	Universitas Negeri Surabaya **Faculty of Mathematics and Natural Sciences** **Undergraduate Chemistry Education Study Program**	**Document Code**

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Monofunctional Organic Compounds	8420403318	Compulsory Study Program Subjects	**T=3**	**P=0**	**ECTS=4.77**	3	June 20, 2022

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	Dr. Mitarlis, S.Pd., M.Si.	Prof. Dr. Suyatno, M.Si.	Prof. Dr. Utiya Azizah, M.Pd.

Learning model	**Case Studies**	
Program Learning Outcomes (PLO)	**PLO study program which is charged to the course**	
	PLO-5	Able to make decisions based on data/information in order to complete tasks that are their responsibility and evaluate performance that has been carried out both individually and in groups, has an entrepreneurial spirit with an environmental perspective (CPL 7)
	PLO-7	Applying logical, critical, systematic and innovative thinking in the context of the development or implementation of science, technology and art that pays attention to and applies humanities values appropriate to the field of chemistry education in solving problems (CPL 5)
	PLO-9	Mastering the principles of K3 (Work Safety and Security), managing the laboratory and using its equipment as well as how to operate chemical instruments (CPL 3)
	PLO-11	Able to demonstrate knowledge related to theoretical concepts about structure, dynamics and energy, as well as basic principles of separation, analysis, synthesis and characterization of chemicals (CPL 1)
	Program Objectives (PO)	
	PO - 1	Utilize learning resources and ICT to support understanding of concepts in functional organic compounds material through discussion and collaboration
	PLO-PO Matrix	

P.O	PLO-5	PLO-7	PLO-9	PLO-11
PO-1				

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																

Short Course Description	Study of knowledge about structural theory, formulas, hybridization, nomenclature, isomers, properties of organic compounds in the aliphatic hydrocarbon group (alkanes, alkenes, alkynes), alicyclics, aromatics, alkyl halides, and the basics of stereochemistry, phenol alcohol compounds and aldehydes ketones, carboxylic acids and their derivatives, and amines, as well as providing skills, scientific attitudes, cooperation and communication skills through learning using the method of question and answer, discussion, assignments and solving questions	
References	**Main :**	

1. Carey, Francis A. 2000.ORGANICCHEMISTRY.fourth edition. TheMcGraw-Hill Companies, Inc. All rights reserved, New York, the United States ofAmerica. ISBN 0-07-290501-8,ISBN 0-07-117499-0 (ISE)
2. Fessenden, R. J. dan Fessenden,J. S. (1998).Kimia Organik. Jilid 1. Jakarta: Erlangga
3. Fessenden, R. J. dan Fessenden,J. S. (1998).Kimia Organik. Jilid 1. Jakarta: Erlangga
4. Hart, H. , Craine, L. E. &Hart, D. J. (2003).Kimia Organik. Suatu Kuliah Singkat. Edisi ke XI. Jakarta: Erlangga.
5. Michael B. Smith and Jerry March, 2007,Advance Organic ChemistryREACTIONS, Mechanism and structure , 6th edition, Published by John Wiley & Sons, Inc. ,Hoboken, New Jersey Published simultaneously in Canada
6. Solomon, T. W. G. & Fryhle, C. B. (2011).Organic Chemistry.New York: John Wiley& Sons, Inc

Supporters:	
Supporting lecturer	Dr. Mitarlis, S.Pd., M.Si. Dr.Hj. Rinaningsih, S.Pd., M.Pd. Dr. Ratih Dewi Saputri, S.Si., M.Si. Dr. Andika Pramudya Wardana, S.Si., M.Si. Nurina Rizka Ramadhania, S.Si. M.Si. Dr. First Ambar Wati, S.Si.

