environment

This course, designed for students in the Pavlis program, will allow students to explore 1) business and management culture, 2) engineering & technology tools, tactics, and processes associated with design and development of new products and technological systems, and 3) topics of environmental stewardship associated with the location of their international experience.

Credits: 2.0

Lec-Rec-Lab: (1-0-1)

Semesters Offered: Summer

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Co-Requisite(s): UN 3404, UN 3405

Pre-Requisite(s): UN 3200

UN 3995H - Honors Institute Contract

Credits: 0.0; Graded Pass/Fail Only

Semesters Offered: On Demand

UN 4000 - Remote Sensing Seminar

A seminal series that covers topical issues in remote sensing, ecosystem research, and global change. Required for all students with a minor in remote sensing.

Credits: 1.0; Repeatable to a Max of 2

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Fall, Spring

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

UN 4050 - Global Leadership Practicum

Students in the Pavlis program will spend time abroad participating in a variety of leadership experiences including at least one major leadership project. Upon returning, students will spend two weeks on campus writing reports and hosting an on-campus leadership institute.

Credits: 7.0

Lec-Rec-Lab: (0-0-12)

Semesters Offered: Summer

Restrictions: Permission of department required; Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): UN 3404 and UN 3405 and UN 3406

UN 4100 - Leadership Capstone Project I

This course, designed for students in the Pavlis program, is the first in a two part leadership capstone experience. Students engage in discussions

and make oral presentations, outline a senior project report, mentor other students and apply their leadership skills by taking on leadership roles.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Senior

Pre-Requisite(s): UN 4050

UN 4200 - Leadership Capstone Project II

This course, designed for students in the Pavlis program, is the second in a two part leadership capstone experience. Students engage in discussions and make oral presentations, write a senior project report, mentor other students and apply their leadership skills by taking on leadership roles.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Senior

Pre-Requisite(s): UN 4100

UN 4990 - Special Topics - Interdisciplinary

Study of interdisciplinary special topics as specified by section title.

Credits: variable to 6.0; May be repeated

Semesters Offered: On Demand

Restrictions: Permission of instructor required

UN 4995H - Honors Institute Contract

Credits: 0.0; Graded Pass/Fail Only

Semesters Offered: On Demand

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