

Oregon Tech Curricular Changes - Effective for Academic Year 2017-2018

This list submitted to OrACRAO on:

Curricular Change Cycle: **Annual**

Annual submission date:

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Effective Term	New (N) Modified (M) Deleted (D)	Prefix	Course#	Course Title	Credits	Term Offered	Course Description
201701	N	ABA	598	Supervised Practicum	2-0-2		Supervised experience in Applied Behavior Analysis. Designed to meet Intensive Practicum experience standards and supervisory requirements of the Behavior Analysts Certification Board (BACB®). Students will have the opportunity to develop proficiency in behavior analytic consultation and service delivery. May be repeated for credit
201701	N	ART	215	Design Arts and Aesthetics	3-0-3		Students learn how to think like designers through critical analysis of design principles, enabling them to differentiate between good and bad design as well as how to influence perception, increase appeal, and problem solve when designing.
201701	N	ART	315	Design Thinking	3-0-3		Students learn how to collaborate and tackle complex problems through creative design strategies, and develop an ability to define the problem, increase empathy, ideate and pitch their idea.
201701	N	BUS	390	Applied Management Internship	0-9-3		This course provides credit for an approved internship related to the student's program. Students work in a supervised setting where they receive training to develop career related skills while applying college learned theory.
201701	N	BUS	420	Applied Management Internship	0-9-3		This course provides credit for an approved internship related to the student's program. Students work in a supervised setting where they receive training to develop career related skills while applying college learned theory.
201701	N	BUS	490	Applied Management Internship			This course provides credit for an approved internship related to the student's program. Students work in a supervised setting where they receive training to develop career related skills while applying college learned theory. Prerequisite: Instructor consent
201701	N	BUS	495	Senior Project Proposal	3-0-3		Examination of senior internship and/or project process and requirements. Definitions of a suitable senior project topic and preparation of a formal proposal. Topics dealing with client contact, task definition, privacy and confidentiality. Initial research, presentation of results.
201701	N	BUS	496	Senior Project	3-0-3		Students finalize project plan and complete data gathering and analysis portion of a project for a client or an independent research project. Topics include completing research, data gathering and analysis. Interim project report is written

201701	N	BUS	497	Senior Project	3-0-3		Students complete project started in BUS 496 including preparing a detailed project report and delivering a final presentation. Periodic progress reports required. Instructor functions as a consultant.
201701	N	EE	501	Communication Systems	4-3-5	Sp	Single Analysis, Fourier series, Fourier Transforms; Analog signal transmission and Reception (AM, FM, PM); effects of noise in Analog Systems. Digital Data and Communication Systems; effects of noise in Digital Systems. Cross-listed with EE 401. Prerequisite: Graduate Standing
201701	N	EE	525	Wireless Communications	3-3-4		Single Analysis, Fourier series, Fourier Transforms; Analog signal transmission and Reception (AM, FM, PM); effects of noise in Analog Systems. Digital Data and Communication Systems; effects of noise in Digital Systems. Cross-listed with EE 401. Prerequisite: Graduate Standing
201701	N	EE	532	Advanced Digital System Design	3-3-4		Advanced digital system design with Field Programmable Gate Arrays (FPGAs). Students implement designs with pre-generated and custom digital custom logic functions using VHDL and/or Verilog hardware description languages. Projects include digital system design, simulation, and hardware implementation. Cross listed with EE 432
201701	N	EE	535	Embedded Systems Hardware	3-3-4		Advanced course in embedded systems hardware design and development. Topics include system-on-chip design, ARM processor architecture, digital signal processors, multicore processing, vector processors, graphics processing units, external serial interfaces, external memory interfaces, network interfaces, debuggers, in-circuit emulators, and hardware security. Cross-listed with EE 435
201701	N	EE	555	Embedded Systems Software	3-3-4		Advanced course in embedded systems software design and development. Topics include bootloaders, embedded operating systems (RTOS, Embedded Linux), memory management systems, file systems, device drivers, integrated development environments (Eclipse, Compilers/Linkers/Makefiles), software revision control, and embedded programming (C++). Cross listed with EE 455
201701	N	EE	565	Sensor and Instrumentation	3-3-4		Advanced course in sensors and instrumentation for embedded applications. Topics include a study of transducers, medical sensors, position sensors, automotive sensors, and sensor arrays. Students will also study sensor synchronization, A/D converters, linearization, sampling, error sources/budget, and noise margin analysis. Cross-listed with EE 465
201701	N	EE	575	Micropower Systems	3-3-4		Advanced course in low-power solutions for embedded systems. Topics will include low power processor architectures, power management subsystems, processor sleep modules, power circuits, power supply sequencing, battery technology, rechargeable power sources, charge capacity models, IoT applications. Cross-listed with EE 475
201701	N	EE	585	Printed Circuit Board Design	3-3-4		A course on modern PCB technology and design skills required for successful implementation of PCB designs in industry. This course provides direct, hands-on experience with industry standards, tools, and design techniques. Students will learn schematic capture and PCB layout. Cross-listed with EE 485

