

WELCOME TO EAST AFRICA UNIVERSITY

GALKAYO BRANCH – SOMALIA



THE PRINCIPAL'S OFFICE



THE LIBRARY



**THE OFFICE OF THE DEAN OF THE FACULTY OF COMPUTER
SCIENCE & ENGINEERING**



A LECTURE IN SESSION



STUDENT'S BEING ADDRESSED ON PARADE DAY



STUDENTS ARRIVING IN THE UNIVERSTY



EAST AFRICA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

GALKACYO-SOMALIA

University Curriculum /syllabus

NAME AND STATUS OF INSTITUTION:

Department of Computer science & Engineering, East Africa University - Galkacyo

EDUCATIONAL GOAL

The engineering program will provide engineers who combine engineering technology, and theoretical knowledge with practical skills and who take responsibility for the interaction between engineering, technology, environment and society. The program is based on research with emphasis on applied research and development.

PROFESSIONAL GOAL AND ACCESS TO FURTHER STUDIES

Computer engineers are employed in private enterprises and organizations as well as in public services and institutions that often are a mixture of technical and practical assignments. Engineers may be engaged in planning, development, maintenance, services, sales, work management, administration, marketing, financial management, teaching, and information technology. After completion of a three-year undergraduate engineering program, a Bachelor degree is granted.

COMPUTER SCIENCE - PROGRAM DESCRIPTION

B.Sc in Computer science:

The three years computer science study educates engineers that are able to develop, and maintain the use of advanced computer programs. Basic subjects in computer science and a through education in programming are central parts of the program In addition to programming; lectures are given in computer graphics, database development and system administration. Certain features use object oriented programming techniques, Windows applications, computer aided design, CAD client/server and SQL. Great emphasis is put on programming in the Windows environment. The programming languages are C++ with development tools Borland C++ and MS Visual C++, java with Borland I Builder, and SQL with Centura Team Developer and Centura Web Developer, and Visual Basic. The Operating systems in use are among others Windows NT and Red Hat, Unix and windows 2000 and, windows xp. Computer science engineers from University of East Africa will be specialists in software and program development for the solution of technical problems.

COURSE STRUCTURE:

The engineering education program consists of general, technical and optional, subjects including social-economic subjects. Social-economic subjects are a general term for subjects like economics, marketing, languages, communication, administration, leadership, management, law, ethics and environmental issues in wide perspectives. During the last semester of the three-year engineering program the students undertake a research project. Most of these final projects are carried out in co-operation with local industry and businesses. The students present their results in a written report and give a presentation to an audience of academic staff and fellow students. The general subjects (Mathematics, Statistics, Physics, Chemistry and Environment, Computer Science) form the mathematical-scientific basis for the studies, and are obligatory for the different engineering program., Among the subjects offered as optional is "Mathematics".

OFFICIAL LENGTH OF THE PROGRAMME

3 years

LEVEL OF QUALIFICATION

Undergraduate level

MEDIUM OF INSTRUCTION/ EXAMINATION:

English

ACADEMIC YEAR

The academic year normally will run from September to June, and is divided into 1st Semester and 2nd semesters.

ADMISSION REQUIREMENTS

Completion of General secondary leaving Certificate

FINAL EXAM/TEST

All subjects taught entail compulsory exercises, fieldwork and laboratory exercises. These have to be carried out satisfactorily before the candidate is allowed to sit the final exam. The schedule includes exercises and laboratory work in order to give all the students access to the equipment and/or assistance to complete the exercises. The students must expect to work more than the scheduled hours to complete the exercises to satisfaction. The grades are based on written exam, project work, compulsory exercises and/or an oral examination. The assessment or evaluation may show the grade pass or fail, or marks from A to F, where A is the top grade, the lowest pass grade is E.

COURSE STRUCTURE COMPUTER SCIENCE & ENGINEERING

DCS100 INTRODUCTION TO COMPUTER SCIENCE

1 semester of first year

Aim and objective:

This course gives a basic understanding of Information Communication Technology (ICT). Computers and operating systems, interfaces, standard computer equipment and programs, Communication and computer networks. Structured problem analysis and simple programming routines. Rules and regulations, protection of personal privacy.

Teaching methods

Lectures

2 hr/week, Laboratory 2hr/week

Reading list: Available on request.

Examination:

Compulsory assignments the numbers of assignments are given at course startup.
Grading: Passed/failed.

DCS101 INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING

2 semesters (Continuous first and second semester) of first year

Aim:

Introduction to Object Oriented Programming and Universal Modeling Language.

Objective:

Objects and Classes, Inheritance, Interfaces and Inner Classes, Graphics Programming, Event Handling, Streams and Files, UML.

