

## Course Name

### **Bio-Designing of Sustainable products from Biological system and Patentability in Life Sciences**

Duration: 06 Months

Total Marks: 100

Theory: 60

Practical or CCE: 40

#### **UNIT-I**

##### **Basics of Bio-design**

- What is Bio-design?
- Scope and types of Bio-Design Products
- Currents status of Bio-design in India and International market
- Biosynthesis and applications of nanoparticles.
- Bio-designing of Microbial fuel system through bacteria, Innovative methods for waste management and bioremediation of heavy metals.

#### **UNIT-II**

##### **Applied Bio-design**

- Cultivation of mushroom its importance and applications
- Bio-designing of eco-cradle and mushroom paper
- Bio-designing of Latro-lamp and moss table
- Hydroponics: Aquaponics and aeroponics types and design of hydroponics
- Introduction to algae/Fungi and various pigments in relation to Bio-design.

#### **UNIT-III**

##### **Understanding and Overview of IPR:**

- Introduction of IPR
- Concept, Nature and Characteristics of IPR
- Kind of intellectual Property
- Impact of Internet in IPR

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- Patents Authorities under Patent Act, 1970: Controller General of India, Patent examiner, Patent agents etc.

#### UNIT-IV

##### Patentability and Copyright Trademark

- Patentable Subject matter and Patentability criteria: Patentable and non-patentable inventions, Novelty, utility of inventiveness/ Non-obviousness.
- Rights of patentee, procedure of granting a patent and obtaining patents, working of patents, transfer of patents.
- Procedure for filing of national and international patents.
- Patent of pharmaceutical products and its process, Patenting Microorganisms, other living organisms and genetic material.
- Protection of plant varieties and farmers Rights, Registration of varieties, Breeders rights/Farmers rights.
- Copyrights: Concept, Nature and scope of copyright, plagiarism, Copyrights issues in digital world, terms of copyrights, condition for granting copyright.
- Trademark: Evolution and registration process of trademark in India, grounds refusal and passing off.

#### UNIT-V

##### Contemporary Issue in IPR and Grants of Patents

- IPR and Sustainable development
- IPR issues in Biotechnology and other field of sciences
- Interface between IPR and Human Rights
- Infringement of Patents and remedies for infringement
- Provision relating to Infringement of copyrights and remedies available
- Infringement of Trademark and remedies.

##### Practicals:

- Isolation, identification and maintenance of pure culture of fungus.
- Bio-designing of eco-cradle and mushroom papers.

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- Preparation of spawn culture for mushroom production.
- Bio-Synthesis of nanoparticles from fungi
- Bio-Designing of Fuel cell by using plants.
- Practice for writing a patent.
- Project Work on some current topic of legal importance or inclusive of other disciplines.
- Submission of Project Work/Assignments/Field Study Report on bio-designing and life sciences area/topic pertaining to IPR involving techno-scientific and legal issues therein.

### **Learning Outcomes Based Curriculum Framework (LOCF)**

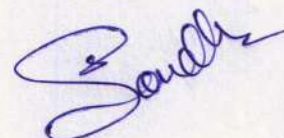
**On completion of this course work study, the students should be able to:**

- Students will gain knowledge about design, innovation, invention and learn about heavy metal toxicity, nano-particle synthesis by microbes and current national and international status of bio-design.
- Students can implement the hydroponics and mushroom cultivation system for their self reliance.
- The students should be able to understand the IPR, their nature, patent authority of India and infringement of copyright, trademark and their remedies.
- After completion of course the learner can analysis between patentable and non-patentable invention, procedure for filing of patent at national and international platform and rights of patentee.
- The course will provide comprehensive knowledge to the students regarding trademark, copyright, rights of farmers and breeders and patenting of microbes and genetic material.
- After completion of the practical, project and CCE work the students should be able to gain knowledge about microbe's isolation, preservation and development of eco-friendly products. They also learn how to work in team, analysis of ethical and professional issues and the project/assignment report reflects as their own learning.
- This course work will definitely facilitate the students to explore career option in IPR and Bio-Design field.

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### References Books:

- W.R. Cornish, Intellectual Property, Sweet & Maxwell, London (2000)
- Terrell On Patent, 2000
- P. Narayana, Patent Law, Wadhwa Publication.
- Merges, Patent Law and Policy: Cases and Materials, 1996
- Brian C. Reid, A Practical Guide to Patent Law, 2nd Edition, 1993
- Brinkhof (Edited), Patent Cases, Wolters Kluwer
- Prof. Willem Hoyng & Frank Eijsvogels, Global Patent Litigation, Strategy and Practice, Wolters Kluwer
- Feroz Ali Khader, The Law of Patents – with a special Focus on Pharmaceuticals in India, LexisNexis Butterworths Wadhwa, Nagpur.
- M. B. Rao and Manjula Guru, WTO Dispute Settlement and Developing Countries (2004).
- N.S. Gopalakrishnan & T.G. Agitha, Principles of Intellectual Property (2009), Eastern Book Company, Lucknow.
- Shiv Sahai Singh, The Law of Intellectual Property Rights, Deep & Deep publication Pvt. Ltd. 2004.
- Phillippe Culet, Intellectual Property Protection and Sustainable development, Lexis Nexis Butterworth, 2004.
- Paul Yock, Stefnos A. Zenous and Todd J. Bio-Design: The process of Innovating Medical Technologies.
- The Innovator's Dilemma & The Innovator's Solution, by Clayton M. Christensen.
- The Innovator's Guide to Growth by Scott D. Anthony, Mark Johnson, Joseph V. Sinfield and Elizabeth J. Altman.
- Traction: How Any Startup Can Achieve Explosive Customer Growth by Gabriel Weinberg and Justin Mares.
- The Start-up Owner's Manual: The Step-by-Step Guide for Building a Great Company by Steve Blank.

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