

<b>Name of the course</b>	<b>Business Mathematics</b>
<b>Course Code</b>	102
<b>Semester</b>	1 <sup>st</sup>
<b>Credit Hours</b>	3
<b>Prerequisite</b>	-
<b>Learning outcomes</b>	<p>After completion of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand business mathematics.</li> <li>2. Develop their numerical skills which can lead to getting better jobs</li> <li>3. Develop ability for logical and structured problem analysis</li> </ol>
<b>Contents</b>	<p><b>Unit-1 Arithmetic Refresher</b></p> <ol style="list-style-type: none"> <li>1.1 Number systems</li> <li>1.2 Basic operations and order of operations</li> <li>1.3 Fractions, decimals</li> </ol> <p><b>Unit-2 Algebra Refresher</b></p> <ol style="list-style-type: none"> <li>3.1 Definition, rules</li> <li>3.2 Formulating equations</li> <li>3.3 Expansion of expressions</li> <li>3.4 Factorization, powers</li> </ol> <p><b>Unit-3 Equations, Linear Programming</b></p> <ol style="list-style-type: none"> <li>3.1 Introduction</li> <li>3.2 Graphically, supply and demand analysis, simultaneous; Quadratic: solving (factorizing, formula), simultaneous, business application</li> <li>3.3 Linear programming models</li> <li>3.4 Solving algebraically</li> </ol> <p><b>Unit-4 Functions I</b></p> <ol style="list-style-type: none"> <li>4.1 Definitions,</li> <li>4.2 Polynomials</li> </ol>

	<p>4.3 Inequalities, sign diagrams, applications</p> <p><b>Unit-5 Functions II</b></p> <p>5.1 Geometric properties (increasing/decreasing, concave / convex),</p> <p>5.2 Shifting graphs</p> <p>5.3 Inverse functions,</p> <p><b>Unit-6 Differentiation I</b></p> <p>Difference quotient, rules of differentiation</p> <p><b>Unit-7 Differentiation II</b></p> <p>Optimization (with one independent variable), second derivative</p> <p><b>Unit-8 Economic Applications of Functions and Derivatives</b></p> <p>Total, average, marginal costs, relationships between cost functions, revenue functions, profit maximization</p> <p><b>Unit-9 Economic Applications II</b></p> <p>9.1 Integration</p> <p>9.2 Indefinite, definite, economic applications</p>
<b>Teaching &amp; Learning Strategies</b>	A combination of lecturing, computer lab, presentations, and discussions will be used to conduct the course. Students will be expected to read extensively ahead of each class session and actively participate in discussions and practical work.
<b>Assignment</b>	Written assignment (10 marks), presentation (5 marks) and Quiz (10 marks)
<b>Suggested Readings</b>	<p>Budnick, F. S., Quinn, S., Bowser, K., &amp; Flaherty, E. H. (2008). <i>Applied mathematics for business, economics, and the social sciences</i>. McGraw-Hill.</p> <p>Jacques, I. (2009). <i>Mathematics for Economics and Business</i>. Pearson Education.</p> <p>Renshaw, G. (2012). <i>Maths for economics</i>. Oxford University Press.</p> <p>Sydsaeter, K., &amp; Hammond, P. J. (2015). <i>Essential mathematics for economic analysis</i>. Pearson Education.</p> <p>Tarasov, V. E. (2020). <i>Mathematical Economics: Application of fractional calculus</i>. Springer.</p>

### Assessment and Examinations

Sr. #	Elements	Weightage	Details
1	Midterm Assessment	35%	Written test (at the mid-point of the semester)
2	Formative Assessment	25%	Assignment, presentation and quiz
3	Final Assessment	40%	Written test (at the end of the semester)