



GUJARAT TECHNOLOGICAL UNIVERSITY

Integrated Master of Science (Biotechnology)

Semester: 8

Subject Name: Bioentrepreneurship

Subject Code: 1380405

Prerequisite: Candidates enrolling in the integrated MSc in Industrial Biotechnology with a compulsory course in Bioentrepreneurship should possess a foundational understanding of both biological sciences and basic business principles. .

Rationale: Integrating a compulsory course in Bioentrepreneurship into the MSc Industrial Biotechnology curriculum is essential for bridging the gap between scientific innovation and commercial application. This course equips students with the necessary skills to transform biotechnological research into viable business ventures, fostering the development of products and services that address societal needs.

Course Scheme:

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	PR		Theory		Practical		
			ESE (E)	PA(M)	ESE (V)	PA (I)		
0	0	4	2	0	0	0	50	50

Course Content:

Module No:	Module Content	No. of Sessions	70 Marks (External Evaluation)
1	<p>Innovation and entrepreneurship in bio-business</p> <p>Introduction and scope in Bio-entrepreneurship, Types of bio-industries and competitive dynamics between the sub-industries of the bio-sector (e.g. pharmaceuticals vs. Industrial biotech), Strategy and operations of bio-sector firms; Factors shaping opportunities for innovation and entrepreneurship in bio-sectors, and the business implications of those opportunities, Alternatives faced by emerging bio-firms and the relevant tools for strategic decision, Entrepreneurship development programs of public and private agencies (MSME, DBT, BIRAC, Make In India), strategic dimensions of patenting & commercialization strategies.</p>	8	20
2	<p>Bio markets: business strategy and marketing</p> <p>Negotiating the road from lab to the market (strategies and processes of negotiation with financiers, government and regulatory authorities), Pricing strategy, Challenges in marketing in bio business (market conditions & segments; developing distribution channels, the nature, analysis and management of customer needs), Basic contract principles,</p>	8	20



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	different types of agreement and contract terms typically found in joint venture and development agreements, Dispute resolution skills.		
3	Finance and accounting Business plan preparation including statutory and legal requirements, Business feasibility study, financial management issues of procurement of capital and management of costs, Collaborations & partnership, Information technology.	6	10
4	Technology management Technology – assessment, development & upgradation, Managing technology transfer, Quality control & transfer of foreign technologies, Knowledge centers and Technology transfer agencies, Understanding of regulatory compliances and procedures (CDSCO, NBA, GCP, GLA, GMP); Bi-specific T-cell engagers (BiTEs) as artificial bispecific monoclonal antibodies for the use as anti-cancer drug.	8	20

Reference Books:

1. Adams, D. J., & Sparrow, J. C. Enterprise for Life Scientists: Developing Innovation and Entrepreneurship in the Biosciences Scion Latest Edition
2. Shimasaki, C. D. Biotechnology Entrepreneurship: Starting, Managing, and Leading Biotech Companies Academic Press Latest Edition
3. Onetti, A., & Zucchella, A. Business Modeling for Life Science and Biotech Companies: Creating Value and Competitive Advantage with the Milestone Bridge Routledge Latest Edition
4. Jordan, J. F. Innovation, Commercialization, and Start-Ups in Life Sciences CRC Press Latest Edition
5. Desai, V. The Dynamics of Entrepreneurial Development and Management. Himalaya Pub. House Latest Edition

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
1	Understand the nature and function of bioentrepreneurship in the successful, commercial application of innovations.	UN
2	Describe new techniques to protect the environment from diseases, fuel production, feed the hungry and various other product preparation.	AN
3	Communicate concepts and ideas effectively.	EL
4	A quality management team, adequate financing, and access to new technology that leads to products.	RM

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create



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