

T.Y.B.Sc. Biotechnology 2020 - 2021

Bioethics & Biosafety



WORLD
INTELLECTUAL
PROPERTY
ORGANIZATION



SEMESTER – VI

BIO-VI.E-13

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COURSE SCHEDULE - Theory

Lecture	Lecture topics	References
L1	Introduction to Biological Safety Cabinets	Singh B.D. (2003) & Krishna V. S. (2007)
L2	Primary Containment for Biohazards	
L3	Biosafety Levels: Physical containment	
L4	Biological containment,	
L5	Biosafety Levels of Specific Microorganisms	
L6	Biosafety levels for infectious agents and infected animals	
L7	General safety measures	Plummer D.T. (1988) & Das H.K. (2008)
L8	Physical hazards	
L9	Biological hazards	
L10	Chemical spillage and waste disposal	Singh B.D. (2003) & Krishna V. S. (2007)
L11	Biosafety guidelines in India	
L12	International biosafety guidelines	
L13	OECD, FAO	
L14	WHO & CAC	
L15	Other organisations	
L16	Introduction to bioethics	Dubey R. C. (1993) & Singh B.D. (2003)
L17	Social & ethical issues in biotechnology	
L18	Bioethics of test tube babies	
L19	Bioethics in plant genetic engineering	
L20	Bioethics in animal genetic engineering	Dubey R. C. (1993) & Singh B.D. (2003)
L21	Introduction to intellectual property	
L22	Protection of intellectual property	
L23	Property rights: trade secret, patent	
L24	Copyright, Plant variety protection;	
L25	Plant breeders' right: history, PPVFR, UPOV	
L26	Requirements for PBR, need and Benefits of PBR	
L27	Breeder's exemption, farmer's privilege, farmer's right	
L28	World intellectual property organization (WIPO), GATT & TRIPs	
L29	Patent status - International Scenario	
L30	Patenting of biological materials; significance of patents in India	
L31	CA-1 of 30 marks & Review of CA-1	Singh B.D. (2003) Dubey R. C. (1993) Singh B.D. (2003) Thomas J. A. & Fush R. L. (2002)
L32	Patenting Basmati rice	
L33	Revocation of patents - turmeric	
L34	Revocation of patents - neem	
L35	Patenting of genes and DNA sequences	
L36	Gene patents and genetic resources	
L37	Farmers rights	
L38	Plant breeder's rights	
L39	Patenting of life forms	
L40	Broad patents in biotechnology	
L41	Introduction to regulatory affairs	
L42	Good Laboratory Practices	
L43	Good Manufacturing Practices	
L44	Biosafety of GEMs and GMOs	
L45	Planned introduction and field trials of GMOs	
L46	Planned introduction and field trials of GEMs	
L47	CA-2 of 30marks & Review of CA-2	

*Text in Black – Dr. R. Kanchana; Text in Blue – Ms. Madhavi M. Motankar

REFERENCES

1. Das H.K. (2008). Textbook of Biotechnology, 3rd edition, Wiley India Pvt. Limited, New Delhi.
2. Dubey R. C. (1993). A Textbook of Biotechnology, S. Chand and Company, New Delhi.
3. Krishna V. S. (2007). Bioethics & Biosafety in Biotechnology, New Age Publishers, Bangalore.
4. Plummer D.T. (1988). An Introduction to Practical Biochemistry, 3rd Edition, Tata McGraw, New York.
5. Singh B.D. (2003). Biotechnology - Expanding Horizons, First edition, Kalyani Publishers, Ludhiana.
6. Thomas J. A. and Fush R. L. (2002). Biotechnology & Safety Assessment, 3rd Edition, Academic Press.

WEB REFERENCES

1. http://www.iitb.ac.in/safety/sites/default/files/BIO%20SAFETY%20IITB_1.pdf (Bio-safety)
2. <https://www.ncbi.nlm.nih.gov/books/NBK218625/> (Introduction to Bio-safety)
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3217699/> (Introduction to IPR)
4. <https://www.wipo.int/export/sites/www/about-ip/en/iprm/pdf/ch1.pdf> (IPR)
5. http://www.fao.org/fileadmin/user_upload/gmfp/docs/Biosafety%20Brochure.pdf (GMOs)
6. <https://www.hindawi.com/journals/isrn/2011/369573/> (Biosafety of GMOs)

PRACTICAL SCHEDULE

Practical No.	Practical topics
P1	General safety measures and study of safety notices
P2	Study of preventive measures and first aid during laboratory hazards
P3	Case study on handling and disposal of radioactive waste
P4	Case study on handling and disposal of medical/microbial waste
P5	Study of Good Laboratory Practices
P6	Study of Good Manufacturing Practices
P7	Study of components and design of a Biosafety laboratory
P8	A case study on clinical trials in India with emphasis to ethical issues
P9	Planning of establishment of a hypothetical biotechnology industry in India
P10	Study of steps of a patenting process

*** MANDATORY ITEMS TO BE CARRIED FOR PRACTICALS;**

Laboratory note book and Pen

- *Note: 1. Practical protocols have been uploaded on Google Classrooms for your reference.
2. You are required to go through the same and be well prepared for better understanding during the practical session.

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