

Course Descriptions

IUGB uses a three-letter discipline abbreviation and a four-digit numbering system for all courses in which each number provides specific information about the course it identifies.

Example: MTH 4303

The abbreviation **MTH** indicates the course is in the discipline of Mathematics (see below all discipline abbreviations).

The first digit (**4** in the example above) denotes the level of the course:

- 0 UPP course
- 1 Freshman course
- 2 Sophomore course
- 3 Junior course
- 4 Senior course

The second digit (**3**) denotes the number of semester credit hours (SCH) awarded for the course.

The third and fourth digits (**03**) distinguish the individual course.

Discipline Abbreviations

Each discipline or area of study is assigned a three-letter abbreviation which is used as an identifying prefix to the course number. The abbreviations are:

Accounting	ACT
Art	ART
Actuarial Science	ASC
Biology	BIO
Business	BUS
Continuing Education	CCE
Chemistry	CHE
Computer Information Systems	CIS
Communication	COM
Computer Science	CSC
Data Science	DSC
Economics	ECO
English	ENG
Environment Science	ENV
Finance	FIN
Geography	GEG
Geology	GEL
History	HIS
Humanities	HUM
Literature	LIT
Mechanical Engineering Technology	MET
Management Science	MGS
Marketing	MKT
Mathematics	MTH
Nutrition	NUT
Philosophy	PHL
Physics	PHY
Political Science	POL
Psychology	PSY
Sociology	SOC
Spanish	SPN
Statistics	STA

Course Listings

Accounting (ACT)

ACT 2301 Principles of Accounting I**3 credits***Prerequisite: None*

BSS & BBA core. In this course, students begin to develop accounting skills for solving business problems, individually and collaboratively. Some of the problems include evaluating business projects and process changes, predicting and reporting operating results, and managing business risks. The course concentrates on planning, decision making, and communicating operating results in traditional and e-business settings. Students interpret the meaning and characterize the implications of computations for a variety of business products, distribution channels and constraints, and then communicate viewpoints and recommendations to stakeholders using database, spreadsheet, and word processing skills

ACT 2302 Principles of Accounting II**3 credits***Prerequisite: ACT 2301, minimum grade of C*

BSS & BBA core. In this course, students continue developing accounting skills for solving business problems, individually and collaboratively. Students analyze information needed for financing and investing decisions and communicate alternatives and recommendations to stakeholders using spreadsheet and word processing software skills. Students evaluate operating outcomes using financial and non-financial performance measures appropriate in traditional and e-business environments.

ACT 4301 Intermediate Accounting I**3 credits***Prerequisites: ACT 2301, ACT 2302*

Students will learn the environmental and theoretical structure of financial accounting, the accounting process, and preparation of an income statement, balance sheet and statement of cash flows. They will also learn to measure income, do profitability analysis, apply time value of money concepts to financial accounting measurements, account for cash, receivables and inventories, and learn to research financial accounting issues. Enhancing This course is designed

ACT 4302 Intermediate Accounting II**3 credits***Prerequisite: ACT 4301*

Students will learn how to account for the economic resources and liabilities of an enterprise. Topics studied will include operational assets, investments, current liabilities, bonds, and leases. Students will also learn rudimentary financial statement analysis pertaining to these topics, analyze real world cases and learn to research financial accounting issues using the FASB Codification Database.

ACT 4310 Cost/Managerial Accounting**3 credits***Prerequisites: ACT 2301, ACT 2302*

Students study what information managers need to plan, monitor and improve their critical processes, products and services. Emphasizing e-business environments, this course highlights the application of information technologies to tasks such as measuring cost to produce, market and deliver products and services, planning via budgets and cost-volume-profit analysis, implementing activity-based-management systems, and measuring and evaluating performance in traditional and e-business settings. Students interpret and characterize implications of computations and communicate recommendations to stakeholders using databases, spreadsheet, and word processing skills.

ACT 4315 Introduction to Financial Statement Analysis**3 credits***Prerequisites: ACT 4301, ACT 4302*

Analyzing financial statements involves evaluating three characteristics: a company's liquidity, profitability, and solvency. This is a course for in depth analysis of companies' financial statements. Students will learn how to apply general purpose financial statements and related data to derive estimates and make inferences useful in business decisions.

ACT 4320 Advanced Financial Accounting**3 credits***Prerequisites: ACT 4301, ACT 4302, ACT 4315*

Study of complex financial reporting topics. Topics will include international accounting, consolidations, mergers and acquisitions, derivatives, and other emerging accounting issues.

ACT 4325 Auditing**3 credits***Prerequisites: ACT 4301, ACT 4302, ACT 4315*

The object of this course is to teach students the procedures followed by CPAs in evaluating and examining the financial statements of entities under audit. Methods and techniques on evaluating an entity internal control system and how auditors' opinions are issued based on audit evidence.

ACT 4396 Special Topics/Independent Study in Accounting 3 credits
Prerequisites: Junior or Senior status and approval by the supervising faculty member and the Dean of BSS

Art (ART)

ART 1302 History of Western Art II 3 credits
Prerequisite: COM 1300

History of Western Art II: The Renaissance through Contemporary Art. Art of the Western world from the fourteenth century to the present.

ART 1303 Art of Africa, Oceania, and the Americas 3 credits
Prerequisite: COM 1300

Art of Africa, Oceania, and the Americas. Survey of the arts of the indigenous cultures of Africa, Oceania, and the Americas. Anthropological and multidisciplinary approach.

ART 2301 Contemporary African Art 3 credits
Prerequisites: ENG 1301, ENG 1302

Survey of the sculpture, architecture, textiles, body ornament, and performance arts of Africa in terms of form, meaning, and function within society. Objects reintegrated into cultural contexts are examined in light of "tradition" and social and political change.

ART 2305 Introduction to the Theater 3 credits
Prerequisite: Freshman status

Lectures, videos, and live theatre events to introduce non-theatre major to the basic elements of theatrical production, dramatic writing, and historical context of the art. Studio and/or shop work required

Actuarial Science (ASC)

ASC 3305 Risk Modeling 3 credits
Prerequisite: MTH 1303

This course introduces students to the principles of probability theory and risk simulation analysis. Specific topics covered include probability theory; descriptive statistics and graphical representations of data; probability distribution functions including binomial, Poisson, Normal and other functions; sampling distributions and the Central Limit Theorem; estimation and goodness-of-fit tests; and static and dynamic Monte Carlo simulation models. Spreadsheet simulation exercises are used extensively to illustrate the concepts. The applications are drawn from a variety of areas where risk analysis has become important including finance, insurance, corporate risk management and personal financial planning.

ASC4309 Mathematics for Actuarial Science 3 credits
Prerequisite: MTH 1402

Topics include the probability distributions (Binomial, Poisson, negative binomial, uniform, normal, Weibull, Pareto), moments generating functions and their applications in the insurance context, economics of insurance, application of utility theory in insurance, individual and collective risk models, survival distributions and life tables, life insurance and annuities

ASC 4310 Theory of Interest 3 credits
Prerequisites: MTH 1403, CSP: 2

Topics include measurement of interest, accumulation and discount, forces of interest and discount, equations of value, annuities, perpetuities, amortization and sinking funds, yield rates, bonds and securities, depreciation, depletion, and capitalized costs.

ASC 4311 Risk Modeling and Insurance 3 credits
Prerequisite: ASC 4309 or any higher level Math course

This course introduces students to the principles of risk simulation applied in the insurance industry. It introduces examples of dynamic (binomial) and stochastic modeling (Monte Carlo Simulation)

ASC 4212 Mathematics for Actuarial Science II 3 credits
Prerequisite: ASC 4309

Topics include benefit premiums and reserves, reserves for general insurance, random and deterministic survivorship group, stop-loss reinsurance, ruin theory applied in reinsurance, expenses augmented insurance models and withdrawal benefits.

ASC 4314 Life Contingencies I 3 credits

Prerequisites: MTH 4345, MTH 4230, CSP: 2

This course is an introduction to life contingencies as applied in actuarial practice. Topics include present value random variables for contingent annuities and insurance, their distributions and actuarial present values, equivalence principle, and other principles for determining premiums.

ASC 4315 Life Contingencies II 3 credits

Prerequisites: MTH 4314

This course is a continuation of the study of life contingencies. Topics include insurance and annuity reserves, characterization of discrete and continuous multiple state (life and/or decrement) models in insurance and their premiums and policy values, pension plans and retirement benefits and profit testing.

Biology (BIO)

BIO 1401 Principles of Biology I 4 credits

Prerequisites: Min of 15 Credits, CSP 1, 6, 7

Introduction to scientific method, theory and experimentation, cell chemistry, enzymes, metabolism, photosynthesis, genetics, ecology, and evolution. Fulfills Biology Major requirement. Three lectures and three laboratory hours a week.

BIO 1402 Principles of Biology II 4 credits

Prerequisite: BIO 1401

Animal and plant biology with emphasis on structure, physiology, ecology, and evolution. Fulfills Biology Major requirement. Three lectures and three laboratory hours a week.

Business (BUS)

BUS 1301 Survey of Business 3 credits

Prerequisite: ENG 1301

This course introduces students to the functions of modern business. It shows the student how these functions exist in a changing society and the type of decisions which must be made within that environment. The course is also designed to expose students to the multitude of career fields in the areas of business. The importance of business in the modern society is also stressed throughout the course. Topics such as business environment, management, organization, marketing, finance, accounting, and data processing are discussed in an introductory manner. May not be taken to satisfy requirements for B.B.A. degree after junior standing has been attained without advance permission of instructor and dean.

BUS 2305 Business Law 3 credits

Prerequisite: University status

This course provides the business student with a study of the interrelationship of law, ethics, and business. The course also covers government regulation of business activities and the legal environment within which business must operate.

BUS 3300 Globalization and Business Practices 3 credits

Prerequisite: None

This course examines worldwide integration of economic, political, technological, cultural, and social facets to explore the impact of globalization on organizations and individuals worldwide. Students develop a worldview of the global marketplace. They learn how to incorporate their knowledge and understanding of global markets through the simultaneous consideration of all business functions. Analytical frameworks such as SWOT are used to conduct firm and industry analyses. Special consideration is given to key issues in e-business that affect trends in international business

BUS 3301 Quantitative Methods for Business Management 3 credits

Prerequisite: MTH 1300

In today's competitive world, statistical analysis increasingly guides decision-making. Properly gathered data can provide invaluable insights in a business, whether your goal is to improve operational processes, increase revenues, direct new developments or retain valued customers. This course teaches statistical techniques for describing and measuring data, and it provides an overview of probability concepts. It will also explore standard sampling methods and hypothesis

testing, linear regression, correlation, time series and forecasting.

BUS 3320 Business Ethics 3 credits

Prerequisite: ENG 1302

Moral issues in business, such as social responsibility, employee obligations and rights, ethics and the professions, marketing and advertising practices, and the environment. Issues in both domestic and international areas may be discussed.

BUS 4396 Special Topics/Independent Study in Business 3 credits

Prerequisite: Senior status or approval by professor

This course reflects current issues in the field of study. The topics will change as innovation; new trends or technology introduces a concept important to the senior students in the discipline.

BUS 4398 Internship 3 credits

Prerequisites: Junior standing and approval of department head

One semester of prearranged work in Department of Management, Marketing and General Business operational activities in a designated enterprise cooperating with the School of BSS. Students will obtain comprehensive work experience and be responsible for periodic reports and appraisals as required by the instructor. No class hours are to be met; conferences are arranged.

Continuing Education (CCE)

CCE 1000 Mathematics 0 credit

Prerequisite: Placement test

A level-appropriate remedial course to prepare for academic work in Mathematics

CCE 4000-43XX Intensive French Program 0 credit

Prerequisite: Placement test

A customized Intensive French Program for individuals or groups to cater to the varying needs of the participants and enhance their French proficiency. The course will focus on improving vocabulary building, grammar, reading, listening, writing and communicative skills.

CCE 4401 Intensive English Program 0 credit

Prerequisite: Placement test

A customized Intensive English Program for individuals or groups to cater to the varying needs of the participants and enhance their English proficiency.

CCE 4402 Academic English 0 credit

Prerequisite: Placement test

This course prepares students who need to pursue their studies in an English instructional environment. It gives the opportunity to learners to be familiar with the academic settings and topics of English-speaking countries, to improve their fluency and help them develop key skills for University life, integrating different academic English skills: practice reading, speaking, listening, writing, vocabulary building and grammar.

CCE 4403 English Immersion 0 credit

Prerequisite: Placement test

An immersion experience in English. A communicative approach that combines integrative skills, task-based approaches and blended learning. The skills of reading, listening, speaking and writing are integrated with grammar and vocabulary building.

CCE 4404 English Reinforcement 0 credit

Prerequisite: Placement test

A remedial course for the IUGB University Preparatory Program students to help them improve their English writing sufficiency to enter IUGB. In this course, students will complete a variety of writing activities to develop both fluency and accuracy. They will go from the basics of academic writing to the development of more complex pieces of writing with special emphasis on structure, unity, coherence and organization. Students will have practices in timed writing and see visible results of their progress. Structure and grammar will also be stressed for them to attain a high degree of proficiency in academic writing.

CCE 4440 English for Special Purposes 0 credit

Prerequisite: Placement test

Our English for Special Purposes courses are designed to give you the English skills and experience you will need for your future work and professional life. This course is intended to break the linguistic barrier which makes francophone and other non-English-speaking

professionals less competitive worldwide.

CCE 4441 English for Medical Use 0 credit

Prerequisite: Placement test

This course is a level appropriate course for medical staff members who are interested in improving their English skills, combining a general English course with English for medical use. The course focuses on medical vocabulary building, listening, speaking, reading and writing skills. Practical tasks-based lessons with an emphasis on real life situations are emphasized as well.

CCE 4442 English for Legal Use 0 credit

Prerequisite: Placement test

The course is appropriate for intermediate level and it offers students the chance to develop and practice specialist vocabulary and structures needed for the legal use. In this course participants read legal texts in order to exchange information and compare aspects of their own legal systems. Other language practice activities include courtroom role-plays; problem solving discussions and debates; listening to talks and legal cases; writing practice. There are opportunities for critical thinking practice and more individual work such as presenting a summary of a legal case or preparing and giving a presentation on a specific legal topic.

CCE 5100 CLEP® Preparation 0 credit

Prerequisite: Placement test

Preparation for any of the 33 exams offered by the College Board in their College Level Examination Program test. See the list of exams at <http://clep.collegeboard.org/exams/offered>.

CCE 5200 GMAT® Preparation 0 credit

Prerequisite: Undergraduate degree

Preparation for the Graduate Management Admission Council exam

CCE 5300 GRE® Preparation 0 credit

Prerequisite: Undergraduate degree

Preparation for the Educational Testing Service Graduate Record Examination

CCE 5400 TOEFL® Preparation 0 credit

Prerequisite: Placement test

Preparation for the internet-based TOEFL® exam offered by the Educational Testing Service. The preparation course is based on the development of all language areas including the four language skills: Reading, Listening, Speaking and Writing, and Grammar and Vocabulary building to improve the test-takers' scores.

CCE 5500 IELTS® Preparation 0 credit

Prerequisite: Placement test

International English Language Testing System. The course focuses on expanding the learners' skills to comprehend and make use of complex academic language and general English to enhance their test-taking strategies in listening, reading, writing and communicative skills needed to reach success and high scores.

CCE 5600 SAT® Preparation 0 credit

Prerequisite: In secondary school or higher

This course is a level-appropriate preparation for the Reading, Writing and Math sections of the College Board Scholastic Aptitude Test

CCE 5700 TFI™ Preparation 0 credit

Prerequisite: Placement test

Teste de Français International. This course focuses on test taking strategies and skills required in reading, listening, writing and speaking that are necessary to guarantee success in taking the TFI™.

