	Universitas Negeri Surabaya Faculty of Economics and Business Bachelor of Economics Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Economics and Business Mathematics	8722003079	Compulsory Study Program Subjects	T=3	P=0	ECTS=4.77	1	July 10, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-3	Develop logical, critical, systematic and creative thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned
	PLO-4	Develop yourself continuously and collaborate.
	PLO-5	Able to analyze overall economic theoretical concepts
	PLO-7	Able to communicate effectively orally and in writing in the field of economics
	Program Objectives (PO)	
	PO - 1	Students are able to understand and master basic mathematical concepts related to the field of Economics and utilize information technology in the field of Economic Mathematics.
	PO - 2	Students are able to make decisions based on mathematical economic analysis.
	PO - 3	Students are able to have an intelligent and thorough character in mathematics and economics learning activities

PLO-PO Matrix

P.O	PLO-3	PLO-4	PLO-5	PLO-7
PO-1	✔		✔	
PO-2		✔		✔
PO-3	✔			✔

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1	✔	✔						✔								✔
PO-2				✔	✔	✔	✔					✔			✔	
PO-3			✔						✔	✔	✔			✔		

Short Course Description	This course contains basic mathematical concepts related to the field of economics as well as utilizing information technology in the field of economic mathematics, making decisions based on mathematical economic analysis and discussing micro and macro economic theories, including: Lines and Series, Linear Functions, Non-Linear Functions, Differentials, Partial and Integral Differentials and their application in economics. The learning method is carried out in the form of lectures and questions and answers as well as using an inquiry approach, namely completing tasks and solving problems.
References	**Main :**

1. Bumulo, Hussain. , Mursito, Djoko. 2011.Matematika untuk Ekonomi dan Aplikasinya. Bayumedia Publishing
2. Dumairy. 2010.Matematika Terapanuntuk Bisnis dan Ekonomi. edisi ketiga.Yogyakarta:BPFE
3. Kalangi, Josep Bintang. 2014.MatematikaEkonomi & Bisnis edisi ke-3. Jakarta:Salemba Empat4. Sarjono,Haryadi. dan Sanny, Lim 2012. Aplikasi Matematika Untuk Bisnis Dan Manajemen. Jakarta: Salemba Empat

Supporters:

Supporting lecturer	Dr. Lucky Rachmawati, S.E., M.Si. Dr. Prayudi Setiawan Prabowo, S.E., M.E. Aprillia Nilasari, S.Pd., M.S.E. Ruth Eviana Hutabarat, S.E., M.E. Nurul Hanifa, S.E., M.Si. Kukuh Arisetyawan, S.Pd., M.E. Wenny Restikasari, S.E., M.S.E.

Week-	**Final abilities of each learning stage (Sub-PO)**	**Evaluation**		**Help Learning, Learning methods, Student Assignments, [Estimated time]**		**Learning materials [References]**	**Assessment Weight (%)**
		Indicator	**Criteria & Form**	**Offline (*offline*)**	**Online (*online*)**		
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
1	Analyzing series and their application in economics	1.1 Able to identify geometric series 1.2 Able to calculate and analyze business development 2.1 Able to identify arithmetic series 2.2 Able to calculate and analyze compound interest and population growth	**Criteria:** According to assessment guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** Analyzing series and their application in economics. **Reference:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing*	3%
2	Analyzing series and their application in economics	2.1 Able to identify arithmetic series 2.2 Able to calculate and analyze compound interest and population growth	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** Analyzing series and their application in economics. **Reference:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing*	4%
3	Identifying the elements and forms of linear functions, compiling linear functions, calculating the values of linear function variables.	3.1 Able to identify types of functions 3.2 Able to explain the form of linear functions 3.3 Able to prepare linear function equations	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** Identifying the elements and forms of linear functions, constructing linear functions, calculating the values of linear function variables. **Bibliography:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	4%

