

MKTG 477. Internet Marketing Practicum. 3 credits.

With an applied focus, this course introduces students to some of the most important and fastest growing sectors in online marketing. Students apply marketing theories in a uniquely applied manner as they become active learners involved in an online marketing campaign, facing real pressures similar to those in the professional workplace (i.e., account management, client relationships, financial constraints, market competition, time limitations, technology, etc.). Student teams will work with actual clients on online marketing campaigns. Throughout their campaigns, students continually make finance, advertising and marketing decisions. Students gather real world data using online marketing dashboards to gain a strong understanding of real market conditions. Students experience traditional advertising concepts such as copy writing, cost per thousand (CPM), return on investment, as well as online marketing concepts such as click-through-rate (CTR), cost-per-click (CPC), conversion rates, landing page strategies, and optimization techniques. *Prerequisites: MKTG 470 and permission of the instructor.*

MKTG 480. Product Development and Management. 3 credits.

The process of developing new products will be developed and explored. The marketing tasks which are unique to this operation will be investigated. An understanding of the marketing management of products throughout their life cycles will complete the course. *Prerequisite: COB 300 or MKTG 380 or permission of the instructor.*

MKTG 482. Marketing Analytics. 3 credits.

This course focuses on the use of information technology and marketing metrics to increase marketing productivity. Students learn how to evaluate marketing strategies and performance using database queries and statistical analysis. Information technologies are applied in market segmentation and target marketing, lifetime value analysis and RFM (recency, frequency and monetary value) analysis. *Prerequisites: COB 300 or MKTG 380 and admission to the marketing major.*

MKTG 485. Marketing Management. 3 credits.

Case studies are used to develop analytical and decision-making skills. Knowledge gained from previous course work is applied to actual circumstances faced by marketing managers in private, public, profit and not-for-profit organizations. Extensive preparation of case materials outside of class provides the basis for case presentations and discussion of case situations in class. *Prerequisites: COB 300, MKTG 384, MKTG 385 and senior standing.*

MKTG 490. Special Studies in Marketing. 1-3 credits.

A course providing an opportunity to work in and deal with industry to complete independent study under faculty supervision. *Prerequisites: GPA of 2.8, instructor recommendation and director approval prior to registration.*

MKTG 494. Marketing Internship. 3-6 credits.

A course providing an opportunity to work in and deal with industry to gain insight into the realities of modern business. *Prerequisites: COB 300 or MKTG 380, minimum cumulative GPA of 2.80, senior standing, recommendation of the internship coordinator and approval of the director prior to registration.*

MKTG 498. Special Topics in Marketing. 3 credits.

This course is designed to allow explorations of areas of current topical concern or to exploit special situations. Course content will vary. For current course content consult your adviser. *Prerequisite: Permission of the instructor.*

MKTG 499. Honors. 6 credits.

Year course. See catalog section "Graduation with Honors."

Materials Science

MATS/PHYS 337. Solid State Physics. 3 credits.

A study of the forces between atoms, crystal structure, lattice vibrations and thermal properties of solids, free electron theory of metals, band theory of solids, semiconductors and dielectrics. *Prerequisite: PHYS 270 or consent of the instructor.*

MATS/CHEM/PHYS 375. An Introduction to Materials Science. 3 credits.

An introduction to materials science with emphasis on general properties of materials. Topics will include crystal structure, extended and point defects, and mechanical, electrical, thermal and magnetic properties of metals, ceramics, electronic materials, composites and organic materials. *Prerequisites: CHEM 131, PHYS 150 or PHYS 250, ISAT 212 or permission of the instructor.*

MATS/PHYS 381. Materials Characterization (Lecture/Lab Course). 3 credits.

A review of the common analytical techniques used in materials science related industries today, including the evaluation of electrical, optical,

structural and mechanical properties. Typical techniques may include Hall Effect, scanning probe microscopy, scanning electron microscopy, ellipsometry and x-ray diffraction. *Prerequisites: MATS/PHYS 275, MATS/ISAT 431 or MATS/GEOL 395.*

MATS 382. Materials Microfabrication Laboratory. 3 credits.

A materials processing course that examines the design and fabrication of micro- and nano-devices using standard technologies and new lithography techniques. Topics will include laboratory safety and protocol, substrate cleaning, thermal oxidation, photolithography, diffusion, metallization, process integration, and device testing. *Prerequisite: MATS 381 or permission of the instructor.*

MATS/GEOL 395. Geologic Perspectives in Materials Science. 3 credits.

A one-semester course which emphasizes the commonalities between the geological sciences and materials science. Course includes topics from mineralogy, crystallography, petrology and structural geology, which are also important in metallurgy and ceramics. *Prerequisites: An introductory course in any physical science or integrated science and technology (i.e., GEOL 110, CHEM 131, PHYS 140 or ISAT 141) and at least one additional advanced course in the major.*

MATS/GEOL 396. X-ray Characterization of Solid Materials. 3 credits.

Covers fundamental principles and theory behind two powerful, X-ray based, technologies: X-ray Diffraction and Energy Dispersive Analysis of X-rays (EDS). Students will collect and analyze data from a single crystal Gandolfi X-ray camera, automated powder diffraction system (focusing goniometer), and EDAX system (EDS). *Prerequisites: GEOL 280, MATS/CHEM/PHYS 275 or ISAT 300.*

MATS/ISAT 430. Materials Science in Manufacturing. 3 credits.

This course is the study of engineering materials used in the fabrication of products including metals, polymers, ceramics, composites and elastomers. Topics include physical, mechanical and electrical properties of materials, elements of strength of materials, failure criteria, and materials selection. *Prerequisites: ISAT 211 and ISAT 142 or permission of the instructor.*

MATS/ISAT 431. Manufacturing Processes. 3 credits.

This course provides an introduction to the processes used for fabricating parts, such as machining, grinding, and casting and sheet-metal fabrication, including both traditional and nontraditional processes. Topics include interaction of materials, processing and design, economics of manufacturing, design for improved processing. Manufacturing processes for metals, plastics and composites are addressed. *Prerequisite: ISAT 430 or permission of the instructor.*

MATS/ISAT 432. Selection and Use of Engineering Materials. 3 credits.

This course deals with the interplay between engineering product specification, design, economics, environment, energy, materials selection, fabrication route, manufacturing cost and product service requirements. Students will be taught how to perform design projects that involve understanding of the behavior of materials and selection of materials for a specific function. *Prerequisite: ISAT 211 or permission of the instructor.*

MATS/ISAT 436. Micro-Nanofabrication and Applications. 3 credits.

This course examines processes used in the manufacture of microelectronic devices (VLSI integrated circuits, optoelectronic devices, flat panel displays), microelectromechanical devices (micromotors, microactuators), data storage media (magnetic and optical disks, including CDs), optical fibers and some sensors and transducers. Principles of operation of semi-conductor and other devices are also studied. *Prerequisites: Junior standing in ISAT, PHYS 150, PHYS 250 or permission of the instructor.*

MATS 498R. Undergraduate Materials Science Research. 1-3 credits, repeatable to 6 credits.

Research in a selected area of materials science arranged with and approved by a faculty research adviser. *Prerequisites: Study proposal must be approved by research adviser and director of Center for Materials Science prior to registration.*

Mathematics

MATH 103. The Nature of Mathematics. 3 credits. Offered fall and spring.

Topics such as geometry, computing, algebra, number theory, history of mathematics, logic, probability, statistics, modeling and problem solving intended to give students insight into what mathematics is, what it attempts to accomplish and how mathematicians think. May be used for general education credit.