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The M.Sc. course in Conservation Biology at Durgapur Govt. College was started in the year 2007 to impart training in the field of conservation science and to further the cause of wildlife conservation in India and elsewhere.

## **Learning Outcome of PG Dept. Of Conservation Biology**

### **SEMESTER 1**

#### **Paper MSCCONBC101**

At the end of this course the students will be able to

1. Identify flora and fauna based on the knowledge of taxonomy and systematic
2. Demonstrate a similarity with major bio-geographic realms, species distribution and ecosystem functions
3. Apply taxonomic methods to classify species (both flora and fauna)
4. Classify different communities and forest based on basic idea about resource and its use
5. Analyze different social issues related to conservation and later apply them to conservation measures in future

#### **Paper MSCCONBC102**

At the end of this course the students will be able to

1. Define and outline the different components of environment
2. Analyze levels of pollution and environmental crisis
3. Apply similarity between theory and natural threats of pollution
4. Classify different communities health hazards and their ecotoxic effects on nature
5. Identify issues related to degradation of nature and natural resources
6. Outline the different climatic changes associated with global climate chemistry

#### **Paper MSCCONBC103**

At the end of this course the students will be able to

1. Classify wetlands in global and Indian perspective
2. Analyze threats and probable measures of conservation of different ecosystems
3. Outline the concept of marine and desert ecosystem
4. Classify different resources and identify the cause of their depletion
5. Apply the knowledge for increasing productivity of ecosystems
6. Create different methods for sustainable use of resources and stop overexploitation

#### **Paper MSCCONBC104**

At the end of this course the students will be able to

1. Demonstrate similarity in theoretical and natural populations
2. Analyze growth patterns of populations and communities

3. Apply molecular genetics in biodiversity conservation
4. Classify different microbial communities and their role in natural ecosystem
5. Compare different behavioral and survival strategies of natural communities
6. Analyze different mating types and demonstrate sexual selection processes

### **Paper MSCCONBC105**

At the end of this course the students will be able to

1. Calculate and compare log volume of tree species for economic valuation of forest ecosystem
2. Create vegetation maps based on ecological and phonological associations
3. Apply molecular genetics in biodiversity conservation
4. Demonstrate different ecosystem components from field studies
5. Calculate different diversity indices for biodiversity evaluation
6. Summarize and compare theoretical studies with natural environment through field visits to different forest, aquatic ecosystems etc

### **Paper MSCCONBC106**

At the end of this course the students will be able to

1. Calculate different water parameters through titrimetric methods
2. Estimate ascorbic acid and analyze APTI
3. Calculate and estimate different soil parameters using field based equipments
4. Demonstrate diverse instruments like UV-spectrophotometer, colorimeter, pH meter, DO meter, titration equipments, multi-parameter tester etc
5. Summarize, compare and validate theoretical case studies with natural environment through laboratory visits

## **SEMESTER 2**

### **Paper MSCCONBC201**

At the end of this course the students will be able to

1. Apply the knowledge on wastewater treatment and management
2. Identify the diverse methods of solid waste treatment
3. Analyze and apply different biocatalyst
4. Categorize different green reactions and apply them for green synthesis
5. Analyze health hazards and their remedy

### **Paper MSCCONBC202**

At the end of this course the students will be able to

1. Categorize rare species and protected areas
2. Classify and understand different strategies for reproductive methods and its conservation
3. Analyze the genetics behind inbreeding and outbreeding and their role in conservation

4. Outline the concept of metapopulation and its application in species prioritization and conservation
5. Identify and analyze methods of population viability analysis and its application in Minimum Viable population estimation

### **Paper MSCCONBC203**

At the end of this course the students will be able to

1. Apply the knowledge on biodiversity for use and value assessment
2. Identify the levels and threats of biodiversity and wildlife
3. Classify different megadiverse countries and hotspots
4. Classify and analyze different endangered and endemic species
5. Analyze and assess different diverse conservation strategies

### **Paper MSCCONBC204**

At the end of this course the students will be able to

1. Demonstrate biosphere and its components
2. Analyze growth patterns of populations and communities
3. Analyze and assess global climate change and threats
4. Classify hydrosphere and analyze challenges related to it and ways of its conservation
5. Classify lithosphere and analyze challenges related to it and ways of its conservation
6. Categorically calculate and analyze the problems related to global climate change and probable remedies

### **Paper MSCCONBC205**

At the end of this course the students will be able to

1. Calculate and compare different species diversity indices
2. Create vegetation maps based on ecosystem studies
3. Identify species based on skull, dentition and pellets
4. Calculate and identify species based on pellets and scat
5. Calculate vegetation cover based on plot less counting
6. Summarize and compare theoretical studies with natural environment through field visits to different forest, aquatic ecosystems etc

