Course title: Applied Mathematics			
Course code: NRE 113	**No. of credits:** 3	**L-T-P distribution:** 31-11-0	**Learning hours:** 42

Pre-requisite course code and title (if any): For students who have not done courses in mathematics at 10+2/bachelor's level, a boot camp of 2 weeks will be held in the beginning of each academic session. Passing the course will be a mandatory requirement for such candidates, prior to registration for the programme.

Faculty: Ms IS Bhanu Sree Rao	**Department:** Department of Natural Resources
Course coordinator (s):	**Course instructor (s):** Prof. Prateek Sharma

Contact details:

Course type	**Compulsory**	**Core/~~Audit~~**	**Elective**	
Course offered in	~~Semester 1~~	**Semester 2**	**Semester 3**	**Other**

Course Description

The course is designed to serve as a foundation course in order to meet the requirement of mathematical knowledge in various subsequent courses offered in the master's degree program.

Course objectives

Course content

SNo	Topic	L	T	P
1.	Introduction: Quantitative aspects in decision making, tools available–deterministic (analytical and numerical), stochastic processes	1		
2.	Review of trigonometry, logarithms and quadratic equations	3		
3.	Linear algebra: Linear algebraic equations, solution methods, system conditioning, applications	6	2	
4.	Differential calculus: Relations and functions, limits and continuity, derivatives and differentiation, applications of differential calculus	7	3	
5.	Integral calculus: Indefinite integrals, methods of integration–integration by substitution, by parts, decomposition into sums etc, applications. Definite integrals, theorems of definite integrals and evaluation of definite integrals, applications	7	3	
6.	Differential equations: Ordinary differential equations, partial differential equations, applications	7	3	
	Total	31	11	

Evaluation criteria

- Tutorials/assignment: 20%
- Minor test: 30%
- 1 major test (end semester): 50%

Learning outcomes

Pedagogical approach
Materials 1. Mackenzie A. (2005) *Mathematics and Statistics for Life Scientists*, Taylor & Francis, New York. 2. Parkhurst D.F. (2006) *Introduction to Applied Mathematics for Environmental Science*, Springer, New York. **Suggested Readings** 1. Prasad G. (2004) *Differential Calculus*, Pothishala Pvt. Ltd., Allahabad 2. Prasad G. (2004) *Integral Calculus*, Pothishala Pvt. Ltd., Allahabad.
Additional information (if any)
Student responsibilities Attendance, feedback, discipline, guest facultyetc