| *Program Educational Objective* | *Program Student Outcome* | *ABET (a)-(k)* | *Program Courses Supporting the Program Outcome* |
| --- | --- | --- | --- |
| PEO 1 | SO-1 (H) | (b) | [104D4112]; [205D4112]; [203D4112]; [202D4112]; [016U0033]; [020U0033]; [101D4113]; [017U0033]; [022U0033]; [105D4123]; [201D4113]; [204D4112]; [206D4112]; [106D4122]; [103D4112]; [102D4112];  [344D4122]; [321D4112]; [322D4113]; [354D4122]; [343D4122]; [304D4112]; [213D4122]; [212D4122]; [210D4123]; [211D4122]; [215D4122]; [216D4122];  [305D4112]; [306D4112]; [307D4112]; [308D4112]; [309D4112]; [310D4112]; [348D4122]; [349D4122]; [350D4122]; [351D4122]; [352D4122]; [312D4112]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [379D4123]; [336D4113]; [380D4123]; [335D4113]; [319D4113]; [333D4113]; [331D4112]; [375D4122]; [353D4122]; [311D4113]; [303D4112]; [219D4121]; [217D4122]; [214D4122] |
| SO-2; SO-6; SO-7 (M) | (a), (b), (c), (d), (f), (g), (j) | [212D4122]; [213D4122]; [301D4112]; [302D4112]; [303D4112]; [354D4122]; [321D4112]; [353D4122]; [342D4122]; [216D4122]; [109D4121]; [107D4122]; [106D4122]; [214D4122]; [215D4122]; [311D4113]  [207D4111]; [208D4111]; [209D4111]; [307D4112]; [348D4122]; [349D4122]; [350D4122]; [352D4122]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [336D4113]; [319D4113]; [333D4113]; [331D4112]; [372D4123]; [311D4113]; [218D4121]; [109D4121]; [108D4121]; [217D4122]; [219D4121]; [375D4122]; [335D4113]; [380D4123]; [379D4123]  [304D4112]; [342D4122]; [343D4122]; [402D4112]; [330D4112]; [337D4112]; [334D4112]; [493D4122]; [211D4122]; [210D4123]; [206D4112]; [201D4113]; [022U0033]; [017U0033]; [372D4123]; [380D4123]; [379D4123] |
| SO-3; SO-4; SO-5 (L) | (e), (g), (h), (i) | [010U0032]; [403D4112]; [492D4122]; [491D4124]; [401D4112]; [009U0032]; [493D4122]  [401D4112]; [402D4112]; [344D4122]; [007U0032]; [008U0032]; [301D4112]; [345D4122]  [011U0032]; [012U0032]; [403D4112]; [492D4122]; [401D4112]; [345D4122]; [218D4121]; [491D4124]; [493D4122] |

| *Program Educational Objective* | *Program Student Outcome* | *ABET (a)-(k)* | *Program Courses Supporting the Program Outcome* |
| --- | --- | --- | --- |
| PEO 2 | SO-4; SO-6 (H) | (a), (c), (h), (i), | [401D4112]; [402D4112]; [344D4122]; [007U0032]; [008U0032]; [301D4112]; [345D4122]  [207D4111]; [208D4111]; [209D4111]; [307D4112]; [348D4122]; [349D4122]; [350D4122]; [352D4122]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [336D4113]; [319D4113]; [333D4113]; [331D4112]; [372D4123]; [311D4113]; [218D4121]; [109D4121]; [108D4121]; [217D4122]; [219D4121]; [375D4122]; [335D4113]; [380D4123]; [379D4123] |
