MODULE HANDBOOK DESCRIPTION

Module designation	Numerical Method	
Code	FBS2230	
Semester(s) in which the module is taught	5/third year	
Person responsible for the module	Abdul Natsir, ST., MT., Ida Bagus Fery Citarsa, ST., MT., Giri Wahyu Wiriasto, ST., MT., I Ketut Perdana Putra, ST., MT.	
Language	Indonesian	
Relation to curriculum	Compulsory for all students	
Teaching methods	Lecture, small group discussion, case base method.	
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester : • Lectures: 2 x 50 minutes • Exercises and Assignments: 2 x 60 minutes • Private study: 2 x 60 minutes. Total study hours = 5 hours 40 minutes/week	
Credit points	*2 (~ 3,2 ECTS)*	
Required and recommended prerequisites for joiningthe module	- Engineering Mathematics I (FBS2120) - Engineering Mathematics II (FBS2228)	
Module objectives/ intended learning outcomes	1. Students are able to explain the basic concepts numerical methods related to approximations and errors, roots of equation, linear equations system, regression analysis, interpolation, numerical integration.	PLO2
	2. Students are able to formulate problems related to approximations and errors, roots of equation, linear equations system, regression analysis, interpolation, numerical integration.	PLO3
	3. Students are able to implement numerical method to solve simple mathematics problems related to approximations and errors, roots of equation, linear equations system, regression analysis, interpolation, numerical integration.	PLO4

Content	• Approximations and Errors • Half Interval Method, Linear Interpolation Method, Newton Rhapson Method, Secant Method, Iterations Method (roots of equation) • Matrices notations, Gauss Elimination Method, Gauss-Jordan Method, Diagonal Matrices Method, Inverse Matrices Method, Iterative Method (linear equations system) • Statistic principle, Least Square Method for Linear Curve, Non-Linear Curve Linearization Method, Correlation Coefficient Method. Polynomial Regression Method (regression analysis) • Linear Interpolation Method, Square Interpolation Method, Newton Polynomial Interpolation Method, Lagrange Polynomial Interpolation Method (interpolation) • Trapezium with Many Pieces Method (numerical integration)
Examination forms	- Multiple choice examination and Essay, - Présentation case study.
Study and examination requirements	The final grade in the module is composed of: a. Per-meeting score = 5 % x 16 meeting = 80% b. Exercise Report/ Homework/Portofolio = 20% Students must have a final grade of 65% or higher to pass
Reading list	1. Bambang, T., 1992, "Metode Numerik", Beta Offset, Yogyakarta 2. Chapra, S.C., Canale, R.P., 2006, "Numerical Methods for Engineers", McGraw Hill, New York. 3. Gerald, F.G., Wheatly, P.O., 1994, "Applied Numerical Analysis, 5th edition", Adison Wisley Pub. Comp. 4. Kendall Atkinson, 1993, "Elementary Numerical Analysis", John Wiley & Sons. 5. Susila, I.N., 1994, "Dasar-dasar Metode Numerik", Direktorat Jenderal Pendidikan Tinggi, Jakarta. 6. Sutarno, H., Rachmatin, D., 2007, "Metode Numerik dengan Pendekatan Algoritmik", PT. Sinar Baru Algensindo, Bandung. 7. Epperson, J., 2002, "Introduction to Numerical Methods and Analysis", John Wiley & Sons, New York.