

ORDINANCES FOR CERTIFICATE COURSE/ DIPLOMA COURSES IN BIODESIGN

The Certificate Course/Diploma Courses in Biodesign, Career Oriented Programme of MHRD, Govt. of India, New Delhi, 2015 onwards introduced as Add-on-Course at Undergraduate and Post Graduate level will be covered under following ordinances.

(A) Duration of the Course:

(i) Diploma-6 months

(ii) Certificate course- 3 months

(B) Number of seats: The number of seats will be 80 (40 for diploma and 40 for certificate). Number of seats can be increased from time to time on the approval of MHRD and Vice Chancellor.

(C) Tuition and other Fees: 2000/- for certificate and 5000/- for diploma course. Fee may be increased as and when required after due consideration. No concession will be made in the fee structure for the candidate of any category in this course.

(D) Condition for Pass:

1. Every candidate will be required to attend minimum of 75% lectures/periods delivered to that class.
2. The candidate must obtain 40% of the total marks in theory and practical separately to pass the course.
3. The candidate after passing examination will be awarded a separate certificate and Diploma in Biodesign in addition to his/her regular degree course.
4. The supplementary examination shall be held in September or as fixed by the University. This examination shall be open to candidates who have been declared reappear in Certificate Course/ Diploma Course.
5. The candidate who doesn't pass in the supplementary examination will be given another chance to appear in above said course along with forthcoming annual examination.
6. A candidate who passed the course in the supplementary examination or in the third chance in annual examination can appear alongside in next subsequent examination of above said course.
7. The candidate, who is unable to pass the course in three given chances, will not be allowed to continue the above said course.
8. Candidates will be offered English/Hindi as the medium of Instructions/ Examination.

Eligibility: 10+2 or Equivalent for Certificate course and B.Sc. for Diploma

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महाराष्ट्र विद्यापीठ संघ प्रशासक
Section officer (Academic)
R. D. University, Jabalpur
26/11

Result: The result of the candidate will be declared on the basis of aggregate marks obtained by him / her in all the course examination. The division shall be awarded on the following basis viz.

- (i) **First Division: grade A** 60% and above,
- (ii) **Second Division: grade B** 50% and above but less than 60%.
- (iii) **Third Division: grade C** 45% and above but less than 50%.

Scheme of Examination:

As and when required, the Board of Studies in Life sciences, R.D.University, Jabalpur, will be empowered to change the Scheme of Examination.

(C) Course of Study: The courses of the studies in papers and in practical's will be as per syllabus prescribed by the Board of Studies in Life sciences, R. D. University, Jabalpur.

Through this scheme the main aims are imparting crucial job skills to the students through various certificate programmes, thus enabling them to acquire an additional certificate along with their Degree certificates. Students can pursue these certificate and Diploma programmes along with their regular Degree programmes.

महोदयों को धन्यवाद

Section officer (academic)
R. D. University, Jabalpur

[Signature]

Annexure I**Syllabus approved in Board of Studies in Life Sciences for Diploma and Certificate courses**

RANI DURGAVATI VISHWAVIDYALAYA, JABALPUR
DEPARTMENT OF BIOSCIENCES,
SYLLABUS PRESCRIBED FOR THE DIPLOMA COURSE IN BIODESIGN
(From 2015-2016 onwards- Six Months)

Paper- Biodesigning of Sustainable products from Biological systems

MM. 100 (75 Theory+ 25 CCE)

Unit-I**Basics of Biodesign**

What is Biodesign, Scope of Biodesign, types of Biodesign products, Synthesis of biodesign products, current status and future prospects of Biodesign in India and International Market.

General introduction to designing, biosynthesis and biomedical application of nanoparticles produced by microorganisms.

Unit-II**Biodesigning through Microbial System**

Types of Bacteria used in Biodesign, characteristic features of limestone producing bacteria with special reference to *Sporosarcina pasteurii*. Designing and preparation of biobricks by Bacteria.

Sources and kinds of biodegradable wastes, need of waste management, innovative methods for biodegradation of wastes by employing Microorganisms. Bioremediation of heavy metals by microbes.

