Programme Détaillé par Matière

EE471: Probability and Statistics

Course Information:

Semester: I	**Unit**: UEF11	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 1.5 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 67.5

Course Objectives:

Knowledge of basic notions of probabilities, how to deal with the random variables, different types of distributions and solving probability problems by choosing the right corresponding distribution

Course Prerequisite(s):

Basic notions of mathematics, computing single and double integrals

Course Outline:

- **Review of Set Theory**
- **Combinatorial Analysis**
- **Probability Definitions**
- **Random Variables, Random Vectors**
- **Some statistics**
- **Some Probability Models**
- **Limit laws: The Central Limit Theorem**

  Some Statistics: Estimation of Means, Variance, Proportion, Confidence Intervals, Introduction to Hypothesis Testing, Linear Regression.

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. Probability and Statistics, A. Paponts, R. GauHill, 1990.

2. The Art of Probability for Scientists and Engineers. Richard W. Hamming. Addison-Wesley, 1991.

3. Probability, Random Variables and Stochastic Processes, A. Papoulis, 3rd Edition, McGraw-Hill, 1991.

EE479: Advanced Mathematics

Course Information:

Semester: I	**Unit**: UEF11	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 1.5 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 67.5

Course Objectives:

Développer les concepts de base acquis en algèbre linéaire. Acquérir des concepts avancés utiles dans l'analyse et la conception

Course Prerequisite(s):

Un cours de base en analyse

Un cours de base en algèbre linéaire.

Course Outline:

- **Review of vector spaces and linear mappings**
- **Orthogonality.**
- **Positive definitness**
- **Computations with matrices** (norm, condition number, eigenpairs, linear equations, least squares problem, etc.)

- **Matrix decompositions.**
- **Singular Value decomposition and the Moore-Penrose inverse.**
- **Systems of linear differential equations.**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. Gilbert Strang, *Linear Algebra and its Applications.*

2. Steven Roman, *Advanced Linear Algebra*

3. R.L. Finney, D.R. Ostberg, R.G. Kuller, *Elementary Differential Equations with*

Linear Algebra.

EE423: Advanced Programming

Course Information:

Semester: I	**Unit**: UEF11	**Credit Hours: 6**	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 1.5 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 67.5

Course Objectives:

This course will focus on the study in some depth of the programming language Java. At the end of the semester the student will grasp the powerful features of Java, such as encapsulation, inheritance, interface, polymorphism, generics, collections etc.

Course Prerequisite(s):

Programming I

Course Outline:

- **Main Features of Object Oriented Programming Languages.**
- **An Overview of Java.**
- **Introduction to Classes.**
- **In-depth Study of Classes. Inheritance.**
- **Packages and Interfaces.**
- **Exceptions and Multi-Threadings.**
- **I/O and Applet Interfaces.**
- **Generics.**
- **The API Library**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. H. Shildt. *Java, a beginner's guide.* Mc Graw Hill, 2005

2. H. Shildt. *Java cookbook*. Mc Graw Hill 2008

3. H. Deitel.*Java for programmers*. Pearson Education 2012

EE425: Advanced Digital Systems

Course Information:

Semester: I	**Unit**: UEF12	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation: 0** hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

To be competent in designing complex digital systems using VHDL and their Implementation in FPGAs.

Course Prerequisite(s):

Digital Systems Design with VHDL I and II (EE221 & EE222)

Computer Architecture.

Course Outline:

- **Review of logic design fundamentals**
- **Structural design modeling**
- **Design, optimization and synthesis of FSM using VHDL**
- **Advanced topics in VHDL**
- **Advanced LPMs**
- **Register files in VHDL**
- **Design & synthesis of datapath controllers with VHDL**
- **Programmable logic devices.**
- **FPGA Architecture and technologies**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. Digital Systems Design Using VHDL by Charles Roth, 1998

2. Digital Systems Design with FPGAs by Ion Grout, 2008

EE423L: Advanced Programming Laboratory

Course Information:

Semester: I	**Unit**: UEF12	**Credit Hours:** 3	**Coefficient:** 2
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 3 hrs/week	**Semester hrs:** 45.0

Course Objectives:

Implementation of the different features (encapsulation, inheritance, polymorphism, multithreading etc.) of the java programming language.

