Department of Computer Science & Engineering
Faculty of Engineering & Technology
Gurukula Kangri (Deemed to be University), Haridwar - 249404
(NAAC Accredited Deemed to University u/s 3 of UGC Act 1956)

Ref. :

Date : 08 / 07 / 2024

सहायक कुलसचिव (शिक्षा)
गुरुकुल कांगड़ी (समविश्वविद्यालय), हरिद्वार

महोदय,

अभियांत्रिकी एवं प्रौद्योगिकी संकाय के कम्प्यूटर साइंस एवं इंजीनियरिंग विभाग, में M.Tech. एवं B.Tech. for Working Professional पाठ्यक्रम शुरू किये जाने हेतु विषय विशेषज्ञों के सम्बन्ध में गठित समिति की Board of Studies की बैठक दिनांक 08 / 07 / 2024 को दोपहर 03:00 बजे हाईब्रिड मोड (ऑन–लाईन एवं ऑफ–लाईन) सम्पन्न हुई। Board of Studies की बैठक का कार्यवृत्त (BoS Register सहित) पत्र संलग्न है। अग्रिम कार्यवाही हेतु प्रस्तुत।

Mayank
विभागाध्यक्ष

प्रतिलिपि :

1. संकायाध्यक्ष, अभियांत्रिकी एवं प्रौद्योगिकी संकाय
2. कुलसचिव, गुरुकुल कांगड़ी (समविश्वविद्यालय), हरिद्वार,
3. परीक्षा नियंत्रक, गुरुकुल कांगड़ी (समविश्वविद्यालय), हरिद्वार। *(with detail syllabus)*
4. कुलपति कार्यालय, गुरुकुल कांगड़ी (समविश्वविद्यालय), हरिद्वार, सूचनार्थ।
5. डॉ0 आर0 के0 यादव, प्रो0(बाह्य विशेषज्ञ) दिल्ली टेक्नीकल विश्वविद्यालय, दिल्ली–110042
6. डॉ0 मनी मधुकर, इण्डस्ट्री एक्सपर्ट, आई0 बी0 एम0, नोयडा, (बाह्य विशेषज्ञ)।

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Date : 08/07/2024

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गुरुकुल कांगड़ी (समविश्वविद्यालय), हरिद्वार

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Mayank

विभागाध्यक्ष

प्रतिलिपि :

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5. डॉ0 आर0 के0 यादव, प्रो0(बाह्य विशेषज्ञ) दिल्ली टेक्नीकल विश्वविद्यालय, दिल्ली–110042
6. डॉ0 मनी मधुकर, इण्डस्ट्री एक्सपर्ट, आई0 बी0 एम0, नोयडा, (बाह्य विशेषज्ञ)।

Reg-5607
CEO | 10/7/24

Reg/1105
10/7/24

10.7.2024

A.R. (Acad.)
10.7.24

Mayank
विभागाध्यक्ष

10/7/24 की प्रति दे

Board of Studies Meeting of Computer Science & Engineering
Faculty of Engineering & Technology
Grurukula Kangri (Deemed to be University), Haridwar

An Online BoS Meeting for B.Tech. Computer Science & Engineering (Working Professional) and M.Tech. (Computer Science & Engineering) was held on 08.07.2024. The agenda was to approve syllabus of B.Tech. (CSE) -Working Professional II Year and M.Tech I Year.

Following members were present online:

1. Prof. Vipul Sharma, Dean, FET & Chairman-BoS
2. Prof. R. K. Yadav, **(External Expert)** Delhi Technical University, Delhi – 110042
3. Dr. Mani Madhukar, Industry Expert, **(External Expert)**, IBM, Noida, India
4. Dr.Tanuj Garg, Incharge, ECE,FET
5. Dr. Nishant Kumar, Assistant Professor, CSE, FET
6. Dr. Suyash Bhardwaj, Assistant Professor, CSE, FET
7. Mr. Namit Khanduja, Assistant Professor, CSE, FET
8. Mr. Vivudh Fore, Assistant Professor, CSE, FET
9. Mr. Ashwani, Assistant Professor, CSE, FET
10. Mr. Aman Tyagi, Assistant Professor, CSE, FET
11. Dr. Aman Tyagi, Assistant Professor, CSE, FET
12. Prof. Mayank Aggarwal, HOD & Convener of BOS, CSE, FET

The following recommendations were made:

1. The designed syllabus of M.Tech I Year was as per AICTE model curriculum approved henece-forth with slight changes in number of hours and introduction of MOOC courses.
2. The designed syllabus of B.Tech (WP) was incorporated from B.Tech(CSE) approved syllabus , hence approved without any changes.
3. Admission/Eligibility criteria for B.Tech (WP) shall be as per B.Tech(Lateral entry) as per AICTE norms.

