

<b>No.</b>	<b>Title</b>													
1.	Subject	Integral Calculus												
2.	Subject Code	KE015												
3.	Status	Major												
4.	Credit Hours	Two (2) [(1.5L + 1T) x 14 weeks]												
5.	Semester and Year	Semester 2												
6.	Pre-requisite	-												
7.	Mode of Delivery	Lectures and tutorials												
8.	Assessment	Assignments 20% Tests 20% Final Examination 60%												
9.	Objectives	To extend the knowledge of the students from basics of calculus to a higher level use of integration and its applications to physical problems. To enable the students to master a variety of integration methods.												
10.	Learning Outcomes	Upon the completion of the unit, the students will be able to: 1. Integrate a variety of functions using different types of integration Methods; 2. Apply integration methods to solve physical problems.												
11.	Details of subject	<table border="1"> <thead> <tr> <th>Contents</th> <th>Hours</th> </tr> </thead> <tbody> <tr> <td>Chapter 1: Integration  Basic ideas and definition, the fundamental theorem of calculus, definite and indefinite integrals, integration as the inverse of differentiation, standard derivatives and standard integrals.</td> <td>3L 2T</td> </tr> <tr> <td>Chapter 2: Techniques of integration  Functions of a linear function. Integrals with integrand of the form <math>\int \frac{f'(x)}{f(x)} dx</math>. Integration by parts. Integration by partial fractions. Integration by algebraic and trigonometric substitution</td> <td>10.5L 7T</td> </tr> <tr> <td>Chapter 3: Definite integrals  Properties of the definite integral. Interchanging limits.</td> <td>3L 2T</td> </tr> <tr> <td>Chapter 4: Applications of integration  Application of Trapezoidal and Simpson's rule to find area under a curve. Areas under a curve by definite integration. Volume of a solid of revolution.</td> <td>4.5L 3T</td> </tr> <tr> <td>Total</td> <td>L = 21 hrs T = 14 hrs  35 hours</td> </tr> </tbody> </table>	Contents	Hours	Chapter 1: Integration  Basic ideas and definition, the fundamental theorem of calculus, definite and indefinite integrals, integration as the inverse of differentiation, standard derivatives and standard integrals.	3L 2T	Chapter 2: Techniques of integration  Functions of a linear function. Integrals with integrand of the form $\int \frac{f'(x)}{f(x)} dx$ . Integration by parts. Integration by partial fractions. Integration by algebraic and trigonometric substitution	10.5L 7T	Chapter 3: Definite integrals  Properties of the definite integral. Interchanging limits.	3L 2T	Chapter 4: Applications of integration  Application of Trapezoidal and Simpson's rule to find area under a curve. Areas under a curve by definite integration. Volume of a solid of revolution.	4.5L 3T	Total	L = 21 hrs T = 14 hrs  35 hours
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12.	Main Reference	1. Stroud, K. A. (1998). <i>Engineering Mathematics</i> (4 <sup>th</sup> ed.). Macmillan Press. 2. Glyn, J. (2000). <i>Modern Engineering Mathematics</i> (3 <sup>rd</sup> ed.).												

		Addison - Wesley.
13.	Additional Reference	1. Swokowski, E. W., Olinick, M., and Pence, D. (1994). <i>Calculus</i> (6 <sup>th</sup> ed.). Boston: PWS Publishing.
14.	Practical/Lab Classes	Not applicable

