

Hope University College

Faculty of Information Science

Department of Information Technology

Curriculum



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1. Introduction

In the current information age, Information Technology (IT) is playing a critical role in the social and economic advancement of developing countries like Ethiopia. There is a great need to adopt Information and Communications Technology (ICT) as stipulated in the development goal of the country in order to deliver quality service, facilitate business processes, and advance socio-economic development. This emphasis, in turn, requires an IT infrastructure, along with well-qualified and trained people, who can play a significant role in the development and operation of such infrastructure. This Bachelor of Science in Information Technology is thus designed to train people in Information Technology.

2. Departmental Vision, Mission and Objectives

2.1 Vision Statement

The vision of the Department of Information Technology of HOPE UNIVERSITY COLLEGE is to prepare professionals in information technology who demonstrate excellence in their knowledge and application of the technology.

2.2 Mission Statement

The mission of the Department of Information Technology of HOPE UNIVERSITY COLLEGE is to deliver high quality education in information technology using state of the art facilities, highly qualified staff and a curriculum that brings about competency to meet the needs of the private and public sectors in information technology.

2.3 Objectives

The objectives of the Department of Information Technology at HOPE UNIVERSITY COLLEGE are to train people with the knowledge and skills in information technology and have them assume professional positions in the field. The training will also help students make useful contributions and have strong conceptual and practical understanding of information technology thereby enabling them to create and utilize appropriate methods, theories, and techniques to solve business and organizational problems, evaluate and recommend IT solutions and develop know how that enable problem solving in IT.

3. Professional and Program Profiles

3.1 Professional Profile

A graduate from this program is expected to have the following abilities and skills:

3.1.1. Knowledge, Understanding and Practical Skills

A graduate can:

- Use and apply current technical concepts and practices in the core information technologies.
- Analyze, identify and define the it requirements that must be satisfied to address problems or opportunities faced by organizations and/or individuals.
- Design effective and usable it-based solutions and integrate them into the user environment;
- Identify and evaluate current and emerging technologies and assess their applicability to address the user's needs;
- Analyze the impact of technology on an individual, organization and the society.
- Develop an effective it project plan.
- Analyze, adopt and demonstrate it best practices, standards and applications.
- Demonstrate problem solving skills.
- Work with teams to address it solutions.
- Communicate effectively and efficiently with clients, users and peers both verbally and in writing, using appropriate terminology.
- Implement, maintain and manage information technologies and services.
- Implement, maintain and manage web based systems and services.
- Implement, maintain and manage data and database systems.

3.1.2. Attitudes and Values

The graduates shall

- Work in teams in projects of information systems and system development.
- Have good communication skills with whom they interact.
- Exhibit professionalism in all their endeavors.
- Have personal confidence in their professional activities.
- Have high integrity.
- Demonstrate goodwill towards others by putting public interest ahead of their own.

3.2 Program Profile

The program prepares students to become highly skilled in computer technology and its applications in information processing and delivery in various professional fields. Given the importance of the technology in this digital age, the program trains people to set up their own businesses as well.

4. Teaching Philosophy and Methodology

4.1 Teaching Philosophy

Based on the mission of HOPE UNIVERSITY COLLEGE and the outcomes of the discussions with relevant stakeholders, the following elements constitute the philosophy of the curriculum:

- Excellence in applying scientific knowledge in a professional setting.
- Continual interaction between the faculty, students and professional learning environments to enable competence.
- Integration of theory and practice to bring about excellent professionals.
- Ongoing contact with the private and public sectors and other stakeholders to develop a curriculum that is relevant, competitive and value adding.
- The development of competencies as an indispensable outcomes of the curriculum.
- The reinforcement of teaching with coaching to foster holistic student development.

4.2 Teaching Methodology

Competency based education which is a student-centered methodology emphasizing theory; skills, work scene interface and personal development will be exercised. In this interaction, there shall be class room lectures, laboratory activities, and practicum sessions in the private sector. Students will also engage in presentations, group projects, which reflect actual situations in business or industry.

Competency based education stresses the interrelationship of several learning dimensions in which the students combine knowledge, skills, values and attitude to create effective learning processes and to meet the standards of Hope University College.

The educational program will be characterized by increasing complexity. Knowledge, skills, attitude and competencies will be tested at several levels during all semesters. The following five complexity-dimensions are distinguished:

- Level of self management of the student
- Level of professional cases to be dealt with
- The level of knowledge (and required analytical skills) to understand a specific subject
- The number of instruments, tools and methods needed to approach the subject

The department acknowledges these dimensions and challenges the students in the course of their professional maturity. Therefore, the curriculum has the integrative elements between theory and practice, between the different disciplines that are taught (a multi-disciplinary approach), and between the constituting parts of a competency. Furthermore, the curriculum has integrative elements between linguistic, calculative, analytic, synthetic, technical and ethical tools to explore available knowledge and develop an intellectual maturity for better judgement, leadership and knowledge ability.

5. Assessment Methods

5.1 Student Assessment

A student's achievement level for a course shall be assessed principally by examinations to gauge content ingestion and by assignments, laboratory tests and projects to assess competency. Furthermore, some credit shall be given for participation in class. Ongoing assessment by way of tests shall help in identifying where a student is and in helping a student to catch up.

5.1.1. The Grading System

The grading system is a five scale assessment ranging from A to F as presented below.

Grade	A ⁺	A	A ⁻	B ⁺	B	B ⁻	C ⁺	C	C ⁻	D ⁺	D	D ⁻	F
Value	4.00	4.00	3.75	3.50	3.00	2.75	2.50	2.00	1.75	1.50	1.00	0.75	0.00

5.2 Program Assessment

To guarantee the quality and standard of the program, the Department:

- Provides on-the-job training upgrading the academic qualification of the staff as needed.
- Gathers feedback from students, employers and graduates as deemed necessary and uses the feedback to improve the curriculum.
- Has prepared and put in place rules governing delivery and assessment of courses.
- Performs regular evaluation of the program based on the current trends in the field and the country's skilled manpower need
- Periodically acquires appropriate textbooks/references, laboratory equipment, software applications, and so forth.
- Prepares a course syllabus for all courses offered in the department in order to standardize the course content.
- Carries out regular evaluation of the staff

6. Admission Requirements of the Department

A candidate will be eligible for admission if he/she fulfills the minimum admission requirement set forth by the Ministry of Education for the year and shows passion for learning and determination to take advantage of the academic opportunities at the University College as stipulated in the charter.

7. Duration of the Study

The duration of the study for the Bachelor of Science in Information Technology is four years.

8. Degree Nomenclature

The degree offered after successful completion of the program is called:

- In English – “Degree of Bachelor of Science in Information Technology”
- In Amharic – “ የ ሳይንስ ባችለር ዲግሪ በኢንፎርሜሽን ቴክኖሎጂ”

9. Graduation Requirements

Graduating students shall be awarded “Bachelor of Science in Information Technology” if they fulfill the following requirements:

- Successful completion of a minimum of 143 credit hours
- An attainment of a minimum Cumulative Grade Point Average of 2.00.
- An attainment of a minimum Cumulative Grade Point Average of 2.50 in the courses of specialization or major area.
- Absence of F or I or NG in one’s transcript.

10. Course Coding

All the Information Technology courses start with the prefix **INTE** representing **IN**formation **TE**chnology followed by three digits.

- ✓ The first digit represents the year in which the course is delivered.
- ✓ The middle digit signifies the categorization of courses in the program. The following categories together with their codes are identified to cluster the courses:

- 0: Basics Courses
- 1: Programming
- 2: Database
- 3: Systems
- 4: Hardware, Networking and Operating Systems
- 5: Applications
- 6: Special

- ✓ The last digit indicates the semester in which the course is offered:
 - Odd last digit shows that the course is offered in the first semester
 - Even last digit shows that the course is offered in the second semester.

Remark:

- ✓ The supportive courses assume their code numbers from the owner departments.
- ✓ The above rule of course coding does not bind cross cutting courses.

11. Quality Assurance

The university college shall have a section for Quality Assurance as an internal audit of the academic program. The director of this section shall ensure quality by monitoring and evaluating academic programs and achievements on a regular basis using set benchmarks of academic excellence.

- 11.1. The internal scheme of performance audit shall enable constant renewal and relevance in the university college. The audit would review the actual outcomes of the content and pedagogy of disciplines by departments, courses, programs and also student competencies.
- 11.2. Though the established goals, objectives and desired outcomes of the university college would be important benchmarks of the audit, the evaluation efforts, being focused on value adding features, may point to the revisiting of certain objectives and activities of the curriculum.
- 11.3. In this way, the university college will be made aware of what it needs to change and make the necessary adjustments to stay abreast of the latest developments of knowledge. In the end, the curriculum is intended to develop graduates who demonstrate proficiency in general knowledge, communication, critical thinking, contextual competence, aesthetic sensibility, professional identity and ethics, leadership capacity, scholarly concern for improvement and motivation for continuing learning.
- 11.4. The curriculum anticipates a qualitative change in the mental and spiritual capacities of students. In this regard, every attempt will be made to transform the capacities of students to a level that would make them change makers. The evaluation will track these outcomes and assess the qualitative changes gained in each student.
- 11.5. Considering the danger of internal evaluation from the standpoint of inbreeding and defensive pretensions by all concerned, internal evaluations will be counterbalanced by external ones. These would be openly discussed for subsequent adjustments.

The department shall do a formative and summative review of the program after four years of implementing this curriculum by collecting feedback from employers and graduates of the program. This formative and summative program review will help to maintain the quality of the program in line with the demand of the employers and the country at large. Methods of quality assurance of the program will include but not be limited to:

- Comprehensive examinations and colleague assessment of examination papers and teaching methods;
- Periodic workshops (with stakeholders, teachers and graduates);
- Assessments by using survey project works (research), internships, and link programs;

- Graduates' evaluation of the program, establishing a graduate alumni organization as a mechanism to implement such evaluations and follow their career paths;
- Standardization of course offerings through preparation of general course outlines, exam contents, and external audit;
- Annual assessment of the program by the teaching staff;
- Working closely with the relevant professional associations to assess graduates' performance.

12. Resource Requirements

12.1 Teaching Staff

To the extent that the quality of education to be provided is primarily dependent on the skill and excellence of its staff members, Hope University College shall engage outstanding faculty members from within country and abroad in teaching.

12.2 ICT Laboratory

HOPE UNIVERSITY COLLEGE shall avail adequate computer terminals for students and faculty to enable on line learning and reading, share knowledge and experiences and work with various software that contribute to one's professional development. In such laboratory one shall also get assistance in digital connections and system's use.

12.3 Library Facilities

Students will have access to a spacious and well stocked library. Computers will be available in the library to provide students with the facility for writing and with Internet Connectivity for access to e-books and on-line learning solutions. Students shall use computerized catalog for instant access to the resources in the library.

12.4. Tutorial Service for a Course Taught

12.4.1. The faculty member of a course is the TUTOR of his/her students.

12.4.2. To enable the tutoring, the faculty member shall designate office hours and inform his students of the same. The faculty member is expected to be in his office during the hours designated.

12.5. Guidance and Counseling

12.5.1. The office of student life shall provide guidance in a number of areas that contribute to the character development of students focusing on themes such as interpersonal relations, personal acceptance and care, life goals, survival skills, work ethics, relations with the opposite gender, community responsibility, right assertiveness,

handling grievance and personal crisis, tolerance, reconciliation, time management, self assessment, etc. in an open ended and non judgmental manner.

- 12.5.2. The office of student life shall avail counseling service to those students that exhibit emotional burden, are at a loss, have a hard time focusing on their studies and responsibilities and show difficulty in relating to others. If the mental state of a student requires professional help, the student shall be told to seek professional help at his expense. Severe cases shall be allowed to take off a semester or a year.
 - 12.5.3. As counseling revolves around trust, a female counselor shall be available for women and a male counselor for men. Besides, peer counseling as well as peer discussion will be held to facilitate the growth and discovery processes in a non-judgmental way.
 - 12.5.4. All counseling communications will be confidential.
 - 12.5.5. The university college shall do its best to reduce impersonality and the kind of atomization that comes from large crowds. While the architecture of the university college is designed to help in this regard by giving ample opportunities for students to interact with one another, every effort shall be made to provide a sense of community that encourages belongingness, involvement and high spirits.
- 59.1.2.6. Common problems shall addressed by the university college and remedies sought as quickly as possible so that unaddressed problems do not cause more harm than what exists.

13. Class Size

To enable manageable faculty attention to students and assure the continuous assessment policy, the optimal class size of the university college shall be:

- 30 students for courses with student discussion,
- 100 students for lecture type courses,
- 30 students for laboratories and workshops.

14. Program Structure

The Information Technology program is designed to be completed within eight semesters. Each semester shall have 18 weeks of regular classes.

There shall be one internship program two and a half months before the end of the third academic year. During such period, students will have a chance to work in an actual work setting using their competency.

The courses in the program are major, supportive and cross cutting courses. The major courses are compulsory and shall be 96 credit hours for one to graduate. The major, supportive and cross cutting courses are presented below.

