CASE UNIVERSITY

MASTER OF SCIENCE IN COMPUTER SCIENCE

COURSE DETAILS

INTRODUCTION TO M.S.C.S

SS CASE IT has a mission to contribute in the industrial sector by producing computer experts both in hardware and software who can lead the industry by introducing best professional practices. SS CASE IT is significantly contributing in today's engineering industry by providing knowledge to technical personnel at undergraduate level (Electrical & Computer Engineering, Computer Science) and at the graduate level (Software Engineering, Information Security, and Electrical and Computer Engineering.) keeping in view the requirement of skilled manpower for the local industry. To fill the gap of software part in the existing engineering programs, SS CASE IT intends to launch Master of Science in Computer Science degree at the Graduate level as part of its Faculty of Computing.

OBJECTIVES

The MS in Computer Science provides intensive preparation in the concepts and techniques related to the design, programming, and application of computing systems. Students are provided a deep understanding of both advanced and important current issues in computer science so that they may either obtain productive employment or pursue advanced research.The MS in Computer Science program requires the student to take a broad spectrum of courses, while simultaneously allowing for emphasis in desired areas of specialization close to software technologies, systems and networks, multimedia, visual computing, embedded systems, information security engineering, software engineering and information systems.

STUDY PLAN FOR M.S.C.S

DEGREE COMPLETION REQUIREMENTS

To become eligible for award of MS degree, a student must satisfy the following requirements:

CODE	COURSE TITLE	CREDIT HOURS
CS6901	FOUR (04) CORE COURSES	A12
CS6902	RESEARCH METHODOLOGY	3
	THESIS	6
	TWO (02) COURSES FROM THE PROGRAM ELECTIVES	6
	TWO (02) COURSES FROM THE UNIVERSITY ELECTIVES	6
	TOTAL	33 (33-0)

(*Must have earned CGPA (Cumulative Grade Point Average) of at least is CGPA of 2.5)

STUDY PLAN FOR M.S.C.S

COURSES BREAKDOWN FOR NON-THESIS OPTION:

CODE	COURSE TITLE	CREDIT HOURS
	FFOUR (04) CORE COURSES	12
	THREE (03) COURSES FROM THE PROGRAM ELECTIVES	9
	THREE (03) COURSES FROM THE UNIVERSITY ELECTIVES	9
	MS PROJECT	3
	TOTAL	33 (33-0)

- **(*Must have earned CGPA (Cumulative Grade Point Average) of at least is CGPA of 2.5)**
- **Earned at least 18 creditsPassed the "Research Methodology" course; ANDCGPA is equal to or more than 2.5.**

COURSES OFFERED IN COMPUTER SCIENCES PROGRAM:

CORE COURSES FOR MS (COMPUTER SCIENCE)

CS6001	ADVANCED THEORY OF COMPUTATION
CS6002	ADVANCED ALGORITHM ANALYSIS
CS6003	ADVANCED OPERATING SYSTEMS
CS6004	ADVANCED COMPUTER ARCHITECTURE
CS6005	THEORY OF PROGRAMMING LANGUAGES

- **At least four courses must be taken from the above**

ELECTIVE COURSES

NET-CENTRIC COMPUTING

CS6101	ADVANCED COMPUTER NETWORKS
CS6102	SIMULATION MODELING AND ANALYSIS OF COMPUTER NETWORKS
CS6103	SIMULATION MODELING AND EVALUATION OF MOBILE NETWORKING
CS6104	DATA COMPRESSION
CS6105	NETWORK PERFORMANCE EVALUATION
CS6106	NETWORK SECURITY
CS6107	CLUSTER COMPUTING SYSTEMS
CS6108	CLOUD COMPUTING
CS6109	DISTRIBUTED COMPUTING SYSTEMS
CS6110	ADVANCED TOPICS IN COMPUTER NETWORKING
CS6111	ADVANCED TOPICS IN NET-CENTRIC COMPUTING

