

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE DETAILS



INTRODUCTION TO B.S.C.S

The program is accredited by National Computing Education & Accreditation Council (NCEAC) of HEC Pakistan. The purpose of the computer science degree program is to produce graduates who have a broad understanding of the field and its concepts, theory and techniques. The program focuses on encouraging students to develop and use abstract models in addition to applying the respective technologies in practical situations. This program focuses on establishing a strong mathematical foundation, basic aspects of computing, and advanced technical electives covering areas like intelligent systems (advance database, artificial neural networks, biologically inspired computing, image processing etc) and software engineering and Net-centric (network security, design patterns, mobile computing, web engineering, advanced programming design of programming languages etc). Abundant opportunities exist for students to develop expertise in their streams of interest through enrollment in these elective courses

Special emphasis is placed on developing project management and communication skills so that the graduates are able to lead the software and IT industry with excellent entrepreneurship knowledge. The program is also designed to provide formal foundations for higher learning as well as industry. The program is dynamic and flexible enough to align with the latest scientific and technological developments in the field. The courses are tailored according to international standards to nurture capacity building and original thinking in our graduates.

STUDY PLAN FOR B.S.C.S

Semester - 1

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
MA1011	Basic Calculus & Analytic Geometry	3-0-3	FRESHMAN STANDING
GS1001	Electricity & Magnetism	3-0-3	FRESHMAN STANDING
HU1001A	Islamic Ideology	1.5-0-1.5	FRESHMAN STANDING
HU1001B	Pakistan Studies	1.5-0-1.5	FRESHMAN STANDING
CS1101	Fundamentals of CS	3-0-3	FRESHMAN STANDING
CS1001A	Programming in C	3-3-4	FRESHMAN STANDING

Semester - 2

CODE		HOURS	PRE-REQUISITE
MA1012	MULTIVARIABLE CALCULUS AND ODE'S	3-0-3	BASIC CALCULUS & ANALYTIC GEOMETRY
CS1003	PROGRAMMING TECHNIQUES	3-3-4	PROGRAMMING IN C
ME1003	MECHANICS	3-0-3	FRESHMAN STANDING
CS1201	DIGITAL LOGIC DESIGN	3-3-4	FRESHMAN STANDING
HU1005	COMMUNICATION SKILLS AND TECHNICAL REPORT WRITING	3-0-3	FRESHMAN STANDING

Semester - 3

CODE		HOURS	PRE-REQUISITE
MA2013	LINEAR ALGEBRA AND NUMERICAL ANALYSIS	3-0-3	BASIC CALCULUS & ANALYTIC GEOMETRY
CS2202	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE	3-3-4	DIGITAL LOGIC DESIGN
CS2301	OBJECT ORIENTED PROGRAMMING	3-3-4	PROGRAMMING TECHNIQUES
CS2102	DISCRETE MATHEMATICS	3-0-3	SOPHOMORE STANDING
CS2302	DATA STRUCTURE AND ALGORITHMS	3-3-4	PROGRAMMING TECHNIQUES

STUDY PLAN FOR B.S.C.S

Semester - 4

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
MA2014	PROBABILITY & STOCHASTIC PROCESS	3-0-3	MULTIVARIABLE CALCULUS AND ODE'S
CS2203	OPERATING SYSTEMS	3-3-4	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE
HU2001	PROFESSIONAL ETHICS AND ISLAMIC SYSTEM	3-0-3	SOPHOMORE STANDING
CS2401	SOFTWARE ENGINEERING	3-3-4	OBJECT ORIENTED PROGRAMMING
CS2104	FORMAL LANGUAGES AND AUTOMATA THEORY	3-0-3	PROGRAMMING TECHNIQUES

Semester - 5

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
CS3103	SIMULATION & MODELING	3-0-3	MULTIVARIABLE CALCULUS AND ODE'S
CS3501	DATABASE MANAGEMENT SYSTEMS	3-3-4	OBJECT ORIENTED PROGRAMMING
CSXXXX	CS ELECTIVE I	3-3-4	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE
CS3303	DESIGN & ANALYSIS OF ALGORITHM	3-0-3	DATA STRUCTURE AND ALGORITHMS
CS3601	COMPUTER COMMUNICATION AND NETWORKING	3-3-4	OPERATING SYSTEMS

Semester - 6

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
HU3007	ENGINEERING ECONOMICS	3-0-3	JUNIOR STANDING
CS3105	SYSTEM PROGRAMMING	3-3-4	OPERATING SYSTEMS
CS3402	SOFTWARE DESIGN & ARCHITECTURE	3-0-3	SOFTWARE ENGINEERING
CS3701	ARTIFICIAL INTELLIGENCE	3-3-4	DATA STRUCTURE & ALGORITHMS
CSXXXX	CS ELECTIVE II	3-0-3	AS PER SPECIFIC COURSE

STUDY PLAN FOR B.S.C.S

Semester - 7

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
HUXXXX	HUMANITIES ELECTIVE	3-0-3	SENIOR STANDING
CS4106	SOFTWARE CONSTRUCTION	2-3-3	FORMAL LANGUAGES & AUTOMATA THEORY
CSXXXX	CS ELECTIVE III	3-0-3	AS PER SPECIFIC COURSE
MSXXXX	MANAGEMENT ELECTIVE I	3-0-3	AS PER SPECIFIC COURSE
CS4990A	SENIOR DESIGN PROJECT (PART-I)	0-9-3	SENIOR STANDING

