SNJB's

Late Sau. Kantabai Bhavarlalji Jain

College of Engineering

(Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)

Shri Neminath Jain Brahmacharyashram (SNJB) (Jain Gurukul)

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ESTD - 1928

SNJB

Curriculum Structure and Evaluation Scheme for M. Tech. in Computer Engineering

To be implemented for 2024-26 Batch

(With Effect from Academic Year 2025-26)

CHAIRMAN
BOARD OF STUDIES COMPUTER ENGINEERING
SNJB's
LSKBJ COLLEGE OF ENGINEERING
Chandwad Dist.Nashik

SNJB'S COLLEGE OF ENGINEERING
Chandwad
(Nashik)
Pin-423101

CHAIRMAN
ACADEMIC COUCIL
SNJB's
LSKBJ COLLEGE OF ENGINEERING
Chandwad Dist.Nashik

Vision of the Institute

Transform young aspirant learners towards creativity and professionalism for societal growth through quality technical education.

Mission of the Institute

1. To transfer the suitable technology, particularly for rural development.
2. To enhance diverse career opportunities among students for building a nation.
3. To acquire the environment of learning to bridge the gap between industry and academics.
4. To share values, ideas, beliefs by encouraging faculties and students for welfare of society.

Vision of the Computer Engineering Department

To empower young generations for significant contributions in the field of computer engineering through excellence in knowledge, technical education, and innovation to cater the industrial demands and societal needs.

Mission of the Computer Engineering Department

1. To achieve academic excellence by inculcating basic and latest knowledge in which new ideas flourish.
2. To undertake collaborative training which offers opportunities for long-term interaction with academia and industry.

Program Outcomes (POs) for PG Engineering Program:

1. An ability to independently carry out research /investigation and development work to solve practical problems.
2. An ability to write and present a substantial technical report/document.
3. Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

Abbreviations:

Table 1: Abbreviations

Abbreviation	Meaning
ISE	Internal Semester Evaluation
SEE	Semester End Examination
VSEC	Vocational and Skill Enhancement Courses
VEC	Value Education Course
PCC	Program Core Courses

Abbreviation	Meaning
PEC	Program Elective Courses
ELC	Research Methodology
	Technical Communication
	Dissertation I
	Dissertation II
	Internship
CCC	Co-Curricular Courses
L	Lecture
PR	Practical
TH	Theory
TW	Term Work
OR	Oral
CS	Computer Engineering

GENERAL COURSE STRUCTURE

A. Definition of Credit:

Table 2: Definition of Credits

1 Hour Lecture (L) per week	1 Credit
1 Hour Tutorial (T) per week	1 Credit
2 Hours Practical (P) per week	1 Credit

B. Range of Credits: (M.Tech. or Equivalent) in Tech. : Two-year Post Graduate degree program in Technology has about 80 credits, the total number of credits proposed for the two-year M.Tech. in **Computer Engineering** is kept as **80**

Table 3: Range of Credits

Course Category		Proposed Credits
Programme Core Course (PCC)	Program Courses	19
Programme Elective Course (PEC)		11
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	4+4*
Value Education Course (VEC)	Humanities Social Science and Management (HSSM)	4+2*
Research Methodology(RM)	Experiential Learning Courses	2
Technical Communication		2
Dissertation I		16
Dissertation II		16
Internship		4
Co-curricular Courses (CC)	Liberal Learning Courses	2
Total Credits		**80**

