



**The Hashemite University**  
**Faculty of Science**  
**Course Description**

<b>Department : Mathematics</b>		
<b>Year : 2021/2022</b>		<b>Semester : Second</b>
<b>Course Information</b>		
Course Title	<i>Calculus (2)</i>	
Course Number	<i>110101102</i>	
Course Credits	<i>3 Hours</i>	
Course Time& section		
Course Duration	<i>One semester</i>	
Prerequisite(s)	<i>110108101</i>	
Instructor		
Office Location		
Office Hours		
E- mail		
<b>Text Book</b>		
Title	<i>Calculus, Early Transcendentals</i>	
Author	<i>James Steward</i>	
Publisher	<i>Cengage Learning.</i>	
Year	<i>2012</i>	
Edition	<i>7<sup>th</sup></i>	
References(s)	<ol style="list-style-type: none"> <li>1. Calculus, by Thomas and Finney, 1996, Addison - Wesley publishing Company</li> <li>2. Calculus, Early Transcendentals by Anton, Bivens and Davis 2010, John Wiley and Sons, Inc..</li> <li>3. Calculus with Analytic Geometry, by Leithold, 1986, Harper and Row publishers.</li> </ol>	
<b>Grading plan</b>		
First Exam		<b>25 %</b>
Second Exam		<b>25 %</b>
Final Exam		<b>50 %</b>

<b>Course Objectives</b>
<p>To study some applications of definite integral, methods of evaluating integrals, infinite series, polar coordinates and conic sections.</p>

<b>Teaching and Learning Methods</b>
Solving problems with discussion.

<b>Course Contents</b>		
<b>Topics</b>	<b>Section</b>	<b>Week</b>

<i>Ch7: Techniques of Integration</i>	<b>7.1</b> <b>7.2</b>	<b>1</b>
<b>Integration by Parts</b> <b>Trigonometric Integrals</b>		
<b>Trigonometric Substitutions</b>	<b>7.3</b>	<b>2</b>
<b>Integration of Rational Functions by Partial Fractions</b> <b>Strategy for Integration</b>	<b>7.4</b> <b>7.5</b>	<b>3</b>
<b>Improper Integrals</b>	<b>7.8</b>	<b>4</b>
<i>Ch 8: Further Applications of Integration</i>		<b>5</b>
<b>Arc Length</b> <b>Area of A surface of Revolution</b>	<b>8.1</b> <b>8.2</b>	
<i>Ch10: Parametric Equations and Polar Coordinates</i>		
<b>Curves Defined by Parametric Equations</b> <b>Polar Coordinates</b>	<b>10.1</b> <b>10.3</b>	<b>6</b>
<b>Area and Lengths in Polar Coordinates</b>	<b>10.4</b>	<b>7</b>
<i>Ch11: Infinite Sequences and Series</i>		
<b>Sequences</b>	<b>11.1</b>	<b>8</b>
<b>Series</b>	<b>11.2</b>	<b>9</b>
<b>The Integral Test and Estimates of Sum</b> <b>The Comparison Test</b>	<b>11.3</b> <b>11.4</b>	<b>10</b>
<b>Alternating Series</b>	<b>11.5</b>	<b>11</b>
<b>Absolute Convergence and the Ratio and Root Tests</b> <b>Strategy for Testing Series</b>	<b>11.6</b> <b>11.7</b>	<b>12</b>
<b>Power Series</b> <b>Representation of Functions as Power Series</b>	<b>11.8</b> <b>11.9</b>	<b>13</b>
<b>Taylor and Maclaurin Series</b>	<b>11.10</b>	<b>14</b>
<b>Applications of Taylor Polynomials</b>	<b>11.11</b>	<b>15</b>