UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER ENGINEERING
FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY

Module name	**Machine Learning**	
Module level	Undergraduate	
Code	EC184503	
Courses (if applicable)	Machine Learning	
Semester	5 / Fall (Gasal)	
Contact person	Prof.Dr.Ir. Mauridhi Hery Purnomo, M.Eng	
Lecturer	Prof.Dr.Ir. Mauridhi Hery Purnomo, M.Eng	
Language	Indonesia / English	
Relation to curriculum	Undergraduate degree program, mandatory, 5th semester.	
Type of teaching, contact hours	Lecture, < 60 students, 170 Minutes * 3 SKS	
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week.	
Credit points	3 credit points (sks).	
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.	
Mandatory prerequisites		
Learning outcomes and their corresponding PLOs	CLO-1 Students are able to explain machine learning concept and state of the art	PLO-3 PLO-4
	CLO-2 Students are able to use machine learning techniques to Recognizing Pattern	PLO-3 PLO-4
	CLO-3 Students are able to explain the various ways of deep learning techniques to Recognizing Pattern	PLO-3 PLO-4
	CLO-4 Students are able to use machine learning programming that can be applied to the design system	PLO-5 PLO-6
Content	In this course, students will learn about machine learning and its application in the real world. Topics include linear prediction, linear regression, non-linear regression, Bayesian learning, Gaussian process, Bayesian optimization, decision tree, random forests, gradient descent, importance sampling, neural network, and Markov chain Monte Carlo (MCMC).	

Study and examination requirements and forms of examination	• In-class exercises • Quiz 1 and 2 • Assignment 1, 2, 3 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom).
Assessments and Evaluation	CO-1: Question no 1 in midterm exam (15%) CO-2: Question no 2 in midterm exam (15%) CO-3: Assignment 1 (5%), question no 4 in midterm exam (20%), Quiz 2 (5%) CO-4: Question no 1 in final exam (20%), question no 2 in final exam (20%)
Reading List	1. Kevin Patrick Murphy, "Machine Learning: a Probabilistic Perspective", fourth edition (Sept 2013), MIT Press. 2. Chris Bishop, "Pattern Recognition and Machine Learning", Springer 2006. 3. Trevor Hastie, Robert Tibshirani and Jerome Friedman. "The elements of statistical learning", Springer 2001. 4. Larry Wasserman, "All of Statistics, Springer 2004. 5. David Mackay, "Information theory, inference and learning algorithms", CUP 2003 6. Jim Albert, "Bayesian Computation with R", Springer 2007. 7. Duda, Hart, Stork, "Pattern Classification (2nd ed.)", Wiley 2001.