

**CENTER WITH POTENTIAL FOR EXCELLENCE IN BIODIVERSITY  
RAJIV GANDHI UNIVERSITY  
Rono Hills : Itanagar – 791 112**



**Advance Post-Graduate diploma in Biodiversity  
(Two Semesters Course under CPEB-II)**

**Choice Based Credit System  
Academic session : 2015-16**

## **Preamble**

The Advance Post Graduate Diploma in Biodiversity was launched under the “Center with Potential for Excellence in Biodiversity” from the Academic year 2013-14. This programme will help in creating human resources in the field of Biodiversity Conservation especially in Arunachal Pradesh which is a Biodiversity Hot Spot in the eastern Himalayan region. It needs the attention of the Governments and non Governmental Organizations for its conservation. For posterity and sustainability the Post Graduate Diploma course will also help in development of skilled manpower for Biodiversity Conservation in the Government and non Governmental sectors..

## **Course Structure**

The course will be taught in two semesters. Students have to appear for the semester examinations in both theory and practicals. The evaluation and examination procedures shall be as per the regulations and guidelines for “Choice Based Credit System” of RGU post graduate examinations.. 20% of the marks shall be allotted in internal assessment in the theory and practical papers. Project work shall be evaluated at the end of semester -II. Two credits of the Project shall be evaluated in Seminar presentation during the Semester-II.

## **Admission:**

Students having B.Sc. Degree from any Indian University (Recognized by the University Grants Commission) shall be eligible for getting admission in the said course. **A Maximum of 15 (Fifteen) students** shall be admitted in the course every year .Students shall have to pay the admission and other fees as per the rules of Rajiv Gandhi University

**Course Fee :** The Course fee will be collected as per the rules of the Rajiv Gandhi University.

**Examination :** The examination rules and regulations of the Rajiv Gandhi University shall be followed for conducting the semester examinations including the internal assessment.

**Advance Post Graduate Diploma in Biodiversity**  
**(Two Semesters course under Choice Based Credit System)**

Semester	Paper code	Course Title	Maximum marks			Credit Distribution	Credit	Total Credit
			Internal	Final	Total	L: T: P		
Semester I	APGDB C- 401	Biodiversity and Values	20	80	100	4:1:0	5	20
	APGDB C-402	Categories of Biodiversity	20	80	100	4:1:0	5	
	APGDB C-403	Plant-Animal Diversity	20	80	100	4:1:0	5	
	APGDB P-404	Practical-I	20	80	100	0:0:10	5	
Semester II	APGDB C-411	Threats to Biodiversity	20	80	100	4:1:0	5	25
	APDGB C-412	Conservation and Management of Biodiversity	20	80	100	4:1:0	5	
	APGDB C-413	Field Methods and Techniques	20	80	100	4:1:0	5	
	APGDB C-414	Project & Seminar Presentation	20	80	100	0:0:16+4	8+2	
<b>Total =</b>							<b>45</b>	

## Semester -I

### APGDB C-401 : Biodiversity, its Values & Uses

**Total marks: 80 + 20 = 100**

**End semester examination=80**

**Credit=05**

**Internal assessment=20**

- Unit 1 : Introduction- Definition: Genetic, species and ecosystem diversity;  
Ecosystem diversity in Arunachal Pradesh ,Habitat biodiversity: Alpha,  
beta and gamma diversity
- Unit 2 : Biodiversity at global and national levels; India as a Megabiodiversity  
nation; Biodiversity in north-east India and Arunachal Pradesh;  
Climate change finger print on Biodiversity
- Unit 3 : Criteria for Hotspots of biodiversity; Importance of hotspots;  
Biodiversity hotspots in the world; characteristics of Biodiversity hotspot  
in India
- Unit 4 : Values of biodiversity: Consumptive and productive use, social, ethical,  
aesthetic and other values; Economic valuation of biodiversity;  
Biodiversity and tourism

## Semester -I

### APGDB C-402 : Categories of Biodiversity

**Total marks: 80 + 20 = 100**

**Credit=05**

**End semester examination=80**

**Internal assessment=20**

- Unit 1 : Endemic biodiversity: Flora and fauna, Causes of endemism; their geographical isolation; Tribal communities and their traditional knowledge and cultural practices for local biodiversity conservation.
- Unit 2 : Agrobiodiversity: Cultivated crops in Arunachal and their place of origin, Wild relatives of cultivated crops in Arunachal Pradesh and their importance, Agroecosystems in Arunachal Pradesh
- Unit 3 : Crop and fruit pollinators and their importance; Predators and parasites in agroecosystems, Decomposers in agroecosystem and their importance; Cattle diversity in India
- Unit 4 : Introduced biodiversity: Intentional and unintentional; alien species including invasive aliens.

