UNDERGRADUATE PROGRAM   **MODULE HANDBOOK**

Module designation	Mathematics (SSOL1001)
Semester(s) in which the module is taught	1st semester
Person responsible for the module	T. Murdani Saputra, S.Pd., M.Si
Language	Indonesian, English
Relation to curriculum	Compulsory module for Soil Science Department
Teaching methods	Lecture, interactive discussion, focus group discussion
Workload (incl. contact hours, self-study hours)	✔ 100 minutes lecture and discussion per week ✔ 120 minutes structured tasks per week ✔ 120 minutes learn to be independent per week
Credit points	2 SKS = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	✔ Students are able to solve mathematical problems involving numbers, fractions, quotients, exponents, roots and logarithms, inequalities, coordinate systems, linear equations, and quadratic equations. ✔ Students are able to explain and solve problems related to functions (including operations and graphs), as well as matrix operations, properties, determinants, inverses, and systems of linear equations using graphical methods, elimination, substitution, combination, and Gaussian elimination.
Content	This course covers fundamental mathematical concepts including the real number system, inequalities, coordinate systems, gradients, linear and quadratic equations, functions, composite and inverse functions, trigonometric functions, exponents, logarithms, and matrices (definitions, properties, and operations), as well as systems of linear equations.
Exams and assessment formats	Assignment, mid-term exam, final exam
Study and examination requirements	✔ Assignment 1: 15% ✔ Assignment 2: 15% ✔ Mid-term Exam: 35% ✔ Final Exam: 35%

Reading list	1. Sheldon Axter. (2013). Precalculus A Prelude to Calculus Second edition with Student Solution Manual. Wiley. 2. Yahya, Y,. Suryadi H.S, D., Agus S. (2013). Matematika Dasar Perguruan Tinggi. Ghalia Indonesia 3. Russell, B. (2020). Principles of mathematics. Routledge. 4. Whitehead, A. N. (2017). An introduction to mathematics. Courier Dover Publications. 5. Gatzke, E. (2021). Mathematical Fundamentals. In Introduction to Modeling and Numerical Methods for Biomedical and Chemical Engineers (pp. 15-32). Cham: Springer International Publishing. 6. Stewart, I., & Tall, D. (2015). The foundations of mathematics. OUP Oxford. 7. Hinman, P. G. (2018). Fundamentals of mathematical logic. CRC Press. 8. McGregor, C., Nimmo, J., & Stothers, W. (2010). Fundamentals of university mathematics. Elsevier. 9. Fikhtengol'ts, G. M. (2014). The fundamentals of mathematical analysis. Elsevier.