ELECTIVE COURSES

Intelligent Systems & Information Management

CS6201	ADAPTIVE AND INTELLIGENT CONTROL
CS6202	MACHINE LEARNING
CS6203	DEEP LEARNING
CS6204	ARTIFICIAL INTELLIGENCE AND NEUTRAL COMPUTING
CS6205	COMPUTER VISION
CS6206	DIGITAL IMAGE PROCESSING
CS6207	DATA MINING
S6208	PARALLEL AND DISTRIBUTED DATABASE SYSTEMS
CS6209	DISTRIBUTED DATA PROCESSING
CS6210	DATA WAREHOUSING
CS6211	OBJECT ORIENTED DATABASE
CS6212	DATA VISUALIZATION
CS6213	BIG DATA ANALYTICS
CS6214	BAYESIAN DATA ANALYSIS
CS6215	SOCIAL NETWORK ANALYSIS
CS6216	TIME SERIES ANALYSIS AND PREDICTION
CS6217	NATURAL LANGUAGE PROCSSING
CS6218	SEMANTIC WEB
CS6219	ADVANCED DATABASE MANAGEMENT SYSTEMS
CS6220	ADVANCED TOPICS IN INTELLIGENT SYSTEMS
CS6221	ADVANCED TOPICS IN INFORMATION MANAGMENT

ELECTIVE COURSES

SOFTWARE ENGINEERING

CS6301 ADVANCED SOFTWARE ENGINEERING
CS6302 STATISTICS FOR SOFTWARE ENGINEERING
CS6303 OBJECT ORIENTED SOFTWARE ENGINEERING
CS6304 SOFTWARE QUALITY MANAGEMENT
CS6305 SOFTWARE DEVELOPMENT PROCESS
CS6306 INFORMATION SYSTEMS
CS6307 SOFTWARE PROJECT MANAGEMENT
CS6308 SYSTEM ENGINEERING
CS6309 ADVANCED TOPICS IN SOFTWARE ENGINEERING

GRAPHICS AND VISUAL COMPUTING

CS6401 ADVANCED COMPUTER GRAPHICS AND VISUALIZATION
CS6402 MULTIMEDIA COMMUNICATIONS
CS6403 VIRTUAL REALITY
CS6404 GEOGRAPHICAL INFORMATION SYSTEMS
CS6405 COMPUTER ANIMATION
CS6406 ADVANCED TOPICS IN GRAPHICS AND VISUAL COMPUTING

PROGRAMMING LANGUAGE DESIGNS AND TRANSLATORS

CS6501 ADVANCED COMPILER DESIGN
CS6502 PROGRAMMING LANGUAGE DESIGN
CS6503 CRYPTOGRAPHY AND NETWORK SECURITY

ELECTIVE COURSES

COMPUTER ARCHITECTURE AND ORGANIZATION

CS6601 ADVANCED COMPILER DESIGN
CS6601 PROGRAMMING LANGUAGE DESIGN
CS6603 CRYPTOGRAPHY AND NETWORK SECURITY

SYSTEMS ENGINEERING

CS6701 DIGITAL SIGNAL PROCESSING
CS6703 ADVANCED DIGITAL SYSTEMS DESIGN
CS6704 SPECIAL TOPICS IN CONTROL SYSTEMS
CS6706 LINEAR SYSTEMS AND CONTROLS
CS6707 REAL TIME OPERATING SYSTEMS
CS6708 REAL TIME EMBEDDED SYSTEM

PROGRAMMING LANGUAGE DESIGNS AND TRANSLATORS

CS6801 INFORMATION AND CODING THEORY
CS6802 CRYPTOGRAPHY AND NETWORK SECURITY
CS6803 INFORMATION SECURITY STRATEGIES AND POLICIES
CS6804 COMPUTER SYSTEM SECURITY
CS6805 ADVANCED CRYPTOGRAPHY AND CRYPTANALYSIS
CS6806 ADVANCED TOPICS IN INFORMATION SECURITY
CS6807 CYBER FORENSIC ANALYSIS