CCE 5800 TOEIC® Preparation 0 credit

Prerequisite: Placement test

Preparation for the Test of English for International Communication exam offered by the Educational Testing Service

CCE 5900 DELF/DALF Preparation 0 credit

Prerequisite: Placement test

Préparation for the DELF (Diplôme d'études en langue française) and the DALF (Diplôme approfondi de langue française). This course is a level appropriate preparation for the different skills: Listening, reading, and writing. The course will focus on providing the participants with vocabulary building and reading strategies, and the best test-taking skills.

Chemistry (CHE)

CHE 1401 Principles of Chemistry I **4 credits**

Prerequisite: One year of high school chemistry or the equivalent and authorization by department, MTH 1303 or higher as a prerequisite or co-requisite is strongly advised

Three lecture and three laboratory hours a week. First course in a two semesters sequence covering the fundamental principles and applications of chemistry for science majors. Topics to be covered include composition of matter, stoichiometry, periodic relations, and nomenclature. Laboratory exercises supplement the lecture material. Three lectures and three laboratory hours a week.

CHEM 1402 Principles of Chemistry II **4 credits**

Prerequisites: CHE 1401, CSP 1,2,6,7

Three lecture and three laboratory hours a week. Second course in a two semester sequence covering the fundamental principles and applications of chemistry for science majors. Laboratory exercises supplement the lecture material. Three lectures and three laboratory hours a week.

Computer Information Systems (CIS)

CIS 2301 Introduction to Computer-Based Information Systems **3 credits**

Prerequisite: University status

This course provides an introduction to computer and information systems concepts, including hardware, software, databases, data communications, and business applications. The student is introduced to methods of determining user requirements and developing application systems using databases and fourth generation languages

CIS 3301 Managing Information Technology Projects **3 credits**

Prerequisite: CIS 2301

This course examines the defining characteristics of IT projects, especially involving the development of software intensive systems, and introduces the student to a variety of project management techniques that can be applied in an IT project context. This course will give students an understanding of the most common processes, tools, techniques, and theories that are necessary to manage IT projects. Managing IT projects that follow both plan-driven traditional development methods as well as agile methods will be covered.

CIS 3305 Advanced Spreadsheet **3 credits**

Prerequisite: CIS 2301

This course is to provide student with the information and technical skills required to use advanced Excel skills in the educational process for the Business Administration and other disciplines as well as entry into the work force, or increased workplace related experience.

CIS 3310 System Analysis **3 credits**

Prerequisites: CIS 2301, CIS 3325

This course provides an introduction to the analysis and logical design of computer based information systems. Emphasis is placed upon the development of requirements specifications that serve the business needs of the organization and provide the necessary base for subsequent systems development. Both data oriented and process oriented approaches are covered.

CIS 3315 Telecommunication for Business **3 credits**

Prerequisites: CIS 2301, GPA 2.5

This course introduces the subject of computer networks and the use of computer networks in business applications. Topics covered include client server networks, network hardware and software, distributed computing, key issues in network management, and the fundamentals of data communications.

CIS 3322 Management of Information Services **3 credits**

Prerequisite: 2.5 GPA

This course addresses the many management issues unique to the information services function within organizations. Coverage includes information systems planning, managing the information system infrastructure, justifying the information technology investments, the costing of services and networks, evaluating information system performance, alternative information system delivery modes, managing distributed and end user computing project and operations management, systems security, and MIS professionals.

CIS 3325 Database Management Systems 3 credits

Prerequisites: CIS 2301, 2.5 GPA

The course Database Management Systems provides an introduction to the management of database systems. The course emphasizes the understanding of the fundamentals of relational systems including data models, database architectures, and database manipulations. The course also provides an understanding of new developments and trends such as Internet database environment and data warehousing. The course uses a problem-based approach to learning.

CIS 3326 Internet Application Development 3 credits

Prerequisite: CIS 3325

Use of Web development tools for Web site development. Architectural planning, technology selection, and Web site programming tasks. Internet applications using COM components on both the client and server.

CIS 3327 Introduction to Information Security 3 credits

Prerequisite: University status

Introduction to Information Security. This course provides an initial overview on the topic of Information Security. It covers the basics of encryption and decryption, program security including viruses and other malicious code, application security, security in operating systems, security in networks and distributed systems, different methods of administering security, and legal and ethical issues in computer security.

CIS 4301 Information System Infrastructure and Network 3 credits

Prerequisite: CIS 3315

Enterprise information technology infrastructure including networking and telecommunications fundamentals, concepts, models, architectures, protocols, standards, communications, configuration, implementation, management, deployment software, firmware, hardware, distributed systems, file services, and software/hardware/network security issues.

CIS 4305 Introduction to Business Intelligence 3 credits

Prerequisites: CIS 2301, MGS 3310

This course covers topics of knowledge management and business intelligence from an organizational IT perspective. The content of the course includes discussion of and readings on the nature of knowledge; knowledge discovery, generation, capture, transfer, sharing, and application; and includes discussion of the core IT capabilities necessary to deliver Business Intelligence in organizations. The development and use of data warehouses and data marts to support business analytics is discussed.

CIS 4310 Enterprise Applications Development 3 credits

Prerequisite: CIS 3326

Required CIS

CIS 4396 Special Topics/Independent Study in CIS 3 credits

Prerequisite: Senior status

This course reflects current issues in the field of study. The topics will change as innovation; new trends or technology introduces a concept important to the senior students in the discipline.

CIS 4398 Internship 3 credits

Prerequisites: Junior or senior status and approval of Dean and/or Faculty Advisor

This course allows the student to work in industry or an agency and be mentored by an industry coach. A faculty member will supervise the internship and develop specific learning objectives that relate to the student's goals, industry involved and the needs requirements for academic rigor. It is a supervised practicum.

CIS 4499 Capstone 4 credits

Prerequisites: MTH 1300, MGS 3310, MKT 3301, all required CIS 3000 level, 2.5 GPA

Computers and Applications. History of computers, hardware components, operating systems, application software, data communication. This course covers all of the IUGB Computer Skills course prerequisites.

Communication (COM)

COM 1300 Human Communication 3 credits

Prerequisite: Freshman status

An introduction to human communication, including language development, verbal, nonverbal, interpersonal, small group, organizational, public, and intercultural communication.

COM 2301 Technical Communication 3 credits
Prerequisite: ENG 1301

COM 2301 integrates several learning goals in order to create a dynamic environment in technical writing with direct application to real-world communication for a specific audience, purpose, and context. Students will be self-directed writers who make use of resources, writing, grammar, case studies, research, and design as they develop critical thinking skills that sharpen their abilities as they master technical writing forms.

COM 2305 Media, Culture, and Society 3 credits
Prerequisite: ENG 1302

Review of the ways in which mass mediation has transformed culture, politics, and communication. The purpose of the course is to enhance media literacy by assessing current debates over the role of the media in society.

Computer Science (CSC)

CSC 1300 Computers and Applications 3 credits
Prerequisites: MTH 1301 or High School Algebra II, CSP 1, 6, 7

Topics covered include: History of computers, information system concepts, hardware components, application software, system software, computer network, the internet and the World Wide Web, computer communications, computer security and ethics. This course covers all of the IUGB Computer Skills course prerequisites.

CSC 2300 Principles of Computer Science 3 credits
Prerequisite: CSC 1300

An introduction to the discipline of computer science. Topics include algorithmic foundations, hardware concepts, virtual machine concepts, computer organization, memory/processor/IO subsystems, software systems, applications, and social issues. Programming concepts are introduced to implement algorithms. Pseudo-code, Assembly language and basic notions of Java are also covered.

CSC 2301 Principles of Computer Programming 3 credits
Prerequisite: CSC 2300

Java is the programming language used in this course. The course introduces Object Oriented Programming notions (OOP). Distinction between classes and objects are explained. Basic and advanced notions of Java are covered including identifiers, constants, variables, data types, expressions, methods, interface, inheritance, polymorphism, graphics, graphical user interfaces, arrays, exceptions management, I/O files and keyboard.

CSC 2303 Theoretical Foundations of Computer Science = MTH 2300 3 credits
Prerequisite: CSC 2300 with grade C or higher

This course covers the basic theoretical foundations required to study various sub-disciplines in computer science. Topics include: propositional and predicate logic with applications to logic programming, database querying, and program verification; induction and its application in proving correctness and termination of programs; recurrence relations, combinatorics, and graph theory with applications to analysis of algorithms; sets, relations, and functions and their applications in databases, functional programming, and automata.

CSC 2304 Mathematical Models for Computer Science 3 credits
Prerequisites: MTH 1402 and MTH 2300 with grade of C or higher.

Mathematical Models for Computer Science. This course will not be accepted as part of the requirements of a major in mathematics. Elements of mathematical modeling including: probability, distributions of random variables, sampling, statistical inference, transforms, operators, vector analysis; elements of linear algebra. Computer science students can take MTH 2302 Introduction to Linear Algebra as a replacement for MTH 2301.

CSC 3300 Computer Organization & Programming 3 credits
Prerequisites: CSC 2301 and MTH 2300 with grades of C or higher.

This course introduces the principles of computer organization and architecture. The instruction set architecture learnt in this course is SPARC. The topics in this course include SPARC processor architecture, SPARC assembly language, macros, digital logic and binary numbers, binary arithmetic, stack, data structures, subroutines, program segmentation and linkage, structure of machine instructions, I/O Text and file.

CSC 3301 System Level Programming 3 credits

Prerequisite: CSC 2301 with grade of C or higher.

Operating systems design and implementation. Topics include overview of components of an operating system, mutual exclusion and synchronization, implementation of processes, scheduling algorithms, memory management, and file systems. Net-centric computing, network architectures; issues associated with distributed computing. Lectures and mandatory one-hour lab sessions per week. 3 class hours + 1 Lab hour.

CSC 3302 Data Structures 3 credits

Prerequisites: CSC 2301 and MTH 2300

The course covers data collection abstraction. Well known data type abstraction as arrays or List is first re-explained, then linked List, double linked list, stacks, queues, trees, dictionary, graphs, recursion, searching and sorting algorithms are detailed. Java is the programming language used to implement those concepts.

CSC 4300 Computer Architecture 3 credits

Prerequisite: CSC 3300

The course explains the structure of the transistor component, its manufacturing process, subsystems of a computer, instructions set architecture, computer performance, pipelining, hierarchy of memory, parallelism, superscalar processors.

CSC 4302 Wireless Networks & Mobile Computing 3 credits

Prerequisite: CSC 3301

Wireless Networks and Mobile Computing. Introduction to wireless communication networks and mobile computing. Topics include: wireless communications technology; communication protocols in wireless networks; representative network types such as cellular wireless networks, wireless LANs, wireless ad hoc networks and wireless sensor networks, and mobile communication systems.

CSC 4303 Programming Language Concepts 3 credits

Prerequisites: CSC 3300, CSC 3302

Fundamental principles underlying the design and implementation of computer programming languages. Syntax and semantics of programming languages. Topics include formal languages and grammars; recursive descent parsing; datatypes, expressions, control structures, and parameter passing; compilers and interpreters; memory management; functional and logic programming principles.

CSC 4305 Software Engineering 3 credits

Prerequisite: CSC 3302

This course is about techniques used in large scale scientific or technical software development. Topics covered include requirements analysis (system and software), cost estimation, project planning and management, risk, specification, system design, implementation, testing, validation, verification, maintenance and life cycle. A team project is mandatory for this class which must be developed using either JAVA or .Net.

CSC 4306 Design & Analysis Algorithms 3 credits

Prerequisites: CSC 3302, MTH 2302

This course is about techniques for designing and implementing efficient algorithms. Topics include efficiency of algorithms; lower bound arguments; algorithms for sorting, selection, graphs, and string matching.

CSC 4307 Database Systems 3 credits

Prerequisite: CSC 3302

An introduction to the fundamental concepts and principles that underlie the relational model of data. Topics include formal query languages; SQL; query optimization; relational database design theory; physical database design, integrity, security, and concurrency control.

CSC 4310 Platform-Based Software Development 3 credits

Prerequisite: CSC 4307

Articulation: Platform-Based Software Development Lectures and mandatory one-hour lab session per week. Design and development of software applications that reside on specific platforms. The course focuses on integrated software development environment in which application development methodologies and constraints for web platforms, mobile platforms and game platforms. Lecture and mandatory one hour lab session per week.

CSC 4311 Data Mining 3 credits

Prerequisite: CSC 3302

Data Mining studies algorithms and computational paradigms that allow computers to find patterns and regularities in databases, perform prediction and forecasting, and generally improve their

performance through interaction with data. Topics include association rules mining, cluster analysis and classification methods, Web data mining, biomedical data mining and security, data knowledge discovery. The knowledge discovery process includes data selection, cleaning, coding, using different statistical and machine learning techniques, and visualization of the generated structures.

CSC 4312 Introduction to Information Security 3 credits

Prerequisite: CSC 3301

This course provides an initial overview on the topic of Information Security. It covers the basics of encryption and decryption, program security including viruses and other malicious code, application security, security in operating systems, security in networks and distributed systems, different methods of administering security, and legal and ethical issues in computer security.

CSC 4315 Artificial Intelligence 3 credits

Prerequisites: CSC 3302, CSC 4303

An overview of techniques and methodologies in the field of artificial intelligence. Topics may include search strategies, problem solving, natural language processing, logic and deduction, memory models, learning, expert systems, knowledge representation, and robotics.

CSC 4316 Web Programming 3 credits

Prerequisite: CSC 2301

This course introduces web programming. It covers the development of distributed multi-tier, web-based server applications using the Java programming language. The use of the current Java Platform and Enterprise Edition (EE) platform will be integral to this process. The focus throughout the course is on practical concepts and fundamentals of web programming using JSP, Servlets, JSF, XHTML, CSS, Java script, ASP.Net, Ajax and PHP.

CSC 4317 Interactive Application Design 3 credits

Prerequisite: CSC 2301 with grade of C or higher

Fundamental principles and techniques of interactive application design as they are implemented on an industry standard platform. Topics: emerging technologies, mobile & web programming frameworks, data-driven applications, modern GUI tools, input/output modalities, rapid prototyping, and user experience. Extensive hands-on programming experience via platform-specific APIs. Lecture/discussion.

CSC 4318 Advanced Network Communication & Security 3 credits

Prerequisite: CSC 4312 with grade of C or higher

Advanced concepts and applications of network communication and security. Topics include: client-server communications, web services and applications, network systems discovery, advanced access control, trade-off between network usability and security, configuration and hardening recommendations and strategies, monitoring, intrusion detection, countermeasures, and incident response. Emphasis on developing, deploying, and maintaining a secure network communication infrastructure. Lecture and mandatory one-hour lab session per week. Optional weekend field trip event over spring break.

CSC 4319 Advanced Database Administration 3 credits

Prerequisite: CSC 4307 with a grade of "C" or higher

Database administration issues in advanced database systems, focusing on recent developments in commercial database technology. Topics covered include advanced query optimization techniques and database administration. Experience with industry standard database administration tools and certification.

CSC 4320 Computer Graphics and Data Visualization 3 credits

Prerequisite: CSC 2301 with grade of C or higher

Data visualization is about displaying data in visual forms such as charts, diagrams, or 3D models. Topics include the theoretical basis (e.g. Gestalt theory, visual attention, visual complexity theories), visualization techniques (e.g. interactive maps, time series charts, scatter plot maps, trees, networks, graphs, etc.), and visualization tools (e.g. Google Chart Tools, Processing). Students will learn basic visualization principles, how to choose the right kind of display for specific purposes, and how to provide interactive features for the user interface.

CSC 4399 Internship 3 credits

Prerequisite: Senior Status

Program to combine academic training with professional experience through short-term internships.

The internship provides a complete immersion opportunity for a student in an organization where he/she is put in the same conditions of a professional employee. A project is given to him/her by the organization and must be completed during the internship. The student is required to produce

a written report document of the works at the enterprise. The student is also required to present its findings and achievements to an audience that included representative of the organization and some academic professors.