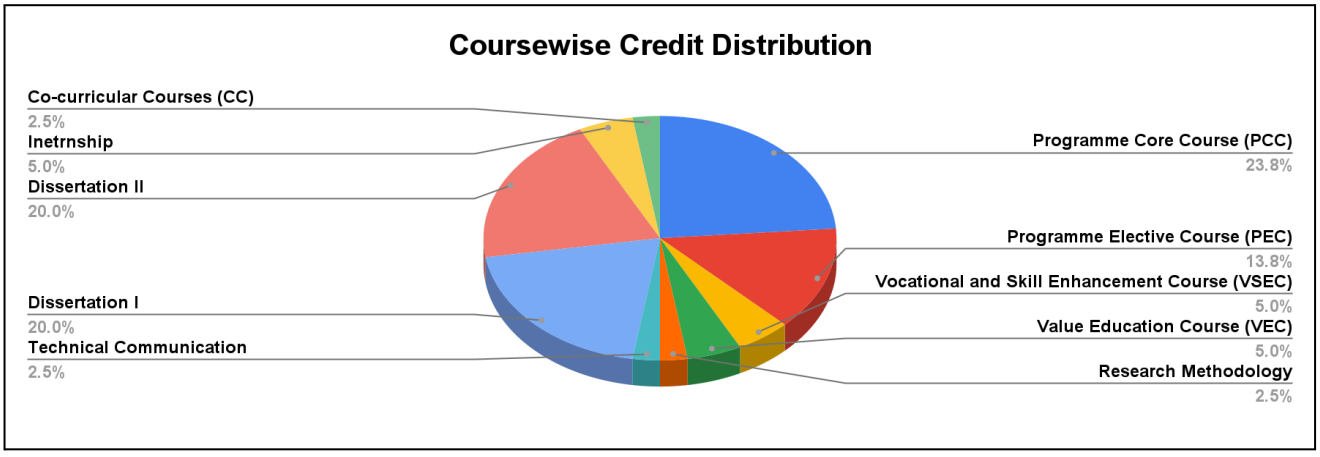
Note:* –Credits are not to be considered while calculating marks for the declaration of the final result (Pass/Fail)."

C. Semester wise Credit Distribution Structure for two Year M.Tech in Computer Engineering

Table 4: Semester wise Credit Distribution Structure

Semester		I	II	III	IV	Total Credits
Programme Core Course (PCC)	Program Courses	13	6	-	-	**19**
Programme Elective Course (PEC)		3	8	-	-	**11**
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	2	2	2*	2*	**4**
Value Education Course (VEC)	Humanities Social Science and Management (HSSM)	-	2*	4		**4**
Research Methodology	Experiential Learning Courses	2	-	-	-	**2**
Technical Communication		-	2	-	-	**2**
Dissertation I		-	-	16	-	**16**
Dissertation II		-	-	-	16	**16**
Internship		-	-	-	4	**4**
Co-curricular Courses (CCC)	Liberal Learning Courses	-	2	-	-	**2**
Total		20	20	20	20	**80**

Note:* –Credits are not to be considered while calculating marks for the declaration of the final result (Pass/Fail)."



In accordance with the NHEQF, the levels for the PG programme are given in the given Table

Table 5: Levels for the PG programme

Level	Qualification Title	Credit Requirements	Semester	Year
6.5	1-Year PG after a 4-year UG	20	I	1
		20	II	1
7	2-Year PG after a 4-year UG such as B.E., B. Tech. etc.	20	III	2
		20	IV	2

TEACHING AND EVALUATION SCHEME FOR FIRST YEAR M-TECH

Semester – I

Sr. No	Category	Course Code	Course Name	Teaching Scheme					Evaluation Scheme					
				Hours				Credits	Theory Course			Lab Course		Total Marks
				L	T	P	Total Hours		ISE	SEE	TH Marks	TW	PR/OR	
1	PCC	24-PCC-CS-5-01	Mathematics for Computer Science	4	-	-	4	4	40	60	100	-	-	100
2	PCC	24-PCC-CS-5-02	Security in Computing	4	-	-	4	4	40	60	100	-	-	100
3	PCC	24-PCC-CS-5-03	Advanced Algorithms	3	-	-	3	3	40	60	100	-	-	100
4	PCC	24-PCC-CS-5-04	Laboratory Practice -I	-	-	4	4	2	-	-	-	50	50	100
5	PEC	24-PEC-CS-5-01	Programme Elective Course – I	3	-	-	3	3	40	60	100	-	-	100
6	VSEC	24-VSEC-CS-5-01	Instructional Design and Development	-	-	4	4	2	-	-	-	50	-	50
7	ELC	24-ELC-CS-5-01	Research Methodology	2	-	-	2	2	50	-	50	-	-	50
Total				**16**	**-**	**8**	**24**	**20**	**210**	**240**	**450**	**100**	**50**	**600**

Table 6: Program Elective Course-I

	Course Code-TH	Name of the Elective Course- TH
A	24-PEC-CS-5-01A	AI Driven Problem Solving
B	24-PEC-CS-5-01B	Digital Image Processing
C	24-PEC-CS-5-01C	Virtual Reality and Augmented Reality
D	24-PEC-CS-5-01D	Soft Computing

