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

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

To be implemented for 2024-26 Batch

(With Effect from Academic Year 2025-26)

CHAIRMAN
BOARD OF STUDIES MECHANICAL 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.

The vision of the Mechanical Engineering Department

To impart quality technical education in the field of Mechanical Engineering for the benefits of society

Mission of the Mechanical Engineering Department

1. To provide quality education among the students through the curriculum and industrial exposure.
2. To develop a learning environment leading to innovations, skill development and professional ethics through curricular and extracurricular activities for societal growth.

Program Outcomes (POs) for an engineering graduate:

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

Table No.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
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
ME	Mechanical Engineering

GENERAL COURSE STRUCTURE

A. Definition of Credit

Table No.2: Definition of Credit

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 program in Technology has about 80 credits, the total number of credits proposed for the two-year M.Tech. in **Mechanical Engineering** is kept as **80.**

Table No.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-curricularCourses (CCC)	Liberal Learning Courses	2
Total Credits		**80**

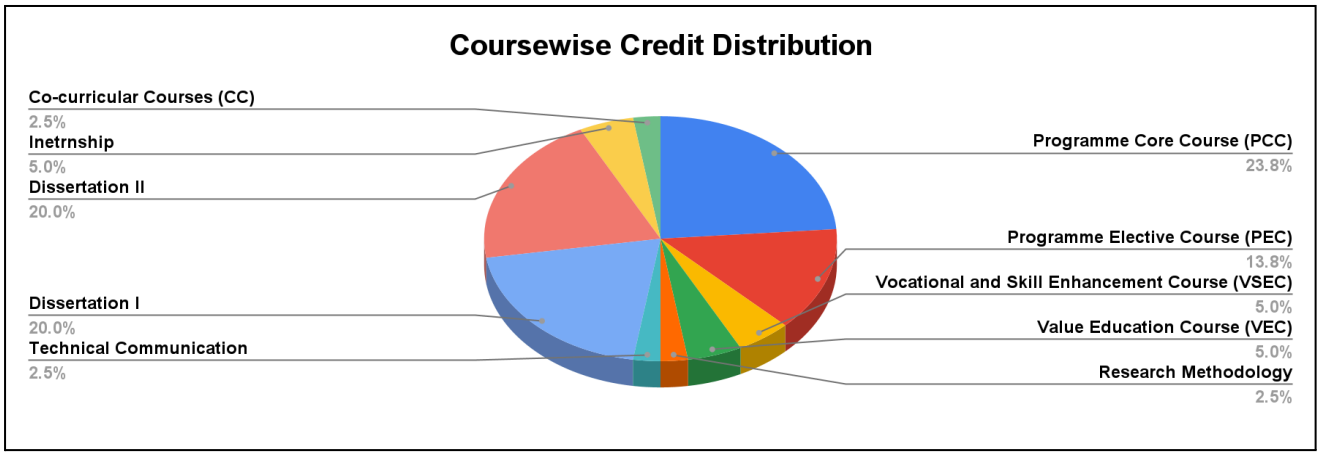
Note:* –Credits are not to be considered while calculating marks for the declaration of the final result (Pass/Fail).

C. Semester wise Credit Distribution Structure for Two Year M.Tech in Mechanical Engineering

Table No.4: Semester wise Credit Distribution Structure

Semester		I	II	III	IV	Total Credits
Program Core Course (PCC)	Program Course	13	6	-	-	**19**
Program 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 program are given in the given Table

Table No.5: Level for the PG Program

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-ME-5-01	Advanced Engineering Thermodynamics	4	-	-	4	4	40	60	100	-	-	100
2	PCC	24-PCC-ME-5-02	Machining and Forming Processes	3	-	-	3	3	40	60	100	-	-	100
3	PCC	24-PCC-ME-5-03	Advanced Vibrations and Acoustics	4	-	-	4	4	40	60	100	-	-	100
4	PCC	24-PCC-ME-5-04	Numerical Methods and Computational Techniques (Laboratory Practice-I)	-	-	4	4	2	-	-	-	50	50	100
5	PEC	24-PEC-ME-5-01	Programme Elective Course – I	3	-	-	3	3	40	60	100	-	-	100
6	VSEC	24-VSEC-ME-5-01	Instructional Design and Development	-	-	4	4	2	-	-	-	50	-	50
7	ELC	24-ELC-ME-5-01	Research Methodology	2	-	-	2	2	50	-	50	-	-	50
Total				**16**	**-**	**8**	**24**	**20**	**210**	**240**	**450**	**100**	**50**	**600**

Table No.6: Program Elective Course –I

	Course Code-TH	Name of the Course- TH
A	24-PEC-ME-5-01A	Advanced Refrigeration
B	24-PEC-ME-5-01B	CAD- CAE
C	24-PEC-ME-5-01C	Surface Engineering
D	24-PEC-ME-5-01D	Manufacturing Automation