CSC 4360 Network Oriented Software Development 3 credits

Prerequisite: CSC 3302

Object-oriented design of network-oriented distributed applications. Review of middleware technologies used in building distributed systems by providing interoperability among applications running on multiple networks and platforms from embedded systems to servers. Programming in middleware using state-of-the-art technologies.

CSC 4373 Data Visualization 3 credits

Prerequisite: CSC 2301

Data visualization is about displaying data in visual forms such as charts, diagrams, or 3D models. This course is targeted towards students who are interested in using data visualization in their work as well as those who are interested in developing visualization systems. Topics include the theoretical basis (e.g. Gestalt theory, visual attention, visual complexity theories), visualization techniques (e.g. interactive maps, time series charts, scatter plot maps, trees, networks, graphs, etc.), and visualization tools (e.g. Google Chart Tools, Processing). Students will learn basic visualization principles, how to choose the right kind of display for specific purposes, and how to provide interactive features for the user interface.

CSC 4391 Directed Reading and Research 3 credits

Prerequisite:

The course initiates students to research activities. It covers topics as the importance and added value of research, differences between fundamental and practical research, publication authority centers (IEEE, DBLP, etc.), methodology approaches, and publication paper structure. Practical IT publicized papers will be used to guide students.

CSC 4392 Selected Topics 3 credits

Prerequisite: Senior Status

No more than six may be applied toward the major. This course analyzes and comments on selected computer sciences topics applied to software areas as network communication, web, services, application, data intelligence, data mining or multimedia data architecture/design/development/test/security/performance or in hardware systems as servers, mainframes, communication devices, grid/parallel computing, network sensors and devices, multimedia devices, system performance, capacity planning.

CSC 4499 Senior Capstone Project 4 credits

Prerequisite: Senior status

Under the supervision of a faculty advisor, a student works on a research project either in enterprise or in laboratory. The duration of the project is one school semester. The project must cover the student main concentration area. Advisor provides to the student a project plan with activities deadline that the student must achieve to be successful. The student produces a written thesis document, then present to a committee of professors. This course is required c for ALL Computer science majors. It is designed to synthesize the skills mastered during the course of the program. All Capstone Experiences must be approved by the faculty advisor and must include oral presentation of the work done to the university or a committee selected by the faculty advisor.

Data Science (DSC)

DSC 2301 Principles of Data Science 3 credits

Prerequisite: CSC 2300 with grade C or higher

The Principles of Data Science course is designed as an introductory course to the main topics, concepts and challenges of the field of Data Science. These basic concepts will cover statistics, computer science, and data science practice. Students will learn the basic skills to manage and analyze data and be exposed to concepts such as exploratory data analysis statistical inference and modeling and the idea of machine learning.

DSC 2302 R Programming for Data Science 3 credits

Prerequisite: DSC 2301

This course introduces the student to the basics of the R programming language including data types, lists, sets, dictionaries, tuples, techniques for manipulation, and the implementation of fundamental tasks. The student learns how to harness the power of complex data structures to store collections and use R libraries like NumPy and Pandas. The students will understand the fundamental syntax of R and write R code and learn how to program in R and how to use R for

effective data analysis and visualization.

DSC 3300 Data Warehousing (DSC 4301) 3 credits

Prerequisite: DSC 2302 and CSC 3302

Data warehousing is known as a collection of corporate information and data derived from multiple external data sources. A data warehouse is designed with the purpose of data consolidation, analysis, and reporting. There are three main types of data warehouse: enterprise data warehouse, operational data store, data mart. Its architecture rests on a relational database management system (RDBMS) server acting as main repository. Furthermore, various types of data models are treated, e.g. Dimensional Data Store according to the Kimball Model, and Normalized Data Store according to the Immon Model. The course also addresses terminology as ETL processes, OLAP (Online Analytical Processing), Data Mart, Data Lake, operational databases and common data sources.

DSC 3301 Introduction to Machine Learning 3 credits

Prerequisite: CSC 4303 or CSC 3302 and DSC 2301

Artificial intelligence (AI) is a study field that tries to simulate human intelligence. The ultimate goal of AI is to make a computer that can learn, plan, and solve problems autonomously. Machine learning is a subset of artificial intelligence, based on programming computers to optimize a performance criterion using example data or past experiences. The main topics in machine learning include: Supervised learning, Unsupervised Learning, Data representation, features engineering and model evaluation. In this course, we will be interested in the implementation and application of machine learning algorithms. The main objective of this course is to introduce Machine Learning, its techniques and applications.

DSC 3303 Relational and No SQL Databases 3 credits

Prerequisites: DSC 2302 and CSC 3302

The emergence of real-time streaming data from technologies including the Internet of Things (IoT) and relationship-based dynamic datasets and social networks led to large volume of high velocity structured and unstructured data. This is called Big Data as a result, relational databases are no longer suitable for the analysis and processing of such data. In this course will explore four NoSQL database models: key-value, document, column, and graph together with their pros and cons. The course will include hands-on experience with a relational database and each type of NoSQL database. Students will also learn to analyze the structure of data and select the appropriate NoSQL database model to store and manipulate big data.

DSC 4305 Data Analytics 3 credits

Prerequisites: DSC 2300 and DSC 2302

Data analytics is a course that focuses on the collection, processing, and analysis of large data sets to gain insights and make informed business decisions. In this course, students earn the principles and techniques of data analytics, such as data cleansing, data transformation, data visualization, data mining, and statistical analysis. The course also teaches students how to use data analytics to solve business problems, such as predicting customer behavior, identifying market trends, and optimizing business processes. Students learn how to interpret and communicate the results of data analysis to different stakeholders, including executives, managers, and clients.

DSC 4311 Data Mining Techniques 3 credits

Prerequisite: CSC 3302 with grade of C or higher

Introduction to basic data mining techniques and their applications. Data Mining studies algorithms and computational paradigms that allow computers to find patterns and regularities in databases, perform prediction and forecasting, and generally improve their performance through interaction with data. Topics include association rules mining, cluster analysis and classification methods, Web data mining, biomedical data mining and security, data knowledge discovery. The knowledge discovery process includes data selection, cleaning, coding, using different statistical and machine learning techniques, and visualization of the generated structures.

DSC 4315 Introduction to Artificial Intelligence 3 credits

Prerequisites: CSC 3302 and CSC 3302 and DSC 4311/CSC 4311 or CSC 4303

Artificial intelligence (AI) is a study field how intelligent human behavior. The ultimate goal of AI is to make a computer that can learn, plan, and solve problems autonomously. The main topics in AI include: problem solving, reasoning, planning, natural language understanding, computer vision, automatic programming, machine learning, and so on. In this course, we will be interested in the inner working of AI. We will introduce some basic search algorithms for problem solving;

knowledge representation and reasoning, pattern recognition and neural networks. The main objective of this course is to introduce Artificial Intelligence (A.I.), its techniques and applications.

DSC 4320 Computer Graphics and Data Visualization 3 credits

Prerequisite: CSC 4303 or CSC 3302 and DSC 2301, DSC 2302

Computer Graphics and Data Visualization is a course that explores the principles, techniques, and tools used to create computer-generated images and visualize data. The course covers the design and implementation of both 2D and 3D graphics, as well as data visualization techniques for exploring, analyzing, and presenting data. The course typically involves a combination of lectures, discussions, programming assignments, and projects. Students are expected to have basic programming skills in Java. Overall, the Computer Graphics and Data Visualization course prepares students for careers in computer graphics, data visualization, and related fields, where they can apply their knowledge and skills to create compelling and effective visualizations for various domains, including science, engineering, medicine, and business.

DSC 4333 Internship 3 credits

Prerequisite: Senior Status

An internship in Data Science is a professional learning experience in a data intensive corporate environment that offers practical work based on a meaningful project. It gives the student an opportunity to apply knowledge acquired in his major and learn new skills under the supervision of an internal corporate advisor. Conversely, the student intern may bring new ideas, talent, and energy into the new environment. It also serves the purpose of introducing a student to the organizational culture through data-related work assignments. The student writes a final Internship report that explains his/her work in the chosen corporate environment. The University-Industry liaison office provides help to students in their search for internship opportunities.

DSC 4498 Special Topics in Data Science 4 credits

Prerequisite: Senior Status and CSC 3302, DSC 2302, DSC 2301 or CSC 4303

Special Topics in Data Science is a course that focuses on advanced topics in data science, such as Machine learning, Deep Learning, natural Language Processing, Big Data, Bayesian Methods, Time Series Analysis, Unsupervised Learning and Artificial intelligence. The course is typically designed for graduate students or advanced undergraduates who have a strong foundation in statistics, programming, and data analysis.

DSC 4499 Capstone 4 credits

Prerequisite: Senior Status

A Capstone Project in Data Science is a research or development work that serves as a culminating academic and intellectual experience for a student who has already completed all required courses. It involves the identification of an existing problem and then the application of learned specific data science skills and methods to develop an appropriate solution. The student writes a final Capstone project report that summarizes his/her contribution. The faculty advisor provides guidance to the student on the project plan with activities deadline that the student must achieve to be successful.

Economics (ECO)

ECO 1301 Introduction to Economics 3 credits

Prerequisite: None

Social Science Elective. Not open to BBA majors.

This course is a non-technical introduction to the basic concepts in economics. Using a few fundamental economic concepts, the course provides a foundation for informed decision making regarding current economic debates. This course is intended for non-majors and does not count for the economics major.

ECO 1302 History of Economic Thought 3 credits

Prerequisite: None

This course offers an in-depth exploration of the evolution of economic thought from classical to modern times. Through a comprehensive analysis of the contributions of various economic thinkers, students will gain an understanding of their theories and the socio-economic context in which they were developed. By the end of the course, students will be able to critically evaluate economic theories and identify their relevance in contemporary economic issues.

ECO 1305 The Economic History of Africa 3 credits

Prerequisite: None

This course provides an overview of the economic history of Africa from pre-colonial to contemporary times. It examines the evolution of African economies and their interactions with the global economy,

with a focus on issues related to economic development, poverty, and inequality. By the end of the course, students will have a comprehensive understanding of the factors that have shaped the economic landscape of Africa.

ECO 2300 The Global Economy 3 credits

Prerequisite: *University status*

This course is designed to introduce students to basic facts about the operation of the world economy, with particular focus on current issues confronting economies of various countries. The course will discuss the role of international organizations such as the World Bank and the International Monetary Fund, and will focus on major problems facing policy makers, such as global income inequality, financial crises, environmental challenges, the transition to a market economy, and the design of the European Monetary Union.

NOTE: Not available for credit in the major; may be used as a non-major elective, depending on degree.

ECO 2301 Principles of Macroeconomics 3 credits

Prerequisite: *MTH 1301*

This course analyzes the overall performance of economic systems including output and employment levels, inflation, economic growth, international finance, and the effects of monetary and fiscal policies.

ECO 2302 Principles of Microeconomics 3 credits

Prerequisite: *MTH 1301*

This course is a systematic study of the functions of markets and prices in the production and distribution of goods and includes economic analysis of international trade, public finance, labor markets, monopoly, and poverty.

ECO 3301 Intermediate Macroeconomics 3 credits

Prerequisite: *ECO 2301*

This course applies the tools of aggregate economic analysis to the problems of the performance of the economy. The course links the theories and data to understand the causes of macroeconomic fluctuations in production, employment, inflation, and international economic relations; particular emphasis is placed on macroeconomic policy issues.

ECO 3302 Intermediate Microeconomics 3 credits

Prerequisite: *ECO 2302*

This course develops models of the behavior of individual economic units, including consumers, workers, investors, and business firms, and explains how and why these units make economic decisions. Economic behavior in various types of market environments is analyzed. The implications of this behavior for the allocation of resources and for public policy are discussed.

ECO 3305 Financial Markets 1 the Macro Econ. 3 credits

Prerequisites: *ECO 2301 and ECO 3301*

This course investigates the interdependence between financial markets and the macro economy. Students will learn about the theories, concepts, and tools used to analyze the relationship between financial markets and macroeconomic variables such as output, inflation, interest rates, and exchange rates. The course also covers topics related to monetary policy, financial crises, and international finance, enabling students to critically evaluate the effects of financial markets on the macro economy.

ECO 3310 Game Theory & Economic Behavior 3 credits

Prerequisites: *ECO 2302 and ECO 3302*

This course provides an in-depth exploration of the principles of game theory and their applications in economics. Students will learn about different types of games, equilibrium concepts, and the applications of game theory in various economic settings. Through case studies and practical applications, students will gain a thorough understanding of how game theory can be used to understand human behavior in strategic interactions.

ECO 4307 Environmental Economics 3 credits

Prerequisite: *ECO 2302*

This course is designed to introduce the student to a broad range of contemporary environmental problems and the design of appropriate policy responses. Environmental concerns such as declining urban air quality, water pollution, tropical rain forest destruction, and global warming are covered (topics vary according to the instructor). The role of economic development and the political and social forces determining environmental quality are explored. The effectiveness of past and present environmental policies and regulations are evaluated and contrasted with newer, more flexible approaches to improving environmental policy. This course is designed for students majoring in all disciplines who have interests in public policy as it relates to managing the environment.

ECO 4315 Economics of Poverty and Public Policy 3 credits

Prerequisite: None

This course applies basic economic concepts to the study of poverty in the United States. There are three main topics: (1) measuring the extent of poverty in the United States, (2) explaining the causes of poverty, and (3) evaluating actual and potential private sector or government responses to the problem. Within this framework, topics that will be discussed include poverty and inequality, economics of the family, racial/gender discrimination and segregation, neighborhood effects, history of welfare, the incentive structure of the current and proposed welfare plans, and welfare reform.

ECO 4320 Money and Credit 3 credits

Prerequisite: ECO 2301

A study of the role of money, credit, interest rates, and the balance of payments in determining the rate of production and employment in a nation's economy; emphasis is placed on monetary policies of the Federal Reserve System and their interaction with other elements of policy and with international economic currents.

ECO 4325 Economic Development 3 credits

Prerequisites: ECO 2301 and ECO 2302

This course analyzes the issues underlying vast differences in development among the nations of the world. Economic growth, subject to appropriate restraints on environmental degradation, is seen as a major instrument for improving the development of nations and the welfare of their people. The course employs elements of theories of growth, international trade and finance, industrial organization, money, as well as micro and macroeconomics to analyze causes of and prescribe cures for, underdevelopment.

ECO 4326 Economic Development of Africa 3 credits

Prerequisite: ECO 2302

Economic and social problems of raising standards of living in Africa. Discussion issues include economic growth, growth and the environment, income disparities, the role of trade and foreign investment and the accompanying political and social changes.

ECO 4335 International Trade 3 credits

Prerequisite: ECO 2302

An examination of theories of trade and empirical verification, trade and welfare, tariff and no tariff barriers to trade, common markets, and the relationship between growth and trade.

ECO 4336 International Finance 3 credits

Prerequisite: ECO 2301

A study of the foreign exchange market, the balance of payments, and exchange rate systems, with particular emphasis on the current international monetary system, the international macroeconomic model, and policies for internal and external balance.

ECO 4340 Experimental Economics 3 credits

Prerequisites: MTH 1300 and MTH 1402 and MTH 1403 and MTH 4300 and ECO 3310

This course introduces students to the experimental method in economics and its applications to real-world economic problems. Students will learn about the principles of experimental design, data collection, and data analysis. The course covers the applications of experimental economics to a variety of economic topics, including game theory, public goods, and market behavior

ECO 4345 Econometrics and Applications 3 credits

Prerequisites: ECO 2301, ECO 2302, and MTH 1300

An introduction to the regression model, its assumptions, limitations, and application to problems in business and economics.

ECO 4346 Labor Economics 3 credits

Prerequisite: ECO 2302

This course applies economic theory to the analysis of labor markets. Topics examined include wage determination, employment and labor force growth, education and training, occupational attainment, unemployment, and the impact of discrimination, unions, and government policy on the functioning of labor markets.

