| | Universitas Negeri Surabaya<br>Faculty of Engineering,<br>Mechanical Engineering Undergraduate Study Program | | | Document Code | |
|---|---|---|---|---|---|

## SEMESTER LEARNING PLAN

| Courses | | CODE | Course Family | Credit Weight | | | SEMESTER | Compilation Date |
|---|---|---|---|---|---|---|---|---|
| CNC | | 2120103013 | | T=3 | P=0 | ECTS=4.77 | 6 | July 18, 2024 |
| AUTHORIZATION | | SP Developer | | Course Cluster Coordinator | | | Study Program Coordinator | |
| | | ...................................... | | ...................................... | | | Ir. Priyo Heru Adiwibowo, S.T., M.T. | |

| Learning model | Case Studies |
|---|---|
| Program Learning Outcomes (PLO) | **PLO study program that is charged to the course** |
| | **Program Objectives (PO)** |
| | **PLO-PO Matrix** |

| | P.O |
|---|---|

**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 |

| Short Course Description | Course Description This course is an understanding of programming, programmatic mastery of making workpieces with a Turning (Computer Numerically Controlled) machine and its development |
|---|---|
| References | **Main :** |

1. Refrensi Mata KuliahEmco. 1992. Student handbook TU 2A. AustriaMesin CNC TU-2A Emco Austria

| | **Supporters:** |
|---|---|
| | |
| Supporting lecturer | Nur Aini Susanti, 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 | Skilled in defining the Basic Concepts of CNC lathes and Applications of G00 and G01 Functions | 1.Skilled in defining the working principles of CNC machines 2.Skilled in designing G01 programs 3.Skilled at piloting programs 4.Skilled in operating machines | | Lectures, discussions, questions and answers 6 X 50 | | | 0% |
| 2 | Skilled in using G84 and G88 Function Application tool positioning | 1.Skilled in determining the initial position of the chisel 2.Skilled in designing G84 programs 3.Skilled at piloting programs 4.Skilled in operating machines | | 6 X 50 | | | 0% |
| 3 | Skilled in using G02 and G03 Function Applications without M99 | 1.Skilled in designing G02 and G03 programs without M99 2.Skilled at piloting programs 3.Skilled in operating machines | | G02 and G03 Function Application without M99 6 X 50 | | | 0% |
| 4 | Skilled in using G02 and G03 Function Applications with M99 | 1.Skilled in designing G02 and G03 programs with M99 2.Skilled at piloting programs 3.Skilled in operating machines | | 6 X 50 | | | 0% |
| 5 | Skilled in using the G25 Function Application | 1.Skilled in designing G25 programs 2.Skilled at piloting programs 3.Skilled in operating machines | | 6 X 50 | | | 0% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **6** | Skilled in using M06, G85, G89, Function Applications | 1.Skilled in designing M06, G85, G89 programs 2.Skilled at piloting programs 3.Skilled in operating machines | | 6 X 50 | | | 0% |
| **7** | Skilled in using G86 and G78 Function Applications | 1.Skilled in designing G86 and G78 programs 2.Skilled at piloting programs 3.Skilled in operating machines | | G86 and G78 6 X 50 Function Application | | | 0% |
| **8** | UTS | 1.Skilled in designing programs 2.Skilled at piloting programs 3.Skilled in operating machines | | 6 X 50 | | | 0% |
| **9** | Skilled in defining the Basic Concepts of CNC Milling Machines and Applications of G00 and G01 Functions | 1.Skilled in defining the working principles of CNC machines 2.Skilled in designing G00 & G01 programs 3.Skilled in piloting G00 & G01 programs 4.Skilled in operating machines | | 6 X 50 | | | 0% |
| **10** | Skilled in determining chisel position and M06 applications | Skilled in determining the initial position of the chisel and the M06 Application | | 6 X 50 | | | 0% |
| **11** | | | | | | | 0% |
| **12** | | | | | | | 0% |
| **13** | | | | | | | 0% |
| **14** | | | | | | | 0% |
| **15** | | | | | | | 0% |
| **16** | | | | | | | 0% |

**Evaluation Percentage Recap: Case Study**

| No | Evaluation | Percentage |
|---|---|---|
| | | 0% |

**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.