201701	N	EE	595	Selected Grad Topics in EE			Selected electrical, computer, and embedded engineering topics at the graduate level. Course may be repeated for credit.
201701	N	EE	596	Grad Research & Development			Research and development in electrical, computer, and embedded engineering topics at the graduate level. Course may be repeated for credit.
201701	N	EE	597	Graduate Project			Graduate project in electrical, computer, and embedded engineering topics. Course may be repeated for credit.
201701	N	EE	598	Graduate Thesis			Graduate thesis in electrical, computer, and embedded engineering topics. Course may be repeated for credit.
201701	N	EE	599	Practicum	3-0-3		Supervised practical experience in electrical, computer, and embedded engineering topics at the graduate level. Course may be repeated for credit.
201701	N				2-3-3		
		ENGR	120	Fund of Engr Design: CAD			Fundamentals of engineering design, including analytical and computational tools that introduce design concepts and build a foundation of engineering knowledge that will be helpful to students starting off in engineering and technology disciplines. Computer aided design and drafting, problem solving, documentation, analysis, teamwork, and multi-step engineering calculations.
201701	N				2-3-3		
		ENGR	121	Engr. Princ. & Problem Solving			Topics include modeling of real-world concepts and systems, basic statics, electronics, energy generation, and robotics. Using both analytical and computational tools to represent, analyze, and improve on real-world situations. Identifying the correct type of system to employ, improving the efficiency of existing systems, working in multi-disciplinary groups, developing and presenting ideas, prototyping as well as testing iteratively.
201701	N				2-3-3		
		ENGR	122	Electronics & Comput in Engr			Fundamental electrical and computational topics in engineering. Building and analyzing circuits, using mathematical concepts to develop solutions, and using both analytical and computational tools to gain knowledge and hands-on skills. Troubleshooting and testing of ideas as well as presenting ideas in an organized and systematic manner to others. Provides a basic foundation of knowledge and skills that will transfer well to continued education, technical jobs and self-confidence.
201701	N				3-0-3		
		ENGR	511	Res Meth & Innov: Intel Prop			Intellectual property (IP) development, evaluation, and strategy. IP fundamentals, patent fundamentals, conducting patentability searches, evaluating the patentability potential of an invention, drafting invention disclosures for patent applications, assessing the value of a patent or patent portfolio, and IP licensing fundamentals.
201701	N				3-0-3		
		ENGR	512	Res Meth & Innov: Res Meth			Fundamental concepts of scientific research. An introduction to the concepts underlying peer-reviewed research, evaluating the relevance and impact of sources, conducting literature reviews, evaluating published findings, using research productivity tools, using statistical methods, designing research studies, and writing scholarly articles.
201701	N				3-0-3		
		ENGR	513	Res Meth & Innov: Strat & Inno			Strategy and innovation concepts with a focus on technology commercialization. Business strategy frameworks, financial analysis, strategic marketing, operations management, business models, project management, business law, and entrepreneurship.
201701	N	ENGR	595	Selected Grad Topics in Engr	4-0-4		Selected engineering topics at the graduate level. Course may be repeated for credit.
201701	N	ENGR	596	Grad Research & Development	3-0-3		Research and development in engineering at the graduate level. Course may be repeated for credit.

201701	N	ENGR	597	Graduate Project	3-0-3		Graduate project in engineering topics. Course may be repeated for credit.
201701	N	ENGR	598	Graduate Thesis	3-0-3		Graduate thesis in engineering topics. Course may be repeated for credit.
201701	N	ENGR	599	Practicum	3-0-3		Supervised practical experience in engineering topics at the graduate level. Course may be repeated for credit.
201701	N	ENV	111	Intro to Env Sciences	3-3-4		A topical overview of environmental sciences stressing the integration of the social, natural and physical sciences. Emphasis on active learning.
201701	N	MECH	260	Engineering Materials I	2-3-3		Survey of materials with emphasis on metals and metal alloys used in industry; their physical and chemical properties as related to structure, corrosion, and engineering applications. Diffusion mechanisms and binary phase diagrams are also examined. Tensile, impact, and fatigue failure of metallic materials. Laboratory included.
201701	N	MECH	426	Fluid Power Systems	2-3-3		A mechanical approach to industrial hydraulic applications with emphasis on selection and function of hardware and interfacing of hydraulic systems with mechanical, fluidic and electrical/ electronic controls.
201701	N	MFG	120	Intro Machining Proc	2-6-4		An introductory course in metal removal processes emphasizing drilling, milling, and lathe processes. Includes tool bit grinding. Emphasis on production speeds and feeds.
201701	N	MFG	420	Adv. Manufacturing Processes	3-0-3		Introduction to less conventional and recently developed manufacturing processes and materials. Emphasis on understanding unique characteristics, advantages, limitations, and applications. Analysis required for selection of appropriate materials and processes. Examples of computer programs that aid the selection process.
201701	N	MFT	540	Research Methods	3-0-3		Course provides a survey of key concepts in social science research including sampling, measurement, research ethics, and design. Additional topics include the evidence base for clinical research, the evaluation of interventions, and pseudoscientific concerns in clinical research. Emphasis is placed on the review, evaluation, and application of professional literature to clinical practice in marriage and family therapy.
201701	N	MIS	118	Programming Fundamentals	3-3-4		An introduction to basic computer programming concepts in the C# programming language. Topics include algorithms, simple data types, conditional and iterative structures, functions and procedures, and code documentation.
201701	N	MIS	251	Networking I	3-3-4		Introduction to networking concepts and technology, including network types, common network standards, network interface cards, wired and wireless network components, IP addressing and subnetting, network protocols, basic network security, and troubleshooting common network issues.
201701	N	MIS	273	Systems Administration I	3-3-4		Introduces the fundamental skills required to install and configure a Windows Server. Topics covered include: Hyper-V, Active Directory, DNS, DHCP, Group Policy, and File and Print Services.
201701	N	MIS	322	Systems Analysis & Design II	3-3-4		Design, implementation and maintenance phases of Systems Development Life Cycle. Designing, selecting and installing new systems for end users. Includes cost/benefit and value-added evaluation. Define and perform data modeling, process modeling, network modeling and their importance.

