



**Universitas Negeri Surabaya**  
**Faculty of Engineering,**  
**Mechanical Engineering Education Undergraduate Study**  
**Program**

Document Code

**SEMESTER LEARNING PLAN**

|  |  |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|--|--|--|-----------------------------------|--|--------------------------|--|------------------------------|---|---|----|----|----|----|----|----|----|--|-----|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| <b>Courses</b>                         | <b>CODE</b>  | <b>Course Family</b>   | <b>Credit Weight</b>              | <b>SEMESTER</b>  | <b>Compilation Date</b>  |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| Gasoline Motor Technology Practice     | 8320303147   |  | T=3 P=0 ECTS=4.77                 | 5  | July 18, 2024            |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>AUTHORIZATION</b>                   |  | <b>SP Developer</b>  | <b>Course Cluster Coordinator</b> | <b>Study Program Coordinator</b>   |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|  |  | .....  | .....                             | Ir. Wahyu Dwi Kurniawan,<br>S.Pd., M.Pd.                                       |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>Learning model</b>                  | Case Studies   |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>Program Learning Outcomes (PLO)</b> | 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)   |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|  |  | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td rowspan="2" style="width: 5%;">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> </table> |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  | P.O | Week |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| P.O                                    | Week   |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|  | 1  | 2  | 3                                 | 4  | 5                        | 6  | 7                            | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>Short Course Description</b>        | Tune up, disassemble, measure and find out how gasoline motorbike components work, including: cooling system, lubrication, fuel, ignition, and how to overcome problems if problems occur. |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>References</b>                      | <b>Main :</b>  |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|  | 1. Toyota. 1985. <i>Manual MotorBensin Toyota 2K, 3K, dan 4K. Manual MotorBensin Daihatsu Espass. ManualMotor Bensin Suzuki.</i>   |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|  | <b>Supporters:</b>   |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>Supporting lecturer</b>             | I MADE MULIATNA<br>Prof. Dr. Muhaji, S.T., M.T.<br>Prof. Dr. I Made Arsana, S.Pd., M.T.<br>Dr. Warju, S.Pd., S.T., M.T.<br>Rachmad Syarifudin Hidayatullah, S.Pd., M.Pd.                   |  |                                   |  |                          |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| <b>Week-</b>                           | <b>Final abilities of each learning stage (Sub-PO)</b>   | <b>Evaluation</b>  |                                   | <b>Help Learning, Learning methods, Student Assignments, [ Estimated time]</b> |                          | <b>Learning materials [ References ]</b> | <b>Assessment Weight (%)</b> |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|  |  | <b>Indicator</b>   | <b>Criteria &amp; Form</b>        | <b>Offline ( offline )</b>   | <b>Online ( online )</b> |  |                              |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| (1)                                    | (2)  | (3)  | (4)                               | (5)  | (6)                      | (7)                                      | (8)                          |   |   |    |    |    |    |    |    |    |  |     |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |

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|---|---|--|---|---|--|--|----|
| 1 | Students can find out the systematics of lectures on diesel motor technology practice | A) Students can explain how to assess, B) Students can explain assignments and evaluation methods,   | <b>Criteria:</b><br>non-test  | online, siakbraind stoming, Lecture 6 X 50  |  |  | 0% |
| 2 | Students can practice diesel motorbikes in workshops (du/di) around where they live   | A) Students can help with work, maintenance and repair of diesel motorbikes according to the standards of the workshop they occupy, B) Students can comment on work in the workshop in video form  | <b>Criteria:</b><br>attached  | Problem base leaning 6 X 50   |  |  | 0% |
| 3 | Perform platinum adjustments  | Students can practice adjusting the platinum gap, measure the dwell angle and carry out an in-depth analysis of the effect of the platinum gap on the dwell angle and rpm of petrol motorbikes using dwell testes and tachometers in accordance with the SOP within the specified time | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stomping, scientific, direct instruction, problem based instruction 6 X 50 |  |  | 0% |
| 4 | Perform valve adjustments   | Students can carry out valve adjustment practices, in top 1, 2, 3, 4, carry out an in-depth analysis of the effect of valve gap size on compression using a compression tester in accordance with the SOP  | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stomping, scientific, direct instruction, problem based instruction 6 X 50 |  |  | 0% |
| 5 | Disassemble and learn how the cooling and lubrication system works                    | Students can carry out disassembly, check component conditions, analysis, repair, assembly according to the SOP within the specified time  | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stomping, scientific, direct instruction, problem based instruction 6 X 50 |  |  | 0% |
| 6 | Disassemble and learn how the fuel system works                                       | Students can practice disassembling, analyzing how components work, analyzing the condition of components, carrying out repairs, assembling and ingesting fuel systems in accordance with the SOP within the specified time  | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stomping, scientific, direct instruction, problem based instruction 6 X 50 |  |  | 0% |

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|---|--|---|---|--|--|--|----|
| 7 | Dismantling and adjusting the carburetor | Students can practice disassembling, analyzing how things work, analyzing conditions, repairing, assembling and adjusting, as well as conducting experiments on the influence of the air and fuel mixture by changing the diameter of the air flow slow jet using a tachometer, in accordance with the SOP. | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions   | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 8 | UTS                                      | Students can carry out ignition system competency according to the SOP within the specified time  | <b>Criteria:</b><br>1.If the work results are in accordance with the SOP and the specified time = 100. If the work is in accordance with the SOP but does not comply with the specified time = 70.<br>2.If the work is in accordance with the specified time but not in accordance with the SOP = 50. If the work is not in accordance with the SOP and the specified time = 30 | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 9 | UTS                                      | Students can work on the job sheet according to the SOP within the specified time   | <b>Criteria:</b><br>1.If the work results are in accordance with the SOP and the specified time = 100.<br>2.If the work complies with the SOP but does not comply with the specified time = 70.<br>3.If the work is in accordance with the specified time but not in accordance with the SOP = 50.<br>4.If the work does not comply with the SOP and the specified time = 30    | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |

|    |   |   |   |  |  |  |    |
|----|---|---|---|--|--|--|----|
| 10 | Carrying out petrol motorbike overhaul (dismantling and cleaning)       | Students can practice disassembling petrol motorbikes, cleaning motorbike components according to the SOP, and storing components according to K3 procedures according to the specified time. | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 11 | Carrying out a petrol motorbike overhaul (measurement and inspection 1) | Students can read and carry out simulation practices using measuring instruments according to the SOP within the specified time   | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 12 | Overhauling petrol motorbikes (Measurement and inspection 2)            | Students can practice measuring petrol motorbike components and carry out analysis according to the SOP within the specified time   | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 13 | Overhauling a petrol motorbike (Assembly 1)                             | Students can practice measuring gasoline motorbike components and carry out analysis and assembly according to SOP within the specified time  | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 14 | Overhauling a petrol motorbike (Assembly 2)                             | Students can assemble gasoline motorbike components according to the SOP within the specified time  | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 0% |
| 15 | Perform a final check (reset)   | Students can assemble petrol motorbike components, adjust them according to the SOP within the specified time   | <b>Criteria:</b><br>Report format: Title, objectives, tools and materials, theoretical study, work safety, work steps, practicum results data, data analysis, conclusions | Structured practice, brain stumping, scientific, direct instruction, problem based instruction<br>6 X 50 |  |  | 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.