	Universitas Negeri Surabaya Faculty of Economics and Business, Bachelor of Science in Office Administration Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Economic math	8721003046	Compulsory Study Program Subjects	T=3	P=0	ECTS=4.77	2	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Case Studies**

Program Learning Outcomes (PLO)

PLO study program which is charged to the course

Program Objectives (PO)

PO - 1	CPMK 1 Able to demonstrate a responsible attitude towards work in his field of expertise analyzing linear and non-linear functions in economics
PO - 2	CPMK 2 Able to apply and analyze linear and non-linear functions in office administration education programs
PO - 3	CPMK 3 Able to make appropriate decisions in solving economic problems through linear and non-linear function analysis

PLO-PO Matrix

P.O
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 micro and macro economic theory, including: Lines and Series, Linear Functions, Non-Linear Functions, Differentials, Partial Differentials and Integrals and their application in the field of economics. The learning method is carried out in the form of lectures and questions and answers as well as conducting inquiry approach, namely task completion and problem solving

References

Main :

1. Dumairy. 2010.Matematika Terapanuntuk Bisnis dan Ekonomi. edisi ketiga.Yogyakarta:BPFE
2. 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:

1. Jacques, Ian. 2015. Mathematics Economics and Business: Eighth Edition. England: Pearson Education.
2. Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill.

Supporting lecturer	Lifa Farida Panduwinata, S.Pd., M.Pd. Amirusholihin, M.Sc. Heni Purwa Pamungkas, S.Pd., M.Pd. Febrika Yogie Hermanto, S.Pd., M.Pd. Eka Indah Nurlaili, S.Pd., M.Pd.

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:** Assessment rubric **Form of Assessment** : Participatory Activities	Lectures, questions and answers, practice questions 3 X 50		**Material:** Rows and Series **Bibliography:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Rows and Series **Bibliography:** *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*	5%
2	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:** Assessment rubric **Form of Assessment** : Participatory Activities	Lectures, questions and answers, practice questions 3 X 50		**Material:** Rows and Series **Bibliography:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Rows and Series **Bibliography:** *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*	5%

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:** Assessment rubric **Form of Assessment** : Participatory Activities	Lectures, questions and answers, practice questions 3 X 50		**Material:** Linear Functions **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Linear Functions **Reader:** *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*	5%
4	Applying linear functions in microeconomics	4.1 Able to compile demand and supply functions 4.2 Able to calculate market equilibrium prices and quantities 5.1 Able to calculate and analyze market balance after taxes and subsidies 5.2 Able to calculate and analyze cost, revenue, profit, loss and breakeven functions.	**Criteria:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, discussions, practice questions 3 X 50		**Material:** Functions of demand and supply, market balance **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Functions of demand and supply, market balance **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*	5%

5	Applying linear functions in microeconomics	4.1 Able to compile demand and supply functions 4.2 Able to calculate market equilibrium prices and quantities 5.1 Able to calculate and analyze market balance after taxes and subsidies 5.2 Able to calculate and analyze cost, revenue, profit, loss and breakeven functions.	**Criteria:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, discussions, practice questions 3 X 50		**Material:** Market balance after taxes and subsidies Functions of costs, revenues, profits, losses and breakeven. **Bibliography:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Market balance after taxes and subsidies Functions of costs, revenues, profits, losses and breakeven. **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*	5%
6	Applying linear functions in macroeconomics	6.1 Able to calculate and analyze consumption, savings and investment functions 7.1 Able to calculate and analyze transfer, tax and import functions. 7.2 Able to calculate and analyze national income	**Criteria:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, Discussions, Questions and Answers, and 3X 50 Practice Questions		**Material:** Consumption, savings and investment functions **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Functions of consumption, savings and investment **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*	5%

7	Applying linear functions in macroeconomics	6.1 Able to calculate and analyze consumption, savings and investment functions 7.1 Able to calculate and analyze transfer, tax and import functions. 7.2 Able to calculate and analyze national income	**Criteria:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, Discussions, Questions and Answers, and 3X 50 Practice Questions		**Material:** Transfer, tax and import functions of National Income **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Transfer functions, taxes and imports, and National Income **Reader:** *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*	5%
8	MIDTERM EXAM	able to do all UTS questions well	**Criteria:** Assessment rubric **Form of Assessment** : Test	3 X 50		**Material:** - **Library:**	10%
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 10.1. 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:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, questions and answers, practice questions 3 X 50		**Material:** Non-Linear Functions Functions, non-linear supply and demand, non-linear market balance **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Non-Linear Functions Functions, non-linear supply and demand, non-linear market balance **Reader:** *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*	5%

10	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 10.1. 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:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, questions and answers, practice questions 3 X 50		**Material:** Market balance of non-linear functions after taxes and subsidies, cost, revenue, BEP functions for non-linear functions . **Reference:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Market balance of non-linear functions after taxes and subsidies, cost, revenue functions, BEP for non-linear functions. **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*	5%
11	Analyzing the differential rule and its application in economics	Analyzing the differential rule and its application in economics	**Criteria:** Assessment rubric **Form of Assessment** : Participatory Activities	Lectures, Discussions, Practice Questions 3 X 50		**Material:** Differential elasticity of demand, supply and production, marginal cost, marginal revenue and marginal product. **Reference:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Differential elasticity of demand, supply and production, marginal cost, marginal revenue and marginal product **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*	5%

12	Analyzing the differential rule and its application in economics	Analyzing the differential rule and its application in economics	**Criteria:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, Discussions, Practice Questions 3 X 50		**Material:** Marginal cost, marginal revenue and marginal product, Optimum value (maximum profit, minimum total cost, maximum revenue) **References:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Marginal cost, marginal revenue and marginal product, Optimum value (maximum profit, minimum total cost, maximum revenue) **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*	5%
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 Lagrange function 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:** Assessment rubric **Form of Assessment** : Participatory Activities	Lectures, Discussions, Questions and Answers, Practice Questions 3 X 50		**Material:** Partial differential rules, maximum and minimum functions of Lagrange functions. **Library:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Partial differential rules, maximum and minimum functions of the Lagrange function. **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*	5%

14	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 Lagrange function 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:** Assessment rubric **Form of Assessment** : Participatory Activities, Tests	Lectures, Discussions, Questions and Answers, Practice Questions 3 X 50		**Material:** Cross Elasticity, Maximum profit from 2 types of goods, Balance of production and consumption **Reader:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Cross Elasticity, Maximum profit from 2 types of goods, Balance of production and consumption **Reader:** *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*	5%
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:** Assessment rubric **Form of Assessment** : Participatory Activities	Lectures, Discussions, Questions and Answers, Practice Questions 3 X 50		**Material:** Integral Consumer and Producer Surplus **Library:** *Dumairy. 2010. Applied Mathematics for Business and Economics. third edition. Yogyakarta: BPFE* **Material:** Integral Consumer and Producer Surplus **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*	5%
16	FINAL EXAMS	able to do all UAS questions well	**Criteria:** Assessment rubric **Form of Assessment** : Test	3 X 50		**Material:** - **Library:**	20%

Evaluation Percentage Recap: Case Study

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.