201701	N				3-3-4		Intermediate course covering voice and data networking concepts and technologies including routing and switching. Focus on enterprise networking and the design, documentation and management of complex networks.
		MIS	351	Networking II			
201701	N				3-3-4		Construct graphical end-user interfaces for scalable, high-performance Internet applications. Building, testing, debugging and deploying interactive Internet applications that use an enterprise level Database Management System. Develops experience with the System Development Life Cycle (SDLC) for web/database integration for application development. Develop understanding and application of Software as a Service (SaaS). For graduate credit students will participate in a field placement project working with companies such as the BLM to create a working application demonstrating mastery of the subject material.
		MIS	442	Adv Web App Programming			
201701	N				3-3-4		Focus on technologies and tools used in advanced enterprise networks. Includes project labs using network infrastructure to implement design goals and team projects.
		MIS	451	Networking III			
201701	N				3-3-4		Construct graphical end-user interfaces for scalable, high-performance Internet applications. Building, testing, debugging and deploying interactive Internet applications that use an enterprise level Database Management System. Develops experience with the System Development Life Cycle (SDLC) for web/database integration for application development. Develop understanding and application of Software as a Service (SaaS). For graduate credit students will participate in a field placement project working with companies such as the BLM to create a working application demonstrating mastery of the subject material.
		MIS	542	Adv Web App Programming			
201701	N				4-0-4		Much of modern civilization is defined by technical products and services. Case Studies in Systems Engineering examines challenges firms face in creating these highly complex products and services rapidly, accurately, and cost-effectively. Selected cases represent examples of failed, successful, and prototype systems that all defined the state of the art. Through analysis and group discussions, students will critically examine issues and approaches presented in numerous case studies. Students will link their own critical analysis to System Engineering best practices.
		SEM	526	Case Studies in Systems Engr.			

201701	N				4-0-4		Engineering Data Analytics introduces students to the technologies and methodologies needed for data-driven decision-making during all stages of product development. Students will learn how to analyze, process, and establish correlations using data from various engineering processes during the design phase, prototyping phase, and production and operation phase. Students will examine large data-sets from smart homes, large-scale to IoT (Internet of Things) applications, and IC design and manufacturing. Correlations will be established using linear regression, Anova, and other data relationship techniques. Students will use advanced software tools such as Tibco Spotfire and R to analyze "Big Data", establish correlations, and determine if processes are capable and in control. An introduction to machine learning and real-time streaming analysis techniques will also be discussed.
		SEM	527	Engineering Data Analytics			
201701	M	REE	331	Fuel Cells	2-3-3	ALL	Introduction to fuel cell technologies: PEM, PAFC, AFC, SOFC, MCFC and DMFC systems. Fuel cell components and systems; field flow plates, electrolytes, electrode materials, electrode catalysts, on-board reformers. Portable devices, utility-scale power production, transportation systems. Fuel types and fuel storage
201701	M	REE	333	Batteries	2-3-3	ALL	This course covers fundamentals of the most important battery types including alkaline, zinc-air, lead-acid, nickel-cadmium, nickel-metal hydride, lithium, and lithium polymer. Applications include stationary, transportation, and portable batteries. The lab deals with battery system design, testing and prototype assembly
201701	M	REE	335	Hydrogen	2-3-3	ALL	This course will cover hydrogen production, storage, distribution and use. Specific energy scenarios such as renewable hydrogen cycles will be explored focusing on transportation applications. The concept of hydrogen economy will be discussed in the context of global energy crisis.
201701	M	REE	345	Wind Power	3-0-3	ALL	Introduction to power production from wind resources. Historical uses of wind resources. The Earth's wind systems. Physics of wind power. Vertical and horizontal axis turbines. Aerodynamics of wind turbines. Large-scale turbine farms and siting. Commercial development, economics and environmental impacts
201701	M	REE	465	Renewable Energy Transportation Systems	3-0-3	ALL	Renewable energy transportation systems including fuel cells, hybrid gasoline-electric engines, electric vehicles, bio-diesel, flex-fuel vehicles, high-efficiency diesel engines, gas turbine prime-mover systems. Topic includes fuel-air mixing, fuel leak detection, chemical safety, and electrical power control systems
201701	M	EE	225	Circuits III	3-3-4	ALL	Introductory course in linear circuit analysis. Transfer functions, frequency response, Bode plots, passive and active filters, Laplace transforms, Fourier series, Fourier transforms, and two-port networks. Students must also register for a laboratory section

