

University of Mumbai



No. AAMS/ (UG) / 32 of 2022


CIRCULAR:-

Sub :- Post Graduate Diploma in Biodiversity Assessment & Conservation

Ref :- RB/MU-2022/CR-022/Edn-5/536, dated 13th May, 2022.

All the Principals of the Affiliated Colleges, the Head of the University Department and Directors of the recognized Institutions in Faculty of Science & Technology are hereby informed that the recommendations made by the Board of Studies in **Botany** at its online meeting held on 24th August, 2021 **vide** item No. 1 (d) and subsequently passed by the Board of Deans at its online meeting held on 23rd September, 2021 **vide** item No. 6.9 (N) have been accepted by the Academic Council at its meeting held on 10th November, 2021, **vide** item No. 6.8 (N) and subsequently approved by the Management Council at its meeting held on 30th December, 2021 **vide** item No. 3 and that in accordance therewith, in exercise of the powers conferred upon the Management Council under Section 74(4) of the Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of 2017) the Ordinance 6759 & 6760 Regulations 9508 & 9509 and the syllabus of **Post Graduate Diploma in Biodiversity Assessment & Conservation** has been introduced and the same have been brought into force with effect from the academic year **2022-23**, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI - 400 032
6th June, 2022


(Sudhir S. Puranik)
REGISTRAR

To,

The Principals of the Affiliated Colleges, the Head of the University Department and Directors of the recognized Institutions in Faculty of Science & Technology.


A.C/6.8(N)/10/11/2021
M.C/3/30/12/2021

No. AAMS/ (UG) / 32- A of 2022

6th June, 2022

Copy forwarded with Compliments for information to:-

- 1) The Chairman, Board of Deans
- 2) The Dean, Faculty of Science & Technology,
- 3) The Chairman, Board of Studies in Botany,
- 4) The Director, Board of Examinations and Evaluation,
- 5) The Director, Board of Students Development,
- 6) The Director, Department of Information & Communication Technology,
- 7) The Co-ordinator, MKCL.


(Sudhir S. Puranik)
REGISTRAR

Copy for information and necessary action :-

1. The Deputy Registrar, College Affiliations & Development Department (CAD),
2. College Teachers Approval Unit (CTA),
3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),
4. The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA)
5. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),
6. The Deputy Registrar, Executive Authorities Section (EA)
He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
7. The Deputy Registrar, PRO, Fort, (Publication Section),
8. The Deputy Registrar, Special Cell,
9. The Deputy Registrar, Fort Administration Department (FAD) Record Section,
10. The Deputy Registrar, Vidyanagari Administration Department (VAD),

Copy for information :-

1. The Director, Dept. of Information and Communication Technology (DICT), Vidyanagari,
He is requested to upload the Circular University Website
2. The Director of Department of Student Development (DSD),
3. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,
4. All Deputy Registrar, Examination House,
5. The Deputy Registrars, Finance & Accounts Section,
6. The Assistant Registrar, Administrative sub-Campus Thane,
7. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,
8. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,
9. P.A to Hon'ble Vice-Chancellor,
10. P.A to Pro-Vice-Chancellor,
11. P.A to Registrar,
12. P.A to All Deans of all Faculties,
13. P.A to Finance & Account Officers, (F & A.O),
14. P.A to Director, Board of Examinations and Evaluation,
15. P.A to Director, Innovation, Incubation and Linkages,
16. P.A to Director, Department of Lifelong Learning and Extension (DLLE),
17. The Receptionist,
18. The Telephone Operator,

Copy with compliments for information to :-

19. The Secretary, MUASA
20. The Secretary, BUCTU.

AC – 10/11/2021

Item No. 6.8 (N)

UNIVERSITY OF MUMBAI



Syllabus for the **Post Graduate Diploma in Biodiversity** **Assessment and Conservation**

(Introduced with effect from the academic year
2022-23)