Unit- III**Biodesigning through Mushroom**

Biology of Mushrooms :Commercial cultivation of Mushrooms, importance and application.

Nutritive profile and economic importance of Mushrooms. Biodesigning of Mushrooms: Ecocradle and papers.

एच.डी.एस. प्रशासक

Section officer (Academic)
R. D. University, Jabalpur

Unit-IV**Biodesigning through plant system**

Introduction to Algae, different types of photosynthetic pigments in relation to biodesign.

Introduction and characteristic features of Bryophyta, examples of moss plants. Biodesigning of Latrolamp and moss table.

Unit-V**Applied Biodesign**

Hydroponics: Aquaponics and aeroponics, introduction, Importance and designing of models for Hydroponics.

Micropropagation of creepers, climbers, orchids and lillies and their application in Biodesign.

IPR issues, National and International status of Patentability of Biodesign products.

Practicals:

1. Isolation, identification and maintenance of pure culture of mushrooms.
2. Biodesigning of ecocradle by using Mushroom myelia.
3. Preparation of spawn through Mushroom cultivation.
4. Biodesigning of biobrick through Limestone producing Bacteria.
5. Analysis of nutritional profiles of some edible mushrooms via biochemical assays.
6. Evaluation of antimicrobial potential of some medicinal mushrooms.
7. Screening of some waste degrading microorganisms isolated from biomedical and various sewage collection / dumping sites of Jabalpur.
8. Designing and cultivation of Hydroponics, aquaponics and aeroponics systems.
9. Micropropagation of creepers, climbers and horticulture plants.
10. Biosynthesis and characterization of nanoparticles from fungi.
11. Biocolour production through Cynobacteria/ Algae.

Recommended Books and articles:

1. Myers, William. BioDesign: Nature Science Creativity New York: Museum of Modern Art, 2012.
2. Dyson Freeman "Our Biotech Future." The New York Times Book Review, July 19, 2007.
3. Aldersey Williams, Hugh. Zoomorphic. New York: HarperCollins, 2003.

4. Antonelli, Paola. Design and the Elastic Mind. New York: Museum of Modern Art, 2008.
5. Dyson, Freeman. The Sun, The Genome, and The Internet. New York: Oxford University Press, 1999.
6. McDonough, William and Michael Braungart. Cradle to Cradle. New York: North Point Press, 2002.
7. Mushroom Production and Processing Technology, Pathak Yadav Gour (2010) Published by Agrobios (India).
8. A hand book of edible mushroom, S.Kannaiyan & K.Ramasamy (1980). Today & Tomorrows printers & publishers, New Delhi.
9. Handbook on Mushrooms, Nita Bahl, oxford & IBH Publishing Co.
10. Mycelium growing Architecture. IAAC, 2013

RANI DURGAVATI VISHWAVIDYALAYA, JABALPUR

DEPARTMENT OF BIOSCIENCES,

SYLLABUS PRESCRIBED FOR THE CERTIFICATE COURSE IN BIODESIGN-

(From 2015-2016 onwards- Three Months)

Paper- Approaches and Applications of Biodesign

MM. 50 (35 Theory+15 CCE)

Unit-I

Definition of Biodesign, Scope of Biodesign, types of Biodesign products, current status and future prospects of Biodesign in India and International Market.

Unit-II

Characteristic features of limestone producing bacteria. Biodesigning and preparation of Biobricks by Bacteria. Biodesigning of nanoparticles from microbes.

Unit- III

Introduction, importance and application of Mushrooms. Biodesigning of Mushrooms: Ecocradle and papers.

Unit-IV

Biodesigning of Latrolamp and moss table and its application.

Unit-V

Hydroponics: Introduction, Importance and biodesigning for Hydroponics.

Micropropagation of creepers, climbers and horticulture plants and their application.

Practicals:

1. Identification and cultivation of Mushrooms.
2. Micropropagation of creepers and climbers used in designing.
3. Demonstration of Hydroponic system.
4. Biodesigning of ecocradle by using Mushrooms.
5. Biodesigning of latrolamp from Algae.
6. Bioremediation of heavy metals through microorganisms.

Recommended Books and articles:

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