Course title: Applied mathematics				
Course code: NRC 113	**No. of credits:** 1	**L-T-P:** 8-6-0	**Learning hours:** 14	
Pre-requisite course code and title (if any):				
Department: Energy and Environment				
Course coordinator(s):		**Course instructor(s):** Dr Anandajit Goswami		
Contact details: anandajit.goswami@terisas.ac.in				
Course type: Optional Audit		**Course offered in:** Semester 1 as bridge course		

Course description

The course is designed to serve as a foundation course even for students with no prior mathematical experience in higher education in order to meet the requirement of mathematical knowledge in various subsequent courses offered in the master's degree program. The course will introduce the students to fundamentals of mathematics applicable to climate science.

Course objective

- Is to introduce basic Numeric method approach

Course contents

Module	Topic	L	T	P
1.	Differential calculus: Relations and functions, limits and continuity, derivatives and differentiation, applications of differential calculus. Differential equations: Ordinary differential equations, partial differential equations, applications	2	3	
2.	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. Introduction of differential equations and its applications.	2	3	
	Total	**4**	**6**	**0**

Evaluation criteria

- Test 3: 100 %

Learning outcomes

- Understanding of basic concepts of mathematics applicable to climate science

Pedagogical approach

Classroom teaching and assignments

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

Student responsibilities

The students are expected to submit assignments in time and come prepared with readings when provided.

Course Reviewers

The course is reviewed by the following experts.

1. Dr. Phil Walker, Director of Student Education in Mathematics at the University of Leeds, United Kingdom.
2. Young-suk Jang, Maths Analyst, Seattle.