ECO 4347 Research Methodology 3 credits

Prerequisite: MTH 1300 and ECO 4345

This course introduces students to fundamental concepts and techniques of research methodology in economics. Students will learn how to design and conduct research, analyze data, and communicate their findings effectively. Through practical exercises and assignments, students will develop essential research skills necessary to conduct empirical research in economics.

ECO 4350 Econometrics Theory & Practices 3 credits

Prerequisite: MTH 1300 and MTH 1402 and MTH 1403 and MTH 4300 and ECO 4345

This course provides students with a comprehensive understanding of the theoretical foundations and practical

applications of econometrics in economics. Students will learn how to apply statistical methods to economic data, interpret and communicate econometric results, and critically evaluate econometric research. Through practical applications and empirical research projects, students will develop essential econometric skills necessary for empirical economic research.

ECO 4396 Special Topics/Independent Study in Economics 3 credits

Prerequisites: Junior or Senior status and approval by the supervising faculty member and the Dean of BSS.

English (ENG)

ENG 1301 English Composition 1 3 credits

Prerequisites: Freshman status, CSP 1,6,7

A composition course designed to increase the student's ability to construct written prose of various kinds. Focuses on methods of organization, analysis, research skills, and the production of short argumentative and expository essays; readings consider issues of contemporary social and cultural concern. Passing grade is C.

ENG 1302 English Composition 2 3 credits

Prerequisite: ENGL1301 \geq C

A composition course designed to develop writing skills beyond the levels of proficiency required by ENG 1301. Stresses critical reading and writing and incorporates a variety of more advanced research methods; readings will be drawn from a wide variety of literature texts. Passing grade is C.

Environmental Science (ENV)

ENV 1401 Environmental Science I 4 credits

Prerequisite: None

Environmental Science is a broad topic that encompasses both the effect of humankind on Earth and the effect of significant biological and geological processes on life on Earth. This course is an introduction to Environmental Science, designed to introduce the student to the world's environments. Using a thematic approach, students will discover the different ecosystems of our world and the relationships that bind them together. A broad range of contemporary environmental concerns (Air quality, water pollution, desertification, deforestation, global warming, etc.) with emphasis on human impacts will be presented, as well as the design or assessment of appropriate policy responses. 3 Hours Lectures and 3 hours Lab per week. The Labs are a series of field trips and students write reports about the field trip and other environmental changes discussed during the trip.

ENV 1402 Environmental Science II 4 credits

Prerequisite: ENV 1401

The origin, distribution, and consequences of consuming the Earth's resources (metallic, nonmetallic, soil, and groundwater). Topics include fossil fuels, nuclear energy, alternative energy sources, and uses of minerals, waste disposal, and contaminants in the environment.

Finance (FIN)

FIN 3305 Corporate Finance 3 credits

Prerequisites: ACT 2301 and ACT 2302 and ECO 2301 and ECO 2302

The main objective of this course is to understand how corporation make financial decisions and investment decisions. The course will first review time value of money, which is a crucial concept in Finance. Students will learn about stocks and bonds valuations, the different types of institutions and their economic roles, investment strategies, and the links between risk and the cost of capital; we will cover techniques used to manage exposures. Further, students will learn about portfolios theories, strategic financial management and they will learn to use best practices to analyze projects (sensitivity analysis, Monte-Carlo simulation and decision trees).

FIN 4301 Fundamentals of Valuation I 3 credits

Prerequisites: FIN 3305, MTH 1300

This course is a follow up of Fundamentals of Valuations I. The topics discussed include: risk-return analysis, the efficient market hypothesis, derivatives analysis and pricing, and the economics of the foreign exchange markets. This is a highly quantitative course and students are expected to be comfortable with basic finance a probability, statistics, regression analysis, and spreadsheet programming.

FIN 4302 Fundamentals of Valuation II 3 credits

Prerequisite: *FIN 4301*

This course is a follow up of Fundamentals of Valuations I. The topics discussed include: risk-return analysis, the efficient market hypothesis, derivatives analysis and pricing, and the economics of the foreign exchange markets. This is a highly quantitative course and students are expected to be comfortable with basic finance a probability, statistics, regression analysis, and spreadsheet programming.

FIN 4305 Financial Analysis and Introduction to Loan Structuring 3 credits

Prerequisites: *FIN 3305, FIN 4301, FIN 4302*

Students intensively examine financial statements and business characteristics to learn the information content of financial statements. Applications focus on how they can be used to identify the pattern of funds need for a business and the best financing vehicle to meet that need. The primary tools of analysis are financial statement construction, cash flow statements, financial ratios, common sized statements, cash budgets, Performa statements, sustainable growth rates, and cost volume profit analysis. Students evaluate the needs of a variety of companies that differ with respect to type, industry, profitability, growth, seasonality, cyclicity, and degree of distress. The primary teaching method is case analysis, and a significant course objective is development of communication skills.

FIN 4307 Foundation in International Finance 3 credits

Prerequisites: *FIN 4301, FIN 4302*

This course exposes students to foreign exchange risk and develops their understanding of institutional realities encountered by the financial manager in a global economic environment. Activities of currency arbitrage, hedging, and speculation are examined in light of exchange rate regimes, eurocurrency markets, the balance of payments, mechanics of foreign exchange conditions in international finance, and international trade activities.

FIN 4315 Advanced Corporate Finance 3 credits

Prerequisites: *FIN 4301, FIN 4302*

This course develops a framework for analyzing corporate investment and financial decisions facing financial managers and introduces students to the tools to make such decisions. Students are introduced to the central issues in capital structure and dividend policy decisions and the interaction between financing and investment decisions. Techniques are introduced for evaluating strategic investments in technology, mergers and acquisitions, corporate restructurings and research and development. They also form the basis for the valuation of firms in traditional and new-technology industries and security offerings such as initial public offerings. A variety of pedagogical vehicles are used including problem solving, case studies, lectures, and group projects.

FIN 4317 Venture Capital & Entrepreneurial Finance 3 credits

Prerequisite: *MGS 4317*

This course is designed for aspiring entrepreneurs who want to gain practical knowledge about early-stage financing. Through real-time case studies, students will learn about the role of angel investors and venture capitalists in funding startups. Additionally, the course will cover various sources of funding and their respective benefits, giving students a comprehensive understanding of entrepreneurial finance.

French (FRN)

FRN 1301 Elementary French 1 3 credits

Prerequisite: *Freshman status*

Development of basic skills in listening, speaking, reading and writing; acquisition of grammatical structures. Not open to native speakers of French.

FRN 1302 Elementary French 2 3 credits

Prerequisite: *FRN 1301 > C*

Development of basic skills in listening, speaking, reading and writing; acquisition of grammatical structures. Not open to native speakers of French.

FRN 2301 Intermediate French 1 3 credits

Prerequisite: *FRN 1302 > C*

Continuing development of listening, speaking, reading and writing skills. Vocabulary expansion. Further work with grammatical structures.

FRN 2302 Intermediate French 2 3 credits

Prerequisite: *FRN 2301 > C*

Continuing development of listening, speaking, reading and writing skills through the use of audio and video materials as well as literary and non-literary texts.

FRN 2307 French Literature 3 credits

Prerequisite: FREN 2302 \geq C

An introduction to French literature within its cultural context. The major periods of French literature are presented, as well as current literary trends. Types of literature and the cultural forces that influenced the authors. Extensive reading. Taught in French.

Geography (GEG)

GEG 1301 Introduction to Human Geography 3 credits

Prerequisite: Freshman status

Introductory regional geography focusing on the ways in which cultural groups around the world utilize and modify their landscapes and environments.

Geology (GEL)

GEL 2301 Geologic Resources and the Environment 3 credits

Prerequisite: Freshman status

The origin, distribution, and consequences of consuming the Earth's resources (metallic, nonmetallic, soil, and groundwater). Topics include fossil fuels, nuclear energy, alternative energy sources, uses of minerals, waste disposal, and contaminants in the environment.

History (HIS)

HIS 1305 Introduction to African & African-American History 3 credits

Prerequisite: University status

Introduction to African and African-American History. African History and Culture. The coming of Africans to the Americas and the development of African-American Culture.

HIS 2305 Survey of United States History 3 credits

Prerequisites: ENG 1301 \geq C, ENGL 1302

A thematic survey of U.S. history to the present.

Humanities (HUM)

HUM 2301 Perspectives on Comparative Culture 3 credits

Prerequisites: Freshman status, CSP 1,6,7

A group of interdisciplinary courses that provide a better understanding of the contemporary world through the study of different cultures. One course from this category may be used to fulfill requirements in Area B, Institutional Options.

HUM 2302 Scientific Perspectives on Global Problems 3 credits

Prerequisites: Freshman status, CSP 1,6,7

A group of interdisciplinary courses that deal with scientific approaches to important issues on the environment, public health, or technology. One course from this category may be used to fulfill requirements in Area B, Institutional Options.

HUM 2305 Introduction to World Religions 3 credits

Prerequisite: ENG 1302

Introduction to World Religions. Introduction to the academic study of the world's major religious traditions, including their beliefs, practices, sacred texts, and moral codes. Religions to be examined may include Buddhism, Hinduism, Confucianism, Taoism, Shinto, Judaism, Christianity, Islam, Native American traditions, and African religions.

HUM 2306 World Religions 3 credits

Prerequisite: HUM 2305

Survey and comparison of the beliefs and practices of the major world religions including Christianity, Islam, Judaism, Buddhism, and Hinduism.

HUM 2308 Back to the Roots: From Latin America to Africa. 3 credits

Prerequisite: ENG 1301

This course examines the African influence on Latin American Culture by comparing and contrasting various aspects of culture such as music and dance, food, religion, art and language. We will look specifically at slavery and race relations, socio-cultural and key historical activities

among Afro-Latin Americans, and the implications of these manifestations for issues pertaining to the question of national identity. Moreover, we will analyze critically the many contributions of African descendants in Latin America, discuss and reflect upon how it has impacted the formation of today's society with the purpose of enhancing cultural understanding among nations that share a common past.

HUM 2310 Afro Futurism: Re-imagining Africa 3 credits

Prerequisite: None

This interdisciplinary course examines how the future is thought and imagined in Africa. African-Futurism/Afrofuturism allows us to look at the world through a Black cultural lens which enables us to project alternative futures and then chart present possibilities within an African context. This is done by futuristically viewing African religion, culture, history, mythology, cosmology, and science fiction as expressed in African-centered literature, film, art, architecture, and music. This course empowers Africans to value their past, see themselves and ideas in the future, and therefore become innovative, free-thinkers in the present. Afrofuturism produces some of the most exciting and innovative works by African artists, creators, decision makers and even politicians to engage with the futures of the continent.

Literature (LIT)

LIT 2305 British Literature 3 credits

Prerequisite: ENG 1301 ≥ C

Historical survey of literature from the British Isles, with consideration of literary genres, conventions, and modes. Issues such as language change, periodization, canon formation, national identity, and the interrelationships between literature and other elements of culture.

LIT 2306 American Literature 3 credits

Prerequisite: ENG 1302 ≥ C

Historical survey of literature from the United States, with consideration of literary genres, conventions, and modes. Issues such as periodization, canon formation, national identity, and the interrelationships between literature and other elements of culture.

LIT 2307 African Literature I 3 credits

Prerequisite: ENG 1302

The course covers both African oral and written literature. An interdisciplinary approach will be undertaken to address the large variety of literature coming from the continent. The course examines the different genres of literature, short stories, poetry, plays, and novels in order to provide students with a general knowledge of African literature in its various forms encompassed in different cultures and regions. Working with texts from across the continent, the course explores the engagement of African writers as they tackle transnational issues from an African perspective such as slavery, colonialism, gender, independence, postcolonial politics and altered history.

Mathematics (MTH)

MTH 1300 Statistics I 3 credits

Prerequisite: High School Algebra II or equivalent

This is a basic course in statistics at a level which does not require knowledge of calculus. Statistical techniques needed for research in many different fields are presented. The course covers sampling methods, collecting, summarizing and graphing data. The course also covers counting techniques, sample space and probability, discrete and continuous probability distributions in particular the Binomial, Poisson and Normal probability distribution. It extends to estimations, hypothesis testing, inferences about populations' proportions, means and variances, correlation and regression analysis, contingency table and chi-square tests of goodness-of-fit, and homogeneity, analysis of variance, and nonparametric statistics.

MTH 1301 College Algebra 3 credits

Prerequisite: Suitable score on the math placement test

This course will cover a variety of topics in algebra. The topics covered include the set of real numbers, equations and inequalities, functions and graphs, systems of equations, polynomial functions, exponential and logarithmic functions. **MTH 1301** does not fulfill the Core Curriculum Area A requirement for science majors. **MTH 1303 (Pre-Calculus)** is the course that fulfills the Core Curriculum Area A requirement for science majors. This course will emphasize student preparation, critical thinking, and problem solving.

MTH 1303 Pre-Calculus 3 credits

Prerequisite: MTH 1301

The goal of this course is to prepare a student for calculus. As such, this course will focus on functions. We will familiarize ourselves with the most important types of functions that are encountered in Calculus: polynomial, rational, power, exponential, logarithmic and, trigonometric functions, identities, inverses, and equations; vectors; polar coordinates; conic sections. We will study the idea of functions in depth, learning how to manipulate and model with them.

MTH 1401 Calculus of one Variable I 4 credits

Prerequisite: MTH 1303 or school approval

Calculus is a transition course to upper-division mathematics and computer science courses. Students will extend their experience with functions as they study the fundamental concepts of Calculus of One Variable: Limits and Continuity, Differentiation, Mean Value Theorem for Derivatives; applications of differentiation; definition of the integral; Fundamental Theorem of Calculus; applications of integration to area. Important objectives of the calculus sequence are to develop and strengthen the students' problem-solving skills and to teach them to read, write, speak, and think in the language of mathematics.

MTH 1402 Calculus of One Variable II 4 credits

Prerequisite: MTH 1401

The main goal of Calculus II is to continue the development of differential and integral calculus started in Calculus I, including the exponential functions, logarithm functions, and inverse trig functions. Students will then learn how to apply the techniques of Calculus (differentiation and integration) to those functions. The method of Hospital Rule will be taught for dealing with certain limits. We will study several applications of integration, including: finding the length of arc of a curve, finding the area of a surface of revolution. Infinite sequences and series will be studied. Methods of representing functions as power series with a radius of convergence will be taught, as well as the Taylor series representations of a given function.

MTH 1403 Calculus III 4 credits

Prerequisite: MTH 1402

This course extends ideas of single variable calculus to higher dimensions and is aimed primarily at students whose majors are science, engineering or mathematics. The focus is on multi-dimensional calculus, including the study of functions of several variables, limits, continuity, differentials, directional derivatives, partial derivatives, chain rule, multiple integrals, and applications. The primary aim is to help students learn, understand, explain, and use calculus. In addition, it is desired that students will improve their mathematical skills, further their understanding of mathematics and its applications to the sciences.

MTH 2300 Discrete Mathematics = CSC 2300 3 credits

Prerequisite: MTH 1303

This course introduces the discrete structures that are the backbones of computer science, engineering and science in general. Students will learn techniques in how to think logically in order to solve problems. Topics include number bases, Boolean algebra, logic and proof, sets, relations, functions, counting, and probability as well as algorithms and mathematical reasoning and elementary concepts of graph theory. Formal languages and computability are also covered in this course. This course is the same as CSC 2303 Theoretical Foundations of Comp Science.

MTH 2301 Math Models for Computer Science $\leq = \geq$ MTH 2302 3 credits

Prerequisites: MTH 2300, MTH 1403

Mathematical Models for Computer Science. This course will not be accepted as part of the requirements of a major in mathematics. Elements of mathematical modeling including: probability, distributions of random variables, sampling, statistical inference, transforms, operators, vector analysis; elements of linear algebra. Computer science students can take MTH 2302 Introduction to Linear Algebra as a replacement for MTH 2301.