Course Prerequisite(s):

A first course in a programming language like C.

Course Outline:

- **Writing, Compiling and executing a Java Program.**
- **Working with Classes, Objects and Methods.**
- **More on Classes, Objects and Methods.**
- **Working with Inheritance, Interfaces and Packages.**
- **Working with the Class String.**
- **Working with Threads.**
- **Working with the Interface Collection.**

Assessment Method: Continuous

Textbook(s) and/or other required material:

1. H. Shildt. *Java, a beginner's guide.* Mc Graw Hill, 2005

2. H. Shildt. *Java cookbook*. Mc Graw Hill 2008

3. H. Deitel.*Java for programmers*. Pearson Education 2012

EE425L : Advanced Digital Systems Laboratory

Course Information:

Semester: I	**Unit**: UEF12	**Credit Hours:** 3	**Coefficient:** 2
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 3 hrs/week	**Semester hrs:** 45.0

Course Objectives:

Get hands on experiments on advanced topics in digital systems using VHDL and the DE2 board.

Course Prerequisite(s):

Digital Systems Design using VHDL I and II (EE221 & EE222)

Computer Architecture.

Course Outline:

- **Design and implementation of Structural model application**
- **Implementation of FSMs**
- **Implementation of Datapath controllers**
- **Implementation of an LSI controller (such as UART, PIO, PPI, …)**
- **Implementation of a digital systems using Megafunctions**

Assessment Method: Continuous

Textbook(s) and/or other required material:

The Altera DE2 Development Board.

EE424: Advanced IC's

Course Information:

Semester: II	**Unit**: UEF21	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

Present state-of-the-art digital integrated circuits and their applications.

Course Prerequisite(s):

Digital Systems Design with VHDL I and II (EE221 & EE222)

Computer Architecture

Microprocessor Systems design

Course Outline:

- **Interfacing the μP to the outside world.**
- **Different Address decoding techniques**
- **Intel (Motorola, Zilog) LSI I/O Controllers**
- **The Programmable Peripheral Interface (PPI) 8522**
- **The programmable Interval Time/Counter (PIT) 8254.**
- **The Keyboard/Display Controller 8279**
- **The UART 8251**
- **Designing μP based systems**
- **SoPC Based design approach**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1- The Z80 microprocessor GAONKAR, 2001

EE472: Numerical Methods

Course Information:

Semester: II	**Unit**: UEF21	**Credit Hours:** 4	**Coefficient:** 3
Lecture: 3 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

The goal of this course is to implement by using a programming language like C, the different numerical methods, such as solving the equation f(x) = 0, solving a system of linear and non linear equations, computing numerically the integral of functions, approximating a function by a polynomial etc.

Course Prerequisite(s):

Linear Algebra

Calculus.

Course Outline:

- **Introduction: Mathematical Preliminaries and Errors Analysis.**
- **Solutions of Equations of one and a system of non linear equations.**
- **Linear Algebraic Methods..**
- **Numerical Methods.**
- **Interpolation and Polynomial Approximation.**
- **Numerical Solution of Initial-Value Problems.**
- **Approximating Eigen Values.**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. H.M. Antia. *Numerical Method for Scientists and Engineers.* Mc Graw Hill, 1995.

2. W. Dos Passos. *Numerical Methods, Algorithms and Tools*. Taylor and Francis

Group, 2010

3. Numerical Methods. *Faires & Burns*. 2002.

EE422: Data Structures and Algorithms

Course Information:

Semester: II	**Unit**: UEF22	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 1.5 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 67.5

Course Objectives:

The aim of this course is make the student understand how to organize computer data in such a way that it can be accessed and processed efficiently.

Course Prerequisite(s):

A first course in a programming Language like C.

A first course on calculus

Familiarity with some counting techniques

Course Outline:

- **Design and Analysis of Algorithms.**
- **The Abstract Data Type List.**
- **The Abstract Data Type Tree**
- **Directed Graphs**
- **Undirected Graphs.**
- **Sorting** (simple sorting algorithms, merge sort, heap sort, bin sort).

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. Aho, Hopcroft, Ullman. *Data Structures and Algorithms*. Addison-Wesley, 1983.

