

21B33C108 – Basic Mathematic

Module designation	Basic Mathematic (Undergraduate)
Semester(s) in which the module is taught	1 nd
Person responsible for the module	Harifuddin, S.T., M.T. Al Imran, S.T., M.T. Dr. Iwan Suhardi, S.T., M.T. Muliaty Yantahin, S.T., M.T. Wirawan Setialaksana, S.Pd., M.Sc. Nurul Mukhlisah Abdal, S.Si., M.Si.
Language	Indonesia – English
Relation to curriculum	Compulsory courses
Teaching methods	Case Based Learning (CBL)
Workload (incl. contact hours, self-study hours)	Total workload: 14 meeting Face to face : 2x50 minutes/week Independent Study : 2x50 minutes/week Structured assignment : 2 x50 minutes/week
Credit points	2 credit points (equivalent with 3,4 ECTS)
Required and recommended prerequisites for joining the module	-

<p>Module objectives/intended learning outcomes</p>	<p>Program Learning Outcomes (PLO)</p> <p>PLO2. Internalize academic values, norms and ethics;</p> <p>PLO4. Master the concepts, theories and applications in the field of informatics and computer engineering which are taught at secondary and vocational education levels;</p> <p>PLO7. Able to apply logistical, critical, creative, systematic and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values appropriate to their field of expertise;</p> <p>PLO8. Able to demonstrate independent, quality, measurable and responsible performance;</p> <p>PLO11. Able to apply mathematics, science and engineering principles to solve complex engineering problems in the fields of informatics and computer engineering;</p> <p>Course Learning Objectives (CLO)</p> <p>CLO1 :Students are able to understand the concept of numbers</p> <p>CLO2 :Students are able to use the concept of limits in solving concrete problems</p> <p>CLO3 :Students are able to use the concept of limits in solving concrete problems</p> <p>CLO4 : Students are able to use integral concepts and integration techniques in solving concrete problems</p> <p>CLO5 : Students are able to understand various types of special mathematical functions</p> <p>Sub CLO:</p> <p>Sub-CLO 1 : Students are able to understand real numbers</p> <p>Sub-CLO 2 : Students are able to determine solutions to inequalities</p> <p>Sub-CLO 3 : Students are able to understand function limits</p> <p>Sub-CLO 4 : Students are able to understand the limits of trigonometric functions</p> <p>Sub-CLO 5 : Students are able to use various types of derivatives in solving concrete problems</p> <p>Sub-CLO 6 : Students are able to use various types of derivatives to determine the optimum point of a function</p> <p>Sub-CLO 7 : Students are able to use various types of derivatives to determine the extreme points of a function</p>
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Content	<ol style="list-style-type: none"> 1. Introduction: Real Numbers, Inequalities and Absolute Value, 2. Limits: Introduction, Limits of Functions, Limit Theorems, Limits of trigonometric functions, Limits at infinity and limits at infinity, and Continuity 3. Derivatives: Derivatives, Rules for determining derivatives, Derivatives of trigonometric functions, Chain rule, Higher order derivatives, Implicit derivatives. 4. Use of Derivatives: Maximum and minimum, Monotony and concavity, Local extremes and extremes on open intervals, L'Hopital's Theorem, 5. Integral Bag I: Indefinite Integral, Definite Integral, First Basic Theorem of Calculus, 6. Integral Use: Area of a plane; Volume of rotating object; Curve Length. 7. Transcendent Functions: Inverse functions and their derivatives, Natural logarithm function, Exponent function, General logarithm function. Exponential growth and decay, Trigonometric Inverse Functions and Their Derivatives, Hyperbolic Functions and their inverses 8. Integral Bag II: Partial Integrals, Integrals of Trigonometric Functions, Integrals with Trigonometric Substitution, Integrals with Root Form Substitution, Integrals of Rational Functions
Examination forms	<p>Assessment techniques : [participation], [written test]</p> <p>Assessment forms : [assignment], [quiz], [midterm exam], [final term exam]</p>

<p>Study and examination requirements</p>	<p>Study and examination requirements :</p> <ul style="list-style-type: none"> ● Students must attend 15 minutes before the class starts ● Students have to inform the lecturer when they are not able to attend the class due to sickness ets. ● Students must have at least 80% of attendance out of total meetings. ● Active in lectures by showing participation in receiving material and doing assignments given in the class. <p>Form of Examination :</p> <p>Written test</p>
<p>Reading List</p>	<p>-Dale Varberg, Edwin Purcell and Steve Rigdon. 2007. Calculus. 9th ed. Pearson.</p> <p>-Frank Ayre. 2018. Schaum's Outline of Calculus</p>