MTH 2302 Introductory Linear Algebra 3 credits

Prerequisite: MTH 1402

This course provides an introduction to fundamental concepts of the theory and applications of matrix algebra and linear transformations with an emphasis on proofs and underlying ideas. Topics include vectors in n-space, systems of linear equations, Gaussian elimination, span and linear independence of a set of vectors, matrix algebra, determinants, subspaces of n-space, basis and dimension, eigenvalues and eigenvectors, diagonalization of a matrix, geometry of vectors, projections, orthogonal sets of vectors, symmetric matrices, and applications. Replaces the old CSC 3030 Models for Computer Science for CSC Majors.

MTH 2303 Engineering Mathematics 3 credits

Prerequisite: MTH 1403

MET Program. This course provides the essential mathematics needed throughout all engineering disciplines. Topics covered include: First order ordinary differential equations and initial value problems; higher order differential equations; vector spaces, matrices, determinants, eigenvectors and eigenvalues; applications to systems of first order equations; Laplace transforms, Fourier Series. Students may not have credits for both MTH 3300 Differential Equations and MTH 2303 Engineering Mathematics.

MTH 3300 Differential Equations 3 credits

Prerequisite: MTH 1403

Differential Equations. First-order equations, linear differential equations with special emphasis on constant coefficient and Euler equations, systems of equations, applications.

MTH 3301 Abstract Algebra I 3 credits

Prerequisites: MTH 3303, MTH 2302

This is an axiomatic approach to algebraic structures, emphasizing group and ring theory. Topics include sets, Cartesian products and binary operations; properties of integers including the Principle of Mathematical Induction, congruences, division and Euclidean algorithms and the Fundamental Theorem of Arithmetic; groups, cyclic and normal subgroups, isomorphisms and homomorphisms; finite permutation groups, normal subgroups and quotient groups, actions on groups, rings, integral domains and fields. (if time permits - complex numbers and historical outline and significance of Galois theory and algebraic geometry emphasizing its computational character).

MTH 3303 Intermediate Analysis 3 credits

Prerequisites: MATH 2300, MTH 1403

This course is a rigorous theorem/proof-type course in analysis. Its role is to prepare students for advanced mathematics, especially for all math courses in analysis. The goal of the course is to teach students mathematical reasoning and the construction of proofs in the environment of \mathbb{R}^1 . Topics covered include the topology of \mathbb{R}^1 , convergence of sequences, limits and continuity, differentiation, Riemann integration and the proofs of well-known calculus theorems such as the Mean Value Theorem, the Intermediate Value Theorem, the Inverse Function Theorem in \mathbb{R}^1 , and the Fundamental Theorem of Calculus.

MTH 4300 Mathematical Statistics I 3 credits

Prerequisite: MTH 1403

This course introduces the fundamental motions of mathematical statistics. This relies heavily on calculus. Topics include Probability, random variables and their distributions, mathematical expectation, moment generating functions, sampling distributions.

MTH 4301 Transforms in Applied Math 3 credits

Prerequisites: MTH 3300, MTH 2302

Transforms in Applied Mathematics. Transforms are very important to engineers and Physicists because they allow ODE's and PDE's to be solved in a certain sense a more universal way than conventional methods in calculus. They are a great mathematical tool to solve some differential equations involving discontinuities or periodic functions. Topics covered includes: The Laplace transforms discrete and continuous Fourier Transforms, z-transforms, discrete filters, and wavelets. Applications to the solution of differential equations are considered.

MTH 4302 Introduction to Stochastic Processes 3 credits

Prerequisites: MTH 3303, MTH 4300

Stochastic processes introduce the concept of time (either discrete or continuous) in random phenomena, which are described by probability theory. In other words, they concern sequences of events governed by probabilistic laws. Many applications of stochastic processes occur in physics, engineering, biology, medicine, psychology, and other disciplines, as well as in other branches of mathematical analysis. Our purpose is to provide an introduction in the basic notions of stochastic processes in an undergraduate level, as well as to provide examples as applied in stochastic operations research such as queuing. Topics to be covered include discrete time Markov chains, Poisson process, Continuous time Markov chains and queuing theory (if time permits).

MTH 4303 Linear Algebra 3 credits

Prerequisites: MTH 3301

This course covers the theory and applications of matrix algebra, vector spaces, and linear transformations. Topics include Linear Transformations, eigenvalues and eigenvectors, similarity of matrices, diagonalization, Hermitian and positive definite matrices, normal matrices, and canonical forms, characteristic values, the spectral theorem, and orthogonality, with applications.

If time allows, the concept of an "abstract vector space" will be introduced.

MTH 4304 Numerical Analysis I 3 credits

Prerequisite: MTH 1403 and CSC 2301

This course is an introduction to the numerical analysis. The primary objective of the course is to develop the basic understanding of numerical algorithms and skills to implement algorithms to solve mathematical problems on the computer i.e. computer implementation of algorithms. It includes round-off errors, floating point arithmetic, Convergence; Numerical solution of linear and Nonlinear Equations; Interpolation and Polynomial Approximation; Numerical integration and differentiation; Applied Linear Algebra; IVP problems for ODE. This course requires ability to write computer code in a higher level language.

MTH 4305 Real Analysis I 3 credits

Prerequisite: MTH 3303

This course provides a rigorous introduction to the deeper properties of the real numbers, continuous functions, and differentiability needed for advanced study in mathematics, science and engineering. It is assumed that the student is familiar with the material of MTH 3303, including an introduction to the real numbers, basic properties of continuous and differentiable functions on the real line, and an ability to do epsilon-delta proofs.

MTH 4306 Real Analysis II 3 credits

Prerequisite: MTH 4305

This course continues the rigorous introduction to deeper properties of the real numbers, continuous functions, and differentiability needed for advanced study in mathematics, science and engineering. As a continuation of MTH 4305, it focuses more on applications of the fundamental concepts. Topics covered include metric spaces, completeness, polynomial approximations, contraction mapping principle, differential equations, Fourier analysis and convex optimization.

MTH 4307 Numerical Analysis II 3 credits

Prerequisites: MTH 4304 and MTH 3300, or instructor approval

This is the second part of the undergraduate Numerical Analysis course. In this course we will cover approximation theory (e.g., least squares approximations, Fast Fourier Transforms), Gaussian Elimination for linear systems; least squares; Taylor, predictor-corrector and Runge-Kutta methods for solving ordinary differential equations; boundary value problems; and numerical solutions to partial differential equations. To gain practical experience with the numerical methods discussed in class we will use MATLAB, Python, Java or C++ high-level languages and development tool that allows you to quickly develop and analyze algorithms.

MTH 4308 Complex Analysis 3 credits

Prerequisite: MTH 1403 and MTH 3303

This course covers the basic results in complex variable theory, in particular complex numbers, analytic functions, complex series, Cauchy's theorem. Topics covered include geometry of the complex plane, triangle inequalities, geometric proof of the fundamental theorem of algebra; elementary analytic functions, including the logarithm, and its principle branch, $\log(z)$; line integrals, the Cauchy integral formula and the Cauchy-Goursat theorem; series: Taylor and Laurent expansions; residue calculus for definite integrals; harmonic functions and analytic functions: conjugate harmonics, conformal invariance of Laplace's equation in the plane, the Cauchy-Riemann equations and conformal maps; Poisson kernel derived from Cauchy's formula; solution of boundary value problems for Laplace's equation by conformal mapping, and selected applications. This course can be used as a topic for **MTH 4391** Directed Reading and Research in Mathematics.

MTH 4309 Applied Dynamical Systems 3 credits

Prerequisite: MATH 2302 and MTH 3300

Three lecture hours per week. An introduction to discrete and continuous dynamical systems. Topics include: phase space; linear and nonlinear systems; structural stability; classification of equilibrium states, invariant manifolds; Poincare maps, fixed points and period orbits; stability boundaries; local bifurcations; homo-clinic orbits; routes to chaos in dissipative systems; applications from physics, biology, population dynamics, economics. This course can be used as a topic for **MTH 4391** Directed Reading and Research in Mathematics

MTH 4310 Mathematical Statistics II 3 credits

Prerequisite: MTH 4300

This course covers the use of the moment-generating function technique to identify the distributions of functions of random variables, point estimation, and interval estimation, measure of the quality of the estimators, statistical hypotheses and testing of hypotheses, analysis of

variance, regression and correlation, and nonparametric tests.

MTH 4311 Operation Research 3 credits

Prerequisite: MTH 2302

This course introduces students to the field of operations research, that is, the scientific research on how to conduct and coordinate operations within an organization in order to optimize output (or profit). Students learn to formulate, analyze, and find the optimal solutions of mathematical models using analytical and computational methods. The course covers an introduction to linear programming, inventory analysis, the Simplex method, duality theory and sensitivity analysis, the transportation and assignment problems, network optimization problems, dynamic programming, integer programming, non-linear programming, Markov chains, queuing models, Markov processes, Poisson processes and simulation.

MTH 4312 Probability and Statistics 3 credits

Prerequisites: MTH 4300 or ACS 3350, CSP: 2

Advanced Math Approved Course. Probability and Statistics. Prerequisites: ACS 3350 or RMI 3750 or MTH 4351, CSP 2. This course covers (1) uni-variate probability distributions, including binomial, negative binomial, geometric, hypergeometric, Poisson, uniform, exponential, chi-square, beta, Pareto, lognormal, gamma, Weibull, and normal; (2) multivariate joint distributions, conditional and marginal distributions; (3) moments and moment generating function; (4) transform of variables; (5) order statistics, and (6) central limit theorem. The purpose of this course of reading is to develop knowledge of the fundamental probability tools for quantitatively assessing risk. The application of these tools to problems encountered in actuarial science is emphasized. A thorough command of probability topics and the supporting calculus is assumed. (=Mathematical Foundation of Actuarial Science + Mathematical Statistics for ACS)

MTH 4314 Mathematical Derivatives Valuation 3 credits

Prerequisites: MTH 4300 and ASC 4310

This is an introductory course in mathematical finance. Technical difficulty of the subject is kept at a minimum, while the major ideas and concepts underlying modern mathematical finance and financial engineering are explained and illustrated. The course covers the binomial model for stock prices, and touches on continuous time models and the Black-Scholes formula.

MTH 4315 Stochastic Models 3 credits

Prerequisite: MTH 4302

This course covers the application of basic stochastic models in an actuarial setting. Topics include review of frequency severity models, introduction to compound distributions, stochastic models, and simulation techniques.

MTH 4316 Error Correction Codes 3 credits

Prerequisites: MTH 2302 and MTH 3301

The theory of error-correcting codes is a branch of discrete mathematics related to such mathematical disciplines as design theory, combinatorial theory, linear algebra, finite fields, rings, Galois geometry, geometric algebra, algebraic curves over finite fields and group theory. This course provides an introduction to the theory and application of error detecting and correcting codes. Topics include survey of groups, finite fields and polynomials, linear algebra, Huffman codes, data compression and entropy, linear codes, Reed-Muller codes, cyclic codes, BCH codes, and fast decoding BCH codes. This course can be used as a topic for **MATH 4391** Directed Reading and Research in Mathematics.

MTH 4320 Computational Finance 3 credits

Prerequisites: MTH 4314, MTH 4304 and MTH 3300

The objective of this course is to provide the students in the financial engineering concentration track with the necessary computing skills to survive the rigor of the financial world. These computing skills blended with the analytical skills acquired in MTH 4314 will help them to make sound financial decision in quantitative finance and risk management and mitigation. MATLAB will be the primary computing language for this course. Students will learn how to upload financial data into MATLAB and compute returns, volatilities, and correlations, produce time-series plot of these and to compute the efficient frontier that results from combining these. Students will learn to code for the valuation of financial instruments in the likes of annuities, bonds, and options (vanilla and exotic). Standard methodologies like Black-Scholes equation will be revisited and numerical approach to solve the Black-Scholes differential equation will be taught. Monte-Carlo techniques for simulating the Brownian motion and the geometric Brownian motion to price derivatives products are also discussed. Binomial and trinomial lattices and their calibrations are also discussed. This course is computationally intensive in nature and involves

lots of codes writing in MATLAB.

MTH 4398 Internship 3 credits

Prerequisite: Junior or Senior Status

Program to combine academic training with professional experience through short-term internships. The internship provides a complete immersion opportunity for a student in an organization where he/she is put in the same conditions of a professional employee. A project is given to him/her by the organization and must be completed during the internship. The student is required to produce a written report document of the works at the enterprise. The student is also required to present its findings and achievements to an audience that included representative of the organization and some academic professors.

MTH 4350 Complex Analysis 3 credits

Prerequisites: MTH 1403, MTH 3303

Complex Analysis. Complex numbers, analytic functions, complex series, Cauchy theory, residue calculus, conformal mapping.

MTH 4391 Directed Reading and Research in Mathematics 3 credits

Prerequisite: At least 12 upper-division hours in mathematics. Authorization required.

Independent investigation of topics of common interest to student and instructor.

The course initiates students to research activities. It covers topics as the importance and added value of research, differences between fundamental and practical research, publication authority centers, methodology approaches, and publication paper structure. Practical Mathematics publicized papers will be used to guide students.

MTH 4392 Selected Topics 3 credits

Prerequisite: varies with topics and Senior Status

No more than six may be applied toward the major. Topics of current interest in mathematics.

May include: Numerical Solutions of ODEs or PDEs, Financial Mathematics, Error correcting codes, Mathematical and Computational modeling, Statistical modeling, Application of Mathematics in Actuarial Science, Operations Research, Computational Linear Algebra, etc.

MTH 4499 Senior Capstone Project 4 credits

Prerequisite: Senior status

A written and oral presentation of research results, original for students but not usually original in a larger sense under the supervision of an advisor. It is required course for ALL Mathematics majors. It is designed to synthesize the skills mastered during the course of the program. The main focus of this requirement must be applied mathematics (Finance, Insurance, Computer Science, Environment, Engineering, etc...). All Capstone Experiences must be approved by the faculty advisor and must include oral presentation of the work done to the university or a committee selected by the faculty advisor.

Mechanical Engineering Technology (MET)

MET 1330 Engineering Graphics 3 credits

Prerequisite: Computer knowledge

Basic principle of Engineering Graphics, blueprint reading and geometric constructions are reviewed. Multi-view projections and 3D visualization are introduced. CAD software named Inventor Professional is studied extensively. Using Inventor students learn dimensioning, creating Sectional, Auxiliary and Detail/Break views. Introduction to Computer-Aided Engineering. 3 hour lectures, 2 hour labs.

MET 1364 Materials and Processes 1 3 credits

Prerequisite: Freshman status

Survey of manufacturing processes. This course provides important background for anyone interested in manufacturing, design engineering design, sales, or management. Processing of polymers, ceramics, metals and composites is discussed. Processes covered include: rolling, injection molding, forging, powder metallurgy, joining and machining. The relationships between materials, processes, processing parameters and the properties of manufactured parts are developed. 3hour lectures, 2 hour labs.

MET 2354 Introduction to Mechanics 3 credits

Prerequisites: PHY 1401 and MTH 1401

Mechanics, the science of motion, is the foundation of much of engineering and applied science.

Introduction to Mechanics is a course on statics of rigid bodies, the basic constituents of structures used in construction. In this engineering approach, the main topics covered are: static equilibrium condition of forces, moments of inertia, friction, centroids, centers of gravity, trusses, and moment of inertia. The distributed forces are also studied and various exercises are solved for better analysis of different kind of structures.

MET 3118 Fluid Mechanics Applications Lab 1 credit

Co-requisite: MET 3318

This laboratory course is designed to provide insight and experience into the fundamental principles taught in core thermal science lecture courses. These principles include internal and external viscous flow, pump parameters and sizing, choked flow analysis, and heat exchanger analysis. Laboratory experiments using standard measuring devices for performing hydraulic and pneumatic tests, non-compressible fluid piping systems, turbines, and pump stations are performed.