2. Brassard, Bratley. *Fundamentals of Algorithmics.* Prentice Hall, 1993.

3. Cormen, Leiserson, Rivest, Stein. *Introduction to Algorithms.* MIT Press, 2001

4. Horowitz, Sahni, Rajasekaran. *Computer Algorithms.* Computer Science

Press,1998

EE426: Operating Systems

Course Information:

Semester: II	**Unit**: UEF22	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

The aim of this course is to show how a Software Package called an Operating System manages the many different resources of a Computer System (Processors, Memory, I/O, Secondary Storage *etc.).*

Course Prerequisite(s):

Programming 1 course, Computer Architecture course and Data structures and AlgorithmCourse are all pre-requisite

Course Outline:

- **Introduction:** Definition of an OS, Types of OS, Fundamental Concepts of an OS.
- **Processes and Threads:** Process and Thread Implementations, Inter Process Communications, Mutual Exclusion Problem Solutions (Busy Waiting, semaphores

etc.), Process and Thread Implementations

- **Memory Management:** Memory Abstractions, Virtual Memory, Segmentation, Segmentation with Paging.

- **File Systems:** Files, Directories, File System Implementation, Examples of File Systems.

- **Input/Output Management:** I/O HW, I/O SW, Clocks, User Interfaces (Keyboard, Mouse, Monitor).

- **DeadLocks:** Resources, Deadlock Conditions, Deadlock Detection and Recovery , Deadlock Avoidance, Deadlock Prevention.

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. A. Shilberschatz, P. Galvin, G. Gagne, *Operating Sysstems Concepts,* Prentice Hall, 2008

2. W. Stallings, *Operating Systems Concepts. Internals and Design Principles,* John Wiley& Sons, 2005

3. A. Tanenbaum, *Modern Operating System,.* Pearson, 2009

EE472L: Numerical Methods Laboratory

Course Information:

Semester: II	**Unit**: UEM21	**Credit Hours:** 2	**Coefficient:** 1
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 1.5 hrs/week	**Semester hrs:** 22.5

Course Objectives:

Using C or Java as the programming language of choice, the student will learn how to implement the different numerical methods covered in the lectures.

Course Prerequisite(s):

Elementary Calculus

Elementary Linear Algebra

Course Outline:

- Implementation of the Bissection method, the Incremental method and Newton's method to solve the non linear equation f(x) = 0.
- Implementation of Gauss elimination algorithm to solve a system of linear equations
- Implem.entation of Jacobi's Gauss Siedel'algorithm to solve a system of linear equations.
- Implementation of Lagrange polynomial for function interpolation
- Implementation of Simpson's formula and Romberg's formula to numerically compute the integral of a function.
- Implementation of Taylor's and Range Kutta's algorithm to solve

Assessment Method: Continuous

Textbook(s) and/or other required material:

Handouts

EE424L: Advanced IC's Laboratory

Course Information:

Semester: II	**Unit**: UEM21	**Credit Hours:** 2	**Coefficient:** 1
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 1.5 hrs/week	**Semester hrs:** 22.5

Course Objectives:

Get hands on experiment using state-of-the-art digital integrated circuits

Course Prerequisite(s):

1. Digital Systems Design with VHDL I and II (EE221 & EE222)

2. Computer Architecture

3. Microprocessor Systems design

Course Outline:

- **Implementation of the Z80 interrupt modes 0, 1 and 2**
- **The PPI 8255 and applications**
- **The 8254 and applications**
- **The 8279 and applications (keyboard and 7-seg display control)**
- **The 8251 UART**
- **Introduction to the SoPC based design using the DE2 board and Quartus II**

Assessment Method: Continuous

Textbook(s) and/or other required material:

1. The Z80 microprocessor GAONKAR, 2001

2. The Altera DE2 Board

EE422L: Data Structures and Algorithms Laboratory

Course Information:

Semester: II	**Unit**: UEM21	**Credit Hours:** 2	**Coefficient:** 1.5
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 3 hrs/week	**Semester hrs:** 45.0

Course Objectives:

This is a companion course to the Data Structures and Algorithms course. Using a Programming Language such as C++ or Java, the student will learn how to implement the variety of different Data Structures and the Operations on these Data both elegantly and efficiently.

Course Prerequisite(s):

A first course in a programming Language like C.