TEACHING AND EVALUATION SCHEME FOR FIRST-YEAR M-TECH

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-ME-5-05	Mechanical Design Analysis	4	-	-	4	4	40	60	100	-	-	100
2	PCC	24-PCC-ME-5-06	Computational Fluid Dynamics (Laboratory Practice-II)	-	-	4	4	2	-	-	-	50	50	100
3	PEC	24-PEC-ME-5-02	Program Elective Course – II	4	-	-	4	4	40	60	100	-	-	100
4	PEC	24-PEC-ME-5-03	Programme Elective Course – III	4	-	-	4	4	40	60	100	-	-	100
5	VSEC	24-VSEC-ME-5-02	Drone Technology	-	-	4	4	2	-	-	-	50	50	100
6	CCC	24-CCC-ME-5-01	Scientific studies of Mind,Matter and Consciousness	2	-	-	2	2	-	-	-	50	-	50
7	ELC	24-ELC-ME-5-02	Technical Communication	-	-	4	4	2	-	-	-	50	-	50
8	VEC	24-VEC-ME-5-01	Introduction to Human Rights and Duties**	1	-	-	1	1*	-	-	-	25*	-	25*

9	VEC	24-VEC-ME-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**

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

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

Table No.7: Program Elective Course –II

	Course Code-TH	Name of the Course- TH
A	24-PEC-ME-5-02A	Advanced Heat Transfer
B	24-PEC-ME-5-02B	Stress Analysis
C	24-PEC-ME-5-02C	Advanced Optimization Techniques
D	24-PEC-ME-5-02D	Mechanical Behavior of Materials

Table No.8: Program Elective Course –III

	Course Code-TH	Name of the Course- TH
A	24-PEC-ME-5-03A	Design of Heat Exchangers
B	24-PEC-ME-5-03B	Tribology in Design
C	24-PEC-ME-5-03C	Soft Computing Techniques
D	24-PEC-ME-5-03D	World Class Manufacturing

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-ME-6-01	Dissertation I	-	-	26	26	16	-	-	-	150	150	**300**
2	VEC	24-VEC-ME-6-01	Cyber Security	3	-	2	5	4	50	-	50	25	25	**100**
3	VSEC	24-VSEC-ME-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 Introduction to Cyber Security(24-VEC-ME-6-01) and Skill Development-I (24-VSEC-ME-6-01) are done as per the Note (41AC-Note-01) dated 4 Feb 2025

TEACHING AND EVALUATION SCHEME FOR SECOND-YEAR M-TECH

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-ME-6-02	Dissertation II	-	-	24	24	16	-	-	-	150	150	**300**
2	ELC	24-ELC-ME-6-03	Internship	-	-	8	8	4	-	-	-	100	-	**100**
3	VSEC	24-VSEC-ME-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-ME-6-02) is done as per the Note (41AC-Note-01) dated 4 Feb 2025

SEMESTER III

24-ELC-ME-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-ME-6-01: Cyber Security

Teaching Scheme:	**Credit:** 4	**Examination Scheme:**
Theory:3 Hours/Week Practical: 2 Hours/Week		**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.		
1. **#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-ME-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 basic understanding of event management concepts and principles.
- Analyze and apply event planning and organizing techniques in real-life scenarios.
- Evaluate and implement effective event management strategies for successful event execution

Course Outcomes:

After completion of the course, learners should be able to

CO1: **Demonstrate** knowledge of key event management concepts and apply them to various event types.
CO2: **Analyze** the effectiveness of different event planning and execution approaches.
CO3:**Design and evaluate** a comprehensive event management plan using industry best practices

Course Contents

Unit I	**Concept of Event Management**	**7 Hours**

5 G's of Events, Event Designing,Relationship Building, Creating Opportunities for Better Deals with Different Media, Events and the Economy

Assignment: Understanding the Concept of Event Management and 5 G's of Events

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

Unit II	**Facets of Event Management**	**8 Hours**

Event Infrastructure, Core Concept, Core People, Core Talent, Core Structure, Set Objectives for the Event, Negotiating Contracts with Event Organisers, Locating Interaction Points, Banners , Displays etc., at the Event, Preparing the Staff for the Event, Post-event Follow-up Event Organisers Targeting Clients, Selecting Event Categories to Serve, Selecting and Contracting with Other Key Elements in Chosen Categories. Venue : In-house Venue, External Venue
Assignment: Plan and execute a small-scale event (e.g., college fest, community gathering, corporate meeting)

#Exemplar/Case Studies : Evaluate the partnership strategy of a major event like the annual social gathering.

