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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
General Physics	8420103045	Compulsory Study Program Subjects	T=3	P=0	ECTS=4.77	1	April 27, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	Muhamad Arif Mahdiannur	Dr. Mohammad Budiyanto, M.Pd.	Prof. Dr. Erman, M.Pd.

Learning model	**Project Based Learning**

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

Program Objectives (PO)

PO - 1	Able to show a responsible attitude, demonstrate a scientific, critical and innovative attitude independently during the lecture process
PO - 2	Able to master the basic substantive concepts of Newtonian mechanics and their application to solve problems in everyday life
PO - 3	Able to demonstrate independent, quality and measurable performance as well as make appropriate decisions and be able to work individually and in a team
PO - 4	Able to plan, carry out and evaluate experimental activities related to basic mechanics according to substantive and procedural concepts as well as science process skills

PLO-PO Matrix

P.O
PO-1
PO-2
PO-3
PO-4

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																
PO-4																

Short Course Description

This course discusses facts, concepts, principles/laws, and measurement procedures, kinematics, dynamics, temperature, heat, and heat transfer. Lectures are carried out with discussions, laboratory activities (inquiry, experiments, and/or problem solving). Assessment includes observation of attitude and activity, assignments, written tests, and performance assessments.

References

Main :

1. Bueche, F.J., 2000. Schaum's Outline of College Physics, Mc Graw-Hill.
2. Jatmiko, B. , Widodo, W. , Budiyanto, Martini. 2015. Fisika Umum. Surabaya: Unesa Unipress.
3. Giancoli, Douglas. 2009. Fisika. Jakarta: Erlangga.

Supporters:

Supporting lecturer	Prof.Dr. Wahono Widodo, M.Si. Dr. Elok Sudibyo, S.Pd.,M.Pd. Dr. Mohammad Budiyanto, S.Pd., M.Pd. Tutut Nurita, S.Pd., M.Pd. Laily Rosdiana, S.Pd., M.Pd. An Nuril Maulida Fauziah, S.Pd., M.Pd. Muhamad Arif Mahdiannur, S.Pd., M.Pd. Dyah Permata Sari, 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	Master the concept of measurement and sources of measurement uncertainty, apply it in measuring an object using appropriate measuring tools, and solve measurement problems using procedural problem solving formulations in everyday life.	1. Explain the concept of measurement using certain tools according to the object being measured 2. Determine the sources of measurement uncertainty 3. Using the concept of significant figures in the measurement process 4. Explain the use of tools to measure length, mass and time 5. Determine the measuring instrument that is appropriate to the object to be measured 6. Carry out the steps of the scientific method in solving examples of measurement problems 7. Prepare practical reports related to measurement activities 8. Utilizing science and technology in solving examples of measurement problems	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Tests	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Quantities and Units **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Quantities and Units **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Quantities and Units **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Quantities and Units **References:** *Giancoli, D. (2009). Physics [Translation]. Erlangga* **Material:** Quantities and Units **References:** *Bueche, FJ (2000). Schaum's outline of college physics. Mc Graw-Hill* **Material:**	5%

						Quantities and Units **References:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall* **Material:** Quantities and Units **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	

2	Master basic knowledge about quantities and units, as well as vectors in a comprehensive and in-depth manner and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Identify and classify quantities and units 2. Explain the system of units and convert units 3. Explain vector quantities and scalar quantities 4. Describe equations and describe addition and subtraction of vectors using triangle and parallelogram matodes 5. Utilizing science and technology in solving examples of scale problems	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Practical Assessment	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 2 x 60'	**Material:** Quantities, Units, and Vectors **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Quantities, Units, and Vectors **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Quantities, Units, and Vectors **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Quantities, Units, and Vectors **References:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall* **Material:** Quantities, Units, and Vectors **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	10%

3	Master the basic knowledge of motion in one dimension and two dimensions comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Describe and apply the equations of position, displacement, speed and acceleration in one-dimensional motion 2. Distinguish between radial acceleration and tangential acceleration	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Practical Assessment	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Straight Motion **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Straight Motion **Reference:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Rectilinear Motion **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Straight Motion **Reference:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	10%

4	Master the basic knowledge of motion in one dimension and two dimensions comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Describe and apply the equations of uniform circular motion (GMB) and uniformly changing circular motion (GMBB) 2. Describe two-dimensional motion in projectile motion	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Practical Assessment	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Circular Motion **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Circular Motion **Reference:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Circular Motion **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Circular Motion **Reference:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	5%