A first course on calculus

Familiarity with some counting techniques

Course Outline:

- **Comparing the running times of Algorithms.**
- **Array and Pointer Implementation of General Lists.**
- **Array and Pointer Implementation of Binary Trees.**
- **Implementation of Depth First Search for Digraphs.**
- **Implementation of Depth First Search for graphs.**
- **Implementation of Dijkstra's Algorithm.**
- **Implementation of Floyd Warshall's Algorithm.**
- **Implementation of Merge Sort, Heap Sort and Bin Sort Algorithm.**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. Aho, Hopcroft and Ullman. *Data Structures and Algorithms.* Addison-Wesley, 1983

2. Brassard, Bratley. *Fundamentals of Algorithms.* Prentice Hall, 1993

3. Cormen, Liserson, Rivest, Stein. *Introduction to Algorithms*. MIT Press, 2001

4. Horowitz, Sahni, Rajasekaran. *Computer Algorithms.* Computer Science Press,1998

EE416L: Operating Systems Laboratory

Course Information:

Semester: II	**Unit**: UEM21	**Credit Hours:** 2	**Coefficient:** 1.5
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 1.5 hrs/week	**Semester hrs:** 22.5

Course Objectives:

This is a companion course to the Operating Systems Course offered in the same semester. The main objective is to show to the students how System Calls are implemented By the Unix OS.

Course Prerequisite(s):

Programming 1, Computer Architecture and Data structures and Algorithm Courses are all pre-requisite.

Course Outline:

- **Working with Processes**
- **2. Working with Pipes**
- **3. Working with Files**
- **4. Working with Memory**
- **5. Working with I/O**

Assessment Method: Continuous

Textbook(s) and/or other required material:

1. R. Card, E. D Dumas, F. Mével. *The Linux Kerne Book*. Wiley and Sons 2000

2. M. DIvay. *Unix et les systèmes d'exploitation*. Dunod 2002

EE521: Embedded Systems

Course Information:

Semester: III	**Unit**: UEF31	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

Ce cours est axé principalement sur l'aspect logiciel/matériel des systèmes embarqués afin de s'appuyer sur les connaissances informatiques (à la fois logicielles et architecturales) de l'élève. Du point de vue électronique, l'accent est mis sur l'aspect système et plus particulièrement sur les systèmes programmables tel que les microcontrôleurs sur puces programmables tel que les FPGAs(System-On-Chip : SoPC).

Course Prerequisite(s):

Advanced Digital Systems

Course Outline:

Introduction aux systèmes embarqués et aux SoC :

- Généralités (Les systèmes considérés, Le développement de tels systèmes)

- Systèmes d'exploitation et contraintes temps réel.

- Réseau de capteur sans fil.

- **Part 1 : Architecture microcontrôleurs et leur programmation** (µcontrolleur 68HC12 et PIC serie 18F258 pour les TPs).

- Processeur, Mémoire, Périphériques, Bus de communication, Entrées / Sorties

- **Part 2: FPGA based SoPC using Altéra's DE2 Kits**.

- The Altera's SOPC Builder software, The Nios II processor on an Altera FPGA device, Blocs IP (Intellectual Properties) et notion de réutilisabilité.

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1) Patrick Kadionik, http://kadionik.developpez.com/, Systèmes embarqués (ENSEIRB)

(2) Andreas Savvide, Yale, EE460A, Networked Embedded Systems and Sensor

Networks.

EE512: Digital Signal Processing with Applications

Course Information:

Semester: III	**Unit**: UEF31	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

Provide the know-how for the implementation and optimization of computationally intensive signal processing algorithms in the TMS320C6416 DSP Processor.

Course Prerequisite(s):

Computer Architecture

Linear Systems II

Microprocessor Systems design

Advanced Integrated Circuits

Course Outline:

- **Introduction to DSP**
- **Architecture addressing modes, and instruction set of the TMS320C6416 processor**
- **FIR Filters**
- **IIR Filters**
- **FFT**
- **Adaptive Filters**
- **DSP Applications**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

Rulph. Chassaing. Digital Signal Processing and Applications with the C6713 and C6416 DSK, 2005

EE525: Programming Languages

Course Information:

Semester: III	**Unit**: UEF32	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 1.5 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 67.5

Course Objectives:

The aim of this course is to help the student to understand Programming Languages by analyzing and contrasting Language Constructs. The goal is to learn how to analyze Languages rather than the pecularities of any particular Language in depth.

