

MASTER OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING

2 YEARS PROGRAMME

Choice Based Credit System
w. e. f. July 2015
(70:30)



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY
HISAR-125001, HARYANA

Vision and Mission of the Department

VISION

The vision of the Department is to become a centre of excellence for education in Computer Science, Engineering and Applications. We visualize ourselves as an agency to nurture young minds into leaders of tomorrow in the field of higher education, research and development, and corporate world. We aim to produce creators and innovators who will work towards the overall well being of the society.

MISSION

- To impart state-of-the-art knowledge in Computer Science and Engineering, Information Technology and Computer Applications.
- To ensure our students graduate with a sound theoretical basis and wide-ranging practical experience.
- To foster linkages between the Department and public and private sectors, traversing research establishments as well as Information Technology industry.
- To promote ethical research of high quality.
- To adopt the best pedagogical methods in order to maximize knowledge transfer.
- To inculcate a culture of free and open discussions in the Department.
- To engage students in learning, understanding and applying novel ideas.
- To infuse scientific temper, professionalism, enthusiasm and team spirit.
- To inspire a zest into students for lifelong learning.
- To promote democratic values, an environment of equal opportunity for everyone irrespective of gender, religion and cast.
- To attract and retain the talented and dedicated teaching and supporting staff, and students.

Programme Educational Objectives (PEOs)

The educational objectives of the M. Tech. (CSE) Programme are:

- PEO1. To set high academic goals for the graduating students and to train them in applying and extending the knowledge to the benefit of the society at large.
- PEO2. To produce post-graduates with a sound theoretical and practical knowledge in the discipline of Computing Science and Engineering.
- PEO3. To create knowledgeable and enthusiastic teaching professionals to engage in higher education institutions.
- PEO4. To craft technically competent, proficient and responsible professionals for IT and its related industries.
- PEO5. To establish a research tradition that supports our post-graduates for pursuing research careers in premier universities and research institutes/organisations in India and abroad.

Programme Outcomes (POs)

In order to achieve the PEOs, we expect our students to attain the following outcomes by the time of their graduation. The Programme graduates will have:

- PO1. an ability to understand and apply mathematical concepts, algorithmic principles and computer science theory in solving computing based real world problems.
- PO2. an ability to understand and apply advanced networking and security of information systems' concepts.
- PO3. an ability to understand, apply and design Computationally Intelligent techniques/algorithms to solve problems that do not map to mathematical models.
- PO4. an ability to understand and apply database design and knowledge mining techniques for complex predictive and descriptive modeling tasks.
- PO5. an ability to understand and apply the principles of computer architecture and micro-processors based systems.
- PO6. an ability to grasp and specify the requirements of resources to solve a computing problem and further model, design, implement and validate the provided computing solution to meet the specified requirements subject to real-world constraints on time and finance.
- PO7. an ability to critically analyze/examine/judge the existing knowledge about a research problem/domain, identify and formulate a research problem and subsequently select appropriate research methodologies and tools to address the problem.
- PO8. ability to design and conduct research experiments, analyze and interpret data and results related to Computer Science and Engineering problems.
- PO9. an ability to propose original ideas and design novel solutions and communicate them effectively to the stakeholders verbally as well as in writing.
- PO10. an ability to learn and apply modern engineering tools and software to solve problems, to understand the limitations of various tools in context of the domain of the problem and overcome them by extending the functionalities of the available tools or building an interface between different tools.
- PO11. an ability to work individually or in a team exhibiting the leadership qualities.
- PO12. an ability to engage in lifelong learning and tackle unforeseen problems.
- PO13. reflect true professionalism and ethical behaviour in his/her work and understand contemporary issues and the impact of engineering solutions in a global, economic, environmental and societal context.

M. Tech. (CSE)
(TWO YEAR PROGRAMME)
SCHEME OF EXAMINATION
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SEMESTER-I

Course Code	Nomenclature of the Courses	Credits
CSL711	Advanced Computer Networks	4
CSL712	Advanced Microprocessors	4
CSL713	Advanced Database Management Systems	4
CSL714	Theory of Computation	4
CSL715	Advanced Software Engineering	4
CSP711	Computer Networks Lab.	2
CSP712	Microprocessor Lab.	2
	Total Credits	24

SEMESTER-II

Course Code	Nomenclature of the Courses	Credits
CSL721	Soft Computing Concepts and Techniques	4
CSL722	Digital Image Processing	4
CSL723	High Speed Networks and Mobile Technologies	4
CSL724	Cloud Computing	4
	Departmental Elective I	4
CSP721	Soft Computing Lab.	2
CSP722	Digital Image Processing Lab.	2
	Total Credits	24

List of Departmental Electives I *

1. CSL725 Research Methods
2. CSL726 Security of Information Systems
3. CSL727 Sensor Networks
4. CSL728 Computational Geometry
5. CSL729 Mathematical Concepts for Computer Science
6. CSL730 Analysis and Design of Computer Algorithms

*Departmental elective paper would be offered only if a minimum of 15 students opt for it.

SEMESTER-III

Course Code	Nomenclature of the Courses	Credits
CSL731	Technical Writing and Effective Communication Skills	Qualifying
	Departmental Elective II	4
CSD731	Dissertation and Seminar-I	4
	Open Elective	3
CSP731	Research Tools for Computer Science and Engineering Lab.	2
	Total Credits	13

List of Departmental Electives II*

1. CSL732 Data Mining Concepts and Techniques
2. CSL733 Performance Evaluation
3. CSL734 Machine Learning and Pattern Recognition
4. CSL735 Software Project Management
5. CSL736 Bio-informatics
6. CSL737 Introduction to Natural Language Processing

* Departmental elective paper would be offered only if a minimum of 15 students opt for it.

CSD731 (Dissertation and Seminar-I) **: To be evaluated by a committee constituted by the Chairperson, CSE.

Open Electives (#) offered by other Departments

1. BME700 Bio-medical Instrumentation
2. ECE700 Advancements in Communication Systems
3. ME700 Computer Aided Design and Manufacturing
4. MTPT700 Advanced Printing Technologies

The minimum number of students in an open elective offered by any Engineering Department will be 15 subject to a maximum of 40 students per section.

SEMESTER-IV

Course Code	Nomenclature of the Course	Total credits
CSD741	Dissertation and Seminar-II**	9

** M. Tech. dissertation workload of two hours per week should be assigned to the faculty members supervising M.Tech. dissertation(s). The workload on this account cannot exceed 2 hours per week.

CSD741 (Dissertation and Seminar-II): To be evaluated jointly by internal supervisor and external examiner appointed by COE.

The research problem formulated after review of literature done in 3rd semester should be continued in the 4th semester. A student is required to publish a research paper related to his/her dissertation work in a Seminar/Conference/Symposium/Journal. The M.Tech. dissertation cannot be submitted without acceptance/publication of a research paper.

Total credits of all semesters

70