201701	M	EE	333	Introduction to Microcontrollers	3-3-4	ALL	Introductory course in microcontroller design. Topics include interrupt controllers, timer/counters, A/D converters, PWM channels, USART's, SPI, two-wire interfaces, LEDs, LCDs, motors, and various sensors. Hands-on projects or lab assignments require C and/or assembly language programming to develop applications.
201701	M	SEM	422	Advanced Systems Engineering	4-0-4	ALL	Advanced concepts in systems science and systems engineering, modeling and mathematical methods for systems engineering; system simulation tools; optimization and decision analysis; case studies involving practical systems, engineering integration of hardware, software, information, and human factor systems.
201701	N	EE	426	RF/Wireless Systems	4-3-5	ALL	Hardware components, system parameters, and architectures of RF and microwave wireless system. Topics include microwave transmission lines, Smith charts, impedance matching networks, antenna systems, microwave components, receivers and transmitters, radar systems and sensors, and wireless communication systems. Prerequisite: EE 341
201701	M	BIO	205	Nutrition	3-0-3	S	A study of the relationships of food and nutrition to health. An overview of the basic nutrition principles including the nutrients and how they function in the body, nutrient requirements, diet planning and energy balance. Currents topics and controversies are examined.
201601	D	BIO	434	Data Analysis Methods	3-3-4	W	
201601	N	ENV	434	Advanced Data Analysis	3-3-4	W, S	Advanced concepts and methods of data analysis from field projects, data archives and other sources. Statistical hypothesis testing; analysis of variance; multi-variate, regression, spatial- and time-series; principles component analysis; data visualization; and infographics
201601	D	BIO	484	Sustainable Human Ecology	2-6-4	F	
201601	N	ENV	484	Sustainable Human Ecology	3-3-4	F	Investigation of global interconnections between humans and natural systems through the study and application of ecological principles. Ethical and ecological considerations are used to solve complex environmental problems. Laboratories involve field work with local experts.
201601	M	MIS	351	Routing & Switching II	3-3-4	F, W	Prepares students to install, operate, and troubleshoot a small branch office network. Includes topics on the operation of IP networks, LAN switching technologies, IPv6, IP routing technologies, IP services (DHCP, NAT, ACLs), network device security, and basic troubleshooting.
201601	D	MIS	451	Networking III	3-3-4	F,W,S	
201601	N	MIS	352	Routing & Switching II	3-3-4	F,W	Prepares students to successfully install, operate, and troubleshoot a small to medium-sized enterprise branch network, Includes topics on LAN switching technologies, IP routing technologies, IP services (FHRP, syslog, SNMP v2 and v3), troubleshooting, and WAN technologies.
201601	D	BIO	111	Introduction to Environmental Sciences	3-3-4	F	
201701	N	EE	585	Printed Circuit Board Design	3-3-4	ALL	A course on modern PCB technology and design skills required for successful implementation of PCB designs in industry. This course provides direct, hands-on experience with industry standards, tools, and design techniques. Students will learn schematic capture and PCB layout. Cross-listed with EE 485. Prerequisites: MSE Graduate Standing