Semester – II

Sr. No	Category	Course Code	Course Name	Teaching Scheme					Evaluation Scheme					
				Hours				Credits	Theory Course			Lab Course		Total Marks
				L	T	P	Total Hours		ISE	SEE	TH Marks	TW	PR/OR	
1	PCC	24-PCC-CS-5-05	Advance Cloud Computing	4	-	-	4	4	40	60	100	-	-	100
2	PCC	24-PCC-CS-5-06	Laboratory Practice - II	-	-	4	4	2	-	-	-	50	50	100
3	PEC	24-PEC-CS-5-02	Programme Elective Course – II	4	-	-	4	4	40	60	100	-	-	100
4	PEC	24-PEC-CS-5-03	Programme Elective Course – III	4	-	-	4	4	40	60	100	-	-	100
5	VSEC	24-VSEC-CS-5-02	Drone Technology	-	-	4	4	2	-	-	-	50	50	100
6	CCC	24-CCC-CS-5-01	Scientific studies of Mind,Matter and Consciousness	2	-	-	2	2	-	-	-	50	-	50
7	ELC	24-ELC-CS-5-02	Technical Communication	-	-	4	4	2	-	-	-	50	-	50
8	VEC	24-VEC-CS-5-01	Human rights and duties **	1	-	-	1	1*	-	-	-	25*	-	25*
9	VEC	24-VEC-CS-5-02	Human rights of vulnerable and Disadvantaged groups **	1	-	-	1	1*	-	-	-	25*	-	25*
Total				**16**	**-**	**12**	**28**	**20**	**120**	**180**	**300**	**200**	**100**	**600**

Note: * Credits not to be considered while Calculation of Marks for Declaration of Final Result (Pass/Fail)

** Inclusion of Courses 24-VEC-CS-5-01 and 24-VEC-CS-5-02 is done as per the Note (41AC-Note-01) dated 4 Feb 2025

Table 7: Program Elective Course-II

	Course Code-TH	Name of the Elective Course- TH
A	24-PEC-CS-5-02A	AI-Powered IoT Applications
B	24-PEC-CS-5-02B	Advance Data Visualization and Storytelling
C	24-PEC-CS-5-02C	Application Development using Augmented reality
D	24-PEC-CS-5-02D	Computer Vision and Pattern Recognition

Table 8: Program Elective Course-III

	Course Code-TH	Name of the Elective Course- TH
A	24-PEC-CS-5-03A	Industrial IOT
B	24-PEC-CS-5-03B	Social Network Analytics
C	24-PEC-CS-5-03C	Ethical Hacking
D	24-PEC-CS-5-03D	Business Analytics

Level 6.5 Exit Criteria:
Students who exit at the end of 1st year with the completion of 40 credits shall be awarded a Postgraduate Diploma.

Guidelines for Program Elective Course
Students may choose any course or NPTEL MOOCs course* from the department's recommended list. The total credits earned through MOOCs must match the allocated credits for the respective elective. (One credit is awarded for each four-week MOOCs course).

* Online NPTEL MOOCs courses will be offered as per availability on the portal of NPTEL/SWAYAM

TEACHING AND EVALUATION SCHEME FOR SECOND-YEAR M-TECH

Semester – III

Sr. No	Category	Course Code	Course Name	Teaching Scheme					Evaluation Scheme					
				Hours				Credits	Theory Course			Lab Course		Total Marks
				L	T	P	Total Hours		ISE	SEE	TH Marks	TW	PR/ OR	
1	ELC	24-ELC-CS-6-01	Dissertation I	-	-	26	26	16	-	-	-	150	150	300
2	VEC	24-VEC-CS-6-01	Cyber Security	3	-	2	5	4	50		50	25	25	100
3	VSEC	24-VSEC-CS-6-01	** Skill Development-I	-	-	4	4	2*	-	-	-	50*	-	50*
Total				3	-	**32**	**35**	**20**	50	-	50	**175**	**175**	**400**

Note: * Credits not to be considered while Calculation of Marks for Declaration of Final Result (Pass/Fail)

** Inclusion of Courses Cyber Security(24-VEC-CS-6-01) and Skill Development-I (24-VSEC-CS-6-01) are done as per the Note (41AC-Note-01) dated 4 Feb 2025

