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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 IT-based solutions 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 standardsof 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 gage 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.

<table>
<thead>
<tr>
<th>Grade</th>
<th>A⁺</th>
<th>A</th>
<th>A⁻</th>
<th>B⁺</th>
<th>B</th>
<th>B⁻</th>
<th>C⁺</th>
<th>C</th>
<th>D⁺</th>
<th>D</th>
<th>D⁻</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>4.00</td>
<td>4.00</td>
<td>3.75</td>
<td>3.50</td>
<td>3.00</td>
<td>2.75</td>
<td>2.50</td>
<td>2.00</td>
<td>1.75</td>
<td>1.50</td>
<td>1.00</td>
<td>0.75</td>
</tr>
</tbody>
</table>

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 – “ştur(208,244),(794,382)”

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 INformation TEchnology 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Lecture Hours</th>
<th>Lab. Hrs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTE 201</td>
<td>Introduction to Information Communication Technology</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>INTE 202</td>
<td>Digital Electronics and Logic Design</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 212</td>
<td>Fundamentals of Programming</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>INTE 312</td>
<td>Internet Programming I</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 314</td>
<td>Data Structures and Algorithms Analysis</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 321</td>
<td>Fundamental of Database Management Systems</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 331</td>
<td>Structured System Analysis and Design</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 341</td>
<td>Data Communications and Computer Networks</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>INTE 342</td>
<td>Computer Architecture and Organization</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 411</td>
<td>Object Oriented Programming</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>INTE 415</td>
<td>Internet Programming II</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 416</td>
<td>Advanced Programming</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 421</td>
<td>Advanced Database Management Systems</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 431</td>
<td>Object Oriented Software Engineering</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 432</td>
<td>Introduction to Artificial Intelligence</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 433</td>
<td>Human Computer Interaction</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 440</td>
<td>UNIX System Administration and Support</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 441</td>
<td>Operating Systems</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>INTE 444</td>
<td>Computer Maintenance and Technical Support</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>INTE 445</td>
<td>Systems and Network Administration</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 452</td>
<td>Web Technologies</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 457</td>
<td>Multimedia Systems</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 460</td>
<td>IT Project Management</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 462</td>
<td>Internship</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>INTE 504</td>
<td>Information and Society</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 542</td>
<td>Wireless Communications and Mobile Computing</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>INTE 546</td>
<td>Network Device Configuration and Troubleshooting</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>INTE 564</td>
<td>Information Assurance and Security</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>INTE 566</td>
<td>Senior Project</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>INTE 455</td>
<td>Computer Graphics</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>96</strong></td>
<td><strong>67</strong></td>
<td><strong>59</strong></td>
</tr>
</tbody>
</table>

**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.

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

Table 3: List of Supportive Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Lecture Hours</th>
<th>Lab. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAEN 214</td>
<td>Introduction to Entrepreneurship &amp; Small Business Management</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>MATH 203</td>
<td>Mathematics I</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>MATH 204</td>
<td>Mathematics II</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>PHYS 201</td>
<td>Applied Physics</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Probability and Statistics</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
<td><strong>15</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>
**Table 4: List of Cross-Cutting Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Lecture Hours</th>
<th>Lab. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEED 201</td>
<td>Civics and Ethical Education</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Microeconomics</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>FLEN 201</td>
<td>Sophomore English</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>FLEN 202</td>
<td>Professional Writing</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>FLEN 301</td>
<td>Presentation and Communication Skills</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>MAEN 441</td>
<td>Leadership Skills</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>PHIL 201</td>
<td>Introduction to Logic</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>PSYC 201</td>
<td>General Psychology</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>24</strong></td>
<td><strong>24</strong></td>
<td><strong>3</strong></td>
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**Table 5: Minimum Credit Hour Requirement Summary**

<table>
<thead>
<tr>
<th>Course Categories</th>
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<tbody>
<tr>
<td>Major including Internship</td>
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<tr>
<td>Major Electives</td>
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<td>Crosscutting/Foundation Courses</td>
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<tr>
<td><strong>Grand Total</strong></td>
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</table>
## 15. Semester Course Break-Down