List of Courses for Information Technology
Table 1: Major Courses

Course Code	Course Title	Credit Hours	Lecture Hours	Lab. Hrs*
INTE 201	Introduction to Information Communication Technology	4	3	3
INTE 202	Digital Electronics and Logic Design	3	2	2
INTE 212	Fundamentals of Programming	4	3	2
INTE 312	Internet Programming I	3	2	2
INTE 314	Data Structures and Algorithms Analysis	3	2	2
INTE 321	Fundamental of Database Management Systems	3	2	2
INTE 331	Structured System Analysis and Design	3	3	0
INTE 341	Data Communications and Computer Networks	4	3	2
INTE 342	Computer Architecture and Organization	3	3	0
INTE 411	Object Oriented Programming	4	3	2
INTE 415	Internet Programming II	3	2	2
INTE 416	Advanced Programming	3	2	2
INTE 421	Advanced Database Management Systems	3	2	2
INTE 431	Object Oriented Software Engineering	3	3	0
INTE 432	Introduction to Artificial Intelligence	3	2	2
INTE 433	Human Computer Interaction	3	3	0
INTE 440	UNIX System Administration and Support	3	2	2
INTE 441	Operating Systems	4	3	2
INTE 444	Computer Maintenance and Technical Support	3	1	4
INTE 445	Systems and Network Administration	3	2	2
INTE 452	Web Technologies	3	2	2
INTE 457	Multimedia Systems	3	2	2
INTE 460	IT Project Management	3	3	0
INTE 462	Internship	3	0	6
INTE 504	Information and Society	3	3	0
INTE 542	Wireless Communications and Mobile Computing	3	2	2
INTE 546	Network Device Configuration and Troubleshooting	4	2	4
INTE 564	Information Assurance and Security	3	3	0
INTE 566	Senior Project	3	0	6
INTE455	Computer Graphics	3	2	2
Total		96	67	59

Remark: *1 Credit hour is equivalent to 1 lecture hour or 2 to 3 hours of laboratory sessions.

Table 2: List of Major Elective Courses
A student is supposed to select at least two courses from the following.

Course Code	Course Title	Credit Hours	Lecture Hours	Lab. Hours
INTE 505	IT and Economic Development	3	3	0
INTE 511	Formal Language Theory	3	2	2
INTE 513	Introduction to Compiler Design	3	2	2
INTE 543	Introduction to Distributed Systems	3	2	2
INTE 544	Introduction to Telecom Technologies	3	2	2
INTE 556	GIS and Remote Sensing	3	2	2
INTE 557	E-Commerce	3	3	0
INTE 558	Simulation and Modeling	3	2	2
INTE 568	Selected Topics in IT	3	3	0
Total		6	4/5/6	0/2/4

Table 3: List of Supportive Courses

Course Code	Course Title	Credit Hours	Lecture Hours	Lab. Hours
MAEN 214	Introduction to Entrepreneurship & Small Business Management	3	3	0
MATH 203	Mathematics I	4	4	0
MATH 204	Mathematics II	4	4	0
PHYS 201	Applied Physics	3	2	2
STAT 301	Introduction to Probability and Statistics	3	2	2
Total		17	15	4

Table 4: List of Cross-Cutting Courses

Course Code	Course Title	Credit Hours	Lecture Hours	Lab. Hours
CEED 201	Civics and Ethical Education	3	3	0
ECON 202	Microeconomics	3	3	0
FLEN 201	Sophomore English	3	3	1
FLEN 202	Professional Writing	3	3	1
FLEN 301	Presentation and Communication Skills	3	3	1
MAEN 441	Leadership Skills	3	3	0
PHIL 201	Introduction to Logic	3	3	0
PSYC 201	General Psychology	3	3	0
Total		24	24	3

Table 5: Minimum Credit Hour Requirement Summary

Course Categories	Credit Hours
Major including Internship	96
Major Electives	6
Supportive	17
Crosscutting/Foundation Courses	24
Grand Total	143

15. Semester Course Break-Down

Year	Semester I		
1	Course No	Course Title	Cr. Hrs
	INTE 201	Introduction to Information and Communication Technology	4
	MATH 203	Mathematics I	4
	CEED 201	Civics and Ethical Education	3
	FLEN 201	Sophomore English	3
	PHYS 201	Applied Physics	3
	Semester Total		17
	Semester II		
	Course No	Course Title	Cr. Hrs
	INTE 212	Fundamentals of Programming	4
	FLEN 202	Professional Writing	3
	MATH 204	Mathematics II	4
	INTE 202	Digital Electronics and Logic Design	3
	PHIL 201	Introduction to Logic	3
Semester Total		17	

Year	Semester I		
2	Course No	Course Title	Cr. Hrs
	INTE 411	Object Oriented Programming	4
	INTE 321	Fundamentals of Database Management Systems	3
	INTE 341	Data Communication and Computer Networks	4
	INTE 331	Structured System Analysis and Design	3
	FLEN 301	Presentation and Communication Skills	3
	Semester Total		17
	Semester II		
	Course No	Course Title	Cr. Hrs
	INTE 416	Advanced Programming	3
	INTE 342	Computer Architecture and Organization	3
	INTE 314	Data Structures and Algorithms Analysis	3
	PSYC 201	General Psychology	3
	MAEN 214	Introduction to Small Business Management and Entrepreneurship	3
INTE 312	Internet Programming I	3	
Semester Total		18	

Year	Semester I		
3	Course No	Course Title	Cr. Hrs
	INTE 421	Advanced Database Management Systems	3
	INTE 431	Object Oriented Software Engineering	3
	INTE 441	Operating Systems	4
	STAT 301	Introduction to Probability and Statistics	3
	INTE 455	Computer Graphics	3
	INTE 415	Internet Programming II	3
	Semester Total		19
	Semester II		
	Course No	Course Title	Cr. Hrs
	INTE 444	Computer Maintenance and Technical Support	3
	INTE 546	Network Device Configuration and Troubleshooting	4
	INTE 440	UNIX System Administration and Support	3
	INTE 452	Web Technologies	3
	INTE 460	IT Project Management	3
INTE 432	Introduction to Artificial Intelligence	3	
Semester Total		19	

INTE 482 Internship (offered between the two semesters) 3			
Year	Semester I		
4	Course No	Course Title	Cr. Hrs
	INTE XXX-	Elective I	3
	INTE 445	Systems and Network Administration	3
	INTE 433	Human Computer Interaction	3
	INTE 457	Multimedia Systems	3
	ECON 202	Microeconomics	3
	Semester Total		18
	Semester II		
	Course No	Course Title	Cr. Hrs
	INTE XXX	Elective II	3
	INTE 564	Information Assurance and Security	3
	INTE 504	Information and Society	3
	MAEN 441	Leadership Skills	3
	INTE 542	Wireless Communication and Mobile Computing	3
	INTE 566	Senior Project	3
Semester Total		18	
Grand Total		143	

16. Course Descriptions and Course Objectives for Major Courses

Course Title: Introduction to Information and Communication Technology
Course Number: INTE 201 same as INSY 201
Credit Hour: 4
Prerequisite: None

Course Description

This course provides an overview of Information and Communication Technology. Topics include the development of computers, data representation, logical organization of a computer system, computer software, computer hardware, computer networking and communication, problem solving using computers, operating systems (single and multi-user) and the windows environment. The course also discusses information system components and types of information systems. This course will be supported by a practical laboratory sessions where students are exposed to hands-on experience in using computers. Specifically they will work on Microsoft Windows operating system followed by office applications (like MS-Word, MS-Excel) and other useful and software tools and applications.

Course Objectives

On completion, students will be able to:

- Explain what IT and ICT are and how they are used as a enabler tool for development
- Understand of the components of modern technological infrastructures, such as relevant hardware, software, networks, telecommunications and internet systems.
- Use computers for general operations using Windows operating systems and applications software.

Text Book

Shelly, Cashman and Vermatt, Discovering Computers 2007/2006, Thomson Course Tech., 2007/2006.

References

1. R. Rainer, E. Turban and R. Potter, Introduction to Information Systems, 2007, INBN 13 978- 0-471- 73636- 3,John Wiley and Sons, Inc.
2. Peter Norton, Computing Fundamentals, 4th Ed., 2001, McGraw Hill
3. June Jamrich Parsons and Dan Oja, Computer Concepts, 5th edition, Thomson Course Tech., 2004
4. Williams, Sawyer and Hutchinson, Using Information Technology, 3rd edition, McGrawHill,1999
5. Zimmerman, Information Technology Applications, 2007, Thomson Course Tech.
6. Keyboarding & Information Processing, 1997, South Western Educational Publishing

Evaluation Scheme

Assignments	15%
Practical work	15%
Mid Exam	30%
Final Examination	40%

Course Title: Digital Electronics and Logic Design
Course Number: INTE 202
Credit Hour: 3
Prerequisite: Applied Physics

Course Description

This course deals with the fundamentals of digital systems building blocks. This includes the digital logic circuit elements like logic gates, Boolean algebra, Boolean function simplification, digital logic design like half and full adders, MSI chip elements like de/multiplexers, decoder and encoder. Moreover, students will be exposed to both combinational and sequential digital circuits where they analyze and design memory elements using MSI chips. Finally, the course will discuss digital logic families. Most of these concepts are supported by laboratory session to experiment the theory.

Course Objectives

At the end of the course students should be able to:

- Explain the basic operation of various digital systems.
- Describe and solve problems involving digital systems using Boolean algebra or logic gates.
- Understand basic digital electronic systems.
- Analyze and simplify digital logic circuits using the various simplification techniques like kmap.

Text Book

Morris M. Mano, Computer System Architecture, 3rd Ed., Prentice Hall

References

1. Roger L. Tokheim, Digital Electronics: Principles and Applications Robert, McGraw Hill, 5th edition, 1999.
2. Thomas L. Floyd, Digital Fundamentals, 6th Ed., 1997, Prentice Hall
3. Joseph J. Carr, Operational Amplifiers and Linear ICs with Applications, 1990, Harcourt Brace Jovanovich Inc.

Evaluation Scheme

Lab Assessment:	30 %
Mid exam:	30 %
Final Examination:	40 %

Course Title: Fundamentals of Programming
Course Number: INTE 212 same as INSY 212
Credit Hour: 4
Prerequisite: Introduction to Information and Communication Technology

Course Description

In this course general programming principles and concepts will be dealt with focusing on structured programming and problem solving techniques. The structured programming approach will be practically implemented using the C++ programming language. Problem solving techniques, simple algorithm design, testing and debugging techniques, and documentation standards will also be covered. The C++ syntactical elements and their semantics will also be learnt for the student. This includes but not limited to elementary operators, data types, control structures, user-defined and library functions, basic input/output, sequential files, arrays and structures. This course will be appropriate for students with little or no programming experience, but comfortable using computers with modern GUI-based operating systems. This course is supported by a rigorous laboratory sessions.

Course Objectives

On completion of this course students should be able to:

- Apply the knowledge acquired in previous courses appropriately
- Assimilate the way a programmer thinks while mapping real world problems into computer programs
- Explain the various techniques of writing computer programs
- Apply the knowledge of writing, editing, compiling, running and debugging programs
- Explain and demonstrate steps involved in program development
- Apply the simple C++ data types, operators, and constructs in programs and explain how they are represented in the machine
- Apply the structured programming constructs: sequence, selection and iteration in solving problems
- Perform elementary interactive input and output operations;
- Apply, define and use the structured C++ data types: arrays, strings, structures in applications drawn from mathematics, the sciences, and other areas;
- Use text files to record and retrieve information in elementary applications;
- Demonstrate the ability of writing well-documented, user-friendly programs of short to medium length.

Text Book

Joel Adams & Larry Nyhoff, An Introduction to Computing, 3rd ed., 2003, Prentice Hall

References

1. D. S. Malik, C++ Programming: From Problem Analysis to Program Design, 2nd edition, 2004, Course Technology Publisher.
2. Walter Savitch, Problem Solving with C++, 5th & 6th editions, Pearson Education Inc., 2005/2009
3. Steven Prata, C++ Primer Plus, 3rd ed., Sams Publishing, 1998
4. Tony Gaddis, Standard Version of Starting Out with C++, 4th ed., 2005
5. Deitel & Deitel, C++ How to Program, Prentice Hall, 1994

Evaluation Scheme

Assignments and project	30 %
Mid-Term exam:	20 %
Quizzes	10 %
Final Examination:	40 %

Course Title: Fundamentals of Database Management Systems
Course Number: INTE 321 same as INSY 322
Credit Hour: 3
Prerequisite: Fundamentals of Programming

Course Description

This course exposes students to the design and implementation of database systems. Topics covered include definition of a database and benefits of database systems, architecture for database systems, implications of file organization and storage structures, hierarchical and network data models, relational data model, data structures and integrity rules, database design, relational algebra and relational calculus.

Course Objectives

At the end of the Course students should be able to:

- Explain the different models of database,
- Design models from specifications and interpret them into relational tables,
- Write statements for data creation and manipulation purposes,
- Optimize databases to the most efficient form,
- Distinguish and use relational model and relational algebra,
- Identify and fix the possible problems that may occur in securing data

Text Book

Abraham Silberschatz, Henry F. Korth, S. Sudarshan. 2005. Database System Concepts (5th ed). ISBN-10 0071244763. 1024 p.