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	Understand molecular structure and can determine the properties of organic compounds	1.1. Explain the basis of structural theory, the classical model of the atom. 2.2. Describe the structure of the atom according to Lewis. 3.3. Design the various structures/isomers 4.4. Distinguish between the classical model of atomic theory and the Bohr model. 5.5. Calculate the formal charge of a substance given its molecular formula. 6.6. Explain the nature of electron dualism according to deBroglie 7.7. Make a diagram of the energy levels of electrons in an atom in the path n= 1,2,3, ... 8.8. Explain that orbital theory is obtained from quantum mechanical atomic theory. 9.9. Explain the structural theory based on the orbital model 10.10. Give an example of atomic structure based on the orbital model 11.11. Explain the orbital shape of the s, p and d subshells. 12.12. Explain the hybridization of an electron. 13.13. Differentiate between sigma bonds and pi bonds, when given the formula for an organic compound.	**Criteria:** 1.Assessment criteria: Qualitative for assessment in the form of non-tests or assignments. Quantitative for assessment criteria in the form of tests such as criteria in the UTS or UAS question grid 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Questions and Answers, Class discussions, Discussion and presentation of case study analysis results on organic chemistry		**Material:** Structural theory: classical model, Bohr atomic model, quantum mechanical atomic model, orbital model, [1, 4, 5] **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Structural theory: classical model, Bohr atomic model, quantum mechanical atomic model, orbital model, [1, 4, 5] **References:** *Solomon, TWG & Fryhle, CB (2011).Organic Chemistry. New York: John Wiley & Sons, Inc*	10%

2	Understand molecular structure and can determine the properties of organic compounds	1.1. Explain the physical properties of compounds based on their structure 2.2. Explain bond theory. 3.3. Predict the effect of chemical bond length 4.4. Calculate the bond dissociation energy. 5.5. Explain the attraction between molecules 6.6. Explain the molecular orbital (MO) theory. 7.7. Explain the theory of delocalization bonds. 8.8. Distinguish between localized bonds and delocalized bonds when given a molecular structure. 9.9. Describe the resonance structure of organic compounds when given their molecular formula/structure.	**Criteria:** 1.In accordance with the assessment guidebook that applies at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Participatory Activities	Questions and Answers, Class discussions, Completion of project assignments, make a summary in the form of a 3 X 50 mind map or concept map		**Material:** Structural theory: Physical properties of compounds based on structure, Molecular orbital theory (MO) and delocalization theory **Bibliography:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%
3	Explain the nomenclature structure of the isomer concept as well as the properties and synthesis of alkene and alkyne compounds.	1.1. Describe the structural form of alkane and cyclo alkane compounds, if the molecular formula is given. 2.2. Give the name of the alkane and cyclo alkane compounds, if the structural formula is given or vice versa. 3.3. Create skeletal isomers given their molecular formulas. 4.4. Explain the conformational isomers of cyclo alkane compounds. 5.5. Explain the physical and chemical properties of alkane and cyclo alkane compounds. 6.6. Designing the synthesis of alkane and cyclo alkane compounds from other compounds	**Criteria:** 1.In accordance with the assessment guidebook that applies at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use Essay questions; Performance assessments and practicum assessments are carried out in an integrated manner with course learning **Form of Assessment** : Participatory Activities	Answer questions, class discussions, completion of project assignments, make a summary (in the form of a mind map) Practice questions 3 X 50		**Material:** Alkanes and cyclo-alkanes: nomenclature, properties, isomers and structure of compound synthesis **. Library:** **Material:** Alkanes and cyclo-alkanes: nomenclature, properties, isomers and structure of compound synthesis. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%

4	Explain conformational geometric isomers and optical isomers in organic compounds	1. Explain geometric isomers in alkenes and alicyclics 2. Explain the conformation of acyclic and cyclic compounds 3. Explain optical isomers in organic compounds 4. Describe the absolute configuration of a chiral compound	**Criteria:** 1. In accordance with the research guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Participatory Activities	Answer questions, class discussions, completion of project assignments, make a summary (in the form of a mind map or concept map) Practice questions 3 X 50		**Material:** Alkenes and alkynes: structure, nomenclature, properties, Isomers and compound synthesis. **Reference:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc*	10%
5	Understanding stereochemical theory includes: geometric isomers in alkenes, geometric isomers in cyclic compounds, conformations of open-chain compounds, forms of cyclic compounds, cyclohexane conformers	1. 1. Explain stereochemistry, geometric isomers in alkenes and cyclic compounds 2. 2. Explain conformational isomers 3. 3. Analyze the types of isomers in compounds 4. 4. Give examples of compounds in each type of isomer	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use Essay questions; Performance assessments and practicum assessments are carried out in an integrated manner with course learning **Form of Assessment** : Participatory Activities	Answer questions, class discussions, completion of project assignments, make a summary (in the form of a mind map or concept map) Practice questions 3 X 50		**Material:** Stereochemical theory includes: geometric isomers in alkenes, geometric isomers in cyclic compounds, conformations of open-chain compounds, forms of cyclic compounds, chirality conformers, absolute and relative configurations and more than one carbon atom. Reference **:** *Fessenden, RJ and Fessenden, JS (1998).Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Stereochemical theory includes: geometric isomers in alkenes, geometric isomers in cyclic compounds, conformations of open-chain compounds, forms of cyclic compounds, chirality conformers, absolute and relative configurations and more than one carbon atom. Reference **:** *Solomon, TWG & Fryhle, CB (2011).Organic Chemistry.New York: John Wiley& Sons, Inc*	5%