| SO-1; SO-2 (M) | (a), (b), (d), (f), (j) | [104D4112]; [205D4112]; [203D4112]; [202D4112]; [016U0033]; [020U0033]; [101D4113]; [017U0033]; [022U0033]; [105D4123]; [201D4113]; [204D4112]; [206D4112]; [106D4122]; [103D4112]; [102D4112];  [344D4122]; [321D4112]; [322D4113]; [354D4122]; [343D4122]; [304D4112]; [213D4122]; [212D4122]; [210D4123]; [211D4122]; [215D4122]; [216D4122];  [305D4112]; [306D4112]; [307D4112]; [308D4112]; [309D4112]; [310D4112]; [348D4122]; [349D4122]; [350D4122]; [351D4122]; [352D4122]; [312D4112]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [379D4123]; [336D4113]; [380D4123]; [335D4113]; [319D4113]; [333D4113]; [331D4112]; [375D4122]; [353D4122]; [311D4113]; [303D4112]; [219D4121]; [217D4122]; [214D4122]  [212D4122]; [213D4122]; [301D4112]; [302D4112]; [303D4112]; [354D4122]; [321D4112]; [353D4122]; [342D4122]; [216D4122]; [109D4121]; [107D4122]; [106D4122]; [214D4122]; [215D4122]; [311D4113] |
| SO-3; SO-5; SO-7 (L) | (b), (d), (e), (f) (g), (h), (j) | [010U0032]; [403D4112]; [492D4122]; [491D4124]; [401D4112]; [009U0032]; [493D4122]  [011U0032]; [012U0032]; [403D4112]; [492D4122]; [401D4112]; [345D4122]; [218D4121]; [491D4124]; [493D4122]  [304D4112]; [342D4122]; [343D4122]; [402D4112]; [330D4112]; [337D4112]; [334D4112]; [493D4122]; [211D4122]; [210D4123]; [206D4112]; [201D4113]; [022U0033]; [017U0033]; [372D4123]; [380D4123]; [379D4123] |

| *Program Educational Objective* | *Program Student Outcome* | *ABET (a)-(k)* | *Program Courses Supporting the Program Outcome* |
| --- | --- | --- | --- |
| PEO 3 | SO-3; SO-5 (H) | (e), (g), (h) | [010U0032]; [403D4112]; [492D4122]; [491D4124]; [401D4112]; [009U0032]; [493D4122]  [011U0032]; [012U0032]; [403D4112]; [492D4122]; [401D4112]; [345D4122]; [218D4121]; [491D4124]; [493D4122] |
| SO-2; SO-4 (M) | (a), (d), (f), (h), (i), (j) | [212D4122]; [213D4122]; [301D4112]; [302D4112]; [303D4112]; [354D4122]; [321D4112]; [353D4122]; [342D4122]; [216D4122]; [109D4121]; [107D4122]; [106D4122]; [214D4122]; [215D4122]; [311D4113]  [401D4112]; [402D4112]; [344D4122]; [007U0032]; [008U0032]; [301D4112]; [345D4122] |
| SO-1; SO-6; SO-7 (L) | (a), (b), (c), (d), (f), (g), (j) | [104D4112]; [205D4112]; [203D4112]; [202D4112]; [016U0033]; [020U0033]; [101D4113]; [017U0033]; [022U0033]; [105D4123]; [201D4113]; [204D4112]; [206D4112]; [106D4122]; [103D4112]; [102D4112];  [344D4122]; [321D4112]; [322D4113]; [354D4122]; [343D4122]; [304D4112]; [213D4122]; [212D4122]; [210D4123]; [211D4122]; [215D4122]; [216D4122];  [305D4112]; [306D4112]; [307D4112]; [308D4112]; [309D4112]; [310D4112]; [348D4122]; [349D4122]; [350D4122]; [351D4122]; [352D4122]; [312D4112]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [379D4123]; [336D4113]; [380D4123]; [335D4113]; [319D4113]; [333D4113]; [331D4112]; [375D4122]; [353D4122]; [311D4113]; [303D4112]; [219D4121]; [217D4122]; [214D4122]  [207D4111]; [208D4111]; [209D4111]; [307D4112]; [348D4122]; [349D4122]; [350D4122]; [352D4122]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [336D4113]; [319D4113]; [333D4113]; [331D4112]; [372D4123]; [311D4113]; [218D4121]; [109D4121]; [108D4121]; [217D4122]; [219D4121]; [375D4122]; [335D4113]; [380D4123]; [379D4123]  [304D4112]; [342D4122]; [343D4122]; [402D4112]; [330D4112]; [337D4112]; [334D4112]; [493D4122]; [211D4122]; [210D4123]; [206D4112]; [201D4113]; [022U0033]; [017U0033]; [372D4123]; [380D4123]; [379D4123] |