References

1. Ramez Elmasri, Shamkant B. Navathe. 2006. Fundamentals of Database System s(5th ed). ISBN-10 0321369574.
2. Connolly T.M. and Carolyn E. Begg. 2009. Database Systems: A Practical Approach to Design, Implementation and Management, 5^c. ISBN-10 0321523067 1400 p.
3. Database Processing. Fundamentals, Design and Implementation by David M. Kroenke
4. Peter Rob & Carlos Coronel, Database Systems: Design Implementation and Management, 3rd Ed., Thomson Course Tech. 1997
5. Richard T. Watson, Data Management: Database and Organizations, 4th Ed., Jhon Wiley & Sons, 2004
6. David M. Kroenke et el, Database Processing, Prentice Hall, 11th Ed, 2010

Evaluation Scheme

Quiz	10%
Mid Exam	30%
Lab Evaluation and Project Work	20%
Final Exam	40%

Course Title: **Advanced Database Management Systems**
Course Number: **INTE 421 same as INSY 421**
Credit Hour: **3**
Prerequisite: **Fundamentals of Database Systems**

Course Description

This course focuses on the client or user side of Database systems. It extends the knowledge in the previous course by adding concepts of database management and use. Topics to be covered are file and record organization, basics of query optimization, transaction management and database security. The course includes an overview of advanced database systems such as Object-Oriented and Object-Relational databases, active databases, deductive databases, multimedia and spatial databases and distributed databases. Current trends in DBMS are also included. This course is supported by a series of laboratory sessions on database management, administration and security issues.

Course Objectives

On completion of this course students should be able to:

- Manage a database system..
- Understand how to organize and use databases effectively
- Identify the related issues with object-relational databases.
- Explain basics of query optimization.
- Understand transaction processing concepts.
- Understand database recovery techniques.
- Identify database security issues.

Text Book

Connolly T.M. and Carolyn E. Begg. 2009. Database Systems: A Practical Approach to Design, Implementation and Management, 5th edition. ISBN-10 0321523067. 1400 p.

References

1. Ramez Elmasri, Shamkant B. Navathe , Fundamentals of Database Systems(4th ed) , USA, Addison-Wesley, 2004
2. Abraham Silberschatz, Henry F. Korth, S. Sudarshan. 2005. Database System Concepts (5th ed). ISBN-10 0071244763. 1024 p.
3. Micheal Otey & Paul Conte, SQL Server 7 Developer's Guide, McGrawHill, 1999
4. Steven Bobrowski, Oracle7 Server Technology Concepts Manual, 1992
5. Peter Rob & Carlos Coronel, Database Systems: Design Implementation and Management, 3rd Ed., Thomson Course Tech. 1997
6. David M. Kroenke et el., Database Processing, Prentice Hall, 11th Ed., 2010

Evaluation Scheme

Assignments and quizzes	20%
Mid-term	30%
Final Examination	50%

Course Title: **Operating Systems**
Course Number: **INTE 441 same as INSY 340**
Credit Hour: **4**
Prerequisite: **Introduction to Information and Communication Technology**

Course Description

This course exposes students to the functions, types and internals of operating systems. Topics to be covered includes but not limited to the overview of operating systems like history, evolution and philosophy initially. Then it covers the process concept; the thread concept; process scheduling: basic concepts, scheduling criteria, scheduling algorithms; inter-process communication, process synchronization, the critical section problem, semaphores, monitors, classical synchronization problems; deadlocks detection, avoidance, and prevention. Memory management includes physical and virtual memory, swapping, allocation, paging, segmentation; file systems, access methods, directory structure, file system implementation, disk space management, Input/Output, principles of I/O hardware and software; security: authentication and encryption. This course is accompanied by a practical laboratory sessions where students will be exposed to hands-on experience in working on the internals of operating systems, possibly, using a Linux distribution like Ubuntu, Fedora or OpenSuSE.

Course Objectives

At the end of the course students should be able to:

- describe common inter-process communication and synchronization methods
- grasp common process scheduling algorithms
- understand the problem of deadlocks
- capture the implementation of virtual memory as used in computer systems and some of the critical problems that need to be considered
- describe the main issues of operating systems in handling I/O devices
- explain the goals of file system design and the ways in which several operating systems meet these goals
- discuss the need for security in computer systems in the historical context and discuss several threats and methods of overcoming those threats

Text Book

Andrew S. Tanenbaum, Modern Operating Systems, 3rd ed., 2007, ISBN-10 0136006633.

References

1. William Stallings, Operating Systems: Internals and Design Principles (5th ed), Prentice Hall, 2005.
2. Abraham Silberschatz, P. B. Galvin and G. Gagne: Operating System Concepts (6th ed), John Wiley & Sons, 2001.
3. Grant Taylor, Linux Complete, 1999, Sybex Inc.
4. Mark J. Rochkind, Advanced Linux Programming, 1995, Prentice Hall
5. Michael Tischer, PC Intern Systems Programming, 1992, Abacus-Developer's Series
6. Christopher Negus, Linux Bible, 2005, Wiley Publishing Inc.,

Evaluation Scheme

Lab Project	15%
Class Exercises/Assignments	15%
Mid-term	30%
Final Exam	40%

Course Title: Data Communications and Computer Networks
Course Number: INTE 341 same as INSY 441
Credit Hour: 4
Co-Requisite: Introduction to Information and Communication Technology

Course Description

This course introduces the basic principles and techniques of data communication in computer networks. Topics covered include: application of computer networks; overview of the OSI and TCP/IP reference models, network types; network protocols; analog and digital signals, modulation; guided and unguided transmission media, encoding, multiplexing, synchronous and asynchronous communication, transmission impairments, connecting devices, error detection and correction, multiple access methods, network topologies, network security, network management and an introduction to wireless networks.

Course Objectives

Upon completion of the course students should be able to understand and analyze:

- Basic data communication concepts and principles like topology and network types
- Understand the concept of data encoding, data transmission, transmission media, and resource sharing
- Different types of computer networks and network architectures
- The concept of path selection and routing
- The various security threats and the security mechanisms to use

Text Book

B. A. Forouzan. 2006. Data Communications and Networking (4th ed). ISBN-10
0071254420

References

- a. W. Stallings: Data and Computer Communications (7th ed), Prentice Hall, , 2004.
- b. D. E. Comer and R. E. Droms: Computer Networks and Internets, with Internet Applications (4th Ed), Prentice Hall, 2003.
- c. A. S. Tannenbaum: Computer Networks (4th ed), Prentice Hall, 2003.
- d. Networking Essentials Plus, Microsoft Press, ISBN:157231902x
- e. Patrick Ciccarelli & Christina Faulkner, Networking Foundations, 2004, Sybex Inc.
- f. Melissa Craft et el., Network+: Exam Prep, 1999, The Coriolis Group
- g. John Ray, Using TCP/IP, 1999, Que Corporation

Evaluation Scheme

Lab Assessment	20%
Class Exercises/Assignments	20%
Mid-term	20%
Final Exam	40%

Course Title: Object Oriented Programming
Course Number: INTE 411 same as INSY 311
Credit Hour: 4
Prerequisite: Fundamentals of Programming

Course Description

This course is designed to provide the fundamental theories; principles and techniques of object oriented programming. Topics to be dealt with are: classes, objects, data abstraction, encapsulation, information hiding, overloading, inheritance, polymorphism, exceptions handling. This course gives an opportunity for students to work on the Java programming language during the practical session to implement; test and experiment on object oriented paradigm of program design and implementation.

Course Objectives

Upon completion of the course students should be able to:

- Compare and contrast the two known programming paradigms structural programming and Object Oriented Programming,
- Understand basic object oriented concepts such as object, class, abstraction, hierarchy, modularity and encapsulation,
- Successfully carry out a project on the edit-compile-run cycle of software development in an appropriate software development environment,
- Use Java to implement and experiment on object oriented program development techniques and principles.

Text Book

Deitel & Deitel, Java How to Program, Pearson Education Inc., 3rd/8th ed., 1999/2010

References

1. Sanders K. E. and Andy Van Dam. 2005. Object-Oriented Programming in Java: A Graphical Approach, Preliminary Edition. ISBN-10 0321245741.
2. Shildt, Herbert. 2006. Java 2: the Complete Reference (Osborne Complete Reference List), 7th Edition, ISBN-10 0072263855. 1024 p.
3. Cay S. Horstmann and Gary Cornell, Core Java 2 Volume I – Fundamentals (7th ed), USA, Prentice Hall PTR, 2004
4. Cay S. Horstmann and Gary Cornell, Core Java 2 Volume II - Advanced Features (7th ed), USA, Prentice Hall PTR, 2004
5. Keneth Litwak, Pure Java 2, Sams Publishing Inc., 2000

Evaluation Scheme

Lab project:	30 %
Mid exam:	30 %
Final Examination:	40 %

Course Title: Internet Programming I
Course Number: INTE 312 same as INSY 312
Credit Hour: 3
Prerequisite: Fundamentals of Programming

Course Description

This course offers an overview of the internet and the World Wide Web. Topics include characteristics of web-based information systems; client-server architecture; web server and security, HTTP protocol; web page design and development; information architecture and visualization, static & dynamic pages and client-side programming using markup and scripting languages (HTML, JavaScript, VBScript);

Course Objectives

At the end of the course students should be able to:

- Understand the internet and World Wide Web(WWW).
- Grasp the essence and application of web-based information systems.
- Analyze, design and develop small scale web-based information systems.
- Produce both static and dynamic web pages.

Text Book

Shelly et al., HTML Comprehensive Concepts and Techniques, 2nd Ed., Thomson Course Tech.

References

1. Paul Dietel, Internet & World Wide Web: How to Program, 4th Edition, 2007, ISBN-10 0131752429.
2. Jennifer Niederst, Web Design in A Nutshell, 1999, O'Reilly & Associates inc., [2]
3. Linda & William Weinman, Creative html design.2, 2001, New Riders
4. Laura Lemay, Teach Yourself Web Publishing with HTML in 14 Days, 1995, Sams.net Publishing
5. Don Gosselin, JavaScript Comprehensive, 2000, Thomson Course Tech.
6. Eric M. & William J., Dynamic HTML in Action, 2nd Ed., 1999, Microsoft Press
7. Peter den Haan et al., Beginning JSP 2: From Novice to Professional, 2004, APress
8. Chris Goode et al., Beginning ASP.NET 1.0 with Visual Basic.NET,2002, Wrox Press Ltd.
9. Susane Clark et al., VBScript Programmer's Reference, 1999, Wrox Press Ltd.
10. Danny Goodman, Dynamic HTML – The Definitive Reference, 2002, O'Reilly

Evaluation Scheme

Lab Project	20%
Class Exercises/Assignments	20%
Mid-term Exam	20%
Final Exam	40%

Course Title: **Structured Systems Analysis and Design**
Course Number: **INTE 331 same as INSY 331**
Credit Hour: **3**
Prerequisite: **Introduction to Information and Communication Technology**

Course Description

This course covers information systems theory. Topics include organization and management; types of information systems; roles in development; development life cycle; information systems development methodologies; approaches to development, requirements structuring, structural modeling and analysis, principles of structured systems development using and the principles of modeling. An individual or team project involving system analysis and design is also a major component of this course.

Course objectives

At the end of the course students should be able to:

- Grasp the theories and principles of systems analysis and design
- Understand the concept of system thinking
- Conceptualize lifecycles of system development
- Internalize object oriented system analysis and design techniques
- Analyze complex systems to structure and organize them into manageable parts
- Perform analysis, design and implementation of small and medium scale information systems

Text Book

Hoffer, J. A. and Joey F. George. 2007. Modern System Analysis and Design 5^e
Joseph S Valacich, 648 p. ISBN-10 0132240769.

References

1. Shelly, Cashman, & Rosenblatt, System Analysis & Design, 4th Ed., 2001, Thomson Course Tech.
2. Kendall K.E. & Kendall J.E. Systems Analysis and Design(7th ed), USA, 816 p.
3. J.C.Wetherbe & N.P. Vitalari, System Analysis & Design: Best Practices, 4th Ed., West Publishing Company
4. J.W. Seatzinger et al., System Analysis & Design in a Changing World, Thomson Course Tech.
5. John G. Burch, System Analysis, Design & Implementation, 1992, Division of South Western Publishing

Evaluation Scheme

Class Exercises/Assignments	30%
Mid-term	30%
Final Exam	40%

Course Title: Computer Architecture and Organization
Course Number: INTE 342 same as INSY 242
Credit Hour: 3
Prerequisite: Introduction to Information and Communication Technology,
Digital Electronics and Logic Design

Course Description

This course exposes students to basic computer organization and architecture concepts. It covers: simple machine architecture, genealogy of microprocessors, von Neumann architecture, the system bus model, data representation and manipulation, organization of instruction sets and program execution, microprocessor organization, memory organization, organization of input and output subsystems, I/O interface; instruction set design philosophies, parallel processing, symmetric multiprocessing and clustering; case study of at least two microprocessor families and other components of computing system.

Course Objectives

At the end of the course students should be able to:

- Discuss the genealogy of microprocessors
- Understand the workings of microprocessors used in personal computers
- Explain the structure of the personal computer system
- Understand and differentiate the von neumann vs. The harvard architectures
- Describe the structure of instruction sets and their effect on registers and memory contents
- Cognize the input output organization of the computer system
- Describe the memory organization of the computer system

Text Book

Morris M. Mano, Computer Systems Architecture, 3rd Ed., Prentice Hall

References

1. Andrew S. Tanenbaum. 2005. Structured Computer Organization, 5^e. ISBN-10 0131485211. 800 p.
2. Mano, M. and Kime, C. 2007. Logic and Computer Design Fundamentals, (4th ed), ISBN-10 013198928X. 607 p.
3. John Hennessey and David Patterson: Computer Architecture: A Quantitative Approach, (4th ed), Morgan Kauffman Publishers, 2003.
4. William Stallings, Computer Organization & Architecture: Designing for Performance, 5th Ed., 1996, Prentice-Hall Inc.