MET 3155 Strength of Materials Lab 1 credit

Co-requisite: MET 3355

This laboratory course is designed to provide insight and experience into the fundamental principles taught in core Strength of Materials lecture classes. Experimentation to determine the mechanical properties of materials including tensile strength, hardness, creep, and toughness are undertaken to give students practical hand exposure on the behavior of materials.

MET 3318 Fluid Mechanics Applications 3 credits

Prerequisites: MET 2354, MTH 1402

This laboratory course is designed to provide insight and experience into the fundamental principles taught in core Fluid Mechanics lecture course. Fluid properties including static fluid forces, buoyancy and pressure measurements are carried out. Fluid dynamics, including conservation laws, fluid pumps, motors and flow measurement devices are studied.

MET 3331 Applied Thermodynamics 3 credits

Prerequisites: MTH 1401, PHY 1402

This course provides an introduction to the essential theoretical basis of engineering thermodynamics and its application to a range of problems of relevance to practical engineering. The course aims to equip the student with basic tools and methodologies for carrying out thermodynamic analyses of engineering systems. Key topic areas are: Thermodynamic properties of working fluids including enthalpy and entropy; First Law of Thermodynamics applied to common engineering situations; Second Law of Thermodynamics applied to heat engines and refrigeration systems; common practical heat engine and refrigeration cycles.

MET 3341 Computer Aided Drafting 1 3 credits

Prerequisite: CSC 2301

Engineering drawing is the language of the engineers and technicians. Therefore, it is the intent of this course to equip students with the fundamentals of this unique language and to give them the skills necessary to prepare complete, concise, and accurate communications through engineering drawings using Inventor Professional.

Topics include Computer-aided drafting and design (CAD) systems and computer graphics hardware and software, selection and evaluation of CAD systems.

MET 3342 Elements of Plant Design 3 credits

Prerequisites: MET 1330, MET 3318, and MET 3331

Design concepts used in preparation of piping arrangement, elevation, and isometric drawings.

Plant layout and design of piping systems constitutes a major part of the design and engineering effort. The goal in the course is to design safe and dependable processing facilities in a cost effective manner. The fact is that there are very few formal training programs that focus on design and engineering of process plants and piping systems. Therefore, most of the required skills are acquired while on the job, reducing productivity and efficiency. Topics include Piping design problems associated with heat exchangers, pumps, horizontal and vertical vessels, pipeways, and plant layouts.

MET 3355 Strength of Materials 3 credits

Prerequisites: MET 2354, MTH 1402

In this course, the concepts of stress, strains, torsion, shear and moment in beams are covered. Topics include top normal stress and strain, shear stress and strain, Hooke's Law, and stress transformation. Deformations in axially loaded members are included with some focus on statically indeterminate members. Torsionally loaded members and flexural members are

covered. Shear and bending moment diagrams are emphasized with an introduction to member design. Deflection of beams and columns buckling is introduced.

MET 3358 Dynamics of Mechanisms 3 credits

Prerequisites: MET 2354

In this course students learn how to apply the techniques of dynamics to analyze both the motion and forces associated with planar mechanisms. Students learn how to model and solve for the position, velocity, acceleration and forces on linkages using vectors. They also study the kinematics of gears, flywheels and cams. Machine vibration is introduced as an integral part of Machine Dynamics. Students learn how to model simple mechanical systems as vibrating systems and then analyze the vibratory response of these systems. Once these analytical skills have been developed, the students can apply these skills to the design of linkages, internal combustion engines, gears, shafts and cams. Computer problems are assigned so that students can experience the solution methods to some of the more complex problems. This course integrates material from calculus and dynamics to provide the student with tools that can be used to analyze the motion of machinery and can be used in the design of machinery and machine components.

MET 3360 Auto Manufacturing Systems 3 credits

Prerequisite: MET 1364

This course enables students to gain a deep understanding of the manufacturing technologies and overlapping logistics in the automotive industry in the global marketplace. More specifically, the course will introduce the advanced methods and tools for design, analysis, optimization and management of automotive manufacturing systems and processes. The key topics include: Logistics and supply chain management in the global automotive industry; Advanced automotive manufacturing technologies; Lean manufacturing; Methodological design and analysis of automotive industrial systems; Process planning (flow, analysis, stabilization and optimization); Process modeling and simulation; Management and control of processes; Manufacturing engineering software tools; Virtual plant layout.

MET 3362 Industrial Work Measurement 3 credits

Prerequisites: MTH 1401, MET 1364

This course is broken into several short courses designed to provide the student with a broad perspective of work measurement and teach how to apply the BasicMOST work measurement system. The course will cover the following items: Calculate the time that a task or set of tasks should take to be performed; Apply predetermined time values to activities from memory or from a data card according to the rules of BasicMOST work measurement system; Observe operator activities and write accurate method descriptions using the work measurement system; Identify work measurement activities in terms of the basic sequence models for manual work: General Move, Controlled Move, Tool Use and Equipment.

MET 3365 Computer-aided design 1 3 credits

Prerequisites: MET 3355, MET 1330, MET 1364

This course provides an introduction into engineering design and communication through the use of computer aided design (CAD) software. The principles and methods of engineering design are introduced, and the critical roles of graphic communication within the design process are described. Visual communication of engineering designs through technical drawings is extensively covered, with reference to the relevant engineering standards. The use of CAD software to generate computer models and technical drawings is presented and supported by computer-based tutorials.

MET 3367 Quality Control Technology 3 credits

Prerequisites: MET 1364, MATH 1401

Quality Control ensures that products and services are designed and produced to meet or exceed customer expectations. This series of courses provide an overview of the concepts and models for variety of philosophies, concepts, and techniques for managing, controlling and improving quality; Statistical analysis of data to establish quality control systems for manufacturing facilities. Course topics may include: Quality systems and assurance; Inspection and testing methods; Metrology and calibration; Blueprint reading; Statistical quality control; Methods for quality improvement.

MET 4172 Materials Technology Lab 1 credit

Co-requisite: MET 4372

The course content is focused on the aspects of materials and materials properties and behavior particularly relevant for mechanical engineering. The course takes both a general approach and a detailed approach where the first includes: Materials and their roles and importance in history and in modern society, materials and innovations, resources and availability, material cost, principles for materials selection and principles for engineering design with respect to material properties

where the engineering tool CES will be introduced. Topics include: physical and mechanical properties including density, elastic properties, yielding and plastic properties, hardness and ductility, Relations between atomic structure, molecular structure, microstructure and material properties, Phase diagrams, heat treatment and strengthening mechanisms for important metals and alloys, Corrosion and degradation mechanisms. Important engineering materials will be emphasized: Carbon steels, steel alloys, light weight alloys, engineering polymers and fiber composites. Common processing and manufacturing methods are covered.

MET 4188 Ethics in Engineering Technology 1 credit

Prerequisite: Senior status in the BS MET program

Ethical considerations and value judgments related to management, engineering, and engineering technology decisions are discussed in this course; the course also examines engineering as a profession and the responsibilities of that profession to society. Professional responsibilities of engineers are compared to those of lawyers, doctors, scientists and businessmen. Ethical theories are introduced as frameworks to guide decisions of technology implementation. Simple quantitative decision making concepts, including risk-benefit analysis, are introduced as a method for engineers to make ethically optimal choices.

MET 4323 Applications Stress Analysis 3 credits

Prerequisites: MET 3355, MTH 1402

This course is about combined stress systems, nonsymmetrical loadings, structural joints and pressure vessels, beams and columns of composite materials, fatigue and impact applications and continues the study of stress analysis. Application of the principles of linear and torsional stress analysis to the design of columns and a variety of beams are presented. Proper selection and application of factors of safety and temperature effects for determinate and indeterminate stress analysis problems are discussed. Applications include shear and moment diagrams, flexural and transverse shearing stresses, torsional stress, and deformations on the proper design of mechanical elements.

MET 4326 Fundamentals of Offshore Systems 3 credits

Prerequisites: MET 3358 and MET 3365

Oil and gas production involves a number of surface unit operations between the wellhead and the point of custody transfer or transport from the production facilities. Thus course is designed to introduce offshore oil and gas production/processing operations. The course explores the theories and principles behind the production/processing of oil and/or gas for safe and economical storage and/or transport by pipelines. The key topics are multicomponent/multiphase flow behavior, emulsions, hydrate chemistry, dehydration, separator sizing and design etc.

MET 4328 Fundamentals of Pipeline Design 3 credits

Prerequisites: MET 3365, MET 4372

The focus in this course is the practical aspects of pipeline design. The theory of pipeline engineering, the optimization process and the design of pipelines will be covered through worked examples. The effect of energy escalation in pump systems will be reviewed and participants will become confident with the design of pipeline systems. Other aspects include: pipeline hydraulics, surge analysis, pipeline component design, pipeline installation, life-cycle costing, testing and operation of pipelines.

MET 4330 Valve Design 3 credits

Prerequisite: MET 3365

The course teaches students how to determine which type of control valve is needed. Control valves come in limitless types, sizes, designs, and materials but basically fall in two distinct categories: linear motion and rotary motion. This will help students evaluate the factors that determine which type of linear motion control valve to use and which type of rotary motion control valve to use. Topics include Valve design analysis and development, featuring a complete design package for a valve per ASME 16.34, API Spec 6A, or 6D code.

MET 4332 Fund of Drilling Technology 3 credits

Prerequisite: MET 3318

This course covers Drilling rig components design and operation, circulating systems, well control and monitoring systems as well as Drill bit hydraulics, drilling mud composition, properties and functions. Experimental methods and software data analysis. In addition, the course prepares students for professional field work and engineering duties dealing with the process of extracting natural gas, oil, petroleum and other natural reserves from earth. Students are strongly encouraged to undergo professional certification for this type of course. This will enhance their

employability in different manufacturing firms, oil and gas based factories and exporting industries.

MET 4337 Downhole Drilling Tools / Technology 3 credits

Prerequisites: MET 3355, MET 4332

This course is about the Selection of drilling tools and technology for drilling. Design and execution of complex well plans. This basic drilling technology course addresses the technology used to drill wells from a fundamental view point. Equipment and procedures involved with drilling oil and gas wells are described. Topics include description of drill bits, directional drilling, drilling fluids, solids control, cementing, casing, well bore stability, well control, measurement-while-drilling techniques, stuck pipe, lost circulation, and well bore hydraulics. Some technologies enhancements are included to improve understanding of drilling operations are presented.

MET 4341 Materials Selection and Management 3 credits

Prerequisites: MET 3365, MET 4372

The course begins with the description of the engineering design process, emphasizing the context in engineering where also the material selection process is placed. In engineering design, the material selection is a main cornerstone together with mechanics and manufacturing. Students will understand how to perform a materials selection not based on traditions and practice, but which is a foundation for new development, a fundamental insight in materials selection and materials is needed. The student will acquire skills in performing a systematic materials selection process and the use of material databases, with problems focusing on mechanical design. Knowledge on the relation between product requirements and structure and properties of commercially available engineering materials, and interpretation of commercial material product information, is discussed.

MET 4360 Fundamentals of Biomechanics 3 credits

Prerequisites: MET 3318, MET 3365

This course places emphasis on multiscale mechanic's approaches in the study of organisms that integrate across molecular, cell, tissue, and organ domains. The influence of mechanical forces on cell and matrix biology in the maintenance, regeneration, and aging of tissues is an important concern. In addition, the relationships between mechanical behavior and extracellular matrix composition and organization are looked at.

MET 4365 Computer-Aided Design 2 3 credits

Prerequisite: MET 3365

Computer-aided design (CAD) is the use of computer systems to aid in the creation, modification, analysis, or optimization of a design. CAD software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing. CAD output is often in the form of electronic files for print, machining, or other manufacturing operations. The term CADD (for Computer Aided Design and Drafting) is also presented.

MET 4372 Materials Technology 3 credits

Prerequisites: MET 3355, MET 4172 concurrently

The intellectual origins of materials science stem from the enlightenment, when researchers began to use analytical thinking from chemistry, physics, and engineering to understand ancient, phenomenological observations in metallurgy and mineralogy. The course is about Materials Technology, also commonly known as Materials Science and Engineering, involves the discovery and design of new materials, with an emphasis on solids.

MET 4384 Manufacturing Systems Control 3 credits

Prerequisite: MET 3360

Manufacturing systems control is a course for a [computerized](#) system used in [manufacturing](#) to track and document the transformation of raw materials to finished goods. It provides information that helps manufacturing decision makers understand how current conditions on the plant floor can be optimized to improve production output. It works in real time to enable the control of multiple elements of the production process (e.g. inputs, personnel, machines and support services).

MET 4391 Directed Reading 3 credits

Prerequisite: Senior Status in the BS MET Program

Directed Reading is a comprehension strategy that guides students in asking questions about a text, making predictions, and then reading to confirm or refute their predictions. It encourages students to be active and thoughtful readers, enhancing their comprehension. A process in which

students take the initiative to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes.

MET 4398 Internship 3 credits

Prerequisite: Junior or Senior Status

An internship consists of an exchange of services for experience between the student and an organization. Students can also use an internship to determine if they have an interest in a particular career, to create a network of contacts, or to gain school credit. Some interns find permanent, paid employment with the organizations for which they worked upon completion of the internship. This can be a significant benefit to the employer as experienced interns often need little or no training when they begin regular employment.

MET 4499 Senior Capstone Project 4 credits

Prerequisite: Senior status in the BS MET program

A written and oral presentation of research results, original for students but not usually original in a larger sense under the supervision of an advisor. It is required course for ALL MET majors. It is designed to synthesize the skills mastered during the course of the program. The main focus of this requirement must be mechanical engineering design, modeling, testing, validation processes, Formulation, construction and/or fabrication work. All Capstone Experiences must be approved by the faculty advisor and must include oral presentation of the work done to the university or a committee selected by the faculty advisor.

Management (MGS)

MGS 3301 Principles of Management 3 credits

Prerequisites: BUS 1301, ECO 2301, and ECO 2302

This course provides a basic framework for understanding the role and functions of a manager and to explain the principles, concepts, and techniques that can be used in carrying out these functions. It is intended for those who presently hold, or desire to hold, management responsibilities in any organization or enterprise. This is introductory course with particular emphasis on the skills, competencies, techniques and knowledge need to successfully understand and manage an organization.

MGS 3305 Business & Entrepreneurship 3 credits

Prerequisites: BUS 1301, ECO 2301, and ECO 2302

The course examines how to start a business and internationalize. Topics covered include: basic entrepreneurial skill development, global expansion of entrepreneurial ventures; methods of small business globalization, opportunities and risks of global expansion; strategies in a global environment. Special consideration is given to key issues in an African context

MGS 3310 Business Analysis 3 credits

Prerequisite: MTH 1300

This course provides a frame of reference for using models in support of decision making in an enterprise, then introduces some of the most commonly useful modeling approaches and principles. Topics covered include model components, simulation, optimization, time series and causal forecasting, decision analysis, Monte Carlo simulation, and quality management. The course emphasizes hands-on application of the techniques using commonly available software, and demonstrates the value of these approaches in a wide variety of functional settings.

MGS 3315 Organizational Behavior 3 credits

Prerequisites: 2.5 GPA and 45 semester hours

This course provides an overview of management in organizations. Students will be introduced to fundamental organizational concepts such as organizational systems, organization design and structure, and the decision making process. In addition, students will be introduced to the study of human behavior in organizations. The organizational behavior topics emphasized include team building, communication, leadership, motivation, ethics and social responsibility. The focus of the course is to examine, from a managerial perspective, the effect of individual, group, and organizational variables on organizational performance.

MGS 4301 Managerial Decision Making 3 credits

Prerequisites: MTH 1300, MGS 3310

This course focuses on how managers, individually and in groups, make decisions. It covers the major descriptive and normative models of managerial problem diagnosis and alternative generation. By comprehending how managers solve problems, students are prepared to build computer-based support tools. Cases and mini-examples are used to apply the concepts and

methods to real-world problems.

