Course Code	TKEE163243
Course Name	Traffic Engineering
Course Instructors	Budi Setiyanto; Dyonisius Dony Ariananda
Course Type	Selected Elective
Course Classification	Engineering Topics
Credit / Contact Hour per Week	2 / 100 minutes per Week
Course Description	This course discusses basic traffic analysis and various traffic models allowing the students to understand which model might be applicable to some possible scenarios in the telecommunication networks
Prerequisites Courses	
Covered Student Outcome	**Fundamental and Engineering Knowledge (a)** **Development of Engineering Solution (b)**

Learning Outcome	1. Students are able to explain the concept of circuit switching and packet switching 2. Students are able to explain all fundamental concepts that are important for Traffic Analysis, such as Poisson Process and Markov Chain 3. Students are able to explain basic traffic modeling and analysis and the fundamental Poisson Traffic Model 4. Students are able to explain the impact of limited number of servers in the traffic analysis and explain Erlang-B and Retrial Model 5. Students are able to explain some specific scenarios in the traffic analysis and the related traffic models including Engsel Model, Near-Wilkinson Model, Erlang-C Model and Priority Issue
Topic	1. Fundamentals of Switching: Circuit Switching, Packet Switching (Virtual Circuit and Datagram) 2. Introduction to Traffic Analysis and Traffic Measure 3. Fundamental for Traffic Analysis: Counting Process, Poisson Process, Discrete and Continuous Markov Chain 4. Traffic Modeling and Analysis 5. Poisson Traffic Model 6. Erlang-B and Retrial Model 7. Engsel Model 8. Overflow Traffic and Near-Wilkinson Model 9. Erlang-C Model 10. Traffic Handling with Priority
Direct Asessment	**Direct Asessment Plan** / **Measured Learning Outcome** Assignments Mid Exam Final Exam
Indirect Assesment	Questionnaire (EDOM)
References	[1] Roberta Martine, Basic Traffic Analysis (Prentice Hall; January, 1994), ISBN-10: 0133354075 [2] J. E. Flood, Telecommunications Switching, Traffic, and Networks, Prentice Hall (February 1995), ISBN-10: 0130333093 [3] Piet van Mieghem, Performance Analysis of Complex Networks and Systems, Cambridge University Press (June 2014), ISBN-10: 1107058600 [4] Roy D. Yates and David J. Goodman, Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers, Second Edition, Wiley (2005), ISBN-10: 1118324560