Admission / Eligibilty criteria for M.Tech. as per AICTE norms (The program will consider applications from both GATE (Graduate Aptitude Test in Engineering) qualified and non-GATE students, though preference will be given to candidates having valid GATE score. Eligible candidates will be shortlisted based on their GATE score/Last Eligible Degree Percentage. The university may consider factors such as overall CGPA or percentage in B.Tech./UG program. Candidates with valid GATE score are eligible for AICTE scholarship as per AICTE norms.

Students must possess a Bachelor's degree in Engineering (BE/B.Tech) in CSE/IT/SE/ECE/EEE or allied branches from a recognized university. An MCA (Master of Computer Applications)/M.Sc (CS/IT), (with Mathematics at B.Sc/BCA level) are also eligible. The university will set a minimum qualifying GATE score or UG exam percentile based on the program's competitiveness.)

Prof. Vipul Sharma
Faculty of Engineering & Technology
Kangri (D.U.)

Consent Online
Prof. R. K. Yadav

Consent Online
Dr. Mani Madhukar

Dr. Nishant Kumar

Dr. Suyash Bhardwaj

Dr. Namit Khanduja

Dr. Mayank Aggarwal
HOD & Convener

Computer Science & Engineering
Faculty of Engineering & Technology
Gurukula Kangri (Deemed to be University)
Haridwar

Batch 2024-2025 and onwards

w.e.f. 2023 (Revised 08/07/24)

CHOICE BASED CREDIT SYSTEM

EVALUATION SCHEME

AND

COURSE OF STUDY

IN

B.TECH.

(WORKING PROFESSIONAL)

COMPUTER SCIENCE AND ENGINEERING

(III SEMESTER & IV SEMESTER)

SCHEME OF EXAMINATION & SYLLABUS

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

FACULTY OF ENGINEERING AND TECHNOLOGY
GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR

Faculty of Engineering & Technology

In the year 2000 Faculty of Engineering & Technology was established with an aim of imparting technical education in the spiritual surroundings of the Gurukula System. Keeping in mind the importance of technocrats with strong moral character, superior knowledge, and devotion to the nation. FET was established with a motto of Building Technocrats with ethics. FET is known in India and abroad for students with virtuous moral character and Technical abilities. Currently, it is providing education in B. Tech. in Computer Science & Engineering, Electronics & Communication Engineering, Electrical Engineering, and Mechanical Engineering. FET is one of the richest faculty of Gurukula Kangri (Deemed to be University), with a huge number of books in the library, well-equipped electronics electrical and mechanical laboratories, latest software, and computers in computer labs. Football field, Tennis court, Volleyball court, Basketball arena, and open gym for the students with athletic interests.

Vision of F.E.T.

To provide affordable & quality education to engineering aspirants and nurture them to be highly skilled & innovative technocrats with ethics and nation building spirit.

Mission of F.E.T.

M1: (ETHICS & VALUES)
To educate and nurture engineering aspirants with values, updated engineering curriculum & latest technology to make them globally trusted and accepted.

M2: (RESEARCH)
Provide conducive environment for teaching, learning & research that can lead to patents, publications and make country proud.

M3: (AFFORDABILITY)
Provide cost effective education so that every section of society can be benefitted.

M4: (SKILLED)
Design industry oriented curriculum that can make engineering graduates ready to work for Indian Industries as well as MNCs.

Department of Computer Science & Engineering

The Department of Computer Science and Engineering (CSE) provides in-depth technical knowledge and opportunities for innovation and research with the latest computer facilities.

Vision And Mission

Vision of the department

To be a frontier in the field of Computer Science by imparting the knowledge in legible, lucid and perspicuous way and preparing the human resource of high moral and ethical values that can cater to contemporary societal needs.

Mission of the department

- **[M1]: (Contemporary excellence)**
  Provide a sound technical foundation in Computer Engineering through the comprehensive curriculum with a rich skill set and practical experience.
- **[M2]: (Holistic Learning)**
  To enable students to become valuable and creative contributors to society. To continue their education in different facets of technology to grow them professionally along with the spirit of moral values.
- **[M3]: (Social Responsibility & Sustainable Development)**
  To contribute to National Development by meeting the needs of society and industry, empowering weaker and underprivileged sections, and building the economy through research and frugal innovation, anchored in the principle of achieving more with less.
- **[M4]: (Ethics & Values)**
  To uphold the highest ethical standards, inculcate values; create willingness and capacity to work with one's hands, and a spirit of devotion to serve humanity.

