

<b>Course title:</b> Applied Mathematics				
<b>Course code:</b> NRE 113		<b>No. of credits:</b> 3	<b>L-T-P:</b> 31-11-0	<b>Learning hours:</b> 42
<b>Pre-requisite course code and title (if any):</b> 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.				
<b>Department:</b> Energy and Environment				
<b>Course coordinator:</b>			<b>Course instructor:</b> Ms I.Y. Bhanu Sree Rao	
<b>Contact details:</b>				
<b>Course type:</b> Audit			<b>Course offered in:</b> Semester 1	
<b>Course Description</b> 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.				
<b>Course objectives</b>				
<b>Course content</b>				
Module	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	
	<b>Total</b>	<b>31</b>	<b>11</b>	
<b>Evaluation criteria</b>				
<ul style="list-style-type: none"> <li>▪ Tutorials/assignment: 20%</li> <li>▪ Test 1: 30%</li> <li>▪ Test 3: 50%</li> </ul>				
<b>Learning outcomes</b>				
<b>Pedagogical approach</b>				
<b>Materials</b>				
<ol style="list-style-type: none"> <li>1. Mackenzie A. (2005) <i>Mathematics and Statistics for Life Scientists</i>, Taylor &amp; Francis, New York.</li> <li>2. Parkhurst D.F. (2006) <i>Introduction to Applied Mathematics for Environmental Science</i>, Springer, New York.</li> </ol>				

**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 faculty etc.