REGULATIONS AND SYLLABUS
FOR
BACHELOR OF SCIENCE IN COMPUTER SCIENCE

1. MOTIVATIONS AND OBJECTIVES

The School of Computing & Informatics (formerly Institute of Computer Science) launched the Bachelor of Science (Computer Science) programme in 1992. The programme was aimed at meeting perceived development needs in Kenya, which it has done very well. Indeed, most of the computer science professionals in industry today have been developed through this programme. However, with experience in offering this programme and given changes in national development needs as well as changes in the fast changing area of information technology and systems, it has become necessary to revise this programme.

More specifically, the Bachelor of Science (Computer Science) programme is part of a set of academic programmes at the School of Computing & Informatics that have been ***motivated*** by the following needs at the national level:

(a) The need for Kenya to harness IT for increased productivity and effectiveness in all sectors of the economy for national prosperity.
(b) The need for widespread socio-economic awareness in Kenya of the purpose and capabilities of information systems.
(c) The need for Kenya to participate effectively in and reap maximum benefits from the global information economy.
(d) The need to address the increasing demand for IT education in the world of work.

The specific ***objectives*** of the Bachelor of Science (Computer Science) programme are:

(a) To present the theoretical foundations in computer science and to integrate these theories in a way that gives the learner deep knowledge of computer science.
(b) To enable learners to use the knowledge gained to analyze, design and implement solutions to a wide range of real-world problems.
(c) To develop learners who are practical and problem solving-oriented and capable of life-long learning.
(d) To contribute to the production of computer science and information systems professionals required at the various levels of our nation's industrial development and thereby be a partner in the industrial development of Kenya.

2. ENTRY REQUIREMENTS

2.1 Candidates must satisfy the University's general admission criteria.

2.2 Eligibility for consideration for admission into the degree of Bachelor of Science in Computer Science in the School of Computing & Informatics shall be governed by the following minimum admission requirements or an equivalent qualification recognized by Senate:

a) KCSE Candidates

Candidates must have obtained minimum grade of C+ in each of the subjects shown below:

Alternative A
Mathematics
English or Biology or Geography or Any from Group IV
Physics
Chemistry

Alternative B
Mathematics
English or Geography or Any from Group IV
Physical Sciences
Biological Sciences

b) A-Level Candidates

candidates with 2 principal passes, one of which must be in Mathematics or Physics, and a subsidiary pass with a Credit pass in Physics at 'O' level.

c) Diploma in Computer Studies

Candidates with Ordinary Diploma in Computer Studies or equivalent with, a minimum pass at Credit level, from an institution recognized by Senate.

d) Higher Diploma in Computer Studies

Candidates with Higher Diploma in Computer Studies or equivalent from an institution recognized by Senate.

e) Bachelor's Degree

Candidates with a Bachelor's degree from an institution recognized by Senate.

3. COURSE STRUCTURE AND DURATION

4.1 The course shall extend over a minimum period of 8 semesters and a maximum period of 16 semesters.

4.2 Each academic year shall have at least two semesters.

4.3 A course unit shall be defined as 45 contact hours of lectures, tutorials and practicals; including common undergraduate courses.

4.4 Taught courses, lab-based courses and projects shall be evaluated in terms of course units.

4.5 The Second Year Projects shall be equivalent to two course units.

4.6 The Fourth Year Project shall be equivalent to six course units.

4.7 The degree to be awarded shall be Bachelor of Science in Computer Science.

4. COURSE OUTLINE

Year of Study I (Compulsory Units)

Semester 1		Contact Hours
ICS 111	Computer Organization	45
ICS 113	Programming Methodology	45
ICS 115	Discrete Mathematics	45
ICS 117	Differential & Integral Calculus	45
ICS 119	Fundamentals of Physics	45
CCS 001	Communication Skills	45
CCS 002	Fundamentals of Development	45
	Total	**315**

Semester 2		Contact Hours
ICS 112	Data Structures & Algorithms	45
ICS 114	Information Systems Analysis & Design	45
ICS 116	Introduction to Database Systems	45
ICS 118	Data Communication Principles	45
ICS 120	Probability & Statistics	45
ICS 122	Linear Algebra	45
ICS 124	Semiconductor Electronics	45
CCS 009	Elements of Economics	45
	Total	**360**

Year of Study II (Compulsory Units)

Semester 1		Contact Hours
ICS 211	Computer Architecture	45
ICS 213	Operating Systems	45
ICS 215	Object-Oriented Programming	45
ICS 217	Digital Electronics	45
ICS 219	Automata and Languages	45
ICS 221	Introduction to Artificial Intelligence	45
ICS 223	Software Engineering Methodologies	45
	Total	**315**

Semester 2		**Contact Hours**
ICS 212	Assembly Language Programming	45
ICS 214	Computer Systems Laboratory	15
ICS 216	Computer Networking Principles	45
ICS 218	Organizations & Management	45
ICS 220	Artificial Intelligence Programming	45
ICS 224	Operations Research	45
ICS 226	Project	90
	Total	**330**

Year of Study III (Compulsory Units)

Semester 1		**Contact Hours**
ICS 311	Advanced Computer Architecture	45
ICS 313	Object-Oriented Analysis & Design	45
ICS 315	Human Computer Interface	45
ICS 317	Management Information Systems	45
ICS 319	Distributed Systems	45
ICS 321	Advanced Database Systems	45
ICS 323	Foundations of Knowledge-based Systems	45
	Total	**315**

Semester 2		**Contact Hours**
ICS 312	Internet Technologies and Applications	45
ICS 314	Computer Graphics	45
ICS 316	Distributed Operating Systems	45
ICS 318	Software Engineering Development	45
ICS 320	Foundations of Learning and Adaptive Systems	45
ICS 322	Research Methodology	45
	Total	**270**

Year of Study IV

Semester 1		**Contact Hours**
ICS 413	Network Systems Security	45
ICS 415	Compiler Construction	45
ICS 417	Information Systems and Society	45
Electives	Any Three Electives approved by the School	135
	Total	**270**

Semester 2		
ICS 411	Computer Science Project	270
	Total	**270**

Overall Total **2445**

GROUPS OF ELECTIVES

A. Distributed Systems Electives

ICS 431: Computer Network Performance	45
ICS 432: Distributed Systems and Network Programming	45
ICS 433: Distributed Algorithms	45
ICS 434: Distributed Multimedia Systems	45
ICS 435: Distributed Databases	45
ICS 436: Parallel Processing	45

B. Artificial Intelligence Electives

ICS 441: Knowledge Engineering and Society	45
ICS 442: Neural Networks	45
ICS 443: Natural Language Processing	45
ICS 444: Speech Recognition	45
ICS 445: Expert Systems	45
ICS 446: Case-based Reasoning	45
ICS 447: Cognitive Science	45

C. Information Systems Electives

ICS 461: Decision Support Systems	45
ICS 462: Information Systems Strategy and Organization	45
ICS 463: Information Systems Audit	45