Program Educational Objectives (Under Graduate Program)

- **PEO1:** To provide a cogent foundation in Basic Sciences, analytical skills and engineering fundamentals required to succeed in engineering field.
- **PEO2:** To provide knowledge of various domains catering to the contemporary requirements of the industry.
- **PEO3:** To train students with good scientific and practical engineering application skills to comprehend, analyze, design, and create feasible solutions for societal vows.
- **PEO4:** Inculcate analytical reasoning and critical thinking through effective teaching learning and hands-on training to develop an innovative spirit and pursue higher education for nation-building.
- **PEO5:** To encourage students to develop lifelong learning skills, self-motivation, and high moral and ethical values for a successful professional career.

Program Specific Outcomes (Under Graduate Program)

- **PSO1:** Graduates of Computer Science & Engineering will achieve the adequate understanding of the contents to analyze, design and implement sustainable solution in their domain.
- **PSO2:** Able to use problem-solving skills to develop efficient algorithmic solutions.

B. Tech (CSE) - Working Professional

1. Introduction

The B. Tech (CSE) working professional program has been designed for individuals who want to advance their careers in computer science engineering along with job. This program allows students to gain practical experience and develop fundamental engineering skills through hands-on learning opportunities. In a B.Tech working professional program(Working professional), eligible applicants get admission directly into the program's second year. This is as per AICTE guidelines because the eligible candidates already have the basic foundational knowledge of the subject from their prior relevant qualifications and so they can directly start studying in the second year of the B.Tech program.

The course spans 6 semesters over a period of 3 years and is tailored to meet the needs of students who are looking to fast-track their career growth in their respective fields. The curriculum has been carefully crafted to ensure that students gain the necessary knowledge and skills to enhance their prospects in their chosen field.

The engineering program is tailored for working professionals who already have experience in their field and relevant qualifications, providing them with the opportunity to enhance and expand their technological skills within their specific area of expertise.

B.Tech (CSE) working professional program covers essential engineering concepts, tools, techniques, and best practices. The course is designed in accordance with the Approval Process Handbook issued by AICTE, which guarantees its broad acceptance across India.

By enrolling in this course, students will acquire the essential skills needed to take advantage of the abundant opportunities in their field and accelerate their career growth.

Program Highlights

1. B. Tech Working Professional program spans 6 semesters and is intended to equip students with an extensive knowledge of cutting-edge technologies. The program places a strong emphasis on the fundamental principles of engineering and their practical application in relevant fields.

2. Prospective candidates must have completed a Diploma program/ Graduation for admission. Furthermore, they should have a minimum of one years of full-time work experience in Registered Industry / Organization (Centra l / State) / Private/ Public Limited Company/ MSMEs located within 50 Km radial distance.

3. The B.Tech working professional program, adheres to the guidelines set by the All India Council for Technical Education (AICTE) in the Approval Process Handbook that is periodically released.

4. The B. Tech working professional employs a variety of assessment methods to continually evaluate student performance, including sessional examinations, quizzes, assignments, practical sessions, and semester examinations. The assessment results are shared with students to assist them in evaluating their performance throughout the learning process.

5. The program aims to spark technical curiosity and promote learning in the ever-evolving engineering landscape.

Eligibility Criteria

Qualification :-

1. To be eligible for admission into the B. Tech (CSE) working professional, candidates must possess a 3-year polytechnic diploma / Graduation (B. Sc).

2. Additionally, they must have at least 1 year of full-time work experience in Registered industry / Organization (Centra l / State) / Private/ Public Limited Company/ MSMEs located within 50 Km radial distance.

3. This program is tailored to professionals with relevant experience who want to expand their skills and knowledge and attain complete competence in essential industry-relevant domains.

Age Criteria :-

1. There are no age restrictions for admission to this course, making it accessible to individuals of all ages.

2. We encourage ambitious and motivated working professionals who want to advance their careers by obtaining a comprehensive understanding of engineering principles and fundamentals to apply for this course.

Admission Process

Admission will be based on Merit of the Qualifying examination.