Teaching methods

Lectures 3 hours per week, exercises 2 hours per week.

Reading list: Available on request.

Examination

Written exam, 3 hours (60%) projects (40%).

DCS102 DIGITAL CIRCUITS AND OPERATING SYSTEMS,

2nd semesters (Continuous 1st and 2nd semester) of First year

Aims

Provide knowledge of electronic digital circuits and microprocessor hardware, operation and programming. Give basic knowledge about UNIX and how an operating system administers the resources in a computer and how a modern file system and operating system are functioning.

Teaching methods:

Lectures 2 hours per week, exercises 2 hour per week, laboratory exercises 2 hours.

Reading list:

1.0. Gorman: Operating systems.

Examination:

Written exam, 3 hours. Compulsory exercises

DCS103 COMPUTER GRAPHICS

Third year 1st semester

Aim:

Give an introduction to principles in computer graphics -and to the ones that form- the basis of three-dimensional, modeling.

Objective:

Utilization of Computer Graphics. Device independent systems. Basic algorithms for drawing, Algorithms and data structures for clipping, windowing,, and, Principles for raster graphic, and interactive techniques. Machine - architectures for raster graphic, Geometric modeling of products, with discussion on the different methods. Shading and representation of curves/surfaces. Models for representation of colors~ and light. Drawing- and modeling- with- the aid. of a- modern- modeling system. Wok will focus on programming in connection with the lectures, and modeling in the modeling system.

Teaching methods:

Lecture of 2 hours per week, computer exercises 2 hours per week.

Examination:

Written. exam- (70%).- Computer exercises (30%).

Reading list: Available on request.

DCS104 ALGORITHMS AND DATA STRUCTURES

Third year 2nd semester.

Aim

Give an introduction to data structures: Array. List. Stack. Queue. Tree. Graph.

Objective:

Introduction to data structures. Method of organizing large amounts of data.

Algorithms and pseudo code implemented in Java/C++ using object oriented, programming, templates and recursion.

Teaching methods:

Lectures 2 hours per week, exercises 2 hours per week.

Reading list: Available on request.

Examination:

Written exam, 3 hours. Compulsory exercises.

DCS105 INTRODUCTION TO ISLAM AND TECHNOLOGY

1st semester – 1st year

Aim and objective:

The course gives an overview of the Islamic history and ethical approaches in today's society and discusses the role of ethics in Islam and way of life. Students are expected to be able to discuss from an ethical standpoint and to analyze ethical problems. They will work with basic ethical questions as well as ethical issues, pertaining to certain areas and professions. The course aims to give students best knowledge of ethics with a view to their personal growth as well as teaching them, discipline in future careers in school, or other organizations.

Teaching methods:

The course is given as a combination of lectures and seminars. Seminar work includes writing essays and analyzing ethical problems.

Reading list: Available on request.

Examination:

Assessment based on a 3-hour individual examination. The result is given as a graded mark.

DCS106 WINDOWS PROGRAMMING, ADVANCED

semester – 2, 4th year

Aims and objectives:

The course gives comprehensive coverage of Windows programming concepts using~ the Net platform and MFC (Microsoft Foundation Classes). Programming languages used are C# for Net and C++ for MFC. The objective of the course is to provide students with relevant knowledge for Windows application development, in an academic or professional setting. Object Oriented Programming. Windows messages and message handling.

Event based programming. SDI, MDI and dialog based!, programs. Serialization. Print and print preview. COM Component Object Model. ATL - Active Template Library.

Teaching methods:

Lectures 2 hours per week, computer exercises 2 hours per week.

Reading list:

A. Troelsen: C# and the NET platform, Apress, ISBN: 1893115593. SheperdA' Kruglinski: Programming with Microsoft Visual C++ NET, Sixth Edition (Core' Reference), Microsoft Press; ISBN: 0735615497.

Examination:

Written exam, 4 hours. Compulsory exercises.

DCS107 DATABASES

1st semester 2nd year

Aim:

Give an introduction to the theory of databases, particularly relational databases. SQL. Programming with Centura.

Objectives:

History. DBMS. Data Dictionary. Client Server. Relational databases. Tables. Key (primary / secondary). Indexes, B-Tree. Cluster. Hashing. SQL Creating table/view.1i Query against tables (single/multiple). Aggregation, Recursive query. Correlated sub queries. Update of table and view. Transactions. Interactive SQL Embedded SQL. Static SQL. Dynamic SQL. Programming with Centura. Centura objects, programming, design, message, DDE/DLL/OLE. Object oriented programming with~ Centura. Programming against data dictionary. Documents and pictures in databases.

Teaching methods:

Lectures and computer excises 4 hours per week.

