



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3140407

Semester – IV

Subject Name: **Bioethics, biosafety and Principles of management**

Type of course: Humanities and Social Science

Prerequisite: Fundamentals of basic sciences with sensitivity to moral values

Rationale: The biotechnology strives for improvements in technology related to sectors like health, medical, food and pharmacy that comes with its drawbacks when it is misused. Ethics and morals speak this time gracing the world. Students need to understand importance of ethics and how to apply it in the field of biotechnology with its specific sectors. This aspect brings the need of safety at a time. The management principles help gain the impact and implementation of bioethics and biosafety.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs	Module Weightage %
PART-A Bioethics and Biosafety			
1.	Introduction to biosafety: GHS symbols, Overview of biosafety, Risk assessment of non GMO microorganisms, Biosafety Levels, Cartagena protocol on Biosafety, Safety equipment, GMOs: Concerns and challenges, Transgenic technology, Gene flow, Future opportunities and challenges, Chemical, fire and electrical safety in a Laboratory, Contingency plans and emergency procedures, Good Laboratory biosafety practices Importance of good laboratory practices, General good laboratory practices.	8	19
2.	International regulatory bodies: National regulatory bodies, Biosafety of Genetically engineered products, Genetically engineered products and recombinant DNA technology, Risk assessment of RDT products, Regulating recombinant DNA technology, Permit for movement and import of GMOs, Web based information of biosafety on GMO, Biosafety database. Biosafety for Animal Laboratories.	10	22
3.	Bioethics: Ethics concerning, Biodiversity : The impact of decreasing diversity, Species Extinction: the cost of commercial activities on different species, Web of life, commercial exploitation of organisms, Environmental Ethics Experimentation regarding animals, Reproductive, Birth, Life and Death, Germ line gene therapy, Genome sequencing.	12	27
PART-B Principles of management			
4.	Innovative Management for Turbulent Times: The need- Manager's Challenge, The Definition of Management, The	05	11



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	Four Management Functions , Organizational Performance, Management Skills, Management Types, What is it Like to Be a Manager?, Managing in Small Business and Nonprofit Organizations, Management and the New Workplace. (Ref. Book 1)		
5.	The Evolution of Management Thinking : Manager’s Challenge, Management and Organization, Classical Perspective, Humanistic Perspective, Management Science Perspective, Recent Historical Trends; overview of managing in a global environment (Ref. Book 1)	04	9
6.	Organizational Structure and Design Types of structures, Work Specialization, Departmentalization, Chain of Command, Span of Control, Centralization and Decentralization, idea of formalization (Ref. Book 2)	02	4
7.	Social Responsibility & Managerial Ethics What are Business Ethics?, Importance of Ethics and Corporate Social Responsibility, Managing Corporate Social Responsibility, The Organization Role in Ethical Behavior, Factors That Affect Managerial Ethics. (Ref. Book 3)	02	4
8.	Managing Small Business Start-Ups: Entrepreneurship and the Environment, Who Are Entrepreneurs?, Social Entrepreneurship: An Innovative Approach to Small Business, Launching an Entrepreneurial Start-Up (Ref. Book 1)	02	4

R Level	U Level	A Level	N Level	E Level	C Level
30	50	10	00	10	00

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom’s Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books: PART [A]:

1. IPR, Biosafety and Bioethics by Deepa Goel and Shomini Parashar, Pearson publisher 2013.
2. Bioethics by S. Ignacimuthu, s.j., Narosa Publishing House 2009.

Reference Books - PART [B]:

1. Principles of Management, Richard L. Daft, Cengage Learning, 2009, fourth reprint 2010.
2. ‘Management’ – Stephen P. Robbins, Mary Coulter, Neharika Vohra – Pearson Prentice Hall of India, New Delhi, Tenth edition
3. ‘Management I’, Dr. Rupesh Vasani, Dr. Kavita P Kshatriya, Books India Publications, First edition 2010

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

Sr. No.	CO Statement	Marks % Weightage
1.	Develop fundamental understanding of risks associated with biotechnology	15



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	research, and laboratory work.	
2.	Develop strategies to minimize accidents in the laboratory.	18
3.	The student will be able to reason and understand the consequences of one's choices and one's action on the biosphere, and the ethical ramifications of the same.	33
4.	To understand and develop the required basic management skills with morals	18
5.	To understand and learn the qualities required for entrepreneurial setup	16