MGS 4305 Analysis of Business Data 3 credits

Prerequisite: MTH 1300

The aim of this course is to provide the student with the background to run a statistical project from the data collection stage through analysis and interpretation of the results. The course is divided into three major parts. The first part of the course discusses data collection methods including the various common sampling designs and questionnaire development. In the second part, students are introduced to the high-level statistical package SAS to provide them with the power to perform data analysis. In the third part, the students will use the procedures from SAS to analyze and interpret the data.

MGS 4310 Managing Human Resources 3 credits

Prerequisite: MGS 3315

This course provides a survey of the field of human resource management. Topics covered include strategic human resource management, recruitment, selection, legal basis of human resource management, performance evaluation, training and development, compensation, and labor relations.

MGS 4315 Principles of Leadership 3 credits

Prerequisites: MGS 3315, 2.5 GPA, and 45 semester hours

Students critically evaluate the definition and meaning of leadership, developing their own interpretations and definitions of leadership after learning how others have interpreted and defined it. They also analyze their own leadership strengths and limitations and engage in activities to improve their leadership skills

MGS 4317 Create a New Venture: From Idea to Launch 3 credits

Prerequisites: CIS 2301, FIN 3305, MGS 3301, MGS 3305 and MKT 3301

This course aims to equip students with the skills and knowledge necessary to turn their ideas into successful business ventures. Students will learn a range of techniques for identifying a unique selling proposition, assessing the viability of their business concept, refining their underlying business concepts, planning their resource requirements, conducting market research, and building a team. Additionally, the course will teach students how to effectively pitch their original business idea, giving them the tools they need to succeed in the competitive world of entrepreneurship.

MGS 4320 Small Business Management 3 credits

Prerequisites: BUS 1301, MGS 3301

This course provides students with an opportunity to learn how to manage a newly organized or acquired small business. The course begins with the start-up phase of the business, and students are shown how to develop the business and make a profit. The mission, objectives, goals, and strategies are set for an actual small business. Staffing decisions, from hiring operative employees to the board of directors, are made. Major emphasis is placed on the design, integration, and operation of the production, marketing, and finance

MGS 4325 Operations Management 3 credits

Prerequisites: MGS 3315, MGS 3310

Study and analysis of planning, design, direction, and control of physical and human resources used in production of goods and services. Emphasis on solutions to operational problems in physical, locational, storage and general service subsystems.

MGS 4326 Entrepreneurship & Innovation 3 credits

Prerequisites: FIN 4317 and MKT 4318

This course is designed to help students create new businesses and markets using cutting-edge innovation, entrepreneurship, and technological tools. Through hands-on training, students will learn how to adapt emerging technologies to scale their businesses in unique and innovative ways. The course will provide practical simulations to further reinforce these concepts and to allow students to apply their knowledge in real-world scenarios.

MGS 4328 Sustainable Business & Social Entrepreneurship 3 credits

Prerequisites: FIN 4317 and MKT 4318

This course is designed to enhance students' capabilities in identifying, assessing, and articulating opportunities within the rapidly expanding green and social economy. Through a combination of lectures, hands-on exercises, and case studies, students will develop a comprehensive understanding of the resources required to support venture development and growth within the green sector. Furthermore, the course will explore critical issues of sustainability and the impact

that successful green businesses can have on local communities, providing students with a well-rounded perspective on this emerging field.

MGS 4329 Corporate Entrepreneurship 3 credits

Prerequisites: FIN 4317 and MKT 4318

In today's fast-paced business environment, established companies must be proactive in creating new business opportunities in order to maintain their competitive advantage, retain market share, and achieve long-term success. With technologies rapidly maturing and product portfolios aging, these companies are increasingly turning to innovation and entrepreneurship as a means of creating, developing, and sustaining new businesses. This course will explore the key principles of innovation and entrepreneurship in a corporate setting.

MGS 4330 Project Management 3 credits

Prerequisites: MTH 1300, MGS 3315

This course addresses the structured process for managing projects. The emphasis in the course is on defining, planning, and controlling projects to successfully complete them within quality specifications, on schedule, and within budget. Project management software is used in the course. Other topics include project organization, roles of the project manager and team members, and project leadership.

MGS 4332 Venture Growth Strategies 3 credits

Prerequisites: FIN 4317 and MKT 4318

This course is designed to provide students with a comprehensive understanding of the various types and patterns of innovation that drive venture growth. Through a blend of interactive lectures, case studies, and experiential learning exercises, students will learn to strategically approach growth using a range of different approaches, including organic growth, strategic alliances, and franchising. Furthermore, the course will help students develop their entrepreneurial skills by providing practical guidance on setting up a new venture, raising funds, and exiting the venture if necessary.

MGS 4396 Special Topics/Independent Study in Management 3 credits

Prerequisites: Junior or Senior status and approval by the supervising faculty member and the Dean of BSS

MGS 4499 Capstone 4 credits

Prerequisites: BUS 2305, BUS 3300, FIN 3305, MGS 3310, MGS 3315, MKT 3301

This is a senior course that integrates subject matter from the business core courses and other disciplines. It focuses on integrated approaches to medium and long-term organizational challenges in a dynamic environment. Students develop skills in, and appreciation of, the role of all managers in the formulation and implementation of organizational strategies. A computer simulation involving teams of students from different functional backgrounds is a major part of the instructional design.

Marketing (MKT)

MKT 3301 Introduction to Marketing 3 credits

Prerequisite: ECO 2302

This course provides an overview of marketing as a management process. Upon successful completion, students will gain the ability to make better business decisions by understanding how to assess the marketing environment, design and conduct marketing research, and determine what elements are most important to customers as they make purchasing decisions. Topics covered include the use of marketing tools to develop and manage actual products and services, how to maximize prices on those products and services, how to distribute products and services, how to maximize prices on those products and services, and how to promote them. Finally, discussions will take place on how to compile the marketing information and decisions in a strategic plan that helps guide organizations' offerings to commercial success

MKT 3305 Consumer / Buyer Behavior 3 credits

Prerequisite: MKT 3301

Basic concepts and research results from marketing and the social sciences are examined with the goal of enabling marketers to better understand customers and meet their needs. The decision process of buyers, factors affecting purchasing decisions, and customer satisfaction are major conceptual areas of the course. Implications for marketing strategies (e.g., market segmentation,

product design, and promotion) are discussed.

MKT 3310 Advertising and Public Relations 3 credits

Prerequisite: MK 3301

This course covers the fundamental concepts and processes underlying integrated marketing communications in a global market place. The discipline's historical roots and current role of professionals

MKT 3315 Sales Management 3 credits

Prerequisite: MKT 3301

This course examines the sales management function in contemporary business organizations. Emphasis is placed on the formulation, implementation, and evaluation of a strategic sales program. Specific topics addressed include ethical and legal issues in sales management, selection and recruiting, territory design, quotas, organizing the sales force, compensation, motivation, leadership and coaching, and evaluation of salesperson performance. The course also emphasizes a mix of conceptual and applied information to provide a balanced view of sales management. The strategic nature of sales management decisions is another major topic.

MKT 3317 Marketing Research 3 credits

Prerequisites: MKT 3301, MGS 3310, and MTH 1300

This course helps students make effective and efficient use of market information. Organizational issues, problem formulation, secondary data sources, survey sampling, measurement principles, questionnaire design, interviewing, basic data analysis, research ethics, new technologies, and international aspects are all introduced.

MKT 4305 Marketing Strategy 3 credits

Prerequisite: MKT 3301

Actual marketing cases and problems: marketing costs, brand policy, channels of distribution, sales promotion, sales policies, price policies and operating control.

MKT 4310 Marketing Management 3 credits

Prerequisite: MKT 3301

An intensive analysis of major marketing decisions facing the firm, such as level, mix, allocation, and strategy of marketing efforts. Specific decision areas investigated include market determination, pricing, physical distribution, product policy, promotion, channel management, and buyer behavior. Competitive, political, legal, and social factors that may affect such areas of decisions are discussed. Cases, models, and problems are used heavily.

MKT 4315 International marketing 3 credits

Prerequisite: MKT 3301

This course aims to broaden students' appreciation of world markets and to provide knowledge and skills needed for recognizing, evaluating, and managing the international function. Through lectures, cases, and hands-on projects, students are introduced to the economic, socio-cultural, financial, and legal- political factors affecting international marketing and to the problems and opportunities associated with doing business on a global scale.

MKT 4318 Marketing for Entrepreneurs 3 credits

Prerequisite: MGS 4317

This course is designed to equip students with the knowledge and skills necessary to navigate the complex marketing challenges facing entrepreneurial firms. With a focus on the discovery, enactment, and pursuit of new business opportunities, the course explores the critical role that marketing plays in successful entrepreneurial ventures. Through a series of engaging lectures, interactive discussions, and real-world case studies, students will gain a comprehensive understanding of how marketing tools and strategies can help entrepreneurs realize the full potential of their ideas in both the African and global contexts.

Nutrition (NUT)

NUT 3300 Nutrition and Health 3 credits

Prerequisite: ENG 1301

Students are introduced to basic knowledge about nutrients and energy, selecting foods of high nutrient density throughout the life cycle, and identifying truths and untruths among advertised claims for food products. Issues such as food availability, food sanitation, local nutritional needs, food supplementation, popular diets, and nutrition-related diseases are also examined. Open to all university students.

Philosophy (PHL)

PHL 1300 Critical Thinking **3 credits**

Prerequisite: Freshman status

Development of practical, logical, and problem solving skills important to all disciplines, with emphasis on the composition of argumentative essays. Definitions, types of meanings, fallacious and deceptive arguments, deductive and inductive reasoning. Introduction to major forms of scientific and logical reasoning used across humanities, sciences and social sciences, including deductive, hypothetico deductive, and inductive arguments such as statistical, causal, and analogical.

PHL 3310 Contemporary Moral Problems **3 credits**

Prerequisite: ENG 1302

Selected moral issues, such as abortion, euthanasia, environmentalism, genetic engineering, feminism, animal rights, gay and lesbian rights, and political violence. Brief coverage of ethical theories as they relate to the issues at hand.

Physics (PHY)

PHY 1401 Principles of Physics I **4 credits**

Prerequisite: MTH 1401

This course is the first course in a two sequence course PHY 1401/ PHY 1402 for students majoring in physics, chemistry, or geology. Topics include Mechanics, Heat, and Waves. It is recommended for mathematics majors and other students with the necessary mathematical background. Three lectures and three laboratory hours a week. During the three laboratory hours, students undertake laboratory experimentation to investigate the physics laws covered during the lecture hours and write a report.

PHY 1402 Principles of Physics II **4 credits**

Prerequisites: MTH 1402 and PHY 1401

Principles of Physics II is the second course in a two sequence PHY 1401/ PHY 1402 for students majoring in physics, chemistry, or computer science. Topics includes electricity and magnetism, light, modern physics. It is recommended for mathematics majors and other students with the necessary mathematical background. Three lectures and three laboratory hours a week. During the three laboratory hours, students undertake laboratory experimentation to investigate the physics laws covered during the lecture hours and write a report.

PHY 3300 Electronics **3 credits**

Prerequisite: PHY 1402

Electronics, or electronic engineering, is an [electrical engineering](#) discipline which utilizes non-linear and [active](#) electrical components (such as [semiconductor devices](#), especially [transistors](#), [diodes](#) and [integrated circuits](#)) to design [electronic circuits](#), [devices](#), [microprocessors](#), [microcontrollers](#) and other [systems](#). The discipline typically also designs [passive](#) electrical components, usually based on [printed circuit boards](#).

Political Science (POL)

POL 1301 Introduction to American Government **3 credits**

Prerequisite: Freshman status

American system of government covering the institutions and ideals basic to the American experience and the process by which the public participates in and is governed by these institutions and ideals.

POL 2301 Introduction to Political Science **3 credits**

Prerequisite: ENG 1302

A survey of the fundamental questions in the study of political science.

POL 2315 Global Issues **3 credits**

Prerequisite: ENG 1302

An introduction to international relations focusing on contemporary issues in world politics such as conflict and cooperation, business and trade, population, environment, and human rights. (Formerly POLS 2401 Global Issues).

POL 3310 Comparative Politics **3 credits**

Prerequisite: POL 2301

Comparative analysis of major political systems.

- POL 3311 Public Administration** **3 credits**
Prerequisite: POL 2301 or POL 2315
 Study of administrative principles and practices in the areas of organization, personnel management, budgeting, government regulations and democratic controls.
- POL 3315 Political Theory** **3 credits**
Prerequisite: POL 2301
 Recurring themes and problems in the study of politics; draws upon classical and modern works (from POLS 3310: Introduction to Political Theory, UH).
- POL 3320 International Politics** **3 credits**
Prerequisite: POL 2301 or POL 2315
 Concepts and theories of international politics. Covers the evolution of the contemporary international system and conflict and cooperation among nation states.
- POL 3325 Global Ethics** **3 credits**
Prerequisites: ENG 1301 and ENG 1302
 This course covers specific issues in contemporary international politics including the promotion and protection of human rights, the use of force, foreign aid, business practices of multinational corporations, and the moral responsibilities of leaders and citizens
- POL 3330 Introduction to Political Research** **3 credits**
Prerequisites: MTH 1300 and POL 2301
 Research techniques in political science including data collection, analysis, and interpretation.
- POL 4305 Voting and Elections** **3 credits**
Prerequisite: POL 2301
 Political, institutional, social, and psychological factors involved in individual and group electoral decisions. Emphasis placed on the role of campaigns and candidate strategy in shaping voting decisions (from POLS 4155: Voting and Elections, GSU)
- POL 4310 Politics of Peace** **3 credits**
Prerequisite: POLS 3310
 Explores the challenges of building stable political systems in the wake of civil war, using cases drawn from all regions of the world (from POLS 4215: Politics of Peace, GSU)
- POL 4311 African Politics** **3 credits**
Prerequisite: POLS 3310
 Addresses the politics of Sub-Saharan Africa, including major issues of political, economic, and social analysis (from POLS 4230: African Politics, GSU)
- POL 4315 Comparative Political Economy** **3 credits**
Prerequisite: POL 3310
 Interface between politics and the economy from a comparative perspective in both developed and developing nations of the world (from POLS 3330: Comparative Political Economy, UH)
- POLS 4320 International Security** **3 credits**
Prerequisite: POLS 3320 or POL 2315
 The threats of nuclear proliferation, nuclear terrorism, weapons of mass destruction, the economic and military rise of new superpowers, trans-national narcotic trafficking, failed states, informational leaks, and global pandemic diseases are among the most challenging international security threats of the upcoming decade. Students will analyze these key threats to international security that have emerged in the post-Cold War era and their implications in carrying out foreign policy.
- POL 4322 International Political Economy** **3 credits**
Prerequisite: POLS 3320
 An examination of international trade and finance regimes, foreign economic policy, transnational corporations in the world economy, North/South and East/West relations, and the implications of economic interdependence (from PSC 434: International Political Economy, UAB)
- POL 4325 Comparative Public Policy** **3 credits**
Prerequisite: POL 3315
 Analysis of domestic policy in both advanced industrialized democracies and developing countries, looking at both policy process and policy substance. Attention will be given to the questions of how and why policies differ across countries, and how one might evaluate policy performance cross-nationally (adapted from PSC 443: Comparative Public Policy, UAB)
- POL 4326 International Organizations** **3 credits**

Prerequisite: POL 3320

An examination of the essential structures and processes in international organizations, both governmental and nongovernmental, and their roles in the area of global security, economy, and social welfare (from PSC 444: International Organizations, UAB)

POL 4327 Nationalism and Ethnic Conflict 3 credits

Prerequisite: POL 3310

An examination of the theoretical aspects of ethnicity, interethnic conflict, conflict management policies and some examples of ethnic crises. Prepares students for analyzing interethnic conflicts and critically evaluating proposed solutions to ethnic strife (from PSC 445: Nationalism and Ethnic Conflict, UAB)

POL 4350 Diplomatic Simulations 3 credits

Prerequisite: POL 2315

This course is an introduction to diplomacy and foreign policy decision making through the use of a course-long computer simulation. This is an online course using the Statecraft simulation package. The online features of the course make for active learning experiences. The Statecraft program allows students to take the roles of foreign policy decision makers and sort through the tradeoffs and responsibilities that characterize real world politics. For instance, students will make real world diplomatic decisions on trade, war, spying, two-level games, and diplomatic interaction with each other. This class is offered online (from PSC 321-901: Diplomatic Simulations, UAB)

POL 4395 Directed Reading & Research 3 credits

Prerequisite: Advisor approval needed

Special directed research. Paper required. By arrangement at student request, as approved by the department. May be repeated for credit (from POLS 4920: Directed Reading & Research, GSU)

POL 4396 Special Topics/Independent Study in Political Science 3 credits

Prerequisites: Junior or Senior status and approval by the supervising faculty member and the Dean of BSS.

