

COMPUTATION AND MANAGEMENT SUBJECT AREA

300 LEVEL COURSES

MGT 301 Marketing (3 Credis)

The objective of this course is to provide students with a broad understanding of the concept of marketing, and a basic knowledge in total marketing. The course integrates key marketing concepts and marketing tools. The course will also consider ways of creating and maintaining a positive total marketing effort in business.

Course topics include: An introduction to marketing; Analysis of marketing opportunities; Planning marketing strategies and making marketing decisions; and Marketing management and the total marketing effort.

MGT 304 Entrepreneurship (3 Credis)

This is an intermediate course in Management specially designed to provide students eligible to take 300 or 400 level courses in Management with theoretical knowledge and academic training in the new entrepreneurship. It is expected that graduating students will find this course useful in formulating new ventures. While there are no prerequisites for this course, students with management, economics, or information technology backgrounds are encouraged to enroll.

Topics taught in the course include: The meaning and importance of the concept of entrepreneurship; Models for new ventures; Commercial opportunities and new ventures; Marketing research for new ventures; Organizing new ventures; Financing new ventures; and Managing growth and finance.

MGT 305 Cost and Management Accounting (3 Credis)

Cost accounting is a tool in Management. It provides management information regarding cost of products, operations, and services. It also provides data for special decisions to be made by management regarding planning and controlling the operations of the enterprise. As a subject, cost accounting is technical in nature, requiring an understanding of its complex concepts, methods, and techniques. Management Accounting is the application of accounting techniques to provide information designed to help all levels of management in planning and controlling the activities of a business enterprise and decision making. The objective of this course is to provide students with a sound knowledge of cost and management accounting theories and their use in problem solving. Course topics include: Cost accounting—basic nature and concepts, elements of cost, costing methods and accounting systems, cost analysis for planning control and decision making; Management accounting-concepts and applications.

MGT 307 Business Law (3 Credis)

This course provides a basic knowledge of the nature, constitution, and legal background of varied forms of business units and contracts such as sole trade ventures, partnerships, and companies.

Course topics include: General principles of the law of contract; Law of agency; Sale of goods; Carriage of goods by sea and air; Partnership; Insurance law; Hire purchasing; Banking; Customer relationships and negotiable instruments; and Company law.

MT 321 Mathematics for Management Studies II (3 credits)

Game theory: Pure strategies, Mixed strategies, Zero-sum games, Dominance, $2 \times n$ game, Graphical solutions, $m \times n$ game, Games with optimal pure strategies, Games with optimal mixed strategies.

Linear Programming: LP in two dimensional space, Graphical solution methods, General LP models, Primal simplex method, Big-M method, Two-phase simplex method, revised simplex method, Applications of duality, Dual simplex method.

Transportation model, Assignment model.

Quadratic Programming: QP algorithms, Applications of QP.

CS 311 Software Engineering (2 Credits)

(Prerequisites: CS 201)

Overview of software engineering: software process; classic life cycle model, iterative models, incremental model. Project planning; Fundamentals of project and system planning, Requirements analysis, Software design fundamentals; Stepwise refinement, bottom-up approach, modularity, Design techniques; Use of UML and design patterns, Testing: Testing objectives, test case design, white box vs. black box testing, overview of testing strategies, Maintenance; Overview of maintenance issues and software configuration management

Recommended Texts:

1. Ian Sommerville, *Software Engineering*, 6th edition, Addison Wesley, 1999.
2. *Design Patterns*, 1st edition, Addison Wesley, 1996.

CS 315 Design and Analysis of Algorithms (2 Credits)

(Prerequisites: CS 201, CS 202)

Analysis of algorithms: time complexity, big O notation. Sorting algorithms: bubble sort, selection sort, insertion sort, quick sort, heap sort, merge sort and external sorting methods. Hashing: hash functions and collision resolution: separate chaining, linear probing and double hashing. Classification of Algorithms by Implementation and Design Paradigm: Divide & Conquer Algorithms, Dynamic Programming, Greedy Algorithms, Recursive Algorithms, Backtracking, Alpha-Beta pruning, Branch & Bound Search; Analysis of Algorithms, NP-completeness; Classification by Field of Study: Searching, Sorting, String matching, Graph, Machine Learning; Genetic algorithms

Recommended Texts:

1. Sara Baase, Allen Van Gelder (2000), *Computer Algorithms - Introduction to Design & Analysis*, Addison-Wesley
2. Thomas H. Cormen, Charles E. Leiserson & Ronald L. Rivest (2000), *Introduction to Algorithms*, McGraw-Hill

CS 303 Operating Systems Concepts (3 credits)

(Prerequisite: CS 203)

Introduction, Distributed OS Techniques; Naming, Inter-process communications and remote procedure calls Data and process migration, transactions, file systems, Parallel OS Techniques; Process management, scheduling, synchronization, Data management, caching, coherency, consistency, file systems, Load balancing, Advanced OS Concerns; Memory management, virtual memory, garbage collection, Fault-tolerance, reliability, replication, Protection, authentication, security, cryptography, I/O models, Performance, benchmarking, and monitoring, Client - Server Model.

Recommended Text:

1. Tanenbaum, A.S.; *Modern Operating Systems*; Prentice Hall; 1992

CS 305 Communication Networks (2 credits)

(Prerequisite: CS 303)

Overview; Examples and concepts of layered architecture; overview of higher layer protocols. LAN - Network Topologies, Medium Access Control Methods, LAN Standards, WAN - Introduction to ISO/OSI Model, Introduction to Internet & TCP/IP Protocols, Transport layer; Internet addressing and Internet protocols; socket interface, Network layer, Taxonomies; relevant parameters of network and traffic, Multiple-access methods for broadcast networks, Taxonomies of multiple access methods; contention, methods; polling methods; reservation methods, Switched networks Architectures of switches; scheduling and admission control; routing, flow control, and congestion control, Interconnections of networks Logical data link protocols.

Recommended Text:

1. Tanenbaum, A.S.; *Computer Networks*; Prentice Hall; 1996

CS 309 Object Oriented Analysis and Design (3 credits)

(Prerequisite: CS 307)

Fundamental of Object-oriented design: Encapsulation, classes and objects, information hiding, operator overloading, inheritance, overriding, delegation; Analyze problems, determine objects that are necessary to model the system, determine what attributes the objects need to have, determine what behaviors the objects need to exhibit, develop conceptual models, generate designs from the models, and implement the models.

Recommended text:

1. An Introduction to Object-Oriented Analysis and Design and the Unified Process Second Edition. Craig Larman, 2002.

ECN 304 Econometrics I (3 credits)

This course is designed as an introduction to the econometric method and to econometric estimation. Its objectives are, first, to impart a sound theoretical background of the classical linear regression model (CLRM) and second, to enable students to estimate and interpret such models.

The course will begin with a discussion of what constitutes "econometrics". It will then move on to the concept of a "regression". And discuss the estimation and interpretation of simple linear regression models. Students will be introduced to the assumptions of the CLRM and to properties of OLS estimators. Initial coverage of Interval Estimation. Testing of Hypotheses, R^2 , and Prediction Error will be within the context of the simple linear regression model. These topics will then be studied with respect to the multiple linear regression model, which will also be extended to cover Dummy Variables. The course will conclude with (a) a preview of some violations of assumptions of the CLRM, i.e., Multicollinearity, Heteroscedasticity and Autocorrelation. and (b) a brief discussion of Specification Error.