Semester – IV

Sr. No	Category	Course Code	Course Name	Teaching Scheme					Evaluation Scheme					
				Hours				Credits	Theory Course			Lab Course		Total Marks
				L	T	P	Total Hours		ISE	SEE	TH Marks	TW	PR/ OR	
1	ELC	24-ELC-CS-6-02	Dissertation II	-	-	24	24	16	-	-	-	150	150	300
2	ELC	24-ELC-CS-6-03	Internship	-	-	8	8	4	-	-	-	100	-	100
3	VSEC	24-VSEC-CS-6-02	** Skill Development-II	-	-	4	4	2*	-	-	-	50*	-	50*
Total				-	-	**36**	**36**	**20**	-	-	-	**250**	**150**	**400**

Note: * Credits not to be considered while Calculation of Marks for Declaration of Final Result (Pass/Fail)

** Inclusion of Courses Skill Development-II(24-VSEC-CS-6-02) is done as per the Note (41AC-Note-01) dated 4 Feb 2025

SEMESTER III

24-ELC-CS-6-01: Dissertation I

Teaching Scheme:	**Credit:** 16	**Examination Scheme:**
Theory: 26 Hours/Week		**TW** : 150 Marks **PR/OR :** 150 Marks

Course Objectives:

- Identify and select a specific research domain aligned with interests and expertise.
- Formulate well-defined research problems under the guidance of a guide, addressing specific research gaps.
- Gather and analyze relevant information to define the scope and objectives of the dissertation work.

Course Outcomes:

After completion of the course, learners should be able to

CONo	CO	BL
CO1	Perform comprehensive literature reviews to understand the current state-of-the-art in their selected domain.	3
CO2	Critically analyze and synthesize the work of various researchers to identify research gaps and define the dissertation's scope.	4
CO3	Conceptualize, design, and document a technical solution or system relevant to the dissertation problem.	3
CO4	Develop and refine their technical presentation skills to effectively communicate research findings and progress.	3

Course Contents

Dissertation Stage-I is a crucial phase of the dissertation process, where students are required to complete a significant portion of their work. This includes defining the problem statement, conducting a thorough literature review, and completing the design phase, which encompasses the scheme of implementation (such as mathematical models, SRS, UML diagrams, ERD, block diagrams, or PERT charts) as well as the layout and setup design. Students are expected to progress at least up to the design stage.

As part of the progress report for Dissertation Stage-I, students must deliver a presentation highlighting advancements in technology related to their chosen dissertation topic. Additionally, they are required to submit a certified Dissertation Stage-I report in the standard format, duly approved and signed by their guide, the Head of the Department and Institute.

The evaluation of Dissertation Stage-I will be conducted by a panel of examiners, including at least one external examiner. The assessment criteria will focus on the literature study, progress made, content delivery, presentation skills, documentation, and the quality of the report. Students are encouraged to validate their work through publications in **recognized conferences or peer-reviewed journals.**

Regular reporting, presentations, and proper documentation of progress are essential, with the frequency and quality of these

activities monitored by the guide along with the guide. To ensure standardization, students should adhere to the formats and guidelines specified in the department-approved dissertation workbook.

24-VEC-CS-6-01: Cyber Security

Teaching Scheme: Theory:3 Hours/Week Practical: 2 Hours/Week	Credit: 4	**Examination Scheme:** **ISE** : 50 Marks **TW** : 25 Marks **OR:** 25 Marks

Prerequisites Courses: NA

Companion Course: NA

Course Objectives:

- Understand cybersecurity threats, terminologies, and the evolving cyber threat landscape.
- Analyze cybercrimes targeting computer systems, mobile devices, and individuals.
- Examine global cyber laws, IT Act 2000, amendments, and legal aspects of emerging technologies.
- Develop cybersecurity strategies, including risk assessment, crisis management, and business continuity.
- Evaluate real-world case studies on cybercrimes, cyber warfare, and cybersecurity policies.

Course Outcomes:

After completion of the course, learners should be able to

CONo	CO	BL
1.	Explain fundamental cybersecurity concepts, threats, and key terminologies.	2
2.	Study cyber attacks and digital crimes targeting systems, mobiles, and online infrastructure.	2
3.	Identify and analyze various cybercrimes, online frauds, and social media risks.	4
4.	Interpret cyber laws, IT Act 2000, amendments, and international legal frameworks.	3
5.	Study data types, privacy, protection laws, and global data security regulations.	2
6.	Implement cybersecurity policies, risk management plans, and security controls.	3

Course Contents

Unit I	Overview of Cyber security	7 Hours

Cyber security increasing threat landscape, Cyber security terminologies- Cyberspace, attack, attack vector, attack surface, threat, risk, vulnerability, exploit, exploitation, hacker., Non-state actors, Cyber terrorism, Protection of end user machine, Critical IT and National Critical Infrastructure, Cyberwarfare.