POL 4398 Internships 3 credits

Prerequisite: Advisor approval needed

Program to combine academic training with professional experience through short-term internships

POL 4499 Senior Seminar 4 credits

Prerequisite: POL 3330

Capstone course. Students work with faculty to develop their senior project, a 20 to 25-page research paper on a topic relevant to a job or graduate school that they intend to apply to, and present a series of presentations on their project for discussion by fellow students and faculty

Psychology (PSY)

PSY 1301 Introduction to General Psychology 3 credits

Prerequisite: Freshman status

A broad survey of the major topics in psychology including, but not limited to, research methodology, biological and social factors influencing abnormal behavior, development, learning, memory, and personality.

PSY 3325 Leadership and Group Dynamics 3 credits

Prerequisite: PSY 1301

Study and application of knowledge skills and values relevant to leadership and membership in groups through theory, skill practice sessions, and intensive group discussion. (Compare to MGS 4420 Principles of Leadership)

Sociology (SOC)

SOC 1301 Introductory Sociology 3 credits

Prerequisite: ENG 1302

A survey of the discipline of sociology. Topics will include sociological theory, methods, and selected substantive areas.

SOC 2302 Scientific Perspectives on Global Problems 3 credits

Prerequisite: Freshman status

A group of interdisciplinary courses that deal with scientific approaches to important issues on the environment, public health, or technology. One course from this category may be used to fulfill requirements in Area B, Institutional Options.

Spanish (SPN)

SPN 1301 Elementary Spanish I 3 credits

Prerequisite: Freshman status

Development of basic skills in listening, speaking, reading, and writing; acquisition of grammatical structures. Not open to native speakers of Spanish.

SPN 1302 Elementary Spanish II 3 credits

Prerequisite: SPN 1301

Development of basic skills in listening, speaking, reading, and writing; acquisition of grammatical structures. Not open to native speakers of Spanish.

SPN 2301 Intermediate Spanish I 3 credits

Prerequisite: SPN 1302

Continuing development of listening, speaking, reading, and writing skills through use of audio and video materials as well as literary and nonliterary texts. Introduction to aspects of Spanish culture. Grammar review as needed. Not open to native speakers of Spanish.

SPN 2302 Intermediate Spanish II 3 credits

Prerequisite: SPN 2301

Continuing development of listening, speaking, reading, and writing skills through use of audio and video materials as well as literary and nonliterary texts. Further introduction to Spanish culture. Grammar review as needed. Not open to native speakers of Spanish.

SPN 2307 Spanish Literature 3 credits

Prerequisite: SPN 2302

An introduction to Spanish literature within its cultural context. The major periods of Spanish language literature are presented, as well as current literary trends. Types of literature and the cultural forces that influenced the authors. Extensive reading. Taught in Spanish.

Statistics (STA)

STA 3300 Exploratory Data Analysis & Graphic 3 credits

Prerequisite: None

This course covers the essential exploratory techniques for summarizing data. These techniques are typically applied before formal modeling commences and can help inform the development of more complex statistical models. Exploratory techniques are also important for eliminating or sharpening potential hypotheses about the world that can be addressed by the data. We will cover in detail the plotting systems in R as well as some of the basic principles of constructing data graphics. We will also cover some of the common multivariate statistical techniques used to visualize high-dimensional data. Focuses on analyzing and summarizing the main characteristics of data sets including visual methods. Explores techniques for formulating hypothesis about data for testing and for new data collection and experiments.

STA 3301 Analysis of Variance for Design Experiments 3 credits

Prerequisites: MTH 3310 or MTH 1300 or STA 3300

This is an introductory course dealing with the design of statistically valid experiments and the analysis of resulting data. Both the theoretical foundations of experimental design and their application to scientific and industrial experimentation will be explored. The design and analysis of experiments is one of the most important and useful branches of modern statistics. In this course, we will learn sample comparative experiments, one-way ANOVA, two-way ANOVA, complete randomized blocks design, incompletely randomized design, Latin squares, factorial designs, the 2 *k* factorial design, and experiments with random factors, nested and split-plot designs. In addition, you will gain some experience with performing design of experiments in a popular statistical software SAS. Tentatively, we will cover Chapters 1, 2, 3, 4, 5, 6, 13 and 14. If time permitted, topics from either Chapter 10 or 15 can be selected.

Single- and multifactor experiments; analysis of variance; multiple comparisons; contrasts; diagnostics, fixed, random, and mixed effects models; designs with blocking and/or nesting; two-level factorials and fractions thereof; use of statistical computing packages.

STA 4300 Applied Linear Regression Analysis 3 credits

Prerequisites: MTH 4300 or MTH 3301 or MTH 1300 or STA 3300

This course is intended to be an introduction to regression analysis techniques which is the most important skill to have as a statistician. Linear regression analysis attempts to explain and quantify the contribution of various factors to the variability inherent to some output variable. Although the primary focuses of this course is on data modeling, the course will cover in details the basic theory underlying linear models, including the least squares method. Topics of STA 4300 include: Simple Linear Regression (SLR) model, Multiple Linear Regression (MLR) model, Polynomial linear regression, Time series regression (AR and ma ARMA models), confidence intervals and F-tests for regression coefficients, model selection and model diagnostics tools and remedies.

STA 4301 Applied Statistical Methods 3 credits

Prerequisites: STA 3300 and MTH 1300 or STA 3301

Methods for describing and analyzing the relationship between two or more categorical variables using SAS: descriptive statistics, measure of association, graphical presentation of association, estimation, hypothesis testing, one-sample problem, two-sample problem, observational and epidemiological study designs (randomized clinical studies, cohort studies, case-control studies, cross-sectional studies), sample size, power; emphasis on learning statistical methods and concepts through hands-on experience with real data. The topics covered are also part of the broader topic of biostatistics.

STA 4302 Monte-Carlo Simulation & Resampling Methods 3 credits

Prerequisite: MTH 3310 or MTH 4312

This course presents Monte-Carlo simulations techniques methods from its foundations to some recent advances like data augmentation. The technique can be used to estimate integrals, probabilities, confidence intervals, cut-off points and p-values in the context of hypothesis testing. They have been shown to be as accurate as numerical method. But Monte-Carlo techniques are the only methodology left to explore when numerical methods fail to work. For example, numerical methods are subject to the curse of dimensionality while simulations are more agile and scalable in higher dimensions. Monte-Carlo simulation is even used to find starting values of numerical optimization techniques. We start this course by discussing how to generate uniformly distributed pseudo-random variates and how to tests their goodness. These pseudo-random variates are used to generate random variates from well-known parametric distributions through the inverse method, the acceptance-rejection method, the importance sampling method, and the ratio-of-uniform method. To increase the accuracy of these methods, we combine these methods with some variance-reduction techniques. This course is computationally intensive in nature and involves lots of codes writing. Both the R and the MATLAB software will be used. It will enhance tremendously the computational skills of students.

STA 4303 Nonparametric Statistics 3 credits

University Preparatory Program (UPP)

UPP 0009 Math Reinforcement 0 credit

Prerequisite: Placement test

A transition from elementary algebra to college algebra. Topics include operations with radicals, graphing of linear and nonlinear functions, algebra of linear and nonlinear functions, systems of linear equations and inequalities, review of factoring and quadratic functions. Applications will be emphasized. Students will address specific areas of weakness with supervision by instructor

UPP 0011 Listening Comprehension 0 credit

Prerequisite: Placement test

This course provides opportunities for listening to native speakers, especially with North American accents, speaking at different speeds and with different levels of difficulty. Multimedia sources, both in and outside class, will equip students with the skills and strategies required for effective listening in their university studies and their successful integration into the English speaking community.

UPP 0012 Grammar 0 credit

Prerequisite: Placement test

This course focuses on grammar issues that are problematic for Francophone students and those most likely to cause breakdowns in communication. Grammar points will be considered in context using communicative activities. High frequency formal and grammatical aspects of English appropriate for high beginner learners — such as parts of speech, word classes, number, sentence types and their syntaxes, verbs and tenses, nouns, rules of spelling and pronunciation of word endings, modifiers, modals and their related expressions, comparatives and superlatives—are

covered. Competitive classroom games and online activities complement more traditional grammar exercises.

UPP 0013 Academic Writing 0 credit

Prerequisite: Placement test

This course covers basics of academic writing, starting with one-paragraph compositions and progressing to three or more paragraphs. Students complete a variety of writing activities to develop both fluency and accuracy. Organization, sentence structure, use of logical connectors, prewriting strategies and the writing process are stressed. Through portfolios and timed writing results, students will see tangible results of their progress.

UPP 0014 Oral Communication 0 credit

Prerequisite: Placement test

The course equips students with basic oral presentation skills appropriate for high beginner learners. They will practice speaking accurately and fluently through planned speeches, impromptu speeches, class discussions, speaking games, and debates in order to prepare for both classroom and testing. Pronunciation problems and common grammar errors will be addressed as they arise.

UPP 0015 Reading for Academic Purposes 0 credit

Prerequisite: Placement test

This course focuses on academic reading skills that high beginner students will need both in university courses and on standardized tests. Skills such as skimming, scanning, inferring meaning from context, and predicting are stressed.

UPP 0016 Integrated Academic Skills 0 credit

Prerequisite: Placement test

This course integrates different academic English skills: reading, speaking, listening, writing, vocabulary building, and basic note-taking skills. Guest speaker lectures, videos, small group discussions, and class discussions are related to actual university topics geared to the high beginner level.

UPP 0017 Extensive Reading 0 credit

Prerequisite: Placement test

This course features short stories, fables, and articles appropriate for high beginners. Instruction focuses on developing both reading and critical thinking skills to help students become more effective readers, increase their vocabulary, and develop an appreciation for reading. Classroom activities focus on helping students develop skills such as summarizing, identifying main ideas, describing characters and themes, relating ideas to students' own lives.

UPP 0021 Listening Comprehension 0 credit

Prerequisite: Placement test

This course provides opportunities for listening to native speakers, especially with North American accents, speaking at different speeds and with different levels of difficulty. The Introductory Course to the IBT TOEFL TEST module, blended with other multimedia sources both in and outside class, will equip students with the skills and strategies required for effective listening, not only in their university studies, but also for their successful integration into the English speaking community at large.

UPP 0022 Grammar 0 credit

Prerequisite: Placement test

This course emphasizes grammar issues that are problematic for Francophone students and those most likely to cause breakdowns in communication. Grammar points will be considered in context using communicative activities. High frequency formal and grammatical aspects of English appropriate for low intermediate learners — such as tense and time relationships; verbs, phrasal verbs, nouns and noun phrases, modals and related expressions; comparatives and superlatives; passive sentences; defining and non-defining relative clauses; quoted, direct and indirect speech — are covered. Competitive classroom games and online activities complement more traditional grammar exercises.

UPP 0023 Academic Writing 0 credit

Prerequisite: Placement test

This course covers basics of academic writing, starting with one to two paragraph compositions and progressing to four to five paragraphs. Students complete a variety of writing activities to develop both fluency and accuracy. Organization, sentence structure, prewriting strategies and the writing process are stressed. Practicing paraphrasing and simple citation methods prepare students to write from source material. Through portfolios and timed writing results, students will

see tangible results of their progress.

UPP 0024 Oral Communication 0 credit

Prerequisite: Placement test

This course equips students with basic oral presentation skills appropriate for low intermediate learners. They will practice speaking accurately and fluently through planned speeches, impromptu speeches, class discussions, speaking games, and debates in order to prepare for both classroom and testing situations. Pronunciation problems and common grammar errors will be addressed as they arise.

UPP 0025 Reading for Academic Purposes 0 credit

Prerequisite: Placement test

This course focuses on academic reading skills that low intermediate students will need both in university courses and on standardized tests. Skills such as skimming, scanning, inferring meaning from context, and predicting are stressed.

UPP 0026 Integrated Academic Skills 0 credit

Prerequisite: Placement test

This course integrates different academic English skills: reading, speaking, listening, writing, notetaking skills, and vocabulary building. Guest speaker lectures, videos, small group discussions, and class discussions are related to actual university topics geared to the low intermediate level.

UPP 0027 Extensive Reading 0 credit

Prerequisite: Placement test

This course features short stories, articles, and short novels appropriate for low intermediate learners. Instruction focuses on developing both reading and critical thinking skills to help students become more effective readers, increase their vocabulary, and develop an appreciation for reading. Classroom activities focus on helping students develop skills such as summarizing, identifying main ideas, describing characters and themes, relating ideas to students' own lives.

UPP 0030 Education for Success 0 credit

Prerequisite: Placement test

This course orients students to the American higher education system, including practical information such as choosing a major and courses, different types of diplomas, GPAs, reading syllabi, understanding prerequisites; The course also covers general academic skills such as note-taking, understanding and avoiding plagiarism, using the library and research databases; as well as life skills such as time management, health maintenance and stress management. Teamwork and project planning and management are taught through the implementation of a community service project. Each unit will feature a language-learning component.

UPP 0033 Academic Writing 0 credit

Prerequisite: Placement test

This course emphasizes development of paragraphs, structure, unit, and coherence and cohesion in a paragraph, and essay organization; as well as giving students practice in various rhetorical modes. Students progress from writing three-paragraph compositions to writing five or more paragraphs. Academic writing, simple business correspondence, and writing answers to academic test questions are practiced. Sentence structure, coherence, cohesion, and grammar are stressed. Students gain experience writing from source material, citing sources, and paraphrasing. Through portfolios and timed writing results, students will see tangible results of their progress.

UPP 0034 Oral Communication 0 credit

Prerequisite: Placement test

This course equips students with basic oral presentation skills appropriate for high intermediate learners. Students practice speaking accurately and fluently through planned speeches, impromptu speeches, class discussions, speaking games, and debates in order to prepare for both classroom and testing. Pronunciation problems and common grammar errors will be addressed as they arise.

UPP 0035 Reading for Academic Purposes 0 credit

Prerequisite: Placement test

This course develops high intermediate learners' reading skills to succeed in course work and on tests. In addition, students develop awareness of their reading progress, build their vocabulary, learn to recognize main ideas and supporting details from written texts, and improve test-taking strategies.

UPP 0036 Integrated Academic Skills 0 credit

Prerequisite: Placement test

This course integrates different academic English skills: reading, speaking, listening, writing, and vocabulary building. Guest speaker lectures, videos, small group discussions, and class discussions are related to actual university topics geared to the high intermediate level.

UPP 0037 Extensive Reading

0 credit

Prerequisite: Placement test

This course features short stories, articles, and novels appropriate for high intermediate learners. Instruction focuses on developing both reading and critical thinking skills to help students become more effective readers, increase their vocabulary, and develop an appreciation for reading. Classroom activities focus on helping students develop skills such as summarizing, identifying main ideas, inferring meaning from context, describing characters and themes, relating ideas to students' own lives.