ACADEMIC SESSION 2023-24

(Effective from the academic session 2023-24)

GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR

Faculty of Engineering & Technology

Computer Science & Engineering

B. Tech. Second Year

Syllabus in accordance with AICTE Model Curriculum

SEMESTER-III

DSC/SEC/DSE/AEC	SUBJECT	PERIODS			EVALUATION SCHEME				Subject Total	Credits
					SESSIONAL EVALUATION			EXAM ESE		
		L	T	P	CT	TA	Total			
THEORY										
BCE-C307	Python Programming	3	0	0	20	10	30	70	100	3
BCE-C305/ BCE-C405	Data Structure-I	3	0	0	20	10	30	70	100	3
BCE-C306	Computer Architecture & Organization	3	0	0	20	10	30	70	100	3
BCE-A360	MOOC	0	0	0	0	0	0	0	0	4
PRACTICAL										
BCE-C354	Python Programming lab	0	0	2	10	5	15	35	50	1
BCE-C355/ BCE-C454	Data Structure-I Lab	0	0	2	10	5	15	35	50	1
BCE-S361	Seminar	0	0	2	35	15	50	0	50	3
		TOTAL CREDITS								
TOTAL		9	0	6	115	55	170	280	450	18

MOOC: List of MOOC courses shall be decided by the departmental committee in each semester depending upon the list from SWAYAM/NPTEL and other recognized online platforms. Students have to study from Online Platform doubt sessions shall be held by Internal teachers and exams shall be taken by university. If a student wishes he can give an exam of Online Platform for certification. SWAYAM courses to run every year from July onwards (Odd Semester) are declared in the month of May and for courses to run every year from January onwards (Even Semester) are declared in the month of December on website https://swayam.gov.in/.

ACADEMIC SESSION 2023-24

(Effective from the academic session 2023-24)

GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR

Faculty of Engineering & Technology

Computer Science & Engineering

B. Tech. Second Year

Syllabus in accordance with AICTE Model Curriculum

SEMESTER-IV

DSC/SEC/DSE/AEC	SUBJECT	PERIODS			EVALUATION SCHEME				Subject Total	Credits
					SESSIONAL EVALUATION			EXAM ESE		
		L	T	P	CT	TA	Total			
THEORY										
BCE-C408	Database Management System	3	0	0	20	10	30	70	100	3
BCE-C406	Object Oriented Programming using Java	3	0	0	20	10	30	70	100	3
BCE-C407	Operating System	3	0	0	20	10	30	70	100	3
BET-C411	MOOCS	3	0	0	20	10	30	70	100	4
PRACTICAL										
BCE-C455	DBMS Lab	0	0	2	10	5	15	35	50	1
BCE-C456	Object Oriented Programming using Java Lab	0	0	2	10	5	15	35	50	1
BCE- S460	Project I	0	0	2	10	5	15	35	50	3
		TOTAL CREDITS								
TOTAL		12	0	6	110	55	165	385	550	18

Project I – A project group shall consist of not more than 4 students. A group can choose any mentor from the department, in case the project is multidisciplinary, mentors from other departments can be consulted. Project should have real-world application and should focus on betterment of societal needs and nation building.

CHOICE BASED CREDIT SYSTEM

EVALUATION SCHEME

AND

COURSE OF STUDY

IN

M.TECH

COMPUTER SCIENCE AND ENGINEERING

(I SEMESTER & II SEMESTER)

SCHEME OF EXAMINATION & SYLLABUS

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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CSE)

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Batch 2024-2025 and onwards w.e.f. 2024 (Revised 08/07/24)

Master of Technology (Computer Science & Engineering)

M. Tech (CSE)

M. Tech stands for Master of Technology. It's a postgraduate program in engineering and technology fields pursued after a Bachelor's degree in a related field, typically lasting two years.

1. Introduction

The Department of Computer Science and Engineering at FET, Gurukul Kangri, Haridwar starts a new M.Tech program in Computer Science and Engineering (CSE) with an intake of 18 students from session 2024-25. This program aims to equip graduates with advanced knowledge and skills in critical areas of CSE to address the ever-growing demand for qualified professionals in the industry.

2. Program Structure

The M. Tech Program will be a four-semesters (Two-years) program. Students will complete course work, laboratory sessions, and a final project/thesis.

The M. Tech in CSE program will be a two-years, full-time program consisting of:

- **Core Courses:** These courses provide a strong foundation in advanced computer science concepts.
- **Elective Courses:** Students can choose electives to specialize in specific areas of interest.
- **MOOC Courses:** Students will attend online lectures/seminars on advanced topics in computer science.
- **Master's Thesis:** Students will undertake a research project under the supervision of a faculty member.