AC- 10/11/2021
Item No. 6.8 (N)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course 0.6759	Post Graduate Diploma in Biodiversity Assessment and Conservation
2	Eligibility for Admission 0.6760	Any Stream Graduate or Degree Diploma in Engineering from recognized Statutory University Board
3	Passing Marks R.9508	40%
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters R.9509	One year part time
6	Level *	Certificate/PG Diploma (Strike out which is not applicable)
7	Pattern	Semester/Yearly (Strike out which is not applicable)
8	Status	Revised/New / (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year:2022-2023

Rajendra Shinde

Signature Chairman of BoS
Name of BOS Chairman :-
Dr. Rajendra Shinde

Anuradha Majumdar

Dr. Anuradha Majumdar
Dean, Science and Technology y

University of Mumbai

ordinance, Regulations and Syllabus related to the
Post Graduate Diploma in Biodiversity Assessment and Conservation (DIBAC)

COURSE CONTENT AND CREDITS

**PG -DIBAC 101: PAPER I: Biodiversity: Introduction, Ecological and Economical Aspects.
(04 Credits)**

UNIT	TITLE	CREDITS
I	Definition, Types, ecological and economical importance	01
II	Threats to Biodiversity, Conservation Needs and Methods	01
III	World Scenario and Biodiversity of India: Hot spots of Biodiversity	01
IV	Biodiversity assessment: Understanding the concept	01

PG -DIBAC 102: PAPER II: Biodiversity Act and Committee Work (04 Credits)

UNIT	TITLE	CREDITS
I	Biodiversity Board of Maharashtra	01
II	Rules and regulations	01
III	Biological diversity act 2002 and rules 2004.	01
IV	PBR role (People's Biodiversity Register Report)	01

PG -DIBAC 103: PAPER III: Ecosystems Studies and Conservation Methods: (04 Credits)

UNIT	TITLE	CREDITS
I	Types of Aquatic and terrestrial ecosystems	01
II	Understanding endemic floral and faunal diversity	01
III	Study of Agro-biodiversity	01
IV	In situ and ex-situ conservation methods	01

PG -DIBAC 104: PAPER IV: Value of Biodiversity and Biodiversity assessment: (04 Credits)

UNIT	TITLE	CREDITS
I	Consumptive and Productive use	01
II	Social and Ethical value, Aesthetic and option value	01
III	Importance of traditional biodiversity knowledge Economical development through wise use of natural resources.	01
IV	Methods of Biodiversity assessment, GPS techniques for assessment, Study of documentation of plants used for religious purpose	01

**PG -DIBAC 101: PAPER I: BIODIVERSITY: INTRODUCTION,
ECOLOGICAL AND ECONOMICAL ASPECTS. (04 Credits)**

UNIT I:

DEFINATION, TYPES, ECOLOGICAL AND ECONOMICAL IMPORTANCE 20 Hrs.

Biodiversity definition and concept, Scope and constraints, Ecosystem diversity, Wild Taxa, Values and uses of Biodiversity, Loss of biodiversity, conservation of biodiversity, Types of Biodiversity zones: Aquatic biodiversity, terrestrial biodiversity zones. Marine biodiversity, Estuarine biodiversity.

Ecological aspects: Biotic and abiotic factors, Food chains and food webs, Ecological pyramid. Economical dependency of local communities as well as to Nation.

UNIT II:

THREATS TO BIODIVERSITY, CONSERVATION NEEDS AND METHODS 20 Hrs.

Causes of Biodiversity loss, Anthropological aspects, Conservation of Biodiversity, Biodiversity prospecting and indigenous knowledge system.

Bioresources: types and protection and management of biodiversity to maintain natural resources for sustainable developments. Understanding need of conservation, Methods of conservation –restoration.

UNIT III:

WORLD SCENARIO AND BIODIVERSITY OF INDIA: HOT SPOTS OF BIODIVERSITY 20 Hrs.

Global biodiversity, Status of Earth's living resources, Biogeography, Centers of Biodiversity worldwide, Types, Biogeography of India, Hot spots of Biodiversity, meaning of hotspot of biodiversity, Biodiversity of India: Uniqueness. Endemic flora and Fauna of Western Ghats.

UNIT IV:

BIODIVERSITY ASSESSMENT: UNDERSTANDING THE CONCEPT: 20 Hrs.

