

BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING

COURSE DETAILS



INTRODUCTION TO B.S.S.E

Pakistan is among the most preferred software outsourcing destination across the globe. The blooming software industry of Pakistan is providing quality services in terms of software codes and designs. Software Engineering is the engineering discipline that utilizes a systematic approach to the development, production, operation, and maintenance of software. The primary mission of Bachelor of Science in Software Engineering program is the education of students who can define, design, develop, deliver and maintain high quality software systems within resource constraints; and to prepare students for careers as software engineers in industry and research.

Bachelor of Science in Software Engineering at SS CASE IT is designed while considering the current state of the art trends in the software industry. Through challenging curricula, high quality knowledge transfer and a technical emphasis, students learn and apply practices, tools, and techniques in real-world. This program is designed to produce future agents of change: individuals who will lead and improve the Software Engineering related industrial and academic practices and the state of the practice in the years to come. Our faculty provides guidance and mentoring based on years of industry experience in Software Engineering and/or related disciplines. Their expertise ranges from software architecture and software process improvement to managing people and risk.

STUDY PLAN FOR B.S.S.E

Semester - 1

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
SE1501	INTRODUCTION TO INFORMATION & COMMUNICATION TECHNOLOGIES	001	FRESHMAN STANDING
SE1501L	INTRODUCTION TO INFORMATION & COMMUNICATION TECHNOLOGIES	001	FRESHMAN STANDING
SE1001	PROGRAMMING FUNDAMENTALS	003	FRESHMAN STANDING
SE1001L	PROGRAMMING FUNDAMENTALS LAB	001	FRESHMAN STANDING
SC1001	CALCULUS & ANALYTICAL GEOMETRY	003	FRESHMAN STANDING
SC1201	APPLIED PHYSICS	003	FRESHMAN STANDING
HU1002	ENGLISH COMPOSITION & COMPREHENSION	003	FRESHMAN STANDING

Semester - 2

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
SE1002	PROGRAMMING TECHNIQUES	003	PROGRAMMING FUNDAMENTALS (CS1001)
SE1002L	PROGRAMMING TECHNIQUES LAB	001	PROGRAMMING FUNDAMENTALS (CS1001)
SE2101	SOFTWARE ENGINEERING	003	FRESHMAN STANDING
HU1003	COMMUNICATION & PRESENTATION SKILLS	003	FRESHMAN STANDING
HU1101	ISLAMIC STUDIES	002	FRESHMAN STANDING
HU1102	PAKISTAN STUDIES	002	FRESHMAN STANDING
SE2301	DISCRETE STRUCTURES	003	FRESHMAN STANDING

Semester - 3

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
SC2003	LINEAR ALGEBRA	003	
SE2003	DATA STRUCTURE AND ALGORITHMS	003	PROGRAMMING TECHNIQUES
SE2003L	DATA STRUCTURE AND ALGORITHMS LAB	001	PROGRAMMING TECHNIQUES
SE2004	OBJECT ORIENTED PROGRAMMING	003	PROGRAMMING TECHNIQUES
SE2004L	OBJECT ORIENTED PROGRAMMING LAB	001	PROGRAMMING TECHNIQUES
SE2119	SOFTWARE REQUIREMENT ENGINEERING	003	SOFTWARE ENGINEERING
	UNIVERSITY ELECTIVE 1	003	SOPHOMORE STANDING

STUDY PLAN FOR B.S.S.E

Semester - 4

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
SC2004	PROBABILITY AND STATISTICS	003	
SE2201	INTRODUCTION TO DATABASE SYSTEMS	003	DATA STRUCTURE & ALGORITHMS
SE2201L	INTRODUCTION TO DATABASE SYSTEMS LAB	001	DATA STRUCTURE & ALGORITHMS
SE2504	OPERATING SYSTEMS	003	DATA STRUCTURE & ALGORITHMS
SE2504L	OPERATING SYSTEMS LAB	001	DATA STRUCTURE & ALGORITHMS
SE2102	SOFTWARE DESIGN & ARCHITECTURE	002	SOFTWARE REQUIREMENT
SE2102L			ENGINEERING
	SOFTWARE DESIGN & ARCHITECTURE LAB	001	SOFTWARE REQUIREMENT
			ENGINEERING
	UNIVERSITY ELECTIVE 2	003	AS PER SPECIFIC COURSE

Semester - 5

CODE	COURSE TITLE	HOURS	PRE-REQUISITE
SC2004	PROBABILITY AND STATISTICS	003	
SE2201	INTRODUCTION TO DATABASE SYSTEMS	003	DATA STRUCTURE & ALGORITHMS
SE2201L	INTRODUCTION TO DATABASE SYSTEMS LAB	001	DATA STRUCTURE & ALGORITHMS
SE2504	OPERATING SYSTEMS	003	DATA STRUCTURE & ALGORITHMS
SE2504L	OPERATING SYSTEMS LAB	001	DATA STRUCTURE & ALGORITHMS
SE2102	SOFTWARE DESIGN & ARCHITECTURE	002	SOFTWARE REQUIREMENT
SE2102L			ENGINEERING
	SOFTWARE DESIGN & ARCHITECTURE LAB	001	SOFTWARE REQUIREMENT
			ENGINEERING
	UNIVERSITY ELECTIVE 2	003	AS PER SPECIFIC COURSE

STUDY PLAN FOR B.S.S.E

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.S.E

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