

Course Title	Calculus II				
Course Code	MAT200				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	2 <sup>nd</sup> Year / 3 <sup>rd</sup> Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course, as a continuation of CALCULUS I, provides a good working knowledge of calculus, a powerful mathematical instrument in engineering and science.				
Learning Outcomes	<p>Upon successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• Manipulate definite integrals to calculate the area between curves, the volume of a solid by revolution, the arc length, surface area and center of mass</li> <li>• Compute the inverse, the derivative and the integral of logarithmic, exponential, and trigonometric functions</li> <li>• Implement a variety of integrating techniques, including integration by parts, algebraic or trigonometric substitution, and partial fractions</li> <li>• Distinguish and evaluate improper integrals</li> <li>• Evaluate definite integrals using numerical approximations</li> <li>• Recognize different sequences whether they converge or not</li> <li>• Use series tests such as geometric, telescoping, integral, ratio, and root to determine the convergence or divergence of different series</li> </ul>				
Prerequisites	MAT150	Co-requisites	None		
Course Content	<p>Volumes by Slicing and Rotation About an Axis: The Disk and Shell Method. Lengths of Plane Curves. Moments and Centers of Mass. Areas of Surfaces of Revolution.</p> <p>Review of Inverse Functions. Continuity and Differentiability of Inverse Functions. Differentiation and Integration of Exponential and Logarithmic Functions. Integration of Trigonometric Functions. The Inverse Trigonometric Functions.</p>				

	<p>Review of the Basic Formulas of Integration. Integration by Parts. Integration of Rational Functions by Partial Fractions. Integrals of Certain Trigonometric Functions. Integrals Involving Trigonometric Substitutions. Numerical Integration. Trapezoidal Rule. Error Bound for Trapezoidal Rule. Simpson's Rule. Error Bound for Simpson's Rule. Improper Integrals.</p> <p>Sequences of Real Numbers. Finite and Infinite. Limit of a Sequence Convergence and Divergence of a Sequence. Bounded and Monotonic Sequences.</p> <p>Geometric Series. Convergence and Divergence of a Geometric Series. Infinite Series. The Ratio and Root Tests. Power Series. Convergence and Divergence of a Power Series.</p> <p>Taylor and MacLaurin Series. Taylor Polynomials. Approximation Using Taylor Polynomials.</p> <p>Recent developments and contemporary issues pertaining to the subject matter of the course</p>						
Teaching Methodology	Face- to- face						
Bibliography	<p>Weir/Hass/Giordano., THOMAS' CALCULUS , Pearson/Addison Wesley (Latest edition)</p> <p>Stewart J, SINGLE VARIABLE CALCULUS, Thomson Brooks/Cole (Latest Edition)</p> <p>Anton, H., CALCULUS WITH ANALYTIC GEOMETRY, Wiley (Latest edition)</p> <p>Adams R., Essex C., CALCULUS: A complete course, Pearson (Latest edition)</p> <p>Morris C., Stark R., FUNDAMENTALS OF CALCULUS, Wiley (Latest edition)</p>						
Assessment	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Examinations</td> <td style="text-align: center; padding: 5px;">90%</td> </tr> <tr> <td style="padding: 5px;">Class Participation and Attendance</td> <td style="text-align: center; padding: 5px;">10%</td> </tr> <tr> <td></td> <td style="text-align: center; padding: 5px;">100%</td> </tr> </table>	Examinations	90%	Class Participation and Attendance	10%		100%
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Language	English						