Unit III	**Activities in Event Management**	**8 Hours**

Networking Components, Print Media, Radio Television, The Internet, Cable Network, Outdoor Media, Direct Marketing, Sales

Promotions, Audience Interaction, Public Relations, Merchandising, In-venue Publicity, Activities in Event Management, Pre-event Activities, During-event Activities, Post-event Activities, Planning, Organizing, Staffing, Leading and Coordination, Controlling, Event Management Information System, Setting Objectives, Development of the Strategic Market Plan, Environmental Assessment, Competitive Assessment, Gaining Competitive Advantages, Business Potential, Assessment, Market Attractiveness, Business Strengths **Assignment:** Document the event planning process through reports, photographs, and participant feedback.		
#Exemplar/Case Studies : Examine how a product launch event integrated multimedia channels for maximum reach.		
Unit IV	**Business Opportunity Search & Preparation**	**7 Hours**
Explore methods for identifying and evaluating new business opportunities within the event industry,market research techniques and the assessment of client needs to develop innovative event concepts,components of a comprehensive business plan tailored to event management,financial planning, marketing strategies, and operational plans necessary for launching and sustaining an event management business. **Assignment:**Conduct a market analysis to evaluate the demand for this event type in your region & Identify your target audience, competitors, and key challenges		
#Exemplar/Case Studies : Research how **BookMyShow** expanded into live event management.		
Learning Resources		
Text Books		
T1. Razaq Raj, Paul Walters,Tahir Rashid Events Management Principles and Practice		
Reference Books :		
R1. Tallon, A.F. Fashion Marketing and Marchandising, 3rd ed., Sequuoia Books, 1986. **R2.**Panwar, J.S. Marketing in the New Era, Sage Publications India Pvt. Ltd., 1998. Avvich, Barry, Event and Entertainment Marketing ,Delhi, Vision Books 1994 **R3**.IGNOU SLM for Basics of Event Management (BHC-011)		
Additional Resources: (Books, e-Resources)		
MOOC Courses links : Basics of Event Management By Prof. Heena K. Bijli | Indira Gandhi National Open University https://onlinecourses.swayam2.ac.in/nou20_ge01/preview		

SEMESTER IV

24-ELC-ME-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/WOS/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-ME-6-03: Internship

Teaching Scheme:	**Credit:** 4	**Examination Scheme:**
PR: 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-ME-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_

Internal Semester Exam Question paper Format

SNJB's Late Sau. Kantabai Bhavarlalji Jain College of Engineering

Department of Mechanical Engineering

Internal Semester Test Exam (Academic Year :__ Semester: __)

Class :	Marks : 20	Date : / /	Time :	Duration : 1 Hr.

Course Name :: Course Code

Instructions:

Q. No.	Questions	Marks	Unit No.	Marking Scheme
Q.1 A)		6		
Q.1 B)		4		
OR				
Q.2 A)		6		
Q.2 B)		4		
Q.3A)		6		
Q.3 B)		4		
OR				
Q.4A)		6		
Q.4B)		4		

Semester End Exam Question paper Format

Semester End Examination (Regular) <<Month Year>>

Programme: Class:
Course and Code: Semester:
Academic Year: Pattern:
Time: 2Hr 30 Min Examination: SEE (Month Year) Max. Marks: 60

Instructions to the candidates:

1. *Solve Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6, Q.7 OR Q.8, Q.9 OR Q.10, Q.11 OR Q.12*
2. *Bold-faced figures to the right indicate full marks.*
3. *Assume the suitable data if necessary, but Justify it.*
4. *Draw the neat labelled diagrams, wherever necessary.*

QN	Question	Marks
1 a)	Unit I	6
1 b)	Unit I	4
	OR	
2 a)	Unit I	6
2 b)	Unit I	4
3 a)	Unit II	6
3 b)	Unit II	4
	OR	
4 a)	Unit II	6
4 b)	Unit II	4
5 a)	Unit III	6
5 b)	Unit III	4
	OR	
6 a)	Unit III	6
6 b)	Unit III	4
7 a)	Unit IV	6
7 b)	Unit IV	4
	OR	
8 a)	Unit IV	6
8 b)	Unit IV	4
9 a)	Unit V	6
9 b)	UnitIV	4
	OR	
10 a)	Unit V	6
10 b)	Unit V	4
11 a)	Unit VI	6
11 b)	Unit VI	4
	OR	
12 a)	Unit VI	6
12 b)	Unit VI	4

Supporting Document

Sr. No.	Syllabus Contains	Short Answer	Yes / No	Page No. (In Syllabus)
1	अभ्यासक्रम	Enclosed in Syllabus	Yes	1-23
2	पात्रता	(As per the Rules and Regulations mentioned in MoM)	Yes	26
3	अभ्यासक्रमाची उद्दिष्टे	Enclosed in Syllabus	Yes	11
4	विषयाचे नाव	Enclosed in Syllabus	Yes	6
5	घटकांचा तपशील	Enclosed in Syllabus	Yes	6
6	तासिका	Enclosed in Syllabus	Yes	6
7	श्रेयांक पद्धत	Enclosed in Syllabus	Yes	6
8	संदर्भ साहित्य	Enclosed in Syllabus	Yes	15
9	संदर्भ ग्रंथ	Enclosed in Syllabus	Yes	15
10	प्रश्नपत्रिकेचे स्वरूप	Enclosed in Syllabus	Yes	24
11	अंतर्गत मूल्यमापनाचे स्वरूप	Enclosed in Syllabus	Yes	6
12	सत्र परीक्षेचे स्वरूप	Enclosed in Syllabus	Yes	25
13	गुणांकन	Enclosed in Syllabus	Yes	6