### **Paper MSCCONBC206**

At the end of this course the students will be able to

6. Calculate and different water parameters through spectrophotometric methods
7. Estimate chlorophyll and analyze APTI
8. Calculate and estimate different water parameters using titrimetric methods
9. Analyze and identify heavy metals in polluted water bodies

10. Summarize and compare theoretical studies with natural environment through industrial visits to different sericulture, aquaculture farms, coal mines or power plants etc

### **SEMESTER 3**

#### **Paper MSCCONBC301**

At the end of this course the students will be able to

1. Identify different ecotourism methods and apply the knowledge in wildlife conservation
2. Generate and apply different assessment methods of environment like EIA, SIA, SEA etc
3. Analyze and apply different restoration methods to conserve and restore ecosystems
4. Categorize, analyze and identify different social issues related to environment and conservation
5. Apply and implement different environmental laws in natural and social environment

#### **Paper MSCCONBC302**

At the end of this course the students will be able to

1. Apply basic knowledge of health hazards and its control in captive and wild animals
2. Classify and categorize different diseases and their remedy to wildlife health
3. Analyze and demonstrate different monitoring methods, capture methods and also use of these methods in real systems
4. Generate awareness for illegal trade and formulate strategies for its prevention
5. Identify and analyze different captive breeding strategies through case studies and real life situations

#### **Paper MSCCONBC303**

At the end of this course the students will be able to

1. Apply different statistics like correlation, regression, ANOVA in real system data
2. Analyze and apply mathematical and simulations models for systems ecology
3. Apply different census methods for data generation and knowledge on species count
4. Assess different sampling technique and quantify and correlate theoretical data with field data
5. Identify diverse quantifying techniques for data analysis

#### **Paper MSCCONBC304 (Core Practical)**

At the end of this course the students will be able to

1. Calculate and generate data on tree height and log content for economic purpose in forestry
2. Demonstrate behavioral studies and apply them in field
3. Construct ethogram and display different behaviors of animals based on time and space
4. Identify natural marking and droppings in field to identify a species
5. Apply the knowledge of pugmarks and use it to identify species from pugmark studies
6. Demonstrate and use different equipments like radio collars, tags, dart guns etc used for wildlife capture and monitoring

### **Paper MSCCONBMJE301 (Forest Wealth I)**

At the end of this course the students will be able to

1. Generate idea about different forest types
2. Classify and identify different forest types and forest covers
3. Identify silviculturally important tree species
4. Apply the knowledge of medicinal plants in ethno-medicinal treatments
5. Identify different plant animal interactions and its role in ecosystem conservation

### **Paper MSCCONBMJE302 (Forest Wealth II- MajorPractical)**

At the end of this course the students will be able to

1. Construct vegetation maps based on spatial distribution
2. Classify and identify medicinal plants and weeds
3. Identify silviculturally important tree species
4. Estimate chlorophyll and ascorbic acid for APTI determination
5. Calculate species value index (SVI) in order to prioritize species for conservation

### **Paper MSCCONBMJE303 (Wetland Conservation I)**

At the end of this course the students will be able to

1. Generate an overview of wetland and its importance
2. Classify wetland types both at global and national level especially in context to India
3. Generate idea on geomorphic, hydrologic and other services of wetlands
4. Apply the knowledge of Ramsar Sites for wetland conservation
5. Generate idea on wetland productivity and its use based on water chemistry and relation to wildlife

### **Paper MSCCONBMJE304 (Wetland Conservation II- MajorPractical)**

At the end of this course the students will be able to

1. Calculate water parameters of wetland

2. Measure soil parameters and productivity of wetland
3. Identify flora and fauna associated with wetlands
4. Generate conservation rules based on wetland law and implement them in real situations
5. Simulate and compare wetlands through field surveys

### **Paper MSCCONBMJE307 (Marine Bioesource I)**

At the end of this course the students will be able to

6. Overview of marine systems in India and compare it to global scenario
7. Classify and identify different marine environments based on its chemistry and stratification
8. Apply knowledge of ocean currents for navigation and species distribution patterns in marine environment
9. Apply the knowledge water and soil chemistry for conservation of marine systems
10. Analyze the extent of marine pollution and propose conservation measures for the same

### **Paper MSCCONBMJE308 (Marine Bioesource II- Major Practical)**

At the end of this course the students will be able to

6. Identify marine flora and fauna
7. Calculate water and soil parameters
8. Identify coastal flora of India
9. Identify marine plankton
10. Compare different marine systems through case studies and field visits