Semester - 8

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
MSXXXX	MANAGEMENT ELECTIVE II	3-0-3	AS PER SPECIFIC COURSE
CSXXXX	CS ELECTIVE IV	3-0-3	AS PER SPECIFIC COURSE
CS4403	HUMAN COMPUTER INTERACTION	3-0-3	OBJECT ORIENTED PROGRAMMING
CSXXXX	CS ELECTIVE-IV	3-0-3	AS PER SPECIFIC COURSE
CS4990B	SENIOR DESIGN PROJECT (PART-II)	0-9-3	SENIOR DESIGN PROJECT

INTELLIGENT SYSTEMS ELECTIVES

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
IS3502	ADVANCED DATABASES	3-0-3	DATABASE MANAGEMENT SYSTEMS
IS4503	DATA WAREHOUSING AND DATA MINING	3-0-3	ADVANCED DATABASES
IS4504	MIS & DSS	3-0-3	DATABASE MANAGEMENT SYSTEMS
IS3702	INTRODUCTION TO SOFT COMPUTING	3-0-3	DATA STRUCTURE AND ALGORITHMS
IS4703	ARTIFICIAL NEURAL NETWORKS	3-0-3	ARTIFICIAL INTELLIGENCE
IS4704	DIGITAL IMAGE PROCESSING	3-0-3	DATA STRUCTURE AND ALGORITHMS
IS3801	BIO-INFORMATICS	3-0-3	DATA STRUCTURE AND ALGORITHMS
IS4802	COMPUTATIONAL BIOLOGY	3-0-3	DATA STRUCTURE AND ALGORITHMS
IS4803	BIO-INSPIRED COMPUTING	3-0-3	DATA STRUCTURE AND ALGORITHMS

SOFTWARE ENGINEERING & NET-CENTRIC ELECTIVES

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
SN3107	DESIGN OF PROGRAMMING LANGUAGES	3-0-3	FORMAL LANGUAGES AND AUTOMATA THEORY
SN3108	REAL-TIME PROGRAMMING	3-0-3	OPERATING SYSTEMS
SN3203	COMPUTER ARCHITECTURE	3-3-4	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE
SN4109	PARALLEL PROCESSING	3-0-3	OPERATING SYSTEMS
SN4110	COMPUTER GRAPHICS	3-0-3	SYSTEM PROGRAMMING
SN4304	DESIGN PATTERN	3-0-3	DATA STRUCTURE AND ALGORITHMS
SN3405	ADVANCED SOFTWARE ENGINEERING	3-0-3	SOFTWARE ENGINEERING
SN4406	SOFTWARE TESTING & QUALITY ENGINEERING	3-3-4	SOFTWARE ENGINEERING
SN4406	SOFTWARE PROJECT MANAGEMENT	3-0-3	SOFTWARE ENGINEERING
SN3603	DISTRIBUTED SYSTEMS	3-0-3	OPERATING SYSTEMS
SN4604	VISUAL PROGRAMMING	3-0-3	OBJECT ORIENTED PROGRAMMING
SN4605	NETWORK SECURITY	3-0-3	COMPUTER COMMUNICATION & NETWORKING
SN4606	DATA SECURITY & ENCRYPTION	3-0-3	COMPUTER COMMUNICATION & NETWORKING
SN4607	MOBILE COMPUTING	3-0-3	COMPUTER COMMUNICATION & NETWORKING
SN3608	WEB ENGINEERING	3-0-3	COMPUTER COMMUNICATION & NETWORKING

MANAGEMENT & HUMANITIES ELECTIVES

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
MS4101	PRODUCTION & OPERATION MANAGEMENT	3-0-3	SENIOR STANDING
MS4102	ENTREPRENEURSHIP & TECHNOLOGY COMMERCIALIZATION	3-0-3	SENIOR STANDING
MS4103	LEADERSHIP & TEAM MANAGEMENT	3-0-3	SENIOR STANDING
MS4104	TOTAL QUALITY MANAGEMENT	3-0-3	SENIOR STANDING
MS4105	PROJECT SCHEDULING AND COSTING	3-0-3	SENIOR STANDING
MS4106	OPERATION RESEARCH	3-0-3	SENIOR STANDING

DEGREE REQUIREMENTS

AS PER REQUIREMENTS OF HEC, BACHELOR OF COMPUTER SCIENCES PROGRAM MUST HAVE A MINIMUM OF 133 CREDIT HOURS INCLUDING A DISSERTATION OF 6 CREDIT HOURS. BACHELOR OF SCIENCE IN COMPUTER SCIENCE PROGRAM AT CASE COMPRISES OF 8 SEMESTERS, WITH TWO SEMESTERS A YEAR AND IS A FULL-TIME FOUR-YEAR BACHELOR PROGRAM. THE MAJOR AREAS OF SPECIALIZATION ARE INCORPORATED IN THE STRUCTURE. EACH MAJOR AREA COMPRISES OF 4-6 COURSES. IN ADDITION AS PER HEC CRITERIA FOR COMPUTER SCIENCE DEGREE, STUDENTS NEED TO COMPLETE AN INTERNSHIP IN INDUSTRY: FOR DURATION OF 6 TO 8 WEEKS