UNIVERSITAS INDONESIA
Faculty of Mathematics and Natural Sciences
Department of Mathematics
Building D, Kampus UI Depok 16424, Telp: 021 - 7863439,
Email: sekretariat.math@sci.ui.ac.id, website: https://www.math.ui.ac.id/

MODULE HANDBOOK

Module designation	*Mathematical Programming*
Semester(s) in which the module is taught	3
Person responsible for the module	*Dr. Zuherman Rustam, D.E.A.*
Language	*Indonesian*
Relation to curriculum	*Compulsory*
Teaching methods	*lecture, lab works*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload: 8.5 hours x 14 weeks + 3 hours x 2 weeks* *Contact hours: 150 minutes lectures, 180 minutes of structured activities, and 180 minutes of individual study per week* *Private study including examination preparation, specified in hours[1]:*
Credit points	*3 SKS (4.77 ECTS)*
Required and recommended prerequisites for joining the module	*Elementary Linear Algebra*
Module objectives/intended learning outcomes	*After completing the course, students have the ability* 1. *to make mathematical models of a linear, integer, and nonlinear optimization problem.* 2. *to solve optimization problems linear, integer, and nonlinear exactly using the appropriate method problem characteristics.* 3. *to solve optimization problems linear, integer, and nonlinear numerically using the appropriate method problem characteristics.*

[1] When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	1. *Optimization Model and Linear Programming* 2. *Linear Programming: Eligible area, set convex* 3. *Linear Programming: Graphic Method, Simplex Method* 4. *Linear Programming: The Principle of Duality* 5. *Integer Programming* 6. *Nonlinear Programming* 7. *Quadratic Programming*
Examination forms	1. *Assignment (homework)* 2. *Mid-term examination* 3. *Final examinations*
Study and examination requirements	*The final mark will be weighted as follows:* 1. *Assignment (homework) (30%)* 2. *Mid-term examination (35%)* 3. *Final examinations (35%)* *To succesfully pass the module it requires minimum 55% of the total mark.* *Mark — Grade* *85—100 — A* *80—<85 — A-* *75—<80 — B+* *70—<75 — B* *65—<70 — B-* *60—<65 — C+* *55—<60 — C* *40—<55 — D* <40 — E

Reading list	1. *Kerami, D. & Silaban, D.R., 2009, Riset Operasional I, UT.* 2. *Winston, Wayne L. & Venkataramanan, Munirpallam, 2003, Introduction to Mathematical Programming: Application & Algorithm, Thomson Learning.* 3. *Hilier, Frederick & Lieberman, Gerald J., 1995, Introduction to operation Research, McGraw Hill.* 4. *Bazaraa, M. S., Jarvis, J.J., Sherali, H. D., 2010, Linear Programming and Network Flows, 4th ed. John Wiley & Sons* 5. *Bazaraa, M. S., Sherali, H. D. & Shetty, C. M., 2006, Nonlinear Programming Theory and Algorithms, 3rd ed. John Wiley & Sons.* 6. *Taha, Hamdy A, 2007, Operation Research: an introduction, 8th ed, Pearson Education.*