MODULE HANDBOOK DESCRIPTION

Module designation	Traffic Engineering (FBC3105)
Semester(s) in which the module is taught	*5 / third year*
Person responsible for the module	*Sudi Mariyanto Al Sasongko, S.T., M.T*
Language	*Indonesian*
Relation to curriculum	*Compulsory on Telecommunication System expertise*
Teaching methods	*lectures, 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. • Self-learning: 2 x 60 minutes. total study hours = 5 hours 40 minutes/week
Credit points	*2 (~ 3,2 ECTS)*
Required and recommended prerequisites for joining the module	Stochastic Process (FBS2121)
Program Learning Outcomes (PLO)	- ***Engineering Analysis (PLO3):*** *Able to choose methods, make literature reviews, design experiments with simulations, and analyze results to reach the right conclusions, as well as develop guidelines for using tools.* - ***Engineering Design (PLO4):*** *Able to design and develop components, systems and/or processes to support engineering activities and create technological innovations by optimally utilizing potential resources.* - ***Experiment (PLO5):*** *Able to design and carry out experiments using basic and modern technical tools and analyze and interpret data based on the correct methodology to strengthen engineering assessments.*

Module objectives/intended learning outcomes	*Students are able to analyze the basic traffic variations and the basic of busy hour in communications systems.*	*PLO3*
	Students are able to design the traffic network	*PLO4*
	Students are able to analyze the types, function and process of Poisson and Erlang distribution	*PLO3*
	Students are able to analyze the types, function and process of Engset and Binomial distribution	*PLO3*
	Students are able to analysis and design of traffic overflow	*PLO4*
	Students are able to analysis queueing systems and Markov Chain	*PLO3*
	Students are able to measure variation traffic cellular	*PLO5*
	Students are able to simulate variation traffic cellular	*PLO5*
Content	*1. Introduction to traffic variations and busy hours* *2. Network and traffic system modeling* *3. Analysis of the Poisson and Erlang distribution* *4. Analysis of the Engset and Binomial distribution* *5. Analysis and design of traffic overflow* *6. Queuing system and markov chain* *7. Application traffic on cellular networks* 8. *QoS parameter measurement of cellular traffic*	
Examination forms	- *Written case study* - *Essay midterm and final test*	
Study and examination requirements	*The final grade in the module is composed of;* *a. Attendance assessment : 5 %* *b. Case I assessment : 15 %* *c. Case II assessment : 20 %* *d. Case II assessment : 20 %* *e. Written Midterm assessment : 20 %* *f. Written Final assessment : 20 %* *Students mush have a final grade of 65% or higher to pass*	
Reading list	1. VB Iversen.,Teletraffic Engineering And Network Planning Revised, 2015 2. Haruo Akimaru and Konosuke Kawashima, Teletraffic: Theory and Applications 2nd Ed, 1999 3. Robert B Cooper and Daniel P Heyman, Teletraffic Theory and Engineering, 1998	