201701	N	SEM	526	Case Studies in Systems Engineering	4-0-4	ALL	Much of modern civilization is defined by technical products and services. Case Studies in Systems Engineering examines challenges firms face in creating these highly complex products and services rapidly, accurately, and cost-effectively. Selected cases represent examples of failed, successful, and prototype systems that all defined the state of the art. Through analysis and group discussions, students will critically examine issues and approaches presented in numerous case studies. Students will link their own critical analysis to System Engineering best practices.
201701	N	SEM	527	Engineering Data Analytics	4-0-4	ALL	Engineering Data Analytics introduces students to the technologies and methodologies needed for a data-driven decision-making during all stages of product development. Students will learn how to analyze, process, and establish correlations using data from various engineering processes during the design phase, prototyping phase, and production & operation phase. Students will examine large data-sets from smart homes, large-scale IoT (internet of things) applications, and IC design & manufacturing. Correlations will be established using Linear regression, Anova, and other data relationship techniques. Students will use advanced software tools such as Tibco Spotfire and R to analyze "Big Data", establish correlations, and determine if processes are capable and in control. An introduction to machine learning and real-time streaming analysis techniques will also be discussed.
201701	M	CST	316	Junior Team-Based Project Development I	3-3-4	F	In this three-term sequence, students will work in teams to gather requirements, model, analyze, develop and integrate an n-tiered architecture software product. Students will learn about project management, software development lifecycle tools and processes, and quality assurance processes.
201701	M	CST	326	Junior Team-Based Project Development II	3-3-4	W	In this three-term sequence, students will work in teams to gather requirements, model, analyze, develop and integrate an n-tiered architecture software product. Students will learn about project management, software development lifecycle tools and processes, and quality assurance processes.
201701	M	CST	336	Junior Team-Based Project Development III	3-3-4	S	In this three-term sequence, students will work in teams to gather requirements, model, analyze, develop and integrate an n-tiered architecture software product. Students will learn about project management, software development lifecycle tools and processes, and quality assurance processes.
201701	M	GIS	432	Customizing the GIS Environment II	3-3-4	W	Creation and management of Add-Ins. Hosting feature and geoprocessing services. Introduction to the server environment and the Portal for ArcGIS. Developing mobile GIS applications.
201701	M	GIS	446	GIS Database Development	3-3-4	F	Advanced geodatabase design. Import and export of XML. Extensive use and creation of relationship classes. Study, use, design, and creation of data models. Design and creation of user interfaces for data entry. This course is a Capstone experience for the GIS option
201701	D	GIS	456	GIS Web Services and Management	3-0-3	W	

201701	N	MIS	42/542	Advanced Database Application Programming	3-3-4	S	Construct graphical end-user interfaces for scalable, high-performance internet applications. Building, testing, debugging and deploying interactive internet applications that use an enterprise level Database Management System. Develops experience with the System Development Life Cycle (SDLC) for web/database integration for application development. Develop understanding and application of Software as a Service (SaaS). For graduate credit students will participate in a field placement project working with companies such as the BLM to create a working application demonstrating mastery of the subject material. Prerequisites: MIS 218 and MIS 341, both
201701	M	GME	451	Geodesy	4-0-4	F	Size and shape of the earth. Geometry of the reference ellipsoid. Spherical, ellipsoidal and local coordinate systems. Coordinate transformations in 2-D and 3-D. Datums and datum conversion. Reduction of field observations to the ellipsoid. The geoid, orthometric heights, and leveling.
201701	M	GME	466	Boundary Law II	3-0-3	W	Evidence, professional liability, written and unwritten transfers of land ownership and title interests. A term paper is required for each student.
201701	M	GME	468	Geomatics Practicum	1-3-2	S	Students design and complete a Geomatics project. Students demonstrate ability to work independently. Projects are under the supervision of faculty members and comply with any related state statutes and local ordinances. Surveying option students are required to have registered for, or taken, the NCEES FS examination to receive a passing course grade.
201701	M	MIS	375	Decision Support Systems	2-3-3	F,W,S	Use of personal computer application programs for analysis and reporting, problem solving and decision assistance.
201701	M	REE	425	Electricity Markets and Modeling	3-0-3	S	Introduction to restructured electricity markets. Students gain knowledge of theory, structures, successes and failures of markets, market participant behavior, risk and uncertainty, and basic simulation and optimization modeling for market analyses.
201701	M	EE	341	Electricity and Magnetism with Transmission Lines	4-0-4	F	Review vector calculus. Flux, potential, gradient, divergence, curl and field intensity. Static electric and magnetic fields. Maxwell's equations. Boundary conditions. Uniform plane waves in media and free space. Reflection and transmission at interfaces. Propagation of guided waves. Transmission line. Antennas.
201701	M	EE	343	Solid-State Electronic Devices	3-0-3	F,W	Crystal properties and growth of semiconductors. Atoms and electrons. Energy bands and charge carriers in semiconductors. Excess carriers in semiconductors, p-n junctions. FETs and BJTs. Optoelectronic devices. High-frequency and high-power devices.
201701	M	MECH	315	Machine Design I	3-0-3	F,W	Study of stress and fatigue analysis as applied to machine elements.
201701	M	MECH	316	Machine Design II	3-0-3	W,S	Application of stress and fatigue analysis in the design and selection of machine elements.
201701	M	MECH	318	Fluid Mechanics I	3-3-4	F,S	Covers fluid properties, fluid statics, conservation laws of pipe flow, drag, lift fluid dynamics, measurement of flow, viscous flow, laminar, and turbulent flow, and forces due to fluid motion.
201701	M	MECH	360	Engineering Materials II	3-0-3	F,W	This course extends the MET 160 Engineering Materials I course using a more theoretical approach. Subjects include metals, polymers, ceramics, and composites.

