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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date
Economic math	8720902128		T=2 P=0 ECTS=3.18	1	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Rochmawati, S.Pd., M.Ak.

Learning model: Case Studies

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

PLO-11	Able to make appropriate decisions in the context of solving problems in their field of expertise, based on the results of information and data analysis

Program Objectives (PO)

PO - 1	Able to apply economic mathematics to solve economic and educational problems in everyday life
PO - 2	Understand mathematical concepts for economics and finance
PO - 3	Able to design and conduct research consisting of formulating problems, processing, analyzing and interpreting data, as well as communicating the results

PLO-PO Matrix

P.O	PLO-11
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 includes a discussion of mathematical economic concepts, including conceptual, linear, nonlinear functions, differential, integral, and practical applications in economics.

References

Main :

1. Du mairy. 2009.Matematika Terapan Untuk Bisnis danEkonomi.Yogyakarta : BPFEKalangi, Joseph Bintang. 2012.MatematikaEkonomi dan Bisnis 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010.Calculus: Business, Economics, and the Social and Life Science.NewYork: McGraw-Hill.Soejoto, Ady & Widyastuti. 2012.MatematikaEkonomi dan Bisnis: Edisi Revisi. Surabaya: Unesa University Press.

Supporters:

Supporting lecturer: Dwi Yuli Rakhmawati, S.Si., M.Si., Ph.D.
Dr. Muhammad Miftah Farid, S.Pd., M.Pd.
Heni Purwa Pamungkas, 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. Calculate the size of the nth term and the sum of all the nth terms in an arithmetic series 2. Calculate business development in year n 3. Calculate the population in year n	**Criteria:** Able to answer questions regarding the material **Form of Assessment** : Participatory Activities	Problem Based Learning and Assignment 6 X 50		**Material:** Analyzing Series **Bibliography:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	5%
2	Analyzing series and their application in economics	1. Calculate the size of the nth term and the sum of all the nth terms in an arithmetic series 2. Calculate business development in year n 3. Calculate the population in year n	**Criteria:** Able to answer questions regarding the material **Form of Assessment** : Participatory Activities	Problem Based Learning and Assignment 6 X 50		**Material:** Analyzing Series **Bibliography:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	5%
3	Identifying the elements and forms of linear functions, constructing linear functions, calculating the values of linear function variables, and applying them in economics.	1. Identify linear functions 2. Determine the form of the function 3. Create a linear function 4. Compile demand and supply functions 5. Calculate the price and balance amount 6. Calculate the price and balance amount, after taxes/subsidies 7. Distinguish between cost and revenue functions 8. Identify profit, loss and breakeven positions 9. State the functions of consumption, savings and investment 10. Identify the functions of expenditure, receipt, transfer payments, taxes and imports 11. Calculate the total national income	**Criteria:** Able to answer questions regarding the material **Form of Assessment** : Participatory Activities	Problem Based Learning and Assignment 3 X 50		**Material:** Analyzing Series **Bibliography:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.* **Material:** Linear Functions **Reference:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	5%

4	Identifying the elements and forms of linear functions, constructing linear functions, calculating the values of linear function variables, and applying them in economics.	1. Identify linear functions 2. Determine the form of the function 3. Create a linear function 4. Compile demand and supply functions 5. Calculate the price and balance amount 6. Calculate the price and balance amount, after taxes/subsidies 7. Distinguish between cost and revenue functions 8. Identify profit, loss and breakeven positions 9. State the functions of consumption, savings and investment 10. Identify the functions of expenditure, receipt, transfer payments, taxes and imports 11. Calculate the total national income	**Criteria:** Able to answer questions about linear functions **Form of Assessment** : Participatory Activities, Portfolio Assessment	Problem Based Learning and Assignment 3 X 50		**Material:** Linear Functions **Reference:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	5%
5	Identifying the elements and forms of linear functions, constructing linear functions, calculating the values of linear function variables, and applying them in economics.	1. Identify linear functions 2. Determine the form of the function 3. Create a linear function 4. Compile demand and supply functions 5. Calculate the price and balance amount 6. Calculate the price and balance amount, after taxes/subsidies 7. Distinguish between cost and revenue functions 8. Identify profit, loss and breakeven positions 9. State the functions of consumption, savings and investment 10. Identify the functions of expenditure, receipt, transfer payments, taxes and imports 11. Calculate the total national income	**Criteria:** Able to answer questions regarding the material **Form of Assessment** : Participatory Activities	Problem Based Learning and Assignment 3 X 50		**Material:** Linear Functions **Reference:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	5%