5	Master the basic knowledge of motion in one dimension and two dimensions comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Create and interpret position, velocity and acceleration time function graphs for rectilinear motion, projectile motion and circular motion 2. Solve motion problems in one and two dimensions 3. Utilizing science and technology in solving examples of straight and curved motion problems	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities	- -	Cased-based learning and peer-interaction (synchronous) via Zoom/Google Meet Asynchronous via LMS Unesa 3 x 50‘ & 3 x 60‘	**Material:** Straight Motion, Projectile Motion, and Circular Motion **References:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall* **Material:** Straight Motion, Projectile Motion, and Circular Motion **Reference:** *Bueche, FJ (2000). Schaum‘s outline of college physics. Mc Graw-Hill* **Material:** Straight Motion, Projectile Motion, and Circular Motion **Reference:** *Giancoli, D. (2009). Physics [Translation]. Erlangga*	5%
6	Master basic knowledge of dynamics, comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Explain and apply Newton‘s first law of motion 2. Explain and apply Newton‘s second law of motion	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Practical Assessment	Cased-based learning and peer-interaction 3 x 50‘	Asynchronous via LMS Unesa 3 x 60‘	**Material:** Newton‘s Laws **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky‘s university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Newton‘s Laws **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Newton‘s Laws **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D.*	10%

						(2015). Physics for AP® Courses. Rice University **Material:** Newton's Laws **Reference:** *Giancoli, D. (2009). Physics [Translation]. Erlangga* **Material:** Newton's Laws **Reference:** *Bueche, FJ (2000). Schaum's outline of college physics. Mc Graw-Hill* **Material:** Newton's Laws **References:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall* **Material:** Newton's Laws **Reference:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	

7	Master basic knowledge of dynamics, comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Distinguish between mass and weight 2. Explain and apply Newton's third law of action-reaction 3. Formulate centripetal forces in GMB and GMBB and solve problems related to dynamics 4. Utilizing science and technology in solving examples of problems with the dynamics of object motion	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Newton's Laws **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Newton's Laws **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Newton's Laws **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Newton's Laws **Reference:** *Giancoli, D. (2009). Physics [Translation]. Erlangga* **Material:** Newton's Laws **Reference:** *Bueche, FJ (2000). Schaum's outline of college physics. Mc Graw-Hill* **Material:** Newton's Laws **References:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall*	5%

8	-	Sub-CPMK 1 to 7	**Criteria:** Accuracy and mastery according to the UTS assessment indicators (assessment rubric). **Form of Assessment** : Test	Mid-Semester Evaluation/Mid-Semester Examination (UTS) 2 x 50'	- -	**Material:** - **Library:**	0%
9	Master basic knowledge related to work and energy, comprehensively and in depth and be able to develop and apply it to study higher physics knowledge in accordance with developments in science and technology	1. Explain and formulate work by constant forces and changing forces 2. Explain and formulate kinetic energy and the work-energy theorem 3. Explaining conservative forces and formulating efforts by conservative forces 4. Explain and formulate potential energy and the work-energy theorem	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Forms of Assessment** : Participatory Activities, Practical Assessment, Tests	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Work and Energy **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Work and Energy **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Work and Energy **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Business and Energy **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	10%
10	Master the basic knowledge of work, energy and power in a comprehensive and in-depth manner and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Explain non-conservative forces and formulate efforts by non-conservative forces 2. Explain and apply the law of conservation of energy and power	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Forms of Assessment** : Participatory Activities, Practical Assessment, Tests	- -	Synchronous via Forum and Chat on LMS Unesa Asynchronous via Lessons on LMS Unesa 3 x 50' & 3 x 60'	**Material:** Work, Energy, and Power **Library:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th*	10%

		3. Utilizing science and technology in solving examples of power problems				*ed.). Addison-Wesley* **Material:** Work, Energy, and Power **Library:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Work, Energy, and Power **Library:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Work, Energy, and Power **Library:** *Giancoli, D. (2009). Physics [Translation]. Erlangga* **Material:** Work, Energy, and Power **Library:** *Bueche, FJ (2000). Schaum's outline of college physics. Mc Graw-Hill* **Material:** Work, Energy, and Power **Library:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall* **Material:** Work, Energy, and Power **Library:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	