3. Admission Process/Eligibility Criteria

The program will consider applications from both GATE (Graduate Aptitude Test in Engineering) qualified and non-GATE students, though preference will be given to candidates having valid GATE score. Eligible candidates will be shortlisted based on their GATE score/Last Eligible Degree Percentage. The university may consider factors such as overall CGPA or percentage in B.Tech./UG program. Candidates with valid GATE score are eligible for AICTE scholarship as per AICTE norms.

Students must possess a Bachelor's degree in Engineering (BE/B. Tech) in CSE/IT/SE/ECE/EEE or allied branches from a recognized university. An MCA (Master of Computer Applications)/M. Sc (CS/IT), (with Mathematics at B. Sc/BCA level) are also eligible. The university will set a minimum qualifying GATE score or UG exam percentile based on the program's competitiveness.

4. Program Outcomes of CSE (M. Tech.) program:

The main outcomes of the CSE (M. Tech.) program are given here. At the end of the program a student is expected to have:

1. An understanding of the theoretical foundations and the limits of computing.
2. An ability to adapt existing models, techniques, algorithms, data structures, etc. for efficiently solving problems.
3. An ability to design, develop and evaluate new computer based systems for novel applications which meet the desired needs of industry and society.
4. Understanding and ability to use advanced computing techniques and tools.
5. An ability to undertake original research at the cutting edge of computer science & its related areas.
6. An ability to function effectively individually or as a part of a team to accomplish a stated goal.
7. An understanding of professional and ethical responsibility.
8. An ability to communicate effectively with a wide range of audience.
9. An ability to learn independently and engage in life-long learning.
10. An understanding of the impact of IT related solutions in an economic, social and environment context.

4. Course Structure

Year I - Semester 1

Course Code	Subject	Scheme Of Studies Per Week			Credits
		L	T	P	
MCE-C101	Program Core I- Mathematical foundations of Computer Science	3	0	0	3
MCE-C102	Program Core II- Advanced Data Structures	3	0	0	3
MCE-E10X	Program Elective I (From List I and III)	3	0	0	3
MCE-S104	MOOC	3	0	0	3
MCE-A104	Research Methodology and IPR	2	0	0	2
MCE-C155	Laboratory 1 (Advanced Data Structures)	0	0	4	2
MCE-C156	Laboratory 2 (Based on Electives)	0	0	4	2
	Total	14	0	8	18

Year I - Semester II

Course Code	Subject	Scheme Of Studies Per Week			Credits
		L	T	P	
MCE-C201	Program Core III – Advance Algorithms	3	0	0	3
MCE-C202	Program Core IV – Soft Computing	3	0	0	3
MCE-E20X	Program Elective II – (From List II and III)	3	0	0	3
MCE-S204	MOOC	3	0	0	3
MCE-C255	Laboratory 3 (Based on cores)	0	0	4	2
MCE-C256	Laboratory 4 (Based on Electives)	0	0	4	2
MCE-C260	Minor Project	2	0	0	2
	Total	14	0	8	18

Nayank Suyash Nanit Nishar

Elective 1

S. No.	CODE	Course Name
1	MCE-E103	Advance Artificial Intelligence
2	MCE-E104	Computer Vision and Image processing
3	MCE-E105	Distributed Computing
4	MCE-E106	Advance Data Science
5	MCE-E107	Big Data Analytics
6	MCE-E108	Machine Learning

Elective 2

S. No	CODE	Course Name
1	MCE-E201	Information and Network Security
2	MCE-E202	Ethical Hacking
3	MCE-E203	Parallel computing
4	MCE-E204	Internet of Things
5	MCE-E205	Block chain and its applications
6	MCE-E206	Genetic Algorithms

Elective 3

S. No	CODE	Course Name
1	MCE-E109 / MCE-E208	Software Testing and Auditing
2	MCE-E110 / MCE-E209	Mobile Application Development
3	MCE-E111 / MCE-E210	Scientific Computing with Python
4	MCE-E112 / MCE-E211	Quantum Computing
5	MCE-E113 / MCE-E212	Robotics
6	MCE-E114 / MCE-E213	Cloud Computing

Note:

List of MOOC courses shall be decided by the departmental committee in each semester depending upon the list from SWAYAM/NPTEL and other recognized online platforms. Students have to study from Online Platform doubt sessions shall be held by Internal teachers and exams shall be taken by university. If a student wishes he can give an exam of Online Platform for certification. SWAYAM courses to run every year from July onwards (Odd Semester) are declared in the month of May and for courses to run every year from January onwards (Even Semester) are declared in the month of December on website https://swayam.gov.in/.