6	Identifying the elements and forms of linear functions, constructing linear functions, calculating the values of linear function variables, and applying them in economics.	1. Identify linear functions 2. Determine the form of the function 3. Create a linear function 4. Compile demand and supply functions 5. Calculate the price and balance amount 6. Calculate the price and balance amount, after taxes/subsidies 7. Distinguish between cost and revenue functions 8. Identify profit, loss and breakeven positions 9. State the functions of consumption, savings and investment 10. Identify the functions of expenditure, receipt, transfer payments, taxes and imports 11. Calculate the total national income	**Criteria:** Able to answer questions regarding the material **Form of Assessment** : Participatory Activities	Problem Based Learning and Assignment 3 X 50		**Material:** Linear Functions **Reference:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	5%
7	Identifying the elements and forms of linear functions, constructing linear functions, calculating the values of linear function variables, and applying them in economics.	1. Identify linear functions 2. Determine the form of the function 3. Create a linear function 4. Compile demand and supply functions 5. Calculate the price and balance amount 6. Calculate the price and balance amount, after taxes/subsidies 7. Distinguish between cost and revenue functions 8. Identify profit, loss and breakeven positions 9. State the functions of consumption, savings and investment 10. Identify the functions of expenditure, receipt, transfer payments, taxes and imports 11. Calculate the total national income	**Criteria:** Able to answer questions regarding the material **Form of Assessment** : Participatory Activities, Portfolio Assessment	Problem Based Learning and Assignment 3 X 50		**Material:** Linear Functions **Reference:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	10%

8	UTS	Able to answer UTS questions	**Criteria:** Able to answer questions about UTS	2 X 50			20%
9	Identify non-linear functions and their applications in economics	1. Identify forms of nonlinear functions 2. Identify non-linear demand functions. 3. Identify non-linear supply functions 4. Determine the market equilibrium price and quantity 5. Analyze cost and revenue functions 6. Determine the indifference curve 7. Analyze the production function 8. Production transformation curve analysis	**Criteria:** Assessment rubric	Problem Based Learning and Assignment 3 X 50			0%
10	Identify non-linear functions and their applications in economics	1. Identify forms of nonlinear functions 2. Identify non-linear demand functions. 3. Identify non-linear supply functions 4. Determine the market equilibrium price and quantity 5. Analyze cost and revenue functions 6. Determine the indifference curve 7. Analyze the production function 8. Production transformation curve analysis	**Criteria:** Assessment rubric	Problem Based Learning and Assignment 3 X 50			0%
11	Identify non-linear functions and their applications in economics	1. Identify forms of nonlinear functions 2. Identify non-linear demand functions. 3. Identify non-linear supply functions 4. Determine the market equilibrium price and quantity 5. Analyze cost and revenue functions 6. Determine the indifference curve 7. Analyze the production function 8. Production transformation curve analysis	**Criteria:** Assessment rubric	Problem Based Learning and Assignment 3 X 50			0%

12	Identify non-linear functions and their applications in economics	1. Identify forms of nonlinear functions 2. Identify non-linear demand functions. 3. Identify non-linear supply functions 4. Determine the market equilibrium price and quantity 5. Analyze cost and revenue functions 6. Determine the indifference curve 7. Analyze the production function 8. Production transformation curve analysis	**Criteria:** Assessment rubric	Problem Based Learning and Assignment 3 X 50			0%
13	Analyzing the partial differential rule and its application in economics	1. Apply differential rules 2. Calculate the demand elasticity coefficient 3. Calculate the supply elasticity coefficient 4. Calculate the cost function 5. Calculate the acceptance function 6. Apply the partial differential rule 7. Calculate cross elasticity 8. Calculate the maximum profit with 2 outputs 9. Calculate maximum utility given the budget constraint 10. Calculate maximum production given budget constraints	**Criteria:** Assessment rubric	Problem Based Learning and Assignment 6 X 50			0%
14		Students are able to understand differential rules	**Criteria:** Able to solve differential problems **Form of Assessment** : Participatory Activities	1 hour 40 minutes		**Material:** Differential **Bibliography:** *Du Mairy. 2009. Applied Mathematics for Business and Economics. Yogyakarta: BPFEKalangi, Joseph Bintang. 2012. MathematicsEconomics and Business 1 & 2. Jakarta: Salemba Empat.Jacques, Ian. 2006.MathematicsEconomics and Business: Fifth Edition. England: Pearson Education.Hoffmann, Laurance D & Gerald L. Bradley. 2010. Calculus: Business, Economics, and the Social and Life Science. New York: McGraw-Hill. Soejoto, Ady & Widyastuti. 2012. Mathematics, Economics and Business: Revised Edition. Surabaya: Unesa University Press.*	10%

15	Analyze integral rules and apply them in economics	1. Apply the integral rule 2. Identify the production cost function 3. Identify the reception function 4. Identify consumption and savings functions 5. Calculate consumer surplus and producer surplus	**Criteria:** Assessment rubric	Problem Based Learning and Assignment 3 X 50			0%
16	UAS			3 X 50			0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	42.5%
2.	Portfolio Assessment	7.5%
		50%

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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.