Evaluation Scheme

Assignments:	20%
Mid exam:	30%
Final exam:	50%

Course Title: Computer Maintenance and Technical Support
Course Number: INTE 444 same as INSY 542
Credit Hour: 3
Prerequisite: Applied Physics, and Introduction to ICT

Course Description

This course is designed to provide students with the fundamentals of configuring, installing, diagnosing, repairing, upgrading, maintaining, computers and their peripherals. The topics include: PC hardware configuration, preventative maintenance, customer interaction, virus protection, safety and networks and installation of operating systems and applications.

Course Objectives

At the end of the course students should be able to:

- Apply standard safety procedures.
- Correctly operate appropriate tools, equipment, and materials
- Perform periodic maintenance on a computer workstation.
- Demonstrate knowledge of computer components, i.e., power supplies, motherboards, Memory, processors, hard drives, modems, and bus and port connections.
- Understand and install appropriate operating systems and drivers.
- Demonstrate knowledge of installation and maintenance of computer peripherals.
- Understand and troubleshoot basic computer networks.
- Manage time and prioritize the needs of the client or organization.

Text Book

Jean Andrews, A+ Guide to Managing and Maintaining Your PC, 6th Edition, Comprehensive, ISBN13: 9780619217587. 2006 edition, ISBN-10 0619217588.

References

1. Stephen J. Bigelow, Troubleshooting, Maintaining, & Repairing PCs, 2nd Ed., 1999, McGraw Hill. [1]
2. David Groth & Dan Newland, A+ Complete Study Guide, 2002, Sybex Inc. [1]
3. Osborne, A+ Certification Study Guide, 3rd Ed., 2001, McGraw Hill. [1]
4. David Groth, A+ Core Module Study Guide, Sybex Inc.
5. Peter Norton & John Goodman, Inside the PC, 7th Ed., 1997, Sams Publishing [1]
6. Tom Badgett et al., A Guide to Operating Systems Troubleshooting & Problem Solving, 1999, Thomson Course Tech. [1]
7. Stephen J. Bigelow, Troubleshooting & Repairing PC Drives & Memory Systems, 2nd Ed., 1998, McGraw Hill. [1]
8. Will Train, PC Upgrading & Maintenance, 1997, Sybex Inc. [1]
9. Beisse, A Guide to Computer User Support for Help Desk and Support Specialists, 3rd ed., 2001, Course Technology, ISBN 0-619-21510-0

Evaluation Scheme

Quizzes and Assignments:	30 %
Practical Work (Series of Lab. Reports):	70 %

Course Title: Computer Graphics
Course Number: INTE 455
Credit Hour: 3
Prerequisite: Data Structures and Algorithm Analysis

Course Description

Introduction to computer graphics starts with a brief survey of the main developments. Additional topics include image concepts: modeling, scaling, rotation, translation, representation, coloring, brightness, shadow, texture and other rendering methods. The course also includes two-dimensional graphics: point plotting techniques, line drawing algorithms, clipping, windowing and shading two-dimensional transformations, homogeneous coordinates and the use of matrices in representing chain of transformations. Animation and visualization, instant drawing, color table, page swapping and screen copying are included. Three-dimensional graphics is also covered including modeling, transformations, perspective projections, clipping, removal of hidden surfaces and factors for giving depth in 3D graphics.

Course Objectives

At the end of this course, students will:

- Understand graphical imaging concepts;
- Internalize the creation and development of two-dimensional graphics;
- Have an understanding of two dimensional transformations;
- Develop skills in animation and visualization;
- Acquire knowledge on three-dimensional graphics

Text Book

Shirely, Peter. 2009. Fundamentals of Computer Graphics. 804 p. ISBN-10 1568814698.

References

1. Donald Hearn & Pauline Paker, Computer Graphics, 2nd Ed.,
2. V.K. Pachghare, Comprehensive Computer Graphics, New Delhi,
3. S. Harrington, Computer Graphics A programming Approach, McGraw Hill

Evaluation Scheme

Assignments and Project:	50 %
Final Examination:	50 %

Course Title: Human Computer Interaction
Course Number: INTE 433
Credit Hour: 3
Prerequisite: General Psychology, Introduction to ICT

Course Description

This course describes the human psychological response of computer system users. Topics include cognitive principles and their application to interfaces with computer products. The course presents analysis of human interaction with products such as avoidance and feedback that show the behavior of user populations that differ with regard to their abilities and characteristics in using both software and hardware products. The importance of the user abilities and characteristics in the usability of products are covered. The course is backed up by a series of usability laboratory sessions.

Course objectives

At the end of the course students should be able to:

- Explain cognitive principles and their applications
- Cognize the conceptual terms for analyzing human interaction with products
- Understand theories and principles of human computer interaction
- Internalize the capabilities of users, and
- Design and develop technologies that fit the organization and work practices.

Text Book

Jennifer Preece, Yvonne Rogers, Helen Sharp, Interaction Design: Beyond Human-Computer Interaction, 2e., ISBN-13: 978-0-470-01866-8 (ISBN-10: 0-470-01866-6), Paperback, 800 pages, 2007.

References

1. Human-Computer Interaction (3rd Ed): by Alan Dix, Janet E. Finlay, Gregory D. Abowd, and Russell Beale
2. Holtzblatt, K., Wendell, J. B., and Wood, S. (2004). Rapid Contextual design: A How-to Guide to key techniques for user-centered design, Morgan Kaufmann

Evaluation Scheme

Lab project:	30 %
Assignments:	20 %
Final Examination:	50 %

Course Title: Internet Programming II
Course Number: INTE 415 same as INSY 411
Credit Hour: 3
Prerequisite: Internet Programming I, Fundamentals of Database Systems

Course Description

Internet Programming II is a continuation of the course Internet Programming I. Topics to be covered includes: client-side programming using scripting languages like JavaScript; server-side programming and scripting using PHP and web-based database applications development. These topics will be paralleled with laboratory sessions and practical assignments and projects.

Course Objectives

At the end of the course students should be able to:

- understand the internet and World Wide Web
- grasp essence and application of client-server web-based information systems
- analyze, design and develop dynamic web-based commercial systems

Text Book

Paul Dietel. 2007. Internet & World Wide Web: How to Program (4th Edition).ISBN-10 0131752429. 1424 p.

References

1. Don Gosselin, JavaScript Comprehensive, 2000, Thomson Course Tech.
2. Peter den Haan et al., Beginning JSP 2: From Novice to Professional, 2004, APRESS
3. Chris Goode et al., Beginning ASP.NET 1.0 with Visual Basic.NET,2002, Wrox Press Ltd.
4. Susane Clark et al., VBScript Programmer's Reference, 1999, Wrox Press Ltd.
5. Danny Goodman, Dynamic HTML – The Definitive Reference, 2002, O'Reilly
6. Danny Goodman, JavaScript Bible, 3rd Ed., IDG Books Worldwide Inc.,
7. Shelly Cashman Series, HTML Complete Concepts and Techniques, 3 rd Edition, 2005, ISBN 0-619-25502-1

Evaluation Scheme

Lab Projects	30%
Class Exercises/Assignments	10%
Mid Exam	20%
Final Exam	40%

Course Title: Web Technologies
Course Number: INTE 452
Credit Hour: 3
Prerequisite: Internet Programming I and II

Course Description

This course exposes students, beyond designing web sites, to the prominent technologies and standards being used on the web. Representative topics to be covered include introduction to web standards, transformations of XML documents, programming language bindings, introduction to web technologies for E-commerce and on-line payments; advanced web services and associated standards.

Course Objectives

At the end of the course, the students will:

- know the important technologies and standards currently used on the web,
- Be able to use the web for accessing relevant information,
- Understand web services

Text Book

Jeffrey C. Jackson. 2006. Web Technologies: A Computer Science Perspective, Prentice Hall. ISBN-10 0131856030. 574 p.

References

1. Mark Arnold et al., Administering Apache, 2000, McGraw Hill
2. Ajay Vohra & Deepak Vohra, Pro XML Development with Java Technology, APress[0]
3. Roger Jennings, Visual Basic.NET XML Web Services, 2002, McGraw Hill
4. Deitel & Deitel, Internet & World Wide Web How to Program, , 4th ed., 2009 Pearson Education Inc.[1]
5. Peter den Haan et al., Beginning JSP 2: From Novice to Professional, 2004, APress
6. Chris Goode et al., Beginning ASP.NET 1.0 with Visual Basic.NET, 2002, Wrox Press Ltd.

Evaluation Scheme

Lab assessment	20%
Class Exercises/Assignments	20%
Mid Examination	20%
Final Examination	40%

Course Title: **Multimedia Systems**
Course Number: **INTE 457** **same as** **INSY 432**
Credit Hour: **3**
Prerequisite: **Data Structures and Algorithm Analysis**

Course Description

Multimedia data has become an indispensable part of our daily life. It is also one of the critical applications in broad areas of use. In this course students will be introduced to the principles and current technologies of multimedia systems. The course includes the topics introduction to multimedia and multimedia systems, multimedia data representation, multimedia applications, multimedia tools, hands on practice on multimedia system creation using tools, multimedia standards, communication requirements of multimedia data and multimedia information retrieval.

Course Objectives

At the end of the course students should be able to:

- Understand principles and current technologies of multimedia systems,
- Comprehend applications of multimedia systems in day to day life
- Design and develop electrifying multimedia rich contents for various application domains like web sites and databases

Text Book

Suzanne, Jennifer, et al., Multimedia Basics, 2004, Thomson Course Tech.

References

1. Tay Vaughan. 2006. Multimedia: Making it Work, 7th ed. ISBN-10 0072264517.
2. Ralf Steinmetz and Klara Nahrstedt, Multimedia Fundamentals: Media Coding and Content Processing; Prentice Hall,
3. Ze Nian Li and M. S. Drew, Fundamentals of Multimedia, Prentice Hall, 2004.
4. G. Lu, Multimedia Database Management Systems, 1999, Artech House [0]
5. K.R. Rao et al., Multimedia Communication Systems, 2002, Prentice Hall

Evaluation Scheme

Multimedia presentation	30%
Class Exercises/Assignments	20%
Mid-term	20%
Final Exam	30%

Course Title: IT Project Management
Course Number: INTE 460 same as INSY 452
Credit Hour: 3
Prerequisite: Structured Systems Analysis and Design

Course Description

The purpose of this course is to provide students with practical experience in the management of development projects. It deals with planning, organizing, staffing, controlling, and directing projects. It lays major emphasis on project planning, techniques for monitoring and controlling projects, quantitative methods and tools, and leadership issues in project management. A term project that involves the development of a project plan for a non-trivial project will be required. Students will gain experience by establishing and actively participating in a development team that comprises of both IS and IT students. Each team will have approximately an equal number of IS and IT students.

Course Objectives

At the completion of the course the student will be able to:

- Define a project goal and create the project charter
- Create a feasibility plan and establish a priority list
- Determine strategy and budget dollars
- Work with management and define their role
- Determine project expenses - including estimated required hours
- Delegate responsibilities and manage project schedules
- Implement a project management approach to tracking progress and implementing
- Develop a project management system to track costs and schedule quality testing

Text Book

Jack R. Meredith, Scott M. Shafer, Sutton, Margaret Sutton, Information Systems Project Management, 2007, ISBN-10 0975914650

References

1. Phillips, Joseph, IT Project Management: On Track from Start to Finish, 2nd edition, 2004, McGraw Hill, Osborne.
2. Baine, Kenneth R. 2004. Integrated IT Project Management- A Model-Centric Approach. Artech House, Boston.
3. Lock, Dennis. 2007. Project Management, 9th ed. Gower.

Evaluation Scheme

Project Work	70%
Final Exam	30%

Course Title: **Advanced Programming**
Course Number: **INTE 416**
Credit Hour: **3**
Prerequisite: **Fundamentals of Database Systems, Object Oriented Programming**

Course Description

This course is expected to expose students to more advanced programming philosophies, theories, techniques and practices based on the knowledge and skills acquired in the pre-requisite courses. It uses complex and state-of-the-art IDEs being used in the academia and industry for software design, development and testing. Modern programming languages, like Java and C#, and corresponding APIs could be used to exemplify the philosophies and principles of advanced program design and development. The course is accompanied by a rigorous student-oriented laboratory work.

Course Objectives

At the end of the course students should be able to:

- Explain advanced programming philosophies, theories and principles,
- Use java/c# effectively as a programming language,
- Apply techniques of systematic debugging and performance tuning
- Analyze program requirements, design and implement a full-fledged (that has both a front-end and back-end) software solution using Java/C#.

Text Book

Deitel and Deitel, Java: How to Program , 8th Edition, 2009.