#Exemplar/Case Studies Viasat Cyberattack

*Mapping of Course Outcomes	CO1

Unit II	**Cybercrimes Targeting Systems, Devices & Infrastructure**	**8 Hours**
Attacks on Computer Systems and Mobile Devices: Cyber crimes targeting Computer systems and Mobiles- data diddling attacks, spyware, logic bombs, DoS, DDoS, APTs, virus, Trojans, ransomware, data breach. **Online Infrastructure Attacks and Digital Crimes:**website defacement, Cybersquatting, Pharming, Cyber espionage, Cryptojacking, Darknet- illegal trades, drug trafficking, human trafficking.		
#Exemplar/Case Studies Ticketmaster Data Breach		
***Mapping of Course Outcomes**	**CO2**	
Unit III	**Online Scams and Cybercrimes Against Persons**	**7 Hours**
Online Scams and Frauds: Online scams and frauds- email scams, Phishing, Vishing, Smishing, Online job fraud, Online sextortion, Debit/ credit card fraud, Online payment fraud. **Cybercrimes Against Individuals:** Cyberbullying, , Social Media Scams & Frauds- impersonation, identity theft, job scams, misinformation, fake news cyber crime against persons - cyber grooming, child pornography, cyber stalking. Social Engineering attacks.		
#Exemplar/Case Studies The Axis Bank Phishing Scam (India, 2019)		
***Mapping of Course Outcomes**	**CO3**	
Unit IV	**Cyber Law**	**7 Hours**
Cyber crime and legal landscape around the world, IT Act,2000 and its amendments. Limitations of IT Act, 2000. Cyber crime and punishments, Cyber Laws and Legal and ethical aspects related to new technologies- AI/ML, IoT, Blockchain, Darknet and Social media, Cyber Laws of other countries,Cyber Police stations, Crime reporting procedure.		
#Exemplar/Case Studies Maharashtra's MARVEL Program		
***Mapping of Course Outcomes**	**CO4**	
Unit V	**Data Privacy and Data Security**	**7 Hours**
Defining data, meta-data, big data, non personal data. Data protection, Data privacy and data security, Personal Data Protection Bill and its compliance, Data protection principles, Big data security issues and challenges, Data protection regulations of other countries- General Data Protection Regulations(GDPR),2016 Personal Information Protection and Electronic Documents Act (PIPEDA)., Social media- data privacy and security issues.		
#Exemplar/Case Studies Equifax Breach: 147 Million People's Data Stolen		
***Mapping of Course Outcomes**	**CO5**	
Unit VI	**Cyber security Management , Compliance and Governance**	**7 Hours**
Cyber security Plan- cyber security policy, cyber crisis management plan., Business continuity, Risk assessment, Types of security controls and their goals, Cyber security audit and compliance, National cyber security policy and strategy.		

#Exemplar/Case Studies: Sony Pictures Hack	
***Mapping of Course Outcomes**	**CO6**
Laboratory Assignments	
1. Platforms for reporting cyber crimes. 2. Checklist for reporting cyber crimes online 3. Setting privacy settings on social media platforms. 4. Do's and Don'ts for posting content on Social media platforms. 5. Registering complaints on a Social media platform. 6. Prepare password policy for computer and mobile devices. 7. List out security controls for computers and implement technical security controls in the personal computer. 8. List out security controls for mobile phones and implement technical security controls in the personal mobile phone. 9. Log into the computer system as an administrator and check the security policies in the system.	
Learning Resources	
Text Books	
T1. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. **T2.** Information Warfare and Security by Dorothy F. Denning, Addison Wesley **T3. .** Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform.	
Reference Books :	
R1. Data Privacy Principles and Practice by Natraj Venkataramanan and Ashwin Shriram, CRC Press. **R2.** Information Security Governance, Guidance for Information Security Managers by W. KragBrothy, 1st Edition, Wiley Publication. **R3.** Auditing IT Infrastructures for Compliance By Martin Weiss, Michael G. Solomon, 2nd Edition, Jones Bartlett Learning.	
Additional Resources: (Books, e-Resources) https://eclm.unipune.ac.in/Search.aspx?d_id=2	
MOOC Courses links : ● https://nptel.ac.in/courses/106105162 ● https://elearn.nptel.ac.in/shop/iit-workshops/ongoing/open-source-tools-for-cyber-security-batch-2/?v=c86ee0d9d7ed ● https://onlinecourses.nptel.ac.in/noc24_cs85/preview	