Course Prerequisite(s):

Programming 1, Computer Architecture course and Data structures and Algorithm Courses are all pre-requisite.

Course Outline:

- **Introduction:** Different Types of Programming Languages and their Foundations (Imperative PL's, Object Oriented PL's, Functional PL's and Logic PL's.

- **Specifying Syntax:** Backus Naur Form, Context Free Grammars, Parsing (Top-Down Parsing, Dealing with ambiguities).
- **Imperative Paradigm.**
- **Object Oriented Paradigm:** Objects and Classes, Encapsulation and Polymorphism and Single and Multiple Inheritance.
- **Logic Programming Paradigm:** Syntax, first Order Logic, the Herbrand Universe, Unification, Resolution. Example of Prolog.

- **Functional Programming Languages:** Computation Model, Evaluation. The λ -Calculus.

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. M. Ben-Ari. *Understanding Programming* Languages, Wiley & Sons, 2006.

2. M. Gabrielli S. Martini. *Programming Languages : Principles and Paradigms*. Springer, 2006

3. M. Lee. *Programming Languages : An Active Approach*. Pearson 2008

4. R. Sebesta. *Concepts of Programming Languages*. Pearson 2005

EE523: Computer Networks

Course Information:

Semester: III	**Unit**: UEF32	**Credit Hours:** 6	**Coefficient:** 4
Lecture: 3 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 45.0

Course Objectives:

The goal of this course is to bring the student to understand thoroughly the Network Protocol mechanisms, the roles and functions of the Intermediate Equipments, such as routers and switches.

Course Prerequisite(s):

The student should have an insight about numbering systems, basic numbering systems, basic boolean algebra and computer architecture.

Course Outline:

- **Network basic introduction.**
- **OSI and TCP/IP protocols models,**
- **Routing techniques.**
- **Switching techniques.**
- **Wan overview.**

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. Cisco CCNA V4.1, *Official Exploration Course*. 2011-2012

2. A. Tanenbaum & al, *Computer Networks, 5th Edition.* Prentice Hall, 2010

EE521L: Embedded System Laboratory

Course Information:

Semester: III	**Unit**: UEM31	**Credit Hours:** 1.5	**Coefficient:** 1
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 1.5 hrs/week	**Semester hrs:** 22.5

Course Objectives:

Get hands on experiment using a reconfigurable complex digital circuits

Course Prerequisite(s):

Advanced Digital Systems

Course Outline:

- **Introduction to Altera's SoPC Builder software.**
- **A Simple Computer System**
- **Program-Controlled Input/Output**
- **Subroutines and Stacks**
- **Polling and Interrupts**
- **Bus Communication**

Assessment Method: Continuous + Final Test

Textbook(s) and/or other required material:

1. Patrick Kadionik, http://kadionik.developpez.com/, Systèmes embarqués (ENSEIRB)

2. Andreas Savvide, Yale, EE460A, Networked Embedded Systems and Sensor

Networks.

EE512L: Digital Signal Processing with Applications Laboratory

Course Information:

Semester: III	**Unit**: UEM31	**Credit Hours:** 1.5	**Coefficient:** 1
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 1.5 hrs/week	**Semester hrs:** 45.0

Course Objectives:

Provide hands-on experiment of computationally intensive signal processing algorithms on the TMS320C6416 DSP processor.

Course Prerequisite(s):

Computer Architecture

Linear Systems II

Microprocessor Systems design

Advanced Integrated Circuits

Course Outline:

- **Familiarity with the CCS**
- **Audio signal sampling**
- **Design and implementation of FIR Filters**
- **Design and implementation of IIR Filters**
- **FFT implementation**
- **DSP Applications**
- **Sinewave generation**
- **PAM,**

Assessment Method: Continuous + Final Test

Textbook(s) and/or other required material:

TMS320C6416 DSK

EE523L: Computer Networks Laboratory

Course Information:

Semester: III	**Unit**: UEM31	**Credit Hours:** 1.5	**Coefficient:** 1
Lecture: 0 hrs/week	**Recitation:** 0 hrs/week	**Lab:** 1.5 hrs/week	**Semester hrs:** 22.5