Reading list

Groff & Weinberg: Using SQL.

Examination

Compulsory database exercises, 3 hours.14

DCS108 DATA COMMUNICATION

Semester 2 - Second Year

Aim :

Give an introduction to various kinds of data communications, and the basic principles of computer networks architecture.

Objectives:

Covers data communications from an applications point of view, and enters underlying protocols from this perspective. Central issues are application protocols, basic understanding of networks, network components, internet works, (TCP/IP/IP), basic protocol building blocks, security, network administration, routing, quality of service, name service, local area networks;.

Teaching methods:

Lectures 2 hours per week, laboratory and/or exercises 2 hours per week.

Reading list:

James F. Kurose and Keith W. Ross: Computer Networking.

Examination:

Written exam, 3 hours. Compulsory exercises.

DCS109 WEB TECHNIQUES I

2 semester – 1st year

Aim:

Convey knowledge and skills on Web techniques, focusing on multimedia and, dynamic applications.

Objectives:

Introduction, basic web concepts and terms. HTML, Client and server side scripting. Active server page (asp) scripting model and *objects*. Database connections and applications, Development and deployment of server component. Selected subjects as: XML, PHP, DHTML or XP. Group assignment.

Teaching methods:

Lectures 2 hours per week, laboratory exercises 2 hours per week.

Written exam, 3 hours. Compulsory exercises.

DCS110 COMPUTER ORGANIZATION AND SYSTEMS

1st semester – 1st year

Aim and objective:

Introduction to Computer Architecture. Central Processing Unit. Instruction Sets and Assembly. Computer Logic and Arithmetic. Memory Systems. Pipelining. Microprogramming. Multicycling. Parallelism. Interfacing Peripherals. Multiprocessors. Case Studies of Modern Computer Architectures. Simulator Laboratory. Selection of Advanced Topics.

Teaching methods

Lectures and PC lab 3-4 hours per week

Reading list: Available on request

Examination:

Examination: 3 hours written individual examination.

DCS111 NETWORK MANAGEMENT'

2nd semester -3rd year

Aim:

Give the necessary background to be able to function as, a(network manager/consultant.

Objectives:

Basic principles about network management in addition to practical experience to the most common network operating systems (NOS). Important topics are hardware'; components, server specification, network design. (shared/switched. networks), network operating systems, user environment and security. Give the necessary background to be able to function as a network manager/consultant.

Teaching methods:

Lectures 2 hours per week, laboratory exercises. 2 hours. per week.

Reading list: Available on request

Examination :

Written exam 3 hours & Compulsory exercises.

DCS112 MOBILE COMMUNICATION

2nd semester -3rd year

Aim:

Fundamental knowledge of wireless and mobile communications.

Objectives:

Wireless transmission, medium access control, mobile communication systems, satellite systems, broadcast systems, wireless LAN.

Teaching methods:

Lectures, exercises and web based material.

Reading list: Available on request.

Examination:

Written exam, 3 hours. Compulsory exercise;

DCS113 WEB TECHNIQUES 2

2nd semester -3rd year

Aims:

In depth knowledge on a selected Internet technology.

Objectives:

The course is conducted as a project/ guided group work. The group chose in cooperation with the responsible professor, a topic to be investigated. The, delivers from the assignment shall be in th4 form of a web-site comprising a lection and/or an explained prototype application

Teaching methods

Project based.

Reading list: Available on request

Examination:

Pass/fail based on the deliveries from the assignment.

DCS114 TELECOMMUNICATION

2nd semester – 1st year

Aim:

Provide fundamental', knowledge about the principles, theories and techniques used in telecommunications.

Objectives:

Transmission, Modulation/demodulation. Fiber optic communications. Digital communications. Data communications. Digital transmission. Digital multiplexing.

Teaching methods:

Lectures 2 hours per week, exercises 1 hours per week, laboratory exercises 3 hours every other week.,

Reading list:

Digital Communications, Addison-Wesley Long man.

Examination:

Written exam, 3 hours. Compulsory exercises;.

DCS115 RESEARCH PROJECT

2nd semester – 3rd year

Aims:

Provide experience through completion of a main project in computer science.

Objectives;

Students chose themes and problems under guidance by the academic staff. The availability of guidance determines if projects can be taken in other areas. As far as practically possible, projects should be in co-operation with industry firms so that students obtain experience in the industrial application of theoretical knowledge and', an idea of the needs of industry.

Teaching methods:

Independent work, access to academic assistance.

Examination:

Project process, Project report, Project product and an oral presentation.

Other Subjects include **DCS 116** - System Analysis and Design, **DCS 117** - Computer Applications, **DCS 118** - Hardware Troubleshooting and Maintenance.