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester I</th>
<th>Semester Total</th>
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<tbody>
<tr>
<td>1</td>
<td>INTE 201 Introduction to Information and Communication Technology</td>
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<tr>
<td></td>
<td>MATH 203 Mathematics I</td>
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</tr>
<tr>
<td></td>
<td>CEED 201 Civics and Ethical Education</td>
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<tr>
<td></td>
<td>FLEN 201 Sophomore English</td>
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<tr>
<td></td>
<td>PHYS 201 Applied Physics</td>
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|      | 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** |

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<tr>
<td>2</td>
<td>INTE 411 Object Oriented Programming</td>
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<tr>
<td></td>
<td>INTE 321 Fundamentals of Database Management Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>INTE 341 Data Communication and Computer Networks</td>
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<td></td>
<td>INTE 331 Structured System Analysis and Design</td>
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<td>FLEN 301 Presentation and Communication Skills</td>
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<p>|      | 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 |
|      | <strong>Semester Total</strong> | <strong>18</strong> |</p>
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<th>Semester II</th>
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<td>INTE 421</td>
<td>Advanced Database Management Systems</td>
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<td>INTE 444</td>
<td>Computer Maintenance and Technical Support</td>
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<td>INTE XXX- Elective I</td>
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<td>INTE 431</td>
<td>Object Oriented Software Engineering</td>
<td>3</td>
<td>INTE 546</td>
<td>Network Device Configuration and Troubleshooting</td>
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<td>INTE 445 Systems and Network Administration</td>
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<td>INTE 441</td>
<td>Operating Systems</td>
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<td>UNIX System Administration and Support</td>
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<td>INTE 433 Human Computer Interaction</td>
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<td>STAT 301</td>
<td>Introduction to Probability and Statistics</td>
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<td>INTE 452</td>
<td>Web Technologies</td>
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<td>INTE 457 Multimedia Systems</td>
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<td>INTE 455</td>
<td>Computer Graphics</td>
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<td>INTE 460</td>
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<td>Internet Programming II</td>
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<td>INTE 432</td>
<td>Introduction to Artificial Intelligence</td>
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<td>INTE 482</td>
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<td>INTE 445</td>
<td>Systems and Network Administration</td>
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<td>INTE 564</td>
<td>Information Assurance and Security</td>
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<td>INTE 433</td>
<td>Human Computer Interaction</td>
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<td>INTE 504</td>
<td>Information and Society</td>
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<td>INTE 457</td>
<td>Multimedia Systems</td>
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<td>MAEN 441</td>
<td>Leadership Skills</td>
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<td>ECON 202</td>
<td>Microeconomics</td>
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<td>INTE 542</td>
<td>Wireless Communication and Mobile Computing</td>
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<td>Senior Project</td>
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</table>
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 an 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

References
6. Keyboarding & Information Processing, 1997, South Western Educational Publishing

Evaluation Scheme

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

15
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

References

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

References
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**


**References**

3. Database Processing. Fundamentals, Design and Implementation by David M. Krenke

**Evaluation Scheme**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Quiz</td>
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<tr>
<td>Mid Exam</td>
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<tr>
<td>Lab Evaluation and Project Work</td>
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<tr>
<td>Final Exam</td>
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18
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

References

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

References

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

References
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


References


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


References

7. Peter den Haan et el., Beginning JSP 2: From Novice to Professional, 2004, APress

Evaluation Scheme

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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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


References

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

References

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

References

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


References

2. V.K. Pachghare, Comprehensive Computer Graphics, New Delhi,

Evaluation Scheme

<table>
<thead>
<tr>
<th>Assignments and Project:</th>
<th>50 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination:</td>
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</table>
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


References

1. Human-Computer Interaction (3rd Ed): by Alan Dix, Janet E. Finlay, Gregory D. Abowd, and Russell Beale

Evaluation Scheme

<table>
<thead>
<tr>
<th>Component</th>
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<tr>
<td>Assignments</td>
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<tr>
<td>Final Examination</td>
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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  

References  
2. Peter den Haan et el., Beginning JSP 2: From Novice to Professional, 2004, APress  

Evaluation Scheme  

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Lab Projects</td>
<td>30%</td>
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<tr>
<td>Class Exercises/Assignments</td>
<td>10%</td>
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<tr>
<td>Mid Exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
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</tbody>
</table>
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