201701	M	MECH	363	Engineering Instrumentation	2-3-3	F,W	Study of measurement techniques and equipment used in mechanical engineering. Instrumentation for measurements in mechanics, thermodynamics, fluid dynamics, and electrical systems are considered. Methods of calibration, correction, and data reduction are presented.
201701	D	MECH	160	Engineering Materials I	2-3-3	F,W,S	
201701	N	MECH	260	Engineering Materials I	2-3-3	F,W,S	Survey of materials with emphasis on metals and metal alloys used in industry: their physical and chemical properties are related to structure, corrosion, and engineering applications. Diffusion mechanisms and binary phase diagrams are also examined. Tensile, impact, and fatigue failure of metallic materials. Laboratory included. Prerequisites: CHE 201 and 204, or CHE 221, or instructor's consent.
201701	N	MECH	426	Fluid Power Systems	2-3-3	W	A mechanical approach to industrial hydraulic applications with emphasis on selection and function of hardware and interfacing of hydraulic systems with mechanical, fluidic and electrical/ electronic controls. Prerequisites: MECH 318 or instructor approval.
201701	D	MET	426	Fluid Power Systems	2-2-3	W,S	
201701	M	MFG	120	Introductory Machining Processes	2-6-4	F,W,S	An introductory course in metal removal processes emphasizing drilling, milling, and lathe processes. Includes tool bit grinding. Emphasis on production speeds and feeds.
201701	M	MFG	331	Industrial Controls	2-3-3	S	Fundamentals of control of manufacturing processes. Applications of relay logic, input and output devices, and programmable logic controllers (PLC). Design of complete control circuits, selection of components, and cost estimation. PLC programming for discrete event control and for analog applications.
201701	M	MFG	343	Manufacturing Tool Design	3-0-3	W	Fundamentals of jig and fixture design. Locating and clamping methods for manufacturing production. Design of sheet-metal stamping, piercing, and forming tools. Study of the effect of manufacturing machines and production methods on tooling design.
201701	M	MFG	420	Advanced Manufacturing Processes	3-0-3	W	Introduction to less conventional and recently developed manufacturing processes and materials. Emphasis on understanding unique characteristics, advantages, limitations, and applications. Analysis required for selection of appropriate materials and processes. Examples of computer programs that aid the selection process.
201701	M	MFG	331	Industrial Controls	2-3-3	S	Fundamentals of control of manufacturing processes. Applications of relay logic, input and output devices, and programmable logic controllers (PLC). Design of complete control circuits, selection of components, and cost estimation. PLC programming for discrete event control and for analog applications.
201701	D	BUS	420	Applied Management Internship	0-9-3	F	
201701	N	BUS	90/490	Applied Management Internship	0-9-3	F,W,S	This course provides credit for an approved internship related to the student's program. Students work in a supervised setting where they receive training to develop career related skills while applying college learned theory.
201701	M	BUS	495	Senior Project Proposal	3-0-3	F	Examination of senior project processes and requirements. Definitions of a suitable senior project topic and preparation of a formal proposal. Topics dealing with client contact, task definition, privacy and confidentiality. Initial research, presentation of results.

201701	M	BUS	496	Senior Project	3-0-3	W	Students finalize project plan and complete data gathering and analysis portion of a project for a client or an independent research project. Topics include completing research, data gathering and analysis. Interim project report is written.
201701	M	BUS	497	Senior Project	3-0-3	S	Students complete project started in BUS 496 including preparing a detailed project report and delivering a final presentation. Periodic progress reports required. Instructor functions as a consultant.
201701	M	MATH	451	Numerical Methods I	4-0-4	F,S	Computer applications of matrix methods, iterative solutions of equations, and systems of equations, polynomial interpolation and curve fitting, numerical differentiation and integration.
201701	N	ART	215	Design Art and Aesthetics	3-0-3	ALL	Students learn how to think like designers through critical analysis of design principles, enabling them to differentiate between good and bad design as well as how to influence perception, increase appeal, and problem solve when designing.
201701	N	ART	315	Design Thinking	3-0-3	ALL	Students learn how to collaborate and tackle complex problems through creative design strategies, and develop an ability to define the problem, increase empathy, ideate and pitch their idea. Prerequisite: Junior standing.
201701	M	DMS	343	Fetal Echo, Neonatal, and Pediatric Sonography	3-0-3	S	Fetal cardiac development and normal anatomy. Fetal echocardiographic 2D views, M-Mode, Doppler and Color Doppler. Common fetal cardiac pathology and anomalies. Neonatal topics include hip, abdominal and neurological sonographic applications. General sonographic pediatric pathologies and anomalies will be discussed.
201701	M	DMS	373	Obstetrical Pathology	3-0-3	S	Advanced obstetrical scanning of second and third trimester obstetrical patients with emphasis on pathology.
201701	M	DMS	388	Externship Preparation	2-0-2	S	Presentation of key concepts related to Diagnostic Medical Sonography externship and required in-services. Focus is on patient care and interpersonal scenarios the externship student will likely face while in the clinical environment. Review and discussion of the DMS Externship Handbook. □
201701	N	ENGR	120	Fundamentals of Engineering Design, Analytical Tools, and CAD	2-3-3	ALL	Fundamentals of engineering design, including analytical and computational tools that introduce design concepts and build a foundation of engineering knowledge that will be helpful to students starting off in engineering and technology disciplines. Computer aided design and drafting, problem solving, documentation, analysis, teamwork, and multi-step engineering calculations.
201701	N	ENGR	121	Engineering Principles and Problem Solving	2-3-3	ALL	Topics include modeling of real-world concepts and systems, basic statics, electronics, energy generation, and robotics. Using both analytical and computational tools to represent, analyze, and improve on real-world situations. Identifying the correct type of system to employ, improving the efficiency of existing systems, working in multi-disciplinary groups, developing and presenting ideas, prototyping as well as testing iteratively.