India – National biodiversity Action plan, Conservation and sustainable use of Biodiversity of India. National Wild life action plan, National Wetland Conservation program, IPR Intellectual property rights.

**PG -DIBAC 102: PAPER II: BIODIVERSITY ACT AND COMMITTEE WORK
(04 Credits)**

UNIT I:

BIODIVERSITY BOARD OF MAHARASHTRA

20 Hrs.

State biodiversity board Establishment and functions, Maharashtra State biodiversity board, National biodiversity protection initiatives and role of Biodiversity board. Working of biodiversity committees at local level, Criteria to be studied by Biodiversity committees and its role in development of area.

UNIT II:

RULES AND REGULATIONS

20 Hrs.

International and National legal framework on Biodiversity, Case laws: SC/HC/NGT, Domestic laws relating to biological diversity, biological diversity act 2002 and rules 2004, Biodiversity act 2020, Important Indian acts passed related to Environment and biodiversity, Policies related to Environment and Biodiversity.

UNIT III:

BIOLOGICAL DIVERSITY ACT 2002 AND RULES 2004

20 Hrs.

Biological diversity act 2002 and rules 2004, Biodiversity management committee, Power to make regulations, roles of Authorities according to acts, restrictions related to access biological diversity resources, Criteria for equitable benefit sharing, application of National Biodiversity funds, Constitution of Biodiversity Management Committee.

UNIT IV:

PBR ROLE (PEOPLE'S BIODIVERSITY REGISTER REPORT)

20 Hrs.

Introduction to PBR and its importance, Role of BMC: Biodiversity management committee in preparation of PBR, Study of PBR reports of various states, understanding the points to be recorded in PBR: Traditional wisdom about herbal medicines, art and crafts, sacred groves, agricultural practices and produce, flora and fauna

PG -DIBAC 103: PAPER III: ECOSYSTEMS STUDIES AND CONSERVATION METHODS (04 Credits)

UNIT I:

TYPES OF AQUATIC AND TERRESTRIAL ECOSYSTEMS 20 Hrs.

Aquifers and springs, rivers and streams, lakes and ponds, wetlands, bays and estuaries, Ocean. adaptations, characteristics and uses of various ecosystems. Marine biodiversity, Estuaries and mangrove ecosystem.

UNIT II:

UNDERSTANDING ENDEMIC FLORAL AND FAUNAL DIVERSITY 20 Hrs.

Study of floral and faunal diversity and its impact on environment, understanding endemic species, Identification of plants and animals, importance, inference and conservation. Study of violations destructing floral and faunal diversity.

UNIT III:

STUDY OF AGRO-BIODIVERSITY 20 Hrs.

Agricultural biodiversity of India, Agro-biodiversity management for sustainable food system, Methods of Agro-biodiversity assessment, Biodiversity and Ecosystem services, food, nutrition and agro-biodiversity under Global climate change, functional agro-biodiversity. Best practices. Socio- economic and cultural benefits, Loss of Agro-biodiversity – causes.

UNIT IV:

IN SITU AND EX-SITU CONSERVATION MEETHODS 20 Hrs.

Principles of in situ and ex-situ conservation, Ex-situ conservation: Seed. embryo storage, in vitr storage, semen, pollen, embryo, DNA storage. Field gene bank, livestock park, Botanical and Zoological gardens, In situ: genetic reserve on farms, Germ plasm preservation and biotechnology.

PG -DIBAC 104: PAPER IV: VALUE OF BIODIVERSITY AND BIODIVERSITY ASSESSMENT (04 CREDITS)

UNIT I:

CONSUMPTIVE AND PRODUCTIVE USE

20 Hrs.

Value of Biological diversity, Direct and indirect values, drugs and medicines, Food, fuel, public policies, Ecosystem and human well-being.

UNIT II:

SOCIAL AND ETHICAL VALUE, AESTHETIC AND OPTION VALUE

20Hrs.

Productive use value, social value, Ethical value, option value. Ecosystem service value, Valuing ecosystem services, quantification and valuation of ecosystem service

UNIT III:

IMPORTANCE OF TRADITIONAL BIODIVERSITY KNOWLEDGE

20Hrs.