6	Explain the nomenclature structure and properties as well as the synthesis of alkyl halogenide compounds as well as the SN-1 and SN-2 reaction mechanisms.	1. Explain the structure of alkyl halide group compounds 2. Explain the physical and chemical properties of alkyl halide group compounds 3. Explain the synthesis reaction of alkyl halide group compounds 4. Explain the mechanism of SN-1 and SN-2 reactions in alkyl halides	**Criteria:** 1. in accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use essay questions. **Form of Assessment** : Participatory Activities	Answer questions, class discussions, completion of project assignments, make a summary (in the form of a mind map or concept map) Practice questions 3 X 50		**Material:** Alkyl halogenides: structure, nomenclature and properties and synthesis of alkyl halogenide compounds. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Alkyl halogenides: structure, nomenclature and properties and synthesis of alkyl halogenide compounds. **Reference:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.*	5%
7	Explain the nomenclature structure and properties as well as the synthesis of alkyl halogenide compounds as well as an introduction to the reaction mechanism SN-1 and SN-2	1. 1. Explain the mechanism of SN1 and SN2 reactions 2. 2. Give examples of SN1 and SN2 reaction applications 3. 3. Create a synthesis reaction for alkyl mono halogenide compounds.	**Criteria:** 1. in accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Participatory Activities	3 X 50 discussion question and answer presentation		**Material:** Alkyl halogenides: structure, nomenclature and properties and synthesis of alkyl halogenide compounds. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%

8	complete UTS	Can complete UTS properly and correctly	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Test	UTS 3 X 50		**Material:** UTS material starting from structural theory, alkanes, alkenes, and alkynes, stereochemistry, and alkyl halide compounds. **Library:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** UTS material starting from structure theory, alkanes, alkenes, and alkynes, stereochemistry, and alkyl halide compounds. **Library:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.*	5%
9	Explain the nomenclature structure and properties of aromatic hydrocarbons and be able to apply substitution reactions for the synthesis of aromatic compounds	1. 1. Explain the molecular structure of aromatic compounds. 2. Explain the relationship between aromatic molecular structure and resonance stability. 3. Explain substitution reactions in aromatic compounds. 4. Explain synthesis reactions in aromatic compounds 2. Describe the structure of monocyclic aromatic hydrocarbons 1. Explain the nomenclature of aromatic hydrocarbons 2. Give the name of the aromatic hydrocarbon according to the rules of nomenclature	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Project Results Assessment / Product Assessment	Questions and Answers, Class discussions, Case studies on aromatic compounds Presentation on analysis results and case studies related to aromatic compounds 1 X 50		**Material:** Aromatic hydrocarbons: structure, nomenclature, properties of aromatic hydrocarbons Reactions of substitution, addition and reaction rules in aromatic rings **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	10%

10	Understand the structure, nomenclature, classification of properties, differences and similarities as well as the synthesis of alcohol – phenol – ether compounds.	1. Explain the structure of alcohol-phenol and ether group compounds 2. Explain the physical and chemical properties of alcohol-phenol and ether group compounds 3 Explain the synthesis reaction of alcohol-phenol and ether group compounds	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discussion Presentation on a case study of the 3 X 50 alcohol-phenol-ether compound		**Material:** Alcohol – phenol – ether: structure, nomenclature, classification of properties, differences and similarities and synthesis. Uses and applications of alcohol, ether and phenol compounds. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%
11	Understand the structure, nomenclature, classification of properties, differences and similarities as well as the synthesis of alcohol – phenol – ether compounds.	1. 1. Classify alcohol compounds based on the number of – OH groups in one molecule. 2. 2. Differentiate the physical properties of alcohol–phenol–ether compounds. 3. 3. Design a reaction to create alcohol–phenol–ether compounds. 4. 4. Analyze the uses and disadvantages of alcohol compounds	**Criteria:** 1. In accordance with the assessment guidelines applicable at Unesa 2. Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Project Results Assessment / Product Assessment	Questions and Answers, Class discussions, Project-based learning assignments to make summaries in the form of concept maps, mind maps) Working on LKM based on mind maps 3 X 50		**Material:** Alcohol, phenol, ether. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Alcohol – phenol – ether: structure, nomenclature, classification of properties, differences and similarities and synthesis. Uses and applications of alcohol, ether and phenol compounds. **Bibliography:** *Solomon, TWG & Fryhle, CB (2011).Organic Chemistry.New York: John Wiley& Sons, Inc*	5%

