



**MANIPAL UNIVERSITY JAIPUR**

Faculty of Engineering | School of Civil, Biotechnology & Chemical Engineering

Department of Civil Engineering

Course Hand-out

MBB2101 | Management of Technology | I 0 0 I

**Session:** Jul-Nov 2024 | **Program:** B. Tech | **Semester:** III

**Course coordinator:** Dr. Harshavardhana B. G.

**A. Introduction:**

The main objective of this course is to provide a complete theoretical guidance for an Entrepreneurship Development. Through the basic understanding of some of the key requirements for converting a business idea into reality, it is encouraged to visualise a start-up to be a successful venture in one's career. The concepts and the need of invention and innovation in this present era, their relationship with the customer needs, the commercialisation and levelling-up of the engineering ideas to the global industry standards would be learnt through this course.

**B. Course Outcomes:** At the end of the course, students will be able to

CO	Statement	Cognitive Level
1	Demonstrate the basic elements / requirements of becoming an entrepreneur, improving their business-skill.	Understand
2	Develop their engineering ideas into business model which may enhance the employability.	Apply
3	Plan the finances and human resources for the sustainable commercialization of new technologies.	Apply
4	Understand the importance of intellectual property rights while commercialising the innovative idea.	Understand

**C. PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES**

**[PO.1]. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

**[PO.2]. Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences

**[PO.3]. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

**[PO.4]. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions



- [PO.5]. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
- [PO.6]. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice
- [PO.7]. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
- [PO.8]. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices
- [PO.9]. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
- [PO.10]. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
- [PO.11]. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
- [PO.12]. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change
- [PSO.1].** Design economic, environment friendly, sustainable engineering structures keeping in view national and social requirements.
- [PSO.2].** Conduct investigation, analysis and interpretation of the results using modern scientific tools and technical skills for solving complex engineering problem.
- [PSO.3].** Manage/ execute engineering projects effectively and ethically as a member or/and leader in diverse teams.
- [PSO.4].** Communicate effectively with multidisciplinary members and engage in independent and lifelong learning for global betterment.
- [PSO.5].** Discharge social responsibility as an engineer by innovative approaches.

#### **D. Assessment Plan:**

Criteria	Description	Maximum Marks
Internal Assessment (Summative)	Mid-Term Examination (Close Book)	30
	Class Work Sessional (CWS): Three Quizzes	30
End Term Exam (Summative)	End Term Exam (Close Book)	40
	Total	100
Attendance	A minimum of 75% Attendance is required to be maintained by a student to be	



(Formative)	qualified for taking up the End Semester examination. The allowance of 25% includes all types of leaves including medical leaves.
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## E. Syllabus

Invention and Innovation; Market analysis; Technology transition; Market survey technique; Analysing marketing opportunities; Ansoff Matrix; Project Formulations (1, 2 and 3) based on market survey technique; Commercialization; Financial Management; Human Resource Management; Leadership; Intellectual Property.

### References:

1. Innovation and Entrepreneurship by Drucker, P.F. Harper and Row Publications, 2006.
2. Business, Entrepreneurship and Management: Rao, V.S.P.; Vikas Publications, 2013.
3. Entrepreneurship: Theory, Process and Practice, Donald F. Kuratko and Richard M. Hodgetts, Thomson Learning Publications, 2003
4. Entrepreneurship, Roy, Rajeev, Oxford University Press, 2020.

Web Link: [https://onlinecourses.swayam2.ac.in/cec24\\_mg28/preview](https://onlinecourses.swayam2.ac.in/cec24_mg28/preview)

## F. Lecture Plan:

Lect.	Topics	Session Outcome	Corresponding CO	Mode of delivery	Mode of Assessing CO
1	Invention and Innovation	Understanding the concepts of invention and innovation	CO1	Lecture	MTE, Quiz & ETE
2	Market analysis	Understanding the concept	CO1	Lecture	MTE, Quiz & ETE
3	Technology transition	Understanding the concept	CO1	Lecture	MTE, Quiz & ETE
4	Market survey technique	Understanding the concept	CO1	Lecture	MTE, Quiz & ETE
5	Market survey technique	Understanding the concept	CO1	Lecture	MTE, Quiz & ETE
6	Analysing marketing opportunities	Understanding the concept	CO1	Lecture	MTE, Quiz & ETE
7	Ansoff Matrix	Understanding the concept	CO1	Lecture	MTE, Quiz & ETE
8	Project Formulations-1 based on market survey technique	Understanding the project formulations	CO2	Lecture	MTE, Quiz & ETE
9	Project Formulations-2 based on market survey technique	Understanding the project formulations	CO2	Lecture	MTE, Quiz & ETE
10	Project Formulations-3 based on market survey technique	Understanding the project formulations	CO2	Lecture	MTE, Quiz & ETE



<b>Mid Term Examination (MTE)</b>					
11	Commercialization	Understanding the significance of commercialization and its applications	CO3	Lecture	MTE, Quiz & ETE
12	Financial Management	Understanding the importance of financial management	CO3	Lecture	MTE, Quiz & ETE
13	Human Resource Management	Understanding the relevance of managing the human resources	CO3	Lecture	MTE, Quiz & ETE
14	Human Resource Management	Understanding the relevance of managing the human resources	CO3	Lecture	MTE, Quiz & ETE
15	Leadership	Understanding the need of becoming a business-leader	CO1	Lecture	MTE, Quiz & ETE
16	Intellectual Property	Understanding the relevance of protecting the creative knowledge for entrepreneurship	CO4	Lecture	MTE, Quiz & ETE
<b>End Term Examination</b>					

**G. Target attainment (%) for course outcomes:**

<b>CO</b>	<b>Target attainment (%)</b>
1	80 %
2	50 %
3	50 %
4	100 %



**H. Course Articulation Matrix: (Mapping of COs with POs and PSOs)**

CO	Statement	Correlation with Program Outcomes																
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS O1	PS O2	PS O3	PS O4	PS O5
1	Demonstrate the basic elements / requirements of becoming an entrepreneur, improving their business-skill.	3	2	1		1		2	3	2	2	1	3			1	2	
2	Develop their engineering ideas into business model which may enhance the employability.			3	2	1		1	3			1	3	2		2		2
3	Plan the finances and human resources for the sustainable commercialization of new technologies.							3			2	3	1			2	3	
4	Understand the importance of intellectual property rights while commercialising the innovative idea.	3				1		1	3		1	1		2		2		
		1: Low Correlation    2: Moderate Correlation    3: Substantial Correlation																

**Course Coordinator**  
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**MUJ ID: MUJ0480**

**Head of the Department**

**Student Representative**  
**Name:**  
**Registration No.**