Economical development through wise use of natural resource, Bio-prospecting, The commercial use of traditional knowledge of Biodiversity, Equitable partnership practices, Traditional vaidus, Sacred groves and other sources of traditional knowledge. Ways of bioresources conservation at local levels.

UNIT IV:

METHODS OF BIODIVERSITY ASSESSMENT

20 Hrs.

GPS techniques for assessment, mapping, study of documentation of plants used for religious purpose, Study of ISBN lists, RET data, Characteristics of study area –sampling, data collection, Biodiversity indices, species richness, Dominance, equity,

PG -DIBAC 105: PRACTICAL COURSE

Suggested list of lab experiments. Any other experiment based on syllabus which will help to the students to understand any topic can be performed

Sr. No.	Name of Experiment
1	Plant identification
2	Designing the projects for sustainable biodiversity model 1. Understanding PBR 2. Report Writing of Local Biodiversity and its Economical, Ecological and social impact 3. Faunal diversity assessment 4. Use of GPS and mapping techniques for Biodiversity studies
3	Field visits
4	Tribal communities and their Traditional Knowledge
5	Understanding Human Wild Life Conflicts through Survey
6	Participation Local Biodiversity Committee meetings
7	Understanding PBR
8	Report Writing of Local Biodiversity and its Economical, Ecological and social impact
9	Faunal diversity assessment
10	Use of GPS and mapping techniques for Biodiversity studies
11	Case study of Wetland biodiversity or forest studies
12	Project reports of Tribal /coastal community dependency on Biodiversity

Demonstration and Hands on training (compulsory)

1	Seed bank technique
2	Camera handling -photography
3	Data collection is soft form

REFERENCE BOOKS:

1. Maharashtra Biodiversity Board –India Environmental Portal: News and Reports
2. Text book of Biodiversity, K. V. Krishnamurthy
3. The Diversity of Life, E. O. Wilson
4. The Ecology Book: Big Ideas Simply Explained
5. Stolen Harvest: Vandana Shiva
6. Origin: Vandana Shiva
7. Biodiversity Report – Food and Agriculture Organization of United Nations
8. National Green Tribunal Act Wikipedia
9. Environment and Ecology, Anuj Kumar Purwar.

Post Graduate Diploma in Biodiversity Assessment and Conservation

Item No. 6.8 Justification

i. Necessity of starting this course:

India being hot spot of Biodiversity in the World needs to be studied in systematic way for better future. University graduate youth needs to be aware trained, understand the importance of species conservation and biodiversity management. After completion of P.G. Diploma students can be involved in various UNDP, Forestry projects as well as can assist local administration and Biodiversity board, Mangrove foundations and other similar research institutes in assessment of Biodiversity as well as employment generation as well as ecotourism development in sustainable way. The Course will definitely provide the better opportunities to graduate students for rural development as well as regional biodiversity management and conservation in sustainable way.

ii. UGC has recommended to start **skill based** courses under B. Voc. and other heads to generate employment/self-employment with regional biogeographical consideration. National Skill Qualification Framework is encouraging colleges to start such courses.

iii. Course is to be commenced from year 2022 -23

iv. Permanent faculties may not be adequate. Institute has to arrange visiting faculty and expertise on temporary basis which can be good opportunity for fresher as well as skilled masters in respective fields.

v. Duration: 1 months. Field visits and climate change considerations, seasonal variations are expected to be considered for the aspects in syllabus. As these are practical based courses 1 year duration is necessary to train and assess the skills. Cannot be compressed as it is PG diploma with objective to create experts.

vi. Intake capacity: 40. Minimum 15 should be enrolled to run the course primarily.

vii. Employment opportunities: Can get job at local Biodiversity assessment committees. Can work as intern at various research stations. Can start consultancy as well as create Biodiversity parks and green campus projects with Biodiversity conservation theme. Regional biodiversity conservation projects can be launched through registration of NGOs. Students can be trained for getting JRF as well as various research scholarships and internships at research institutes.


Dr. Rajendra Shinde