Course Objectives:

The Goal of this series of labs is to make sure the student will grasp the concepts of LANs, sub-networking and VLANs

Course Prerequisite(s):

No pre-requisites

Course Outline:

The labs will be implemented using one the two similulators : Packet Tracer V3.3.3 of

Cisco Academy or GNS 3.x

- **Introduction to Packet Tracer and GNS3.**
- **Router Configurations used in LANs.**
- **Switch configuration used in LANs (VLAN configuration)**
- **LANs interconnections (MANs or/and WANs).**

Assessment Method: Continuous + Final Test

Textbook(s) and/or other required material:

1. Cisco CCNA V4.1, *Official Exploration Course*. 2011-2012

2. A. Tanenbaum & al, *Computer Networks, 5th Edition.* Prentice Hall 2010

EE541L: Introduction to UML

Course Information:

Semester: III	**Unit**: UET31	**Credit Hours:** 1.5	**Coefficient:** 1.5
Lecture: 2 hrs/week	**Recitation:** 1.5 hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 52.5

Course Objectives:

At the end of the course, the student using the UML formalism will be able to analyze and model simple as well as complex oriented object applications.

Course Prerequisite(s):

A good understanding of an object oriented programming (Java for example)

Course Outline:

- **Diagram Overview**
- **Structure Diagram**
  - Class Diagram
  - Component Diagram
  - n Object Diagram
- **Behavior Diagram**
  - Use Case Diagram
  - Interaction Diagram
  - Activity Diagram.
  - State Machine Diagram

Assessment Method: Continuous + Final Exam

Textbook(s) and/or other required material:

1. S.W. Ambler. *Agile Model Development with UM*, Cambridge University 2004.

2. R.C. Martin . *UML for Java Programmers*, Prentice Hall 2003

EL502: Communication Skills

Course Information:

Semester: IV	**Unit**:	**Credit Hours:** 3	**Coefficient:** 2
Lecture: hrs/week	**Recitation:** hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 40

Course Objectives:

To provide samples of academic writing and appropriate practice materiel for such student and also for those students who need to write papers and reports in English

Course Prerequisite(s):

English

Course Outline:

a) <u>Part One</u>

- Transition from sentence production to the development of continuous prose
- Devices for linking ideas and sentences: logical, grammatical and lexical connectors
- Concepts of reference
- Paragraph Development: Producing pieces of coherent discourse
- Different types of paragraphs (analysis, description, comparison/contrast, analogy,definition ...)

b) <u>Part Two</u>

- Definition: Explaining what something is
- Instructions and Process: Explaining how to do something
- Description of a Mechanism: Explaining how something works
- Analysis through Classification and Partition: Putting things in order
- Analysis through Effect and Cause: Answering Why
- The Summary: Abstracting and Getting to the heart of the matter
- Using the Library: Getting acquainted with ressource materials
- Visuals: Seeing is convincing
- Report Writing: Telling it like it is
- Oral Communication: Saying it clearly
- Business Letters: Sending a Message through the mail

Assessment Method: Continuous + Examen final

Textbook(s) and/or other required material:

1. R. R. Jordan, "Academic writing course , " Harper Collins publishers 1990.
2. T. A. Sherman and S. S. Johnson "Modern Technical Writing " 5th ed, prentice hall.

EE582: Management

Course Information:

Semester: I	**Unit**:	**Credit Hours:** 3	**Coefficient:** 2
Lecture: hrs/week	**Recitation:** hrs/week	**Lab:** 0 hrs/week	**Semester hrs:** 40

Course Objectives:

The objectives of this course are to provide a basic acquaintance with elementary concepts of production planning and organization in order to make sound production and management decisions.

Course Prerequisite(s):

Economics Basics

Course Outline:

- **Background of production management**
- **Basic economic concepts**
- **Equipment and storage**
- **Procurement and storage**
- **Production planning and control**
- **Product design**

Assessment Method: Continuous + Examen final

Textbook(s) and/or other required material:

1. Harold Koontz and Cyril O'donnel, "Management, " 5th ed, Mc Graw Hill.
2. F. G. Moore and T. E. Henkel, , "Production/Operations Management, " 8th ed, Mc Graw Hill.