24-VSEC-CS-6-01: Skill Development - I		
Teaching Scheme: Theory: 4 Hours/Week	**Credit:** 02	**Examination Scheme:** **TW** : 50 Marks
Prerequisites Courses: NA		
Companion Course: NA		

Course Objectives:

- Develop a foundational understanding of HTML and CSS to create visually appealing web pages.
- Enhance proficiency in designing responsive and interactive websites using advanced HTML, CSS, and JavaScript.
- Apply web development frameworks like Bootstrap to streamline the design and development process.
- Learn the complete website publishing process, from wireframing to hosting.

Course Outcomes:

After completion of the course, learners should be able to

CO1: **Design and develop** well-structured webpages using HTML and CSS.

CO2: **Implement** responsive web design techniques for optimal viewing on different devices.

CO3: **Enhance** website functionality and interactivity using JavaScript.

CO4: **Utilize** frameworks and publishing tools to create and deploy professional-quality websites.

Course Contents

Unit I	**Fundamentals of Web Design**	**7 Hours**

HTML and CSS BasicsIntroduction to Web Design: History and Principles,Why Web Design Matters: Applications and Careers, HTML Basics: Understanding Tags and Attributes, Building Your First Webpage: Structure and Content, Adding Links and Images to Webpages, CSS Essentials: Selectors and Properties, Styling Text with CSS: Fonts, Colors, and Sizes, Understanding the Box Model: Margins, Padding, and Borders, Using Inline, Internal, and External CSS, Week 2: Advanced HTML and CSS

Assignment: Hands-on: Create a Simple HTML and CSS Webpage

#Exemplar/Case Studies: Study of SNJB Website Design.

Unit II	**Advanced HTML and CSS**	**8 Hours**

HTML Forms: Inputs, Buttons, and Text Areas, Working with Tables: Structuring Tabular Data, Embedding Multimedia: Audio, Video, and Interactive Elements, CSS Positioning: Static, Relative, Absolute, and Fixed, Grid Layout: Modern Layouts Made Easy, Flexbox Fundamentals: Aligning and Distributing Space,Responsive Web Design: Why It Matters, Media Queries for Responsive Designs,Creating Adaptive Layouts for Mobile and Desktop

Assignment: Hands-on: Develop a Fully Responsive Webpage

#Exemplar/Case Studies : Study of Computer Department static and dynamic web pages of SNJB COE		
Unit III	**Interactive Web Development**	**7 Hours**
JavaScript Introduction: What and Why? Basic Syntax: Statements, Variables, and Operators, Understanding Data Types in JavaScript, Loops and Conditional Statements: Logic in Code, Functions: Writing Reusable Code,The DOM: Connecting JavaScript to HTML, Event Listeners and Handling User Interactions, Basic Animations with JavaScript , Debugging JavaScript Code: Common Errors **Assignment:** Hands-on: Add Interactivity to a Webpage		
#Exemplar/Case Studies : Study GSAP for displaying advanced animations.		
Unit IV	**Frameworks and Publishing**	**8 Hours**
What Are Frameworks? An Introduction, Getting Started with Bootstrap: Components and Layouts,Customizing Framework Styles for Unique Designs, Image Optimization: Techniques for Faster Loading, Steps to Publish a Website: Hosting and Domains, Understanding Website Building Workflow, Wireframing Basics: Planning a Layout, Prototyping with Online Tools, Adding Framework Components to Your Website **Assignment:**Hands-on: Publish Your First Framework-Based Website		
#Exemplar/Case Studies : Study about Domain Registration & Hosting as well as Website Publishing Platforms.		
Learning Resources		
Text Books		
T1. Keith J. Grant - CSS in Depth, Manning Publications, 2018. **T2**.V.K. Jain - Multimedia and Animation, Khanna Publishing House, Edition 2018.		
Reference Books :		
R1. Jason Beaird and Alex Walker - The Principles of Beautiful Web Design, SitePoint, 2020 (4th Edition). **R2.**Jennifer Robbins - Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web **Graphics, O'Reilly Media, 2018.**		
Additional Resources: (Books, e-Resources)		
MOOC Courses links : Web-designing and multimedia Technology By Dr. B. Yogameena National Institute of Technical Teachers' Training and Research, Chennai https://onlinecourses.swayam2.ac.in/ntr25_ed64/preview		