References

1. Walter Savitch, Problem Solving with C++: Object Oriented Programming, 7th Edition, 2008, ISBN-10: 0321531346
2. Steve C McConnell, Code Complete: A Practical Handbook of Software Construction, Microsoft Press.
3. Molay, Understanding Unix/Linux Programming: A Guide to Theory and Practice, Prentice Hall.
4. C++ Programming. Program Design including Data Structures by D.S. Malik, 2007

Evaluation Scheme

Programming project:	30 %
Assignments:	30 %
Final Examination:	40 %

Course Title: Systems and Network Administration
Course Number: INTE 445 Same as INSY 442
Credit Hour: 3
Prerequisite: Data Communication and Computer Networks

Course Description

This course covers concepts and principles of networked computer systems management and administration. The networked systems may span from simple peer-to-peer networks to complex server-based networked systems and resources. Specific topics include networking fundamentals, server management, network security, network configuration and management. This course provides a practical problem solving approach using any combination of Windows 2003/2008, UNIX/Linux based systems, and/or Novell Netware systems.

Course Objectives

At the end of the course, students will be able to:

- Manage the day-to-day administrative tasks necessary to maintain a business computer network,
- Create user and group accounts, profiles, and setting permissions,
- Set up and administer a network printer,
- Audit, backup and recovery, and monitoring resources,
- Use software tools such as Microsoft Windows 2003/2008, UNIX/Linux.

Text Book

Mark Burgess, Principles of Network and Systems Administration (2nd edition), 2004, ISBN 0-470-86807-4

References

1. Michael Aubert, MCSE Microsoft Windows Server 2003 Active Directory Enhanced, 2006, Thomson Course Tech.
2. Andrew S. Tanenbaum, Computer Networks, 3rd Ed., 1996, Prentice Hall
3. Patrick Ciccarelli & Christina Faulkner, Networking Foundations, 2004, Sybex Inc.
4. Melissia Craft et al., Network+: Exam Prep, 1999, The Coriolis Group
5. John Ray, Using TCP/IP, 1999, Que Corporation
6. William Stallings, Data and Computer Communications, 2004, Prentice Hall.
7. J. F. Kurose and K. W. Ross: Computer Networking: A Top-Down Approach to the Internet (3rd ed), Pearson Education, Inc., 2005.

Evaluation Scheme

Class Exercises/Assignments	20%
Practical laboratory work	40%
Final Exam	40%

Course Title: Network Device Configuration and Troubleshooting
Course Number: INTE 546
Credit Hour: 4
Prerequisite: Data Communications and Computer Networks

Course Description

This course is directed towards designing a network and troubleshooting network problems and fixing them. Topics include the functions of networking, security, the Host-to-Host communications model, packet delivery process, connecting to an Ethernet LAN, solving network challenges with switched LAN technology, switches, routers, remote devices, IP addressing schemes and IP services to meet network requirements for a small branch office. The practical side of this course is directed towards working with network hardware. Topics include configuring and troubleshooting switches, routers, remote devices, IP addressing schemes and IP services. Students will assemble the system, operate it, and perform troubleshooting and maintenance.

Course Objectives

At the end of the course students should be able to:

- Set up the basic configurations for switches and routers as applied to lans and wans
- Formulate basic access control lists to provide security for a network
- Perform basic troubleshooting of typical network problems
- Design a simple lans and wans using cisco devices
- Setup ip sub-networks with appropriate ip addresses and subnet masks
- Set up operate the hardware for basic configurations for switches and routers as applied to lans and wans
- Carryout basic troubleshooting and maintenance of typical network problems
- Understand remote monitoring and maintenance.

Text Books/References

- Peterson L. L. and B S Davie. 2007. Computer Networks: A Systems Approach, 4th edition. 848 p. ISBN-10 0123705487.
- Network device manuals
- Todd Lammle, CCNA Study Guide, 4th Ed., Sybex Inc.
- Todd Lammle, CCNA Study Guide, 2nd Ed., Sybex Inc.

Evaluation Scheme

Exams:	40 %
Design and Laboratory work:	60 %

Course Title: Information Assurance and Security
Course Number: INTE 564 Same as INSY 554
Credit Hour: 3
Prerequisite: Systems and Network Administration, and Advanced Database Management Systems

Course Description

The course will cover historical background of security, fundamentals of Information Systems security, privacy and the importance of security for Information Systems. Additional topics include protection schemes, public and private key encryption techniques, and security at different layers, malicious security threats (viruses, worms, Trojan horses) and web security.

Course Objectives

At the end of the course students should be able to:

- Understand potential threats of information systems
- Comprehend theories and principles of information security
- Plan security protection mechanisms and analyze their strength and limitations
- Demonstrate how to secure computer resources and control users accesses

Text Book

Ciampa. 2009. Security Awareness: Applying Practical Security in Your World, ISBN-10: 1435454146.

References

1. S. Bosworth and M. E. Kabay, Computer Security Handbook (4th ed) , Willey Inc. , 2002.
2. D. Schweitzer, Incident Response, Computer Forensics Toolkit, Wiley, 2003.
3. S. Garfinkel, G. Spafford and A. Schwartz, Practical Unix and Internet Security (3rd ed), O'Reilly, 2003.

Evaluation Scheme

Assignments and Quizzes	20%
Mid exam:	30 %
Final Examination:	50 %

Course Title: Senior Project
Course Number: INTE 566
Credit Hour: 3
Prerequisite: Advanced Programming, Object Oriented Software Engineering, Systems and Network Administration

Course Description

The purpose of this course is to enable students to put together and materialize the various concepts and principles they have acquired through the years in solving a real world problem. They will identify and define a problem area worth a semester period, write a project proposal, develop requirement analysis, write a project management plan and then carry out the project according to the plan. To accomplish these students will be organized in teams and assigned an advisor who mentors them throughout the project and guides them to successful completion. Evaluation will be conducted by a panel of instructors which will comprise of the advisor and examiners. To provide an all-rounded evaluation there will be written report submission and oral presentation at the end of the project. The grade will be based on the quality of the reports, the actual software/system developed and the oral presentation.

Course Objectives

The aim of the senior project is to enable students:

- Identify and select real world organizational problems that could be solved using computer systems
- Perform feasibility analysis of the problem proposed
- Manage projects efficiently and effectively
- Combine system development and project management techniques and strategies
- Organize and manage teams properly by the use of proper communication and coordination mechanisms
- Develop soft skills that polish and advance their technical expertise in the work force
- Prepare project documentations and presentations professionally
- Develop and nurture the habit of receiving and giving positive criticism and feedback

Evaluation Scheme

Project reports	40 %
Quality of the software/system	40%
Oral presentation	20%

Course Title: Information and Society
Course Number: INTE 504 same as INSY 502
Credit Hour: 3
Prerequisite: Introduction to Information and Communication Technology

Course Description

This course covers information, information overload, computers and their use, the social system, and societal evolution. Topics include social impacts of information, physiological, psychological, cultural, and social interactions; the information economy (occupational changes, impacts on the work force, telecommuting), information economics (market structure and pricing, etc), E-governance (computerization and democratization), computer crimes and security mechanisms, property rights, privacy, surveillance, and censorship. Moreover, issues regarding regulation, the digital divide and ethics of computing professional will be discussed.

Course Objectives

Through this course students will be able to:

- Comprehend the impact of information on society
- Understand e-governance
- Conceptualize and use ergonomics of computers
- Recognize ethical issues regarding information technology and adhere to the same

Text Book

M. Martin and R. Schinzinger, Introduction to Engineering Ethics, 2009, 288 pages, ISBN-10: 0072483113

References

1. Accreditation Board for Engineering and Technology (ABET) Engineering Criteria 2000 Third Edition, <http://www.ele.uri.edu/People/Faculty/daly/criteria.2000.html>
2. <http://www.acm.org/constitution/code.html> ACM Code of Ethics & Profess. Conduct
3. www.ieee.org/about/whatis/code.html IEEE Code of Ethics
4. Fuchs, Christian. 2008. Internet and society: social theory in the information age. Routledge, New York

Evaluation Scheme

Continuous Assessment (quizzes and assignments)	30%
Mid-Term	30%
Final Exam	40%

Course Title: **Wireless Communications and Mobile Computing**
Course Number: **INTE 542**
Credit Hour: **3**
Prerequisite: **Data Communication and Computer Networks**

Course Description

This course on wireless communication includes an overview of current wireless systems; wireless channel and system models; cellular communications, multiple access schemes and wireless communication systems standards (1G/2G/3G systems). Topics on Mobile Computing include an introduction to mobile computing, mobile devices, and trends of mobile computing, mobile communication protocols and mobile operating systems.

Course Objectives

At the end of the course students should be able to:

- Explain principles of current wireless systems.
- Understand wireless channel and system models.
- Grasp mobile devices and their computing.

Text Book

1. P. Zheng et al., Wireless Networking Complete, 2009, 300 pages, ISBN-10: 0123750776
2. Reza B'Far, Roy T. Fielding, Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML, Cambridge University Press, 2005, ISBN 0521817331, 9780521817332

References

1. T. S. Rappaport, Wireless Communications: Principles & Practice(2nd ed), USA, Prentice-Hall: Upper Saddle River, 2002
2. The Essential Guide to the Business of U.S. Mobile Wireless Communications, John P. Burnham, 2002, Prentice Hall
3. Tse David & Pramod Viswanath, Fundamentals of Wireless Communication

Evaluation Scheme

Lab project:	30 %
Assignments:	20 %
Final Examination:	50 %

Course Title: Internship
Course Number: INTE 462 Same as INSY 551
Credit Hour: 3
Prerequisite: Completing Third Year

Course description

This course supplements the student's academic program with experiential education. The internship experience will be guided by a learning contract outlining expectations and academic components. The internship will occur during the summer break between the third and fourth year. The intern will work regular work days for two and a half months. Students are expected to concentrate on the major ICT areas of the organization they are engaged during their attachment.

Objectives

During the time of the internship students are expected to fully engage themselves with all aspects of the organizational ICT infrastructures, systems and services including but not limited to:

- Legacy systems (both hardware and software) being used, migrations from old to modern systems (if any), etc
- How organizations manage their ICT needs and requirements
- Network systems being used and maintained, technologies(both hardware and software) used, services delivered, etc
- Operating systems and other software tools used
- The strategy deployed to respond organizational software needs
- Web systems and technologies being used
- Users expectations and satisfactions of the ICT services
- How end users' requests are managed
- Detailed knowledge of organizational ICT infrastructures and strategies
- New ways of doing things in ICT

Albeit an intern is expected to be effortful and successful in establishing all-rounded personality addressing the aforementioned areas it is also encouraging to find a specific area of interest and explore more deeply. For instance, after exploring the overall ICT infrastructures and systems of an organization a student may become more interested concentrate his/her effort either in the networking systems or software development or web development and services of the organization.

Evaluation Scheme

Daily reports and accomplishments	40%
Special project accomplished and report delivered	40%
Executive interview (viva voce)	10%
Job performance evaluation	10%

Course Title: Data Structures and Algorithms Analysis
Course Number: INTE 341 same as INSY 314
Credit Hour: 3
Prerequisite: Object Oriented Programming

Course Description

This course focuses on the study of data structures, algorithms and program efficiency. It helps students not only to write correct programs but also to evaluate their efficiency in terms of processor time utilization and memory usage. Topics include analysis of time and space requirement of algorithms; program efficiency improving techniques; abstract data types such as linked lists, stacks, queues, and trees; simple and advanced searching and sorting algorithms. By making object oriented programming as a prerequisite it is intended to deliver this course using object oriented programming paradigm. The course is accompanied by rigorous laboratory sessions.

Course objectives

At the end of the course students should be able to:

- Understand and explain the theories and principles of data structures and algorithms
- Grasp the essence of writing efficient programs
- Comprehend how to create abstract data types and structures
- Analyze programs' space and time complexity
- Write efficient programs using the appropriate data structures and algorithms
- Explain the workings, pros and cons of sorting and searching algorithms

Text Book

Richard & Lewis, Fundamentals of Object Oriented Programming & Data Structures in Java, 2000, Cambridge University Press

References

1. Kathryn E. Sanders & Andries van Dam. 2005. Object Oriented Programming in Java: A Graphical Approach. ISBN 0-321-24574-1.
2. Horowitz, Ellis, Sartaj Sahni & Dinesh Mehta. 1995. Fundamentals of Data Structures in C++. Computer Science Press.
2. Reingold, Edward M. & Wilfred J. Hansen. 1983. Data Structures. CBS Publishers & Distributors.
3. Sahni and Sartaj. 1999. Data Structures, Algorithms and Applications in C++. McGrawHill.
4. Weiss and Mark. 1997. Data Structures and Algorithms Analysis in C. Benjamin Cummings Publishing.

Evaluation Scheme

Assignments and Project:	30%
Mid-term:	30%
Final Exam:	40%

Course Title: Object Oriented Software Engineering
Course Number: INTE 431
Credit Hour: 3
Prerequisite: Structured Systems Analysis and Design

Course Description

This course provides a general introduction of software engineering including history of software development from techniques that have been used and their pros and cons, software quality assurance and management, and software project management issues. Object Oriented techniques in software life cycle; Object oriented concepts: object, class, encapsulation, data hiding, inheritance, polymorphism and reuse. Principles of object-oriented analysis: definition of classes, attributes and methods, identification of association, aggregation and generalizations. Principles of object-oriented design; system design, object design. Software testing techniques; traditional testing, object-oriented software testing; Configuration management; Software maintenance; and Computer Aided Software Engineering - CASE tools.

Course objectives

At the end of the course students should be able to:

- Comprehend general concepts and principles of software engineering
- Understand and work with software development life cycles and process models,
- Cognize how to manage software projects,
- Explain how to work in a teams during developing software,
- Internalize object-oriented analysis, design and implementation techniques,
- Apply and use CASE tools for the development of software

Text Book

Roger Pressman. 1997. **Software Engineering: A Practitioner's Approach**. 4th Edition. McGraw-Hill.

