Description of Course Unit

Course unit title	Operation Research
Course unit code	VS191205
Type of course unit (compulsory, optional)	compulsory
Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)	First cycle of Bachelor
Year of study when the course unit is delivered (if applicable)	
Semester/trimester when the course unit is delivered	2
Number of ECTS credits allocated	3.2
Name of lecturer(s)	Sri Mumpuni Retnaningsih Mike Prastuti Zakiatul Wildani Muhammad Alifian Nuirman
Learning outcomes of the course unit	Students are able to 1. Identify real problems in Operational Research (PO) problems. 2. Formulate real problems into linear program problems and solve them using graphic and simplex methods. 3. Use the Duality and Sensitivity Method 4. Formulate real problems into transportation problems and solve them with NWC and Vogel methods. 5. Formulate real problems into assignment problems and solve them to get optimal results. 6. solve queue problems with finite and infinite queue lengths. 7. Plan the feasibility of a project in terms of cost and time
Mode of delivery (face-to-face, distance learning)	Face-to-face
Prerequisites and co-requisites (if applicable)	-
Course content	1. Introduction and overview of the operations research modelling approach 2. Linear Programming (Graphis method, simplex method, feasible base method, two-phase simplex method, Big M) 3. Duality model (primal-dual problem, complementary slackness, interpretation of dual problem, dual simplex method) and sensitivity analysis 4. Transportation problems (mathematical model, planning, NWC method, Vogel method, optimum cost) 5. Assignment problems (mathematical models, planning optimal costs/outputs) 6. Queueing theory (characteristics of queuing problems, birth and death process, model (M/M/1/I/I), (M/M/S/I/I), (M/M/1/I/F), (M/M/S/I/F)) 7. Project Management (identifying the activities of a project, critical trajectory method, PERT method, analyzing project feasibility based on cost and time)

Recommended or required reading and other learningresources/tools	1. Retnaningsih SM, Irhamah, "Penelitian Operasional", ITS Press, Surabaya, 2011 2. Hillier Frederick and Liberman Gerald, "Introduction To Operations Research", Tenth edition, McGraw- Hill,Inc, New York, 2015
Planned learning activities and teaching methods	Problem Based Learning, Blended Learning
Language of instruction	Indonesian Language
Assessment methods and criteria	Assignment, Quiz, Midterm Exam and Final Exam