SEMESTER IV

24-ELC-CS-6-02: Dissertation II

Teaching Scheme:	**Credit:** 16	**Examination Scheme:**
Theory: 24 Hours/Week		**TW** : 150 Marks **PR/OR :** 150 Marks

Course Objectives:

- Follow the Software Development Life Cycle (SDLC) to achieve the objectives of their proposed work.
- Emphasize rigorous testing before deploying the system.
- Ensure the validation of the undertaken work.
- Facilitate the consolidation of work into a comprehensive, professional report.

Course Outcomes:

After completion of the course, learners should be able to

CONo	CO	BL
CO 1	Demonstrate in-depth knowledge of the domain of choice.	3
CO 2	Analyze findings, evaluate, and present the results and their interpretation.	4
CO 3	Prepare an independent dissertation report, resulting in publication.	3
CO 4	Demonstrate an ability to present and defend dissertation work to a panel of experts.	3

Course Contents

In Dissertation Stage-II, students are required to consolidate and complete the remaining aspects of their dissertation. This includes selecting appropriate technology, performing installations, implementing solutions, conducting testing, obtaining results, measuring performance, and discussing outcomes using data tables aligned with the parameters considered for improvement. The work should include comparisons with existing algorithms or systems, validation of results, and drawing meaningful conclusions. A final dissertation report, prepared in the standard format and certified by the guide, the Head of the Department and Director of the Institute, must be submitted to fulfill the requirements.

The dissertation stage II will be evaluated by a panel of examiners, including at least one external examiner. Students are encouraged to validate their research findings through publications in **recognized journals(Scopus/SCI).**

Students must demonstrate consistent progress through regular reporting, presentations, and proper documentation of their activities, as monitored by the guide. Continuous assessment of the progress should be clearly documented. It is recommended to adhere to the guidelines and formats outlined in the department-approved dissertation workbook.

24-ELC-CS-6-03: Internship

Teaching Scheme:	**Credit:** 4	**Examination Scheme:**
Theory: 8 Hours/Week		**TW** : 100 Marks

Course Objectives:

- To provide MTech students with hands-on experience in **industry, research, or academics**, enabling them to apply theoretical knowledge to real-world problems, enhance technical and analytical skills, and prepare for professional careers or further research.

Course Outcomes:

After completion of the course, learners should be able to

CONo	CO	BL
CO 1	**Apply** theoretical knowledge to real-world problems in **industry, research, or academia** through hands-on internship experiences.	3
CO 2	**Develop** technical, analytical, and problem-solving skills relevant to professional careers and advanced research.	3
CO 3	**Demonstrate** professional ethics, efforts, and effective communication.	3

Course Contents

1. Industry Internships

Industry internships offer MTech students hands-on exposure to real-world projects, enhancing their technical expertise and problem-solving skills. These internships provide valuable industry experience and help students understand practical applications of their academic knowledge. Key aspects include:

- Working on live projects in collaboration with industry professionals.
- Developing technical, analytical, and project management skills.
- Submitting periodic progress reports and a final presentation.
- Receiving feedback from industry mentors, which plays a crucial role in evaluation.

Students must adhere to industry standards, confidentiality policies, and ethical guidelines throughout the internship.

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2. Research Internships

Research internships are ideal for students interested in pursuing PhD programs or careers in R&D. These internships take place in national or international research labs, universities, or R&D centers. The primary focus areas include:

- Gaining expertise in research methodologies and experimental analysis.
- Conducting data collection, processing, and in-depth analysis.
- Enhancing technical writing skills for journal publications and conference papers.

- Presenting research findings in academic forums.

Students must document their work in a research report or journal paper while maintaining academic integrity and ethical research practices.

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3. Academic Internships

Academic internships prepare students for careers in teaching, curriculum development, and educational research. These internships provide hands-on experience in the academic domain through:

- Assisting in teaching undergraduate or postgraduate courses.
- Supervising laboratory sessions and guiding students.
- Participating in curriculum planning and educational research.
- Engaging in student mentorship and assessment activities.

Interns are expected to follow academic policies, maintain professional conduct, and submit a final report summarizing their learning experience.