References

1. Bernd Bruegge and Allen Dutoit. 2000. **Object Oriented Software Engineering: Conquering Complex and Changing Systems**. Prentice Hall.
2. Stephen Schach. 1999. **Classical and Object Oriented Software Engineering with UML and Java**, 4th Edition, McGraw-Hill,
3. Simon Bennet, Steve McRobb, and Ray Farmer. 2002. **Object Oriented Systems Analysis and Design using UML**. McGraw-Hill.
4. Timothy Lethbridge and Robert Laganieri. 2002. **Object Oriented Software Engineering: Practical Software Development using UML and Java**. McGraw-Hill.
5. Shari Lawrence Pfleeger. 2001. **Software Engineering: Theory and Practice**. Prentice Hall.
6. James Rumbaugh, Ivar Jacobson, and Grady Booch. **The Unified Modeling Technique: Reference Manual**. <http://www.rational.com/uml>.
7. Hans-Erik Eriksson and Magnus Penker. 1998. **UML Toolkit**. John-Wiley and Sons, Inc.
8. Scott w. Ambler. **The Object Primer**. 3rd Edition. University of Cambridge Press. 2004.

Evaluation Scheme

Assignments and Projects	40%
Mid-term Exam	30%
Final Exam	30%

Course Title: Introduction to Artificial Intelligence
Course Number: INTE 432 same as INSY 434
Credit Hour: 3
Prerequisite: Object Oriented Programming, Introduction to Logic

Course Description

This course introduces basic principles and current research topics in Artificial Intelligence. It includes a formal representation of real world problems, search of problem spaces for solutions, and deduction of knowledge in terms of logic and reasoning. Application of these methods is made to important areas of Artificial Intelligence including Expert Systems, language understanding, machine learning, neural networks, computer vision and robotics.

Course Objectives

On completion of this course students should be able to:

- Describe the key components of the artificial intelligence (AI) field
- Outline search strategies and solve problems by applying a suitable search method
- Grasp how agents reasoning works
- Understand the issues related to agent planning, handling uncertainty, learning from observation and communicate.

Text books:

Stuart J. Russell and Peter Norvig, Artificial Intelligence: Modern Approach (3rd edition), USA, Prentice Hall, 2009, ISBN10: 0136042597.

References

1. James A. Anderson, An Introduction to Neural Networks, 1995, MIT Press. [1]
2. Rich Elaine, Artificial Intelligence, McGraw Hill [0]

Evaluation Scheme

Lab project:	30 %
Mid exam:	20 %
Final Examination:	50 %

Course Title: UNIX System Administration and Support
Course Number: INTE 440 same as INSY 541
Credit Hour: 3
Prerequisite: Operating Systems, Data Communications and Computer Networks

Course description

This course is designed to introduce the students how to perform basic and advanced systems administrative tasks on UNIX environments with the intention of enabling them to have the skills to manage users, services, files, hardware devices and networks. Topics covered includes but not limited to installation and configuration of a UNIX based operating system, maintenance and monitoring of files systems, managing users. Monitoring and troubleshooting system performance, developing and customizing user login and other start-up scripts. Managing system services, Shell scripting, automating system services. Installing and updating application software, connecting to a network, Implementing file servers, print servers and web server, mail servers, Security administration, Firewalls and IP masquerading, system backups and restores, and package and patch administration.

Course Objectives

Upon successful completion of this course, students should be able to:

- Describe, define and understand the open and free software principles and mottoes
- Understand the various UNIX and Linux based operating system distributions
- Install and configure a Linux based operating system
- Use and manage the operating system installed and configured
- Monitor and fine tune performances of typical operating system features
- Manage users and other resources in the operating system, possibly on a networked system
- Install, configure and test file, mail, print and web servers
- Perform security related configurations and patch updates
- Perform system backups and restores

Text Book

Evi Nemeth, Gareth Snyder et al., UNIX System Administration Handbook, 3rd Ed., 2001, Prentice Hall

References

1. Dave Taylor, Sams Teach Yourself UNIX System Administration in 24 Hours, Sams Publishing
2. David Tansley, Linux and UNIX Shell Programming
3. Mark Burgess, Principles of Network and System Administration

Evaluation Scheme

Continuous Assessment	25%
Midterm exam	20%
Project work	25%
Final Exam	30%

Course Descriptions for Major Elective Courses

Course Title: Geographical Information System and Remote Sensing
Course Number: INTE 556
Credit Hour: 3
Prerequisite: Computer Graphics

Course Description

This course prepares students to use geo-referenced data to produce geographical presentations. Topics include various kinds of coordinate systems and transformation between them, many different ways of computing with geo-referenced data and choice in presentation parameters such as color schemes, symbol sets, and medium used.

Course objectives

At the end of the course students should be able to:

- explain concepts and principles of geographic information systems
- internalize concepts and techniques of geo-referencing
- understand presentations techniques of location or geo-referenced information
- capture location data and form maps

Text Book

DeMers M.N., Fundamentals of Geographic Information Systems, 2006, ISBN-10 0470129069.

References

1. Chang, Kang-tsung 2009. Introduction to Geographic Information Systems with Data Files CD. 448 p. ISBN-10 007729436X.
2. C. P. Lo & Albert K.W. Yeung, Concepts and techniques of Geographic Information Systems, Prentice Hall of India, New Delhi, 2005
3. Albrecht, J 2007. Key Concepts and Techniques in GIS. London: Sage.

Evaluation Scheme

Lab project:	30 %
Assignments:	10 %
Mid-term:	20%
Final Examination:	40 %

Course Title: Introduction to Distributed Systems
Course Number: INTE 543
Credit Hour: 3
Prerequisite: Data Communication and Computer Networks

Course Description

This course includes topics such as basic concepts in distributed systems and their architectures, communication mechanisms; synchronization related issues, consistency and replication, security, distributed files systems and distributed middleware applications of the trade. Moreover, the course covers both the hardware and software aspects of distributed systems. It is accompanied by project work that gives students hands-on experience and exposure to the de facto distributed system implementations like RPC of Windows and RMI of Java.

Course Objectives

At the end of the course students should be able to:

- Understand concepts, principles and architectures of distributed systems
- Explain about remote procedure calls and
- Comprehend concepts in distributed file systems, transactions, consistency and data security

Text Book

A.S. Tanenbaum, Maarten Van Steem, Distributed Systems, Principles and Paradigms; 2006, ISBN 10: 0132392275.

References

1. Distributed Systems, Concepts and design, G. Coulouries, J. Dullimore, Y. Kendberg
2. Distributed Systems, S.Mullender

Evaluation Scheme

Mid Exam:	30 %
Assignments:	30 %
Final Examination:	40 %

Course Title: IT and Economic Development
Course Number: INTE 505 same as INSY 503
Credit Hour: 3
Prerequisite: Information and Society

Course Description

The development of information systems considers the implications of the “Information Age” for the majority population that live in “developing” countries. The course considers answers to the following questions:- What professional and ethical issues are raised by the so called “Digital Divide?”; Does adoption of information technology lead to economic development; Can information technology support sustainable development?

This course combines a range of topics from information systems, the social sciences, and economics, as well as other social and professional issues. It examines factors such as knowledge, place, time, capital, institutional relationships, learning, and policy in understanding and promoting technology-based economic development. Policies to promote high technology firms, technology development and transfer, and regional techno poles are examined.

Course Objectives

At the end of the course students should be able to:

- Explain impact of IT in economic development
- Understand factors dealing technology-based economic development
- Analyze polices that promote information technology transfer and development

Text Book

M. Warschauer, Technology and Social Inclusion: Rethinking the Digital Divide, 2004, ISBN-10: 0262731718

References

1. Wilson, E. J. (2004). The information revolution and developing countries. Cambridge, MA: MIT Press.

Evaluation Scheme

Project paper:	40 %
Assignments:	10 %
Mid-Term	20%
Final Examination:	30 %

Course Title: Formal Language Theory
Course Number: INTE 511
Credit Hour: 3
Prerequisite: Advanced Programming, Mathematics II

Course Description

This course focuses on grammars and automata: Regular grammars and finite state automata; Context free grammars and pushdown automata. It covers foundation concepts and theory on how artificial languages are designed and work.

Course Objectives

Upon the completion of this course, students should be able to understand:

- Regular grammars and languages;
- Deterministic and non-deterministic finite state automata(DFSA and NFSA) and their relationships with regular languages;
- Regular expressions and their properties;
- Equivalent among the DFSA, NFSA and regular expressions;
- Context free grammars and languages;
- Pushdown automata and their properties and relationships with context free languages.

Text Book

Peter Linz, An Introduction to Formal Language Automata, D.C. Heath, 1990.

References

1. Herbert L. D. & Michael J. J, Programming Languages: Structures & Models, 2nd Ed., 1995, PWS Publishing
2. Robert W. Sebesta, Concepts of Programming Languages, 4th Ed., 1999, Addison Wesley Inc.
3. K.L.P Mishra, Theory of Computer Science, Prentice Hall Inc., 2003.
4. John C. Martin, Introduction to Language and the Theory of Computation, Tata McGraw Hill, 2004.

Evaluation Scheme

Lab project:	20 %
Assignment and exercises:	50 %
Final Examination:	30 %

Course Title: Selected Topics In IT
Course Number: INTE 568
Credit Hour: 3
Prerequisite: Completing Third Year

Course Description

This course gives an opportunity for the faculty to introduce emerging and new technologies and applications to students. Until the next curriculum revision the course may vary across the various batches so that it reflects new and state-of-the-art technologies. The specific course content will be decided by the Faculty Academic Council formally considering the availability of resources and the then technological developments.

Course Objectives

The aim of this course is to expose students with:

- Current and state-of-the-art technologies in software development, hardware technology and computer systems
- Self learning and updating oneself as technology changes
- New tools and techniques of doing things in ICT
- Work collaboratively in the cyberspace community

Evaluation Scheme

Assignments and Projects	40%
Mid-term Exam	30%
Final Exam	30%

Course Title: System Simulation and Modeling
Course Number: INTE 558
Credit Hour: 3
Prerequisite: Structured Systems Analysis and Design, Multimedia Systems

Course Description

The course presents a holistic view of the modeling and simulation enterprise by starting from a general methodology which stresses the generic, application-independent aspects of modeling formalisms and their implementation. Topics covered include basic introduction to modeling and simulation, model syntax and semantics, system specification hierarchy, model classification, state automata and petri nets, higraphs and state charts, pseudo-random generators, input/output analysis, discrete event world views, process interaction, discrete event system specification, animation of simulation results, continuous-time models, solvers, sorting, population dynamics, system dynamics and object-oriented modeling of physical systems

Course Objectives

At the end of the course, students will:

- Understand modeling and simulation from methodology to implementation,
- Apply modeling and simulation techniques in real world problems
- Explain how virtual reality is changing how we see and interact with our environment
- Apply the computer system can be used to simulate and emulate natural and man-made systems for various purposes

Text Book

Banks J, John Carson, Barry Nelson, and David Nicol. 2009. Discrete event System Simulation, 5e., 640 p. ISBN-10 0136062121.

References

1. Bernard P. Zeigler, Herbert Praehofer, and Tag Gon Kim, Theory of Modeling and Simulation (2nd edition),USA, Academic Press, 2000.
2. Paul A. Fishwick, Simulation Model Design and Execution, USA, Prentice Hall, 1995.
3. Harrell et al., Simulation using Promodel, 3rd ed., 2000, McGrawHill [1]

Evaluation Scheme

Lab project:	30 %
Mid exam:	20 %
Final Examination:	50 %

Course Title: Introduction to Compiler Design
Course Number: INTE 513
Credit Hour: 3
Prerequisite: Data Structures and Algorithm Analysis

Course Description

This is a course for those who are interested in the design and practice of programming languages. A compiler enables us to use a high-level programming language like C or Java by translating programs into low-level machine code. Understanding how compilers work is essential if you want to be a good programmer. The study of compilers also includes interesting ideas in translation and optimization with sparse resources. To be specific the course covers overview of a compiler, Lexical Analysis: regular expressions and finite-state machines, Simple Parsing: context-free grammars, top-down and bottom-up parsing, LL(1) parsing: efficient top-down parsing, Shift-reduce parsers: introduction to bottom-up parsing, SLR/LR parsing: fast and efficient bottom-up parsing, Type checking: checking semantics of program, Semantics and code generation: from a high-level language to assembly language, Optimization: an introduction to various types of code optimization.

Course Objectives

At the completion of this subject, students should:

- Understand the purpose and workings of compilers
- Explain how compilers make translations
- Comprehend how syntax and semantic checking works
- Use lexical analysis on regular expressions
- Use lexical analysis and parsing tools
- Knowledge of how to design a compiler

Text Book

Alfred V. Aho et al., Compilers: Principles, Techniques & Tools, 1986

References

1. Kenneth Loudon. 1997. Compiler Construction: Principles and Practice. PWS Publishing Company.
2. John Levine, Tony Mason & Doug Brown. 1992. **lex & yacc** (2nd edition). O'Reilly & Associates, Inc.
3. Andrew Appel. 2002. Modern Compiler Implementation in Java (2nd Edition). Cambridge University Press.
4. Aho, Lam, Sethi and Ullman. 2007. Compilers: Principles, Techniques, and Tools (2nd Ed.). Addison Wesley.