4	Applying linear functions in microeconomics	1 Able to construct demand and supply functions 2 Able to calculate market equilibrium price and quantity	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 1 demand and supply functions 2 market equilibrium price and quantity **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** 1 demand and supply functions 2 market equilibrium price and quantity **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	3%
5	Applying linear functions in microeconomics	1. Able to calculate and analyze market balance after taxes and subsidies 2. Able to calculate and analyze cost, revenue, profit, loss and breakeven functions.	**Criteria:** 1.According to scoring guidelines 2.According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 1. market balance after taxes and subsidies 2. cost, revenue, profit, loss and breakeven functions. **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** 1. market balance after taxes and subsidies 2. cost, revenue, profit, loss and breakeven functions. **Bibliography:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	3%
6	Applying linear functions in macroeconomics	1. Able to calculate and analyze the functions of consumption, savings and investment 2 Able to calculate and analyze the transfer, tax and import functions.	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 1. consumption, savings and investment functions 2. transfer, tax and import functions. **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** 1. consumption, savings and investment functions 2. transfer, tax and import functions. **Bibliography:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	4%

7	Applying linear functions in macroeconomics	Able to calculate and analyze national income	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** national income **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** national income **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** national income **References:** *Kalangi, Josep Bintang. 2014.Mathematics, Economics & Business, 3rd edition. Jakarta:Salemba Empat4. Sarjono, Haryadi. and Sanny, Lim 2012. Applications of Mathematics for Business and Management. Jakarta: Salemba Empat*	4%
8	MIDTERM EXAM	Can do questions well and correctly	**Criteria:** According to scoring guidelines **Form of Assessment** : Test	Written test 3 X 50	3 x 50 exams	**Material:** Material 1-7 **Library:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	20%
9	Analyze the form of non-linear functions and their application in economics	9.1 Able to analyze non-linear functions 9.2. Able to analyze non-linear supply and demand functions	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 9.1 non-linear functions 9.2. non-linear supply and demand functions **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** 9.1 non-linear functions 9.2. non-linear supply and demand functions **Reference:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	4%

10	Analyze the form of non-linear functions and their application in economics	10.1. Be able to calculate and analyze market balance for non-linear functions 10.2. Able to calculate and analyze market balance after taxes and subsidies for non-linear functions 10.3. Able to calculate and analyze cost, revenue, BEP functions for non-linear functions	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 10.1. market equilibrium for non-linear functions 10.2. market balance after taxes and subsidies for non-linear functions 10.3. cost, revenue, BEP functions for non-linear functions **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** 10.1. market equilibrium for non-linear functions 10.2. market balance after taxes and subsidies for non-linear functions 10.3. cost, revenue, BEP functions for non-linear functions **Reference:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	4%
11	Analyzing the differential rule and its application in economics	Analyzing the differential rule and its application in economics	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** differential **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing*	4%
12	Analyzing the differential rule and its application in economics	Analyzing the differential rule and its application in economics	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** differential **References:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing*	3%

13	Analyzing the partial differential rule and its application in economics	13.1. Able to identify partial differential rules 13.2. Able to calculate and analyze maximum and minimum functions 13.3. Able to calculate the Lagrange function	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 13.1. partial differential rule 13.2. maximum and minimum functions 13.3. Lagrange function **Reader:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing* **Material:** 13.1. partial differential rule 13.2. maximum and minimum functions 13.3. Lagrange function **Library:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	3%
14	Analyzing the partial differential rule and its application in economics	14.1. Able to calculate and analyze cross elasticity 14.2. Able to calculate and analyze the maximum profit of 2 types of goods 14.3. Able to calculate and analyze the balance of production and consumption	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 14.1. cross elasticity 14.2. maximum profit from 2 types of goods 14.3. balance of production and consumption **Bibliography:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing*	4%
15	Analyze integral rules and apply them in economics	15.1 .Able to apply integral rules 15.2 .Able to calculate and analyze consumer and producer surplus	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures, discussions and case studies 3 X 50	Interactive lectures, discussions and case studies 3 X 50	**Material:** 15.1 . integral rule 15.2. consumer and producer surplus **Bibliography:** *Bumulo, Hussain. , Mursito, Djoko. 2011. Mathematics for Economics and its Applications. Bayumedia Publishing*	3%
16	FINAL EXAMS	UAS	**Criteria:** According to scoring guidelines **Form of Assessment** : Test	Written test 3 X 50	3 X 50 exam	**Material:** Material 9-15 **Library:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE*	30%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	50%
2.	Test	50%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and

knowledge.

3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.