24-VSEC-CS-6-02: Skill Development-II		
Teaching Scheme: Theory: 4 Hours/Week	**Credit:** 02	**Examination Scheme:** **TW** : 50 Marks
Prerequisites Courses: NA		
Companion Course: NA		

Course Objectives:

- Develop effective communication skills through interactive activities
- Apply conflict resolution and stress management techniques.
- Analyze personal habits and implement productive changes.
- Create and deliver impactful presentations with confidence.

Course Outcomes:
After completion of the course, learners should be able to
CO1: **Demonstrate** effective verbal and non-verbal communication in different scenarios.
CO2: **Evaluate** and resolve conflicts using appropriate strategies.
CO3: **Apply** time management and goal-setting techniques for personal growth.
CO4: **Design** and present clear, persuasive presentations using multimedia tools.

Course Contents

Unit I	**Introduction to Soft Skills and Personality Development**	**8 Hours**

A New Approach to Learning, Planning and Goal-Setting
Human Perceptions: Understanding People,
Types of Soft Skills: Self-Management Skills, Aiming for Excellence: Developing Potential and Self-Actualizations, Need Achievement and Spiritual Intelligence.
Self-Management & Self-Evaluation: Self-Discipline & Self-Criticism, Recognizing One's Strengths & Weaknesses, Developing a Growth Mindset
Assignment: Self-Assessment and Goal Setting

#Exemplar/Case Studies: Analyze the personality development journey of a renowned leader.

Unit II	**Conflict Resolution and Stress Management**	**8 Hours**

Conflict Resolution Skills: Seeking Win-Win Solutions Interpersonal Conflicts: Two Examples Types of Conflicts: Becoming a Conflict Resolution Expert Types of Stress: Self-Awareness About Stress Regulating Stress: Making the Best Out of Stress
Assignment: Conflict Resolution and Stress Management Techniques

#Exemplar/Case Studies : Review a workplace conflict resolution scenario and propose alternative solutions.

Unit III	**Habit Formation and Personal Growth**	**8 Hours**

Habits: Guiding Principles , Identifying Good and Bad Habits , Habit Cycle ,Breaking Bad Habits Using the Zeigarnik Effect for Productivity and Personal Growth Forming Habits of Success. Communication Skill: Significance of Listening , Active Listening .Barriers to Active Listening **Telephone Communication:** Basic Telephone Skills,Advanced Telephone Skills ,Essential Telephone Skill **Technology and Communication:** Technological Personality, Mobile Personality, EMail Principles **Assignment** : 1)Enhancing Verbal, Non-Verbal, and Listening Skills 2)Building Productive Habits and Managing Time		
#Exemplar/Case Studies : Analyze how successful entrepreneurs apply time management techniques.		
Unit IV	**Presentation skills**	**6 Hours**
Body Language: The Role of Body Language, Using Visuals, Effective Reading for Interviews, for Group Discussions **Reading Skills**: Effective Reading,Human Relations: Developing Trust and Integrity **Thoughtful & Responsible Communication:** Self-Awareness & Emotional Intelligence, Independent Thinking & Decision-Making, Social & Cultural Sensitivity in Communication **Assignment:** 1)Effective Communication in a group discussion 2)Mastering Presentation and Public Speaking		
#Exemplar/Case Studies: Study of presentation skills of Vivek Bindra and Sandeep Maheshwari.		
Learning Resources		
Text Books		
T1. Personality development and communication skills by: gupta sachin book enclave; 2009 **T2.** Communication skills by: sen leena phi learning private limited; 2009		
Reference Books :		
R1. Dorch, Patricia. What Are Soft Skills? New York:Execu Dress Publisher, 2013. **R2.**Kamin, Maxine. Soft Skills Revolution: A Guide for Connecting with Compassion for Trainers,Teams,		
Additional Resources: (Books, e-Resources) 1. Klaus, Peggy, Jane Rohman & Molly Hamaker.The Hard Truth about Soft Skills. London:HarperCollins E-books, 2007 2. Stein, Steven J. & Howard E. Book. The EQ Edge: Emotional Intelligence and Your Success.Canada: Wiley & Sons, 2006		
MOOC Courses links : ● NPTEL Enhancing Soft Skills and Personality By Prof. T. Ravichandran | IIT Kanpur (8 week) https://onlinecourses.nptel.ac.in/noc24_hs26/preview?utm_		