Evaluation Scheme

Assignment and project:	20 %
Mid exam:	50 %
Final Examination:	30 %

Course Title: Introduction to Telecom Technologies
Course Number: INTE 544
Credit Hour: 3
Prerequisite: Data Communication and Computer Networks

Course description

This course covers telephone system administration and the application of telephone systems to assist user organizations in achieving their goals. The subject is presented from the user organization's telecommunication manager's perspective. Management of premise equipment, costs, staffing, departmental structure and management, and the services provided by a telephone company's central office are included. Operational principles of audio, data and video telecommunication technologies are also included.

Course Objectives

At the end of the course students should be able to:

- Explain theories and principles of telephone systems
- Describe usage of telecom systems in organizations
- Understand operational principles of audio and video data in telecommunication technologies
- Grasp the major services and their management in telecom companies

Text Book

Lillian Goleniewski, Telecom Engineering: Telecommunications Essentials, 2nd Ed., 2007, Pearson Education

References

1. Carr I Snyder (2003) Management of Telecommunications, McGraw-Hill Irwin: Boston
2. Grant, August E. & Meadows, Jennifer H. (1998). Communication Technology Update (6th Edition). Boston, MA: Focal Press in association with Technology Futures, Inc.
3. A. Kershenbaum: Telecommunications Network Design Algorithms.
4. Norihiko Morinaga, Ryuji Kohno and Seiichi Sampei (Editors): Wireless Communication Technologies: New Multimedia Systems, Kluwer Academic Publishers, 2002.
5. Stuber: Principles of Mobile Communication, second edition, Kluwer Academic Pub.

Evaluation Scheme

Class Exercises/Assignments	20%
Mid-Term Exam	30%
Final Exam	50%

Course Title: E-Commerce
Course Number: INSY 557 same as INTE 553
Credit Hour: 3
Prerequisite: None

Course Description

This course introduces students to the emerging theories and practices of E-commerce strategies. Strategies associated with both sides of the electronic commerce world are included: ecommerce solutions for existing companies and E-business concept development for venture startups. Students will study the role of E-systems and the internet in commerce. Application of Information Technology in business is also part of the class.

Course Objectives

At the completion of this course, students should:

- be familiar with the different ways that electronic commerce can add business value to an organization;
- be able to list and analyze the key decision faced by an organization when establishing or updating a web presence;
- have an appreciation of the principles and use of key technologies applied in electronic commerce;
- understand the processes involved in doing business electronically; and
- be able to design and develop a good quality web presence for business purposes

Text Book

Erfan Turban et. al., Electronic Commerce, 2008, Pearson Education, ISBN-10: 0132243305

References

1. Mc Garvey and Campanelli, Start Your Own E-Business, 2006, ISBN-10: 1932156744
2. E-Business and e-Commerce Infrastructure: Technologies Supporting the e-Business Initiative. Abhijit Chaudhury, Jean-Pierre Kuilboer. Published by Mc-Graw Hill Companies, 2002. ISBN: 0-07-247875-6.

Evaluation Scheme:

Lab project	20 %
Paper work	50 %
Final Examination	30 %

Course Descriptions for Supportive Courses

Course Title: Mathematics I
Course Code: MATH 203
Credit Hours: 4
Prerequisite: None

Course Description

Basic mathematics logic, sets and their operations, functions and their graphs, matrix and its manipulations, system of linear equations and inequalities, elementary counting principles, recurrence relations, elements of Graph Theory: Definition , Examples, Matrix Representation, path and connectivity of a graph complete, regular and bipartite graph, trees and forest.

Course Objectives

Upon successful completion of this course, students should be able to:

- Explain the basic concepts of logic, sets and matrices.
- Grasp the concept of function.
- Apply the graphs of linear quadratic, logarithmic and exponential functions.
- Analyze the system of linear equations of 2×2 and 3×3 .
- Internalize the system of linear inequalities of 2×2 and 3×3 .
- Solve linear programming problems of smaller inequalities.
- Apply the methods and principles obtained to solve problems in the study of information science.
- Use the graphs in application software.

Text Book

Applied Finite Mathematics, S. T. Tan, 5th Edition, 1997 (30 copies)

References

1. College Algebra in Context, Harshberger and Yocco, 2007.
2. College Algebra , Hornsby and Lial, 2nd Edition, 1999 (38 copies)
3. College Mathematics for Business, Economics, Life and Social Sciences, Raymond A. Barnett 10ed, 2005
4. Mathematics for Business, Economics, Life Sciences, and Social Sciences, 11th Edition, 2008,
5. Applied Mathematics for Managerial, Life and Social Sciences , S.T. Tan, 4ed.,2003

Evaluation Scheme

Assignment	10%
Project work	10%
Mid-semester exam	25%
Attendance	5%
Final exam	50%

Course Title: Mathematics II
Course Code: MATH 204
Credit Hour: 4
Prerequisite: Mathematics I

Course Description

The course introduces the basic concepts of Limits: One-sided limits, infinite limits, Continuity of a function, Derivatives, Derivatives of Inverse Trigonometric, Hyperbolic functions, Implicit differentiation, Applications of derivatives, Integration: indefinite integral, techniques of integration, definite integrals, Application of integrals: area, volume, arc length; Improper integrals; Differential Calculus of two variables: limits, continuity, partial derivatives, tangent lines, directional derivatives, gradient, total differential, tangent planes, relative extrema; Double integral in iterated form, polar form, Applications

Course Objectives

Upon successful completion of this course, students should be able to :

- Analyze the formal definition of Limit and Continuity
- Apply the Limit of Functions
- Internalize the points of discontinuity of Functions
- Comprehend the derivative of Functions
- Apply derivatives of different types of Functions
- Use derivatives to solve problems
- Apply derivatives to sketch the graph of Functions
- Analyze an integral of a Function
- Understand integrals of different types of Functions
- Use integrals to find areas and volumes

Text Book

College Mathematics for Business, Economics, Life and Social Sciences, Raymond A. Barnett, 10th ed., 2003
(30copies)

References

1. Calculus and Its Applications Larry J. Goldstein, 9ed, 2005
2. Applied Mathematics for Managerial, Life and Social Sciences, S.T.Tan, 4ed, 2007
3. College Algebra, Hornsby and Lial, 2nd Edition, 1999 (38 copies)
4. Calculus Concepts and Context, James Stewart, 1997.

Evaluation Scheme

Assignment	10%
Professional work	5%
Mid semester exam	30%
Attendance	5%
Final exam	50%

Course Title: Introduction to Statistics and Probability
Course Code: STAT 301
Credit Hour: 3
Prerequisite: Mathematics I

Course Description

This course is designed to show students the meaning of statistics, methods of data collection, methods of data presentation, and how to calculate measures of central tendency, measures of variation, moments, skewness and kurtosis, counting techniques, concepts of probability, probability distributions, sampling and sampling distribution of the sample, linear regression and correlation.

Course Objective:

Upon completion of this course, the students will be able to;

- Discuss and use statistical methods.
- Organize and analyze statistical data
- Interpret and apply statistical analyses

Text Books

1. Basic Statistics for Business and Economics, Lind et al., 2006
2. Introduction to Statistics and its Applications, Adem Kedir Geleto, 2ed, 2009

References

1. Microsoft Excel Manual, A. Bluman, 2007
2. Elementary Statistics in Social Research, Jack Levin/James Alan, 9ed, 2003
3. Complete Business Statistics, Aczel and Sounderpandian. 2006
4. Just the Essentials of Elementary Statistics, Johnson/Kuby: 3ed, 2003

Evaluation Scheme

Assignments	10%
Laboratory	20%
Midterm Exam	25%
Professional Task	5%
Final Exam	40%

Course Title: Applied Physics
COURSE Code: PHYS 202
Credit Hours: 3
Prerequisite: Co-prerequisite with Mathematics I

Course Description

The purpose of this course is to reinforce previous learning of physics by focusing on the applied physics needed as support for the technical courses students will be taking in advanced studies. The theoretical work will be supported by a series of practical laboratory exercises. The topics covered include applications in 1-d and 2-d motion, forces, energy and momentum, torque and center of mass, statics, wave motion and sound, heat and temperature, electric charge, electric potential and current, magnetism, reflection and refraction of light, mirrors and lenses.

Course Objectives

After completing this course, students should be able to:

- Discuss the physical world based on a broad understanding of how it works
- Apply physics concepts when taking the technical courses where this skill is needed
- Reinforce past learning through performing practical exercises in important areas of physics
- Solve problems by using trouble-shooting skills
- Apply skill in working with instruments including data acquisition systems.
- Be curious about the physical world and want to know more about it

Text Book

J.D. Wilson et al., College Physics, 6th Edition, 2007

References

1. How Things Work The Physics of Everyday Life, L. Bloomfield, 2nd Ed., 2001, 12 copies
2. Physics for Scientists and Engineers, Vol. 2, Paul Tipler, 2003, 2 copies
3. Physics with Vernier, K. Appel, et al.
4. Physics, P. Tippens, 6th Ed., 2001
5. Physical Science, B. Tillery, 6th Ed. 2005, 7 copies
6. Physics for Scientists and Engineers, Vol. 1, Tipler and Mosca, 53, 2004.

Evaluation Scheme

Laboratory Reports	30%
Mid-Term Examination	30%
Final Examination	40%

Course Title: Introduction to Small Business Management and Entrepreneurship

Course Number: MAEN 214

Credit Hour: 3

Prerequisite: None

Course description

This interdisciplinary course is designed to introduce students to the concept of sustainable entrepreneurship, a manageable process that can be applied across careers and work settings. It focuses on building entrepreneurial attitudes and behaviors that will lead to creative solution with in community organizational environments. Course topics include the history of entrepreneurs, the role of entrepreneurs in the 21st century global economy, and the identification of entrepreneurial opportunities. The element of creative problem solving, the development of a business concept/model, and the examination of feasibility studies and the social/moral/ethical implications of Entrepreneurship will be covered.

Course objectives

Upon successful completion of this course, students should be able to:

- Describe and define the nature of entrepreneurship within the context of society, organization and individuals
- Explain entrepreneurship as a creative and innovative process
- Grasp the importance of developing and using a business plan
- Discuss the factors to be considered in starting a new venture
- Understand the specific management issues involved in setting up and running a small enterprises.
- Distinguish between an entrepreneurial and conventional approach to management.
- Develop a concept for an innovative product or service in his/her own area of interest.
- Develop a personal framework for managing the ethical dilemmas and social responsibilities facing entrepreneurs.
- Equip with the basic knowledge and skills of starting and operating a business for they will be future managers (or owner-managers) of these firms.

Text Book

Nicholas Siropilis: Entrepreneurship and Small Business Management 6th ed. 1998; LI Indian Publishers, New Delhi

References

1. Kuratko, Donald. Entrepreneurship: Theory, Process and Practice, 2008. ISBN10: 0324590913
2. Katz, Jerry and R. Green, Entrepreneurial Small Business, 2008. ISBN 0073405063.
3. How to Write a Business Plan, Ethiopian Chamber of Commerce, 2004.
4. Small Business Management: Launching and Growing Entrepreneurial Ventures,J. Longenecker et al., 2007, 768 p. ISBN-10: 0324569728

Evaluation Scheme

Continuous Assessment	25%
Midterm Exam	20%
Project Work	25%
Final Exam	30%

Course Descriptions for Cross-Cutting Courses

Course Title:	Civic and Ethical Education
Course Code:	CEED 201
Credit Hours:	3
Prerequisite:	None

Course Description

This course is designed to be offered as a common course to all students in the degree program in order to produce responsible, well-informed and competent citizens. The course encompasses the basic concepts of civic and ethical education, state and government, the values and principles of democracy, issues related to citizenship and patriotism, concepts of constitution and constitutionalism, fundamental human rights and major issue of development, basic ideas of international relations and contemporary issues.

Course Objectives

At the end of the course the students will be able to:

- Explain the subject matter of civic and ethical education
- Develop professional ethics
- Appreciate the difference between state and government
- Practice the principles and values of democracy
- Understand the concept of citizen and citizenship
- Know the concept of constitution and constitutionalism
- Understand the principles of the Ethiopian constitution
- Explain the basic concepts and features of human rights
- Understand and analyze the concepts of development, the theories of development
- Understand the development policies and strategies of Ethiopia
- Know the concept of international relations
- Discuss the national interest and foreign policies of Ethiopia

Text Books

1. AAU (2005). Civic and Ethical Education, Compendium Part One. Addis Ababa: College of Social Sciences.
2. AAU (2005). Civic and Ethical Education, Compendium (2005) Part two. Addis Ababa: College of Social Sciences.
3. Miller, E.D.I (1984). Question that matter: an invitation to Philosophy
4. FDRE (1995). The constitution of Federal Democratic Republic of Ethiopia Addis Ababa.
5. Vincent, B. (1980) Philosophy: a text with readings, chapter three ethics and chapter four, Social Philosophy.