12	Understand the structure, nomenclature, properties and be able to predict isomers and can design to synthesize carbonyl compounds	1.1. structure of aldehyde and ketone group compounds 2. Explain the physical and chemical properties of aldehyde and ketone group compounds 3. Explain the synthesis reaction of aldehyde and ketone group compounds 2.4. Explain the uses of aldehyde and ketone compounds	**Criteria:** 1.In accordance with the assessment guidelines applicable at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Questions and Answers, Class discussions, Project-based learning Completion of project assignments making a summary in the form of a concept map or mind map) 3 X 50		**Material:** Aldehyde and ketone material **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Aldehyde and ketone materials **Reference:** *Solomon, TWG & Fryhle, CB (2011).Organic Chemistry. New York: John Wiley& Sons, Inc* **Material:** Carbonyl compounds include: aldehydes and ketones, structure, nomenclature, properties, isomers and compound synthesis. **Reference:** *Solomon, TWG & Fryhle, CB (2011). Organic Chemistry. New York: John Wiley & Sons, Inc.*	5%
13	Explain the structure, nomenclature, isomers, properties, especially acidity and synthesis of carboxylic acids and their derivatives	1. Explain the structure of carboxylic acid group compounds and their derivatives 2. Explain the physical and chemical properties of carboxylic acid group compounds and their derivatives 3. Explain the synthesis reactions of carboxylic acid group compounds and their derivatives	**Criteria:** 1.In accordance with the assessment guidelines applicable at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Questions and Answers, Class discussions, Project-based learning Completion of project assignments making a summary in the form of a concept map or mind map) 3 X 50		**Material:** Carboxylic acid derivative material. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga* **Material:** Carboxylic acid derivative material **Reference:** *Solomon, TWG & Fryhle, CB (2011).Organic Chemistry. New York: John Wiley& Sons, Inc* **Material:** 1. Carboxylic acids: structure, nomenclature, isomers, properties and synthesis 2. Carboxylic acid derivatives: structure, nomenclature, isomers, properties and synthesis. **Bibliography:** *Solomon, TWG & Fryhle, CB (2011).Organic Chemistry.New York: John Wiley& Sons, Inc*	5%

14	Understand the structure, nomenclature, isomers, properties, especially acidity and synthesis of carboxylic acids and their derivatives	1.1. Explain the structure and nomenclature of carboxylic acid derivatives 2.2. Explain the reactions that occur in carboxylated acid derivative compounds 3.3. Explain the reaction for making carboxylated acid derivatives	**Criteria:** 1.In accordance with the assessment guidelines applicable at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Questions and Answers, Class discussions, Project-based learning Completion of project assignments making a summary in the form of a concept map or mind map) 3 X 50		**Material:** carboxylic acid derivative material. **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%
15	Explain the structure, nomenclature, properties (basicity), reactions, and synthesis of amine compounds.	1. Explain the structure of amine group compounds 2. Explain the physical and chemical properties of amine group compounds 3. Explain the synthesis reaction of amine group compounds	**Criteria:** 1.In accordance with the assessment guidelines applicable at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Questions and Answers, Class discussions, Project-based learning Completion of project assignments making a summary in the form of a concept map or mind map) 3 X 50		**Material:** Amine: structure, nomenclature, properties and synthesis of amines **Reference:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	5%
16	complete the UAS with the material that has been studied	can complete the UAS well and correctly	**Criteria:** 1.In accordance with the assessment guidebook that applies at Unesa 2.Participation with a weight of 20%; Tasks with a weight of 30%; UTS with a weight of 20%; UAS with a weight of 30%; UTS and UAS use multiple choice questions and essays. **Form of Assessment** : Test	Test method: UAS 2 X 50		**Material:** Material according to what has been discussed. **References:** *Fessenden, RJ and Fessenden, JS (1998). Organic Chemistry. Volume 1. Jakarta: Erlangga*	10%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	52.5%
2.	Project Results Assessment / Product Assessment	25%
3.	Portfolio Assessment	7.5%
4.	Test	15%
		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.