References
2. Ajay Vohra & Deepak Vohra, Pro XML Development with Java Technology, APress[0]
5. Peter den Haan et el., Beginning JSP 2: From Novice to Professional, 2004, APress

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

References
2. Ralf Steinmetz and Klara Nahrstedt, Multimedia Fundamentals: Media Coding and Content Processing; 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

References

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 prerequisite 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

References

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


References


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

- Network device manuals

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

References

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


References


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


References

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

<table>
<thead>
<tr>
<th>Evaluation Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily reports and accomplishments</td>
<td>40%</td>
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<tr>
<td>Special project accomplished and report delivered</td>
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<tr>
<td>Executive interview (viva voce)</td>
<td>10%</td>
</tr>
<tr>
<td>Job performance evaluation</td>
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</tr>
</tbody>
</table>
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


References


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

References

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:

References

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 an 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 mottos
• 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

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


References


Evaluation Scheme

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lab project</td>
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<tr>
<td>Assignments</td>
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<td>Mid-term</td>
<td>20%</td>
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<tr>
<td>Final Examination</td>
<td>40 %</td>
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</tbody>
</table>
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  

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 technopoles 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
- Anaylze polices that promote information technology transfer and development

Text Book


References


Evaluation Scheme

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<td>Final Examination</td>
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</tbody>
</table>
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


References


Evaluation Scheme

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<td>Final Examination:</td>
<td>30 %</td>
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</tbody>
</table>
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

<table>
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<tbody>
<tr>
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<tr>
<td>Mid-term Exam</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
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</tbody>
</table>
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

References

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

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


References


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

References

Evaluation Scheme:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
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<td>Paper work</td>
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</tr>
<tr>
<td>Final Examination</td>
<td>30 %</td>
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</tbody>
</table>
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 2x2 and 3x3.
• Internalize the system of linear inequalities of 2x2 and 3x3.
• 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

References
3. College Mathematics for Business, Economics, Life and Social Sciences, Raymond A. Barnett 10ed, 2005

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 exterma; 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**  
(30 copies)

**References**  
1. Calculus and Its Applications Larry J. Goldstein, 9ed, 2005  

**Evaluation Scheme**  
<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
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<td>Mid semester exam</td>
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<td>Attendance</td>
<td>5%</td>
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<tr>
<td>Final exam</td>
<td>50%</td>
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</table>
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

References

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
5. Physical Science, B. Tillery, 6th Ed. 2005, 7 copies

Evaluation Scheme
<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Laboratory Reports</td>
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<tr>
<td>Mid-Term Examination</td>
<td>30%</td>
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<tr>
<td>Final Examination</td>
<td>40%</td>
</tr>
</tbody>
</table>
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 entrepreneurships, 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

References

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

References


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

References
1. Irving M. Copi, Introduction to Logic, 12th edition, 2005

Evaluation Scheme

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<td>Class participation</td>
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<tr>
<td>Tests</td>
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<tr>
<td>Group assignment</td>
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</tr>
<tr>
<td>Final examination</td>
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</tbody>
</table>
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


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.
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

References
3. Discovering Arguments, an Introduction to Critical Thinking and Writing, 2e, D. Memering, 2006

Evaluation Scheme

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<th>Component</th>
<th>Percentage</th>
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<td>Professional task: writing, presentation</td>
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<tr>
<td>Class participation in discussion</td>
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</tbody>
</table>

63
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

References

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
2. Koutsyiannis, Modern Microeconomics.
5. J.P. Gold and C. Ferguson, Microeconomics Theory.
7. Essentials of Economics, 5e, by Mankiw, 2008

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


References

3. Psychology, Stephen Davis and Joseph Pallidino, 4e, 2003

Evaluation Scheme

<table>
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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
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<td>Assignments</td>
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<tr>
<td>Projects, practical work</td>
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<td>Mid-semester examination</td>
<td>20%</td>
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<tr>
<td>Final project/examination</td>
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</table>
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.)

Evaluation Scheme
- Midterm and final exams: 60%
- Leadership in the class: 20%
- Leadership Project: 20%