References

1. Gorge, D and Kalaer, H. (1993) An introduction to Business Ethics.
2. Matt, C. et al. (1991). Challenges of Citizenship.
3. Palmer, D. (1996). Does the center hold? An introduction to Western Philosophy. (chapter 7, Ethics, chapter 8, Critique of Traditional Ethical Theories: chapter 9 Political and Social Philosophy).
4. Boss, A. and Boss (1998). Perspective on ethics. London: Mayfield Publishing.
5. Kassaye, A. (2001), Fundamentals of Civic and Ethical Education. Aurum, A. and Popkin, H.(1996) introduction to Philosophy (Chapter 4 & Chapter 5)

Evaluation Scheme

Continuous Assessment	50%, which includes:
• Attendance	5%
• Reading assignment	10%
• Team assignment	10%
• Mid Term Examination	25%
Final examination	50%

Course Title: Introduction to Philosophy (Logic)
Course Number: PHIL 201
Credit Hours: 3
Prerequisite: None

Course Description

The subject matter and purpose of logic; the fundamental laws of logic; the distinction between deductive and inductive arguments; validity and soundness in an argument; language and definition; rules of lexical definition; fallacies; categorical propositions; syllogism; syllogistic rules and fallacies; propositional logic; analogical reasoning and science and hypothesis.

Course Objectives

At the end of the course the students will be able to:

- Develop the skills needed to construct sound arguments of one's own and evaluate the arguments of others.
- Instill a sensitivity for the formal component in language, a through command of which is indisputable to clear, effective and meaningful communication
- Process the cultivation on the habits of correct reason/critical/ thinking.
- Make distinction between good and bad arguments and avoid fallacious reasoning; and also expose students to different types of fallacy in such a way that they develop the habits of thinking self-independently.

Text Book

Irving M. Copi et al, Introduction to Logic, 13th edition, 2009

References

1. Irving M. Copi, Introduction to Logic, 12th edition, 2005
1. Being Logical: A Guide to Good Thinking, D. McNerny, 2005
2. Logic, 2nd edition, Patrick J. Hurley, 1984.

Evaluation Scheme

Attendance	5%
Class participation	5%
Tests	30%
Group assignment	10%
Final examination	50%

Course Title: Sophomore English
Course Code: FLEN 201
Credit Hours: 3
Prerequisites: None

Course Description

A course designed to develop college-level reading and writing skills. It includes oral and written response to readings, as well as academic vocabulary, grammar and mechanics. It focuses on the steps of the writing process: planning, organizing, writing, peer review, revising, and editing while writing essays in various patterns of organization and development. There will be in-class essays and others prepared outside of class. Students will write every day in class. In addition, students will improve listening and speaking skills through work in the Language Lab, listening to lectures and taking notes, class discussion, giving short talks and responding to questions.

Course Objectives

Upon successful completion of this course, students will be able to:

- Understand and critically analyze class readings, as well as their Text Books.
- Improve their academic vocabulary, written and spoken grammar and mechanics usage
- Improve their overall writing skills: being able to write clearly and correctly, make points and support them with examples and explanations.
- Write under time pressure in answering essay examination questions.
- Understand oral academic lectures and basic English conversation.
- Make simple reports and presentations to the class on readings, discussions and professional tasks

Text Book

Evergreen: A Guide to Writing with Readings, 8th Edition. Susan Fawcett. 2007. Houghton-Mifflin/ Cengage, ISBN10: 0618766448

References

1. Confidence in Writing: Paragraphs and Essays, Alan Meyer
2. Steps to Writing Well, Jean Wyrick, 6e, 2005, ISBN10: 14130-01092 (3)
3. The Brief Bedford Reader. Kennedy, Kennedy and Aaron, 8e, 2003 (54)
4. 75 Readings: Anthology ;by S. Buscemi, C. Smith, 2007
5. Reading for Results.
6. Listen; Listen to Learn: Lecture comprehension and Note-taking, R. Lebauer, 1988.
7. Prentice Hall, Writing and Grammar: Communication in Action, by Carroll, et.al, 2005

Evaluation Scheme

Tests: reading, grammar, vocabulary	20%
Writing assignments:	35%
Professional task: writing, presentation	10%
Class participation in discussion	10%
Final exam, including writing	25%

Course Title: Professional Writing
Course Code: FLEN 202
Credit Hours: 3
Prerequisites: Sophomore English

Course Description

A course extending use of the writing process to longer essays based on analysis of readings, through awareness of audience, purpose and diverse viewpoints. Additional writing will be based on research in students' professional fields, incorporating credible evidence through quotations, paraphrase and summary, using MLA/APA. Students will learn to distinguish between opinion, facts and inferences and to use argument and persuasion. Students will prepare various types of letters, memos, email, proposals, graphics and documents which will be needed in their future professional work. Students will work in teams on a cross-disciplinary professional task, including written and oral work.

Course Objectives

Upon successful completion of this course, students will be able to:

- Incorporate vocabulary appropriate to their field of study in their writing and speaking.
- Write essays with a clear thesis, logical points to support the thesis, and evidence based on library and internet research.
- Avoid plagiarism by incorporating research evidence using proper documentation.
- Improve writing and proofreading skills through participating in peer review.
- Write clear, concise and effective letters, reports, proposals, and other documents appropriate to their field of study, using library and internet research.
- Speak clearly and effectively in groups, meetings and in a final oral presentation for the professional task.

Text Books

1. Evergreen: A Guide to Writing with Readings, 8th Edition. Susan Fawcett. 2007. Cengage, ISBN10: 0618766448
2. Alred, Gerald J, Brusaw, Charles, Oliu, Walter; Business Writers' Handbook,2008. Bedford
3. Alred, Gerald J, Brusaw, Charles, Oliu, Walter; Handbook of Technical Writing, 2008, 9th ed.

References

1. Michael Merkel, Technical Communication, 9e, ISBN9780-312485979 Bedford St. Martins.
2. Tom Jehn, Jane, Writing in the Disciplines: a Supplement, 2007, ISBN10: 0312452640
3. Discovering Arguments, an Introduction to Critical Thinking and Writing,2e, D. Memering,2006
4. Locker, Kaczmarek. Guide to Business Communication: Building Critical Skills,2e, 2004.
5. Guffey, Mary Ellen. Business Writing, 2007. Thomson, Southwestern Publishers.
6. Writing and Speaking for Business, W. Baker, 2007, BYU Publishing.

Evaluation Scheme

Essays	30%
Professional writing assignments:	50 %
Professional task: writing, presentation	10%
Class participation in discussion	10%

Course Title: **Communication and Presentation Skills**
Course Code: **FLEN 301**
Credit Hours: **3**
Prerequisites: **Professional Writing**

Course Description

Following previous limited instruction in making brief talks and reports, this course is designed to improve students' ability to give effective formal presentations and work in groups. Students will focus on audience and purpose, with attention to organization, providing support for their points, appropriate use of visual aids and awareness of nonverbal behavior. They will give talks of varying length, planned and impromptu, followed by questions and feedback. Students will research and write a proposal paper relevant to their field, with proper documentation, and formally present their proposal using AV equipment. This will be good preparation for the professional task. In group assignments, students will learn to conduct effective meetings, negotiate, apply critical thinking in making decisions, deal with conflict usefully but respectfully, and use turn-taking and other English conversational conventions. Resume writing and interviewing skills will prepare them when they look for jobs.

Course Objectives

Upon successful completion of the course, students will be able to:

- Demonstrate awareness of audience, purpose, and the importance of skilled communication in the solution of business problems.
- Negotiate differences in communication between themselves and people from other cultures and those with viewpoints disagreeing with their own.
- Employ a variety of communication strategies;
- Make effective presentations, oral and written, with or without an equipment.
- Apply critical thinking and decision-making skills to business or technical tasks
- Work effectively with other people in small groups or teams
- Listen actively for understanding
- Give and receive feedback which will improve their own and others' communication.

Text Book

Public Speaking: An Audience-Centered Approach, Steven Beebe and Susan Beebe, 6 ed., 2006.

Munter, Mary and Lynn Russell, Guide to Presentations, 7th Ed, 2007.

References

1. Rudolph Verderber, Communicate, 9th ed, 1999, Wadsworth Publishing.
2. Locker, Kitty, Kaczmarek, Stephen Kyo, Building Critical Skills, 4th Ed. *McGraw-Hill*, 2008.
3. The Art of Public Speaking, and Learning Tools Suite, 8e, by Stephen Lucas, 2004
4. Writing and Speaking for Business, W. H. Baker, 2007, BYU Publishing.
5. Essentials of Business Communication, M.E. Guffey, 5e, 2007, Southwestern-Thomson.

Evaluation Scheme:

Class work: discussion, role plays, short talks	20%
Professional Task	10%
Quizzes:	20%
Final research Proposal and Presentation	25%
Group work, assignments and presentations	25%

Course Title: Microeconomics
Course Code: ECON 202
Credit Hours: 3
Prerequisite: None

Course Description

This course introduces and explores a variety of microeconomic topics, including: utility, preference, choice, consumer equilibrium, market demand, elasticity of demand, choice involving risk, production, cost, competitive market, pure monopoly and monopolistic competition. Students will work in teams on a professional task, using their knowledge of microeconomics.

Course Objectives

Upon successful completion of this course, students will be able to:

- Define utility, preference and choice.
- Explain how consumers optimize their objectives given the opportunity.
- Relate the concept of elasticity to consumer demand
- Describe production and cost and how they are interrelated
- Identify the basic market structures and describe their characteristics

Text Book

R.S. Pindyck and D. L. Rubinfeld, Microeconomics.

References

1. Hal R. Varian, Intermediate Microeconomics: A Modern Approach, 4th Ed.
2. Koutsiannis, Modern Microeconomics.
3. E. Mansfield, Microeconomics: Theory and Applications.
4. D.S. Watson, Price Theory and its Uses.
5. J.P. Gold and C. Ferguson, Microeconomics Theory.
6. D.N. Dwivedi, Microeconomics Theory.
7. Essentials of Economics, 5e, by Mankiw, 2008
8. Principles of MicroEconomics by Frank and Bernanke, 3rd ed., 2007

Evaluation Scheme

Assignments, tests, quizzes, class work	20%
Practical work, Project work	30%
Mid Exam	20%
Final Examination	30%

Course Title: General Psychology
Course Code: PSYC 201
Credit Hours : 3
Prerequisites: None

Course Description

This survey course explores the scientific study of human nature, behavior and cognitive processes. The major areas of psychological study will be reviewed, including history, biology, memory, learning, development and personality, abnormal psychology and social psychology. Emphasis will be placed on applying psychological principles and data to life experience. Students will learn to understand the psychological foundations of human behavior in all occupations. They will learn how to apply psychological principles and concepts in order to overcome human and environmental barriers to effective relationships. Topics to be covered include motivation, emotion, knowledge retention, group dynamics, worker efficiency, sensation and perception, personality, and development of attitudes. Students will complete the proficiency task of developing a personal statement of goals and values.

Course Objectives

Upon satisfactory conclusion of this course, students will have developed the ability to:

- Understand human behavior and relationships in different professions and in life at large
- Apply knowledge gained from the course in the areas of business, government and education
- Understand the major factors that influence group and individual decision-making
- Understand effective human and environmental relationships
- Use knowledge of psychology to develop a personal statement of goals and values

Text Book

Kalat, James. Introduction to Psychology, 8th ed. Wadsworth, 2008

References

1. Weiten, Wayne, Diane Helpert. Psychology: Themes and Variations: with Concept Charts. Briefer Edition, 7th ed. Thomson-Wadsworth, 2007
2. Psychology: A Modular Approach to Mind and Behavior, 10e, Dennis Coon, 2006.
3. Psychology, Stephen Davis and Joseph Pallidino, 4e, 2003
4. The Essential World of Psychology, Samuel Wood and Ellen Green Wood, 2002.
5. Psychology: A Journey, Dennis Coon, 2002.
6. Psychology, 7th ed., John Santrock, 2005

Evaluation Scheme

Assignments	20%
Projects, practical work	30%
Mid-semester examination	20%
Final project/examination	30%

Course Title: Leadership Skills
Course Code: MAEN 441
Credit Hours: 3
Prerequisites: None

Course Description

This course challenges students to be leaders as leadership is in each and every one. The course outlines how one identifies one's leadership niche and helps one cultivate what one may have to offer as a leader. The course provokes students to think critically about their future life path and in so doing encourages students to find themselves in a world of leaders. In initiating students to such self-discovery, the course encourages students to be committed to certain steps of personal transformation that would set them as leaders. The course uses competency based training as an approach. Concepts are revealed and discussed and applications are attempted within a mock arrangement. Students will then be required to explore leadership qualities within the work environment. Cases shall be used as examples of real life situations for leadership exercises, and speakers invited to talk about their own leadership journeys.

Course Objectives

The course shall impress upon each student that each is a leader and with this awareness the course shall encourage students to work on their leadership niche. The course shall then impress upon students the attitudinal changes that they need to make and the life goal paths that they should explore.

Text Books

1. Focus on Leadership: Servant Leadership for 21st Century, Ken Blanchard (30 c.)
2. Awakening the Leader Within: A Story of Transformation, Kevin Cashman, Jack Forem
3. The Purpose-Driven Life, Rick Warren, 2002 (150 c.)

Reference Books

1. Principle-Centered Leadership, Steven Covey, 1991. (10 c.)
2. Leadership Challenges, Kouzes and Posner, 4th Ed., 2008
3. Leadership: Courage in Action, Robert Terry, 1999.
4. Leadership: Theory and Practice, Northouse, 9th Ed, 2009

Evaluation Scheme

Midterm and final exams	60%
Leadership in the class	20%
Leadership Project	20%