## Semester - I

### APGDB C-403 :Plant-Animal Diversity

**Total marks: 80 + 20 = 100**  
**End semester examination=80**

**Credit=05**  
**Internal assessment=20**

- Unit 1 : Vegetation patterns in Arunachal Pradesh; Mountain ecosystem; Mapping of vegetation pattern, landscape diversity and different forest types in eastern Himalayan region. Climatic Zone of Arunachal Pradesh
- Unit 2 : Diversity of major plant groups (Bryophytes, Pteridophytes, Gymnosperms, Angiosperms) in Arunachal Pradesh and India; Orchids in India and Arunachal Pradesh . Important medicinal plant species in Arunachal Pradesh & its distribution
- Unit 3 : Phyletic diversity-Major animal phyla. Phyletic diversity of fauna of terrestrial and aquatic systems, (freshwater and marine); diversity of Fishes, amphibians and reptiles with special reference to north east India
- Unit 4 : Major vertebrate and invertebrate groups in Arunachal Pradesh; Birds and Mammals in India with special reference to north-east India. Bird migration : Intercontinental and regional, migratory birds in north East India with special emphasis in Arunachal Pradesh. Distribution of important mammalian species in Arrunachal Pradesh

## Semester -I

### APGDB P- 404 : Practicals

**Total marks: 80 + 20 = 100**  
**End semester examination=80**

**Credit=05**  
**Internal assessment=20**

1. Identification of microbes, mushroom, fungi & algae.
2. Identification of Orchids and method of cultivation
3. Identification of important insects including moths , butterflies, honey bees and other pollinmators in Arunachal Pradesh.
4. Identification of hill-stream and wetland fishes.
5. Identification of amphibia reptile and birds.
6. Estimation of population density of trees using quadrat and PCQ method.
7. Estimation of population size and density of animals using quadrat and line transect method.
8. Comparison of biodiversity richness and evenness of different habitats using biodiversity indices.
9. Census techniques, identification of pugmarks and foot prints, scratch studies in wild habitat
10. Field work: Field study should be documented and presented in the form of a report and submitted for evaluation. The field study can be at least 1 week at the study spot, depending upon the informations/ sample collection. The study can be made in more than one field visit.

## Semester-II

### APGDB C-411 : Threats to Biodiversity

**Total marks: 80 + 20 = 100**  
**End semester examination=80**

**Credit=05**  
**Internal assessment=20**

- Unit 1 : General account of natural and anthropogenic threats to biodiversity;  
Natural threats: Cyclone, tsunami, earthquake, landslide, flooding, forest fire, diseases and competition between species
- Unit 2 : Developmental activities- electric power generating projects, National highways, Railways, Modern communication technology  
Habitat loss, Poaching of wildlife and international trade, man-wildlife conflicts, overexploitation.
- Unit 3 : Pollution: air, water and soil pollution; Greenhouse gas emissions, global warming and sea level rise, climate change scenario and its impact on biodiversity; ocean acidification.
- Unit 4 : IUCN threat categories and criteria. Wildlife under IUCN threat categories and their distribution and threats to the existing population

## Semester –II

### APGDB C-412 : Conservation and Management of Biodiversity

**Total marks: 80 + 20 = 100**

**End semester examination=80**

**Credit=05**

**Internal assessment=20**

- Unit 1 : In-situ and ex situ conservation of plants, methods and applications.  
Important plant species for conservation in Arunachal Pradesh. Insitu and Ex situ conservation of animals. Methods of conservation and important animal species of north east India. Animal translocation and rehalitation.
- Units 2 : Biosphere reserves, protected areas, National Parks, Environmental Protection Act, Wildlife Protection Act, Forest Conservation Act, CITES, IUCN, RAMSAR sites.
- Unit 3 : UN Convention on Biological Diversity, Member countries, National Biodiversity Authority of India, State Biodiversity Boards, Village Biodiversity Committees, Biodiversity Registers
- Unit 4 : EIA (Environmental Impact Assessment), Issues involved in enforcement of environmental legislation and biodiversity conservation, public awareness and nature camps.

## Semester-II

### APGDB C 413: Field Methods and Techniques

**Total marks: 80 + 20 = 100**  
**End semester examination=80**

**Credit=05**  
**Internal assessment=20**

- Unit 1 : Methods of data collection; Census and Sampling techniques;  
Measures of central tendency - mean, median and mode;  
Standard deviation and Standard error
- Unit 2 : Application of: Radio collaring, radio telemetry, Camera trapping,  
Remote sensing, Geographical information system (GIS),  
Global position System (GPS) , techniques for study of bird migration
- Unit 3 : Molecular technique in wildlife: DNA fingerprinting, DNA barcoding;  
Collection and preservation of plants and animals and museum/herbarium studies.
- Unit4 : Tools for wildlife study- Binocular; Camera, Traps and others  
Report writing and preparation of research project proposals;  
Funding agencies for biodiversity research projects

**The students shall have to formulate their own project, which should be evaluated by the concerned supervisor & the constituted board under CPEB.**

## Semester-II

### APGDB P-414 : Dissertation/ Project Work

**Total marks: 80 + 20 = 100**

**End semester examination=80**

**Seminar Presentation = 2 credits**

**End semester Project evaluation = 8 credits**

**Credit=8+2 =10**

**Internal assessment=20**

1. Each student should select one project work, covering any one area of the theory papers during the whole diploma course. The project could be done either on survey and analysis of collected data in field on experimental work in laboratory as per the the APGDB syllabus.
2. The project shall have to be submitted for evaluation at the end of Semester-II as notified by the Coordinator CPEB/ Controller of Eaxminations, of the Rajiv Gandhi University
3. Seminar shall have to be presented by every student for clearing 2 credit. Seminar presentation shall be evaluated by the group of internal examiners.
4. The project work will carry 8 credits. It will be evaluated by the examiner on the basis of data collection, analysis, innovative ideas and originality of research.
5. Field study may be conducted in the Semester –II for training of the students on ecological study, diversity of plant and animals as well as to address the problems of Biodiversity. Report of the field study may be submitted separately.

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