201701	N	ENGR	122	Electronics and Computation in Engineering	2-3-3	ALL	Fundamental electrical and computational topics in engineering. Building and analyzing circuits, using mathematical concepts to develop solutions, and using both analytical and computational tools to gain knowledge and hands-on skills. Troubleshooting and testing of ideas as well as presenting ideas in an organized and systematic manner to others. Provides a basic foundation of knowledge and skills that will transfer well to continued education, technical jobs, and self-confidence.
201701	M	MIS	118	Programming Fundamentals	3-3-4	F,W,S	An introduction to basic computer programming concepts in the C# programming language. Topics include algorithms, simple data types, conditional and iterative structures, functions and procedures, and code documentation.
201701	M	MIS	322	Systems Analysis and Design II	3-3-4	W,S	Design, implementation and maintenance phases of Systems Development Life Cycle. Designing, selecting and installing new systems for end users. Includes cost/benefit and value-added evaluation. Define and perform data modeling, process modeling, network modeling and their importance.
201701	M	MIS	344	Business Intelligence	2-3-3	W,S	Develop analytic solutions to gain functional understanding of Business Intelligence to solve business problems. Covers the development of Crystal Reports and Dash-boarding tools to develop reporting and interface solutions for business.
201701	M	MIS	42/542	Advanced Web Application Programming	3-3-4	S	Construct graphical end-user interfaces for scalable, high-performance Internet applications. Building, testing, debugging and deploying interactive Internet applications that use an enterprise level Database Management System. Develops experience with the System Development Life Cycle (SDLC) for web/database integration for application development. Develop understanding and application of Software as a Service (SaaS). For graduate credit students will participate in a field placement project working with companies such as the BLM to create a working application demonstrating concepts of the web and Internet.
201701	M	MIS	118	Introduction to Programming in C#	3-3-4	F,W,S	An introduction to basic computer programming concepts in the C# programming language. Topics include algorithms, simple data types, conditional and iterative structures, functions and procedures, and code documentation.
201701	M	MIS	496	Senior Project Management	2-3-3	F,S	Focuses on project management. Includes best-known industry practices, as well as planning, organizing and managing resources to bring about successful completion of specific project goals and objectives. Produces formal proposal for Senior Project.

[illegible]

[illegible]

[illegible]

[illegible]

Term offered & prerequisite	CHE 260 with C or better and PHY 222	2016-001 (1)	Yes	Yes		Yes
Term offered & prerequisite	CHE 260 with C or better	2016-01 (2)	Yes	Yes		Yes
Term offered & prerequisite	CHE 260 with C or better	2016-001 (3)	Yes	Yes		Yes
Term offered & Description		2016-001 (4)	Yes	Yes		Yes
Term offered & prerequisite	REE 253 or MECH 326	2016-001 (5)	Yes	Yes		Yes
Typographical	The lecture hours, lab hours, and credit hours should not be bold and part of the title. The (3-3-4) should be moved to the second line.	2016-001 (6)	Yes	Yes		Yes

Typographical	The lecture hours, lab hours, and credit hours should not be bold and part of the title. The (3-3-4) should be moved to the second line.	2016-001 (7)	Yes	Yes		Yes
Description, Prerequisites, & Term offered	SEM 421 or MGT 345 and WRI 227 and either MATH 243 or MATH 361 or MATH 465	2016-001 (8)	Yes	Yes		Yes
		2016-001 (9)	Yes	Yes		Yes
Corequisites & Prerequisites	None	2016-002 (1)	Yes	Yes		Yes
		2015-031 (77)	Yes	Yes		Yes
		2015-031 (77)	Yes	Yes		Yes
		2015-031 (78)	Yes	Yes		Yes
		2015-031 (78)	Yes	Yes		Yes
Title & Description		2015-028 (7)	Yes	Yes		Yes
		2015-028 (8)	Yes	Yes		Yes
		2015-028 (8)	Yes	Yes		Yes
		2015-031 (75)	Yes	Yes		Yes
			Yes	Yes		Yes

