Second Semester 2020-2021 **11-Jan-2021**

COURSE HANDOUT (PART II)

In addition to part-I (General Handout for all courses) printed on page 1 of the timetable book, this portion gives further specific details regarding the course.

Course Number **: BIO F314**
Course Title **: Conservation Biology**
Instructor-in-charge **: SANDHYA MARATHE (sandhya.marathe@pilani.bits-pilani.ac.in)**
Instructor(s) **: NA**
Tutorial/Practical Instructors **: SANDHYA MARATHE (sandhya.marathe@pilani.bits-pilani.ac.in)**

1. Course description:
Fundamentals of conservation biology; biological diversity- its measurement, value and threatened status; concepts related to conservation at the population and species levels; protection, management and restoration of ecosystems; and sustainable development and community-based conservation; conservation legislation. Course practicum will be effected through classroom and field activities.

2. Scope and Objectives of the course:
With the biodiversity crisis looming large, conservation biology is fast emerging as a field that requires urgent progress. This course will educate and train students on the foundations and advances in conservation science. The students will develop a scientific approach to study the current state of the natural world, the threats posed due to human activities and the effort involved in conserving it.
The course will deal with the fundamental, intellectual, conceptual, and practical problems that conservation biologists need to address and solve. Topics that will be taught include some key concepts related to the conservation at various trophic levels, systematic conservation planning, sustainability, community-based conservation. The course will also offer a glimpse of the state-of-the-art research and field work by leading Institutes and NGOs in the Indian context. The course includes a compulsory practical component in the form of on and off-the-field assignment(s) that will attempt, in a small way, to bridge the gap between the theory covered and real world conservation efforts.

3. Textbook (TB):

1. Bawa. K. S., Primack. R. B., Oommen. M. A.(2011). Conservation Biology a primer for South Asia. Hyderabad: University Press (India) Private Limited.

4. Reference Books (RB):

1. Dyke F. V. (2008) Conservation Biology: Foundations, Concepts, Applications. (2nd edition) Springer

2. Mills L. S.(2012) Conservation of Wildlife Populations: Demography, Genetics, and Management. (2nd edition) Wiley-Blackwell
3. Gordon M., Bartol S. (2004) Experimental Approaches to Conservation Biology. (1st edition)University of California Press

5. Lecture plan:

Module Number	Lecture session	Reference	Learning Outcome
1. Introduction to conservation biology	L1: Introduction to the course, distinctions and ethics of conservation biology	TB:1, RB1: 1	Understanding conservation biology in context of biodiversity
2. Biodiversity assessment	L2.1 – L2.2: Biodiversity definition and its measurement	TB1:1, RB1: 4	Learning about estimation and it application in species conservation
	L2.3: Importance and challenges in biodiversity assessment. Rarity and endemism		
3. Biodiversity crisis	L3.1 – L3.2: Causes: Anthropogenic, habitat loss & fragmentation, invasive & alien species, wildlife diseases, overexploitation, extinction dynamics	TB1:2, TB2: 4-7, 10	Learn about why there is crisis and how it is affecting biodiversity
4. Factors determining the fitness & persistence of wildlife population	L4.1 – L4.3. Effective size, genetic variability (drift/bottlenecks, in/out-breeding depression, hybridization and introgression/ GMOs)	TB1: 3, RB1: 6, RB2:12	Learning to quantify factors affecting population fitness and its use in conservation efforts
	L4.4 – L4.5. Demographic & environmental variability, extinction vortices		
5. Genetic diversity and conservation goal	L5.1. Conservation genetics, genetic techniques, genetic insights into conservation management	RB1:7	Understanding management of genetic diversity for conservation.
6. Conservation at species & population levels	L6.1 – L6.2: Tools predicting risks to small/declining populations	TB1: 3, RB1: 8, RB2:12	Learning methods to analyze population viability and strategies to manage species
	L6.3 – L6.4: Population dynamics, conservation strategies and management		
7. Conserving biological communities, habitat & landscape	L7.1. Systematic conservation planning, prioritization of sites	TB1: 4, TB2: 11, RB1: 10 & 11	Understanding basic concepts to execute conservation efforts
	L7.2 – L7.3: Establishment of protected areas, concepts of sustainability		
8. Research needs and tools in conservation biology	L 8.1 – 8.3: Principles & approaches for biodiversity conservation	TB1: 7, TB2: 16, RB3	Learning research techniques in conservation biology

	including theoretical & experimental (behavioral) approach		
9. Community-based conservation	L9.1 – 9.2: Cultural traditions, local participation, ecological and economic view	TB1: 5, TB2: 14 + notes	Understanding history of community based conservation

*** Special readings:** As the subject is vast, students are expected to read topics from reference books and research/review articles as and when recommended by the Instructors.

6. Practical hours: On-field or *in-silico* projects &/or field trips/documentary screening (whenever feasible) will be accounted for as practical hours of the course.

7. Evaluation Scheme

Evaluation component	Duration	Weight	Date and time	Remarks
Mid-semester Test (theory+ lab)	1 h	30%	<TEST_1>	TBA
Quizzes & assignment	-	10%	Surprise	
Practical component	-	25%	Continuous	Open book
Comprehensive examination	2 h	35%	<TEST_C>	TBA

Students to note that participation with uniform & enthusiastic sincere effort in all activities of the course mentioned in the handout will be **absolutely essential** for registering a good performance in the course.

8. Grading Policy:

Award of grades would be based on the student's participation, regularity and performance, and instructor's overall assessment of the individual's sincerity and ability. If the student absents himself/herself in any one of the components (listed in evaluation scheme) entirely, his/her performance may be reported as NC (Not Cleared). **Student gaining less than 10% marks in theory component may be awarded NC grade.**

9. Office Consultation Hour: To be announced in class.

10. Make-up Policy:

Make-ups for any evaluative component will be granted only in case of severe medical problem, hospitalization. However, instructor should be informed beforehand or at the earliest after missing the evaluation component. The decision to grant make-up or not is taken by the instructor-in-charge and shall be final.

11. Course notices:

All course announcements shall be displayed only in the Dept. of Biological Sciences notice board or announced during the lecture.

Instructor-in-charge
Course No. BIO F314