11	Master basic knowledge of collisions and momentum in a comprehensive and in-depth manner and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Describe collision and momentum 2. Explain and apply the collision and momentum equations	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Forms of Assessment** : Participatory Activities, Practical Assessment, Tests	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Collision and Momentum **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Collision and Momentum **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Collisions and Momentum **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University*	5%

12	Master the concept of the law of conservation of momentum, impulse, and the momentum-impulse theorem comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with the development of science and technology	1. Explain and formulate the conservation of momentum and impulse 2. Graph the momentum-impulse theorem	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Tests	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Momentum Conservation, Impulse, and Momentum-Impulse Theorem **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Momentum Conservation, Impulse, and Momentum-Impulse Theorem **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Momentum Conservation, Impulse, and Momentum-Impulse Theorem **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Momentum Conservation, Impulse, and Momentum-Impulse Theorem **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	10%

13	Master the basic knowledge of rotation of rigid bodies in a comprehensive and in-depth manner and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Explain the concept of rigid bodies with the concept of rotation of rigid bodies 2. Explain and calculate the amount of energy in the rotational motion of a rigid body	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Tests	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Rotation of Rigid Bodies **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Rotation of Rigid Bodies **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Rotation of Rigid Bodies **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Rotation of Rigid Bodies **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	5%

14	Master basic knowledge of rotational dynamics of rigid bodies in a comprehensive and in-depth manner and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Explain the concept of torque 2. Calculate the magnitude of the angular acceleration for a rigid body 3. Calculate the amount of work and rotational power of a rigid object	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Form of Assessment** : Participatory Activities, Tests	Cased-based learning and peer-interaction 3 x 50'	Asynchronous via LMS Unesa 3 x 60'	**Material:** Rotational Dynamics of Rigid Bodies **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Rotational Dynamics of Rigid Bodies **References:** *Giambattista, A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill* **Material:** Rotational Dynamics of Rigid Bodies **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Rotational Dynamics of Rigid Bodies **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	5%
15	Master the basic knowledge of equilibrium of rigid bodies comprehensively and in depth and be able to develop and apply it to study higher knowledge of physics in accordance with developments in science and technology	1. Explain the conditions that allow equilibrium of a rigid body to occur 2. Explain and determine the concept of center of gravity in a rigid body 3. Explain the application of the concept of equilibrium of a rigid body	**Criteria:** Accuracy and mastery according to assessment indicators (assessment rubric) **Forms of Assessment** : Participatory Activities, Portfolio Assessment, Tests	- -	Synchronous via Forum and Chat on LMS Unesa Asynchronous via Lessons on LMS Unesa 3 x 50' & 3 x 60'	**Material:** Equilibrium of Rigid Bodies **References:** *Young, HD, Freedman, RA, & Ford, AL (2012). Sears and Zemansky's university physics: with modern physics (13th ed.). Addison-Wesley* **Material:** Equilibrium of Rigid Bodies **References:** *Giambattista,*	5%

						A., Richardson, BM, & Richardson, RC (2010). College physics (2nd ed.). McGraw-Hill **Material:** Equilibrium of Rigid Bodies **References:** *Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., Anderson, D., Czuba, N., ... & Ingram, D. (2015). Physics for AP® Courses. Rice University* **Material:** Equilibrium of Rigid Bodies **References:** *Giancoli, D. (2009). Physics [Translation]. Erlangga* **Material:** Equilibrium of Rigid Bodies **References:** *Bueche, FJ (2000). Schaum's outline of college physics. Mc Graw-Hill* **Material:** Equilibrium of Rigid Bodies **References:** *Ewen, D., Schurter, N., & Gundersen, PE (2012). Applied physics (10th ed.). Prentice Hall* **Material:** Equilibrium of Rigid Bodies **References:** *Jatmiko, B., Widodo, W., Budiyanto, M., & Martini. (2015). General Physics. Unesa Unipress*	
16	-	Sub-CPMK 1 to 14	**Criteria:** Accuracy and mastery according to the UAS assessment indicators (assessment rubric). **Form of Assessment** : Test	Final Semester Evaluation/Final Semester Examination (UAS) 2 x 50'	- -	**Material:** - **Library:**	0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	50%
2.	Portfolio Assessment	1.67%
3.	Practical Assessment	25.83%
4.	Test	22.5%
		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.