			Yes	Yes		Yes
			Yes	Yes		Yes
Prerequisites	CST 211 with "C" or better, Pre- or corequisites: CST 324 with "C" or better and at least two of CST 236, CST 238, CST 276 each with a "C" or better.	2016-005 (1)	Yes	Yes		Yes
Prerequisites	CST 316	2016-005 (1)	Yes	Yes		Yes
Prerequisites	CST 326	2016-005 (1)	Yes	Yes		Yes
Term Offered & Description		2016-006 (12)	Yes	Yes		Yes
Description, Pre & Corequisites	GIS 426, GIS 432 and MIS 442	2016-006 (13)	Yes	Yes		Yes
		2016-006 (14)	Yes	Yes		Yes

		2016-006 (15)	Yes	Yes		Yes
Prerequisites	MATH 254N or instructor consent	2016-006 (18)	Yes	Yes		Yes
Corequisites	No corequisites	2016-006 (19)	Yes	Yes		Yes
Description		2016-006 (20)	Yes	Yes		Yes
Prerequisites	MIS 102, MATH 111, Juinor standing	2016-007 (1)	Yes	Yes		Yes
Prerequisites	EE 221 and ECO 201 or ECO 202	2016-009 (1)	Yes	Yes		Yes
Prerequisites	EE 221 or EE 123; MATH 254N; PHY 222 or PHY 202 and MATH 252.	2016-009 (2)	Yes	Yes		Yes
Prerequisites	PHY 222 or PHY 202 and MATH 252	2016-009 (3)	Yes	Yes		Yes
Prerequisites	MET 160 or MECH 160, and ENGR 213 or MECH 223	2016-10 (20)	Yes	Yes		Yes
Prerequisites & Term Offered	MECH 315 or instructor consent	2016-010 (21)	Yes	Yes		Yes
Term Offered		2016-010 (22)	Yes	Yes		Yes
Prerequisites & Term Offered	MET 160 or MECH 260 and CHE 201 or CHE 221	2016-010 (25)	Yes	Yes		Yes

Term Offered		2016-010 (26)	Yes	Yes		Yes
		2016-010 (29)	Yes	Yes		Yes
		2016-010 (29)	Yes	Yes		Yes
		2016-010 (31)	Yes	Yes		Yes
		2016-010 (31)	Yes	Yes		Yes
Title		2016-010 (33)	Yes	Yes		Yes
Term Offered, Pre and Corequisites	Pre or Corequisite: MET 326	2016-010 (34)	Yes	Yes		Yes
Prerequisites	MET 315 or MECH 315, MFG 314, MFG 313, MFG 341; or instructor consent.	2016-010 (35)	Yes	Yes		Yes
Title & Prerequisites	MATH 112, MFG 120, MET 242, and PHY 221 or instructor consent.	2016-010 (36)	Yes	Yes		Yes
Term Offered & Co- and Prerequisites	MET 326	2016-010 (46)	Yes	Yes		Yes
		2016-011 (1)	Yes	Yes		Yes
		2016-011 (1)	Yes	Yes		Yes
Pre and Corequisites, Credit Hours, & Description	MGT 335 and BUS 456 or BUS 457	2016-011 (2)	Yes	Yes		Yes

Credit Hours		2016-011 (3)	Yes	Yes		Yes
Credit Hours, Description, & Prerequisites	BUS 496 with a grade of "C" or better. BUS 356	2016-011 (4)	Yes	Yes		Yes
Prerequisites & Term Offered	MATH 252, MATH 341 or MATH 261, and either ENGR 266, ENGR 267, or CST 116	2016-004 (2)	Yes	Yes		Yes
		2016-013 (1)	Yes	Yes		Yes
		2016-013 (7)	Yes	Yes		Yes
Prerequisites	DMS 342 with a grade of "C" or better	2016-015 (1)	Yes	Yes		Yes
Prerequisites	DMS 370 with a grade of "C" or better	2016-015 (2)	Yes	Yes		Yes
Term Offered & Prerequisites	DMS 316, DMS 353 and DMS 370 with grade "C" or better.	2016-015 (3)	Yes	Yes		Yes
		2016-016 (1)	Yes	Yes		Yes
		2016-016 (6)	Yes	Yes		Yes

		2016-016 (15)	Yes	Yes		Yes
Prerequisites	MATH 111 or instructor consent	2016-012 (7)	Yes	Yes		Yes
Pre & Corequisites	MIS 218, MIS 312, MIS 341 all with a "C" or better.	2016-012 (8)	Yes	Yes		Yes
Prerequisites	MIS 341 with grade "C" or better	2016-012 (9)	Yes	Yes		Yes
Title		2016-012 (10)	Yes	Yes		Yes
Title, Description & Prerequisites		2016-012 (11)	Yes	Yes		Yes
Prerequisites	MIS 495 and MIS 322 with a "C" of Instructors Consent	2016-012 (12)	Yes	Yes		Yes