| *Program Educational Objective* | *Program Student Outcome* | *ABET (a)-(k)* | *Program Courses Supporting the Program Outcome* |
| --- | --- | --- | --- |
| PEO 4 | SO-1; SO-2; SO-7 (H) | (a), (b), (d), (f), (g), (j) | [104D4112]; [205D4112]; [203D4112]; [202D4112]; [016U0033]; [020U0033]; [101D4113]; [017U0033]; [022U0033]; [105D4123]; [201D4113]; [204D4112]; [206D4112]; [106D4122]; [103D4112]; [102D4112];  [344D4122]; [321D4112]; [322D4113]; [354D4122]; [343D4122]; [304D4112]; [213D4122]; [212D4122]; [210D4123]; [211D4122]; [215D4122]; [216D4122];  [305D4112]; [306D4112]; [307D4112]; [308D4112]; [309D4112]; [310D4112]; [348D4122]; [349D4122]; [350D4122]; [351D4122]; [352D4122]; [312D4112]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [379D4123]; [336D4113]; [380D4123]; [335D4113]; [319D4113]; [333D4113]; [331D4112]; [375D4122]; [353D4122]; [311D4113]; [303D4112]; [219D4121]; [217D4122]; [214D4122]  [212D4122]; [213D4122]; [301D4112]; [302D4112]; [303D4112]; [354D4122]; [321D4112]; [353D4122]; [342D4122]; [216D4122]; [109D4121]; [107D4122]; [106D4122]; [214D4122]; [215D4122]; [311D4113]  [207D4111]; [208D4111]; [209D4111]; [307D4112]; [348D4122]; [349D4122]; [350D4122]; [352D4122]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [336D4113]; [319D4113]; [333D4113]; [331D4112]; [372D4123]; [311D4113]; [218D4121]; [109D4121]; [108D4121]; [217D4122]; [219D4121]; [375D4122]; [335D4113]; [380D4123]; [379D4123]  [304D4112]; [342D4122]; [343D4122]; [402D4112]; [330D4112]; [337D4112]; [334D4112]; [493D4122]; [211D4122]; [210D4123]; [206D4112]; [201D4113]; [022U0033]; [017U0033]; [372D4123]; [380D4123]; [379D4123] |
| SO-5; SO-6 (M) | (a), (c), (e), (h), | [011U0032]; [012U0032]; [403D4112]; [492D4122]; [401D4112]; [345D4122]; [218D4121]; [491D4124]; [493D4122]  [207D4111]; [208D4111]; [209D4111]; [307D4112]; [348D4122]; [349D4122]; [350D4122]; [352D4122]; [329D4113]; [330D4112]; [373D4122]; [337D4112]; [334D4112]; [336D4113]; [319D4113]; [333D4113]; [331D4112]; [372D4123]; [311D4113]; [218D4121]; [109D4121]; [108D4121]; [217D4122]; [219D4121]; [375D4122]; [335D4113]; [380D4123]; [379D4123] |
| SO-3; SO-4 (L) | (e), (g), (h), (i), (k) | [010U0032]; [403D4112]; [492D4122]; [491D4124]; [401D4112]; [009U0032]; [493D4122]  [401D4112]; [402D4112]; [344D4122]; [007U0032]; [008U0032]; [301D4112]; [345D4122] |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | PEO-1 | PEO-2 | PEO-3 | PEO-4 |
| SO-1 | **H** | M | L | **H** |
| SO-2 | **H** | M | M | **H** |
| SO-3 | L | L | **H** | L |
| SO-4 | L | **H** | M | L |
| SO-5 | L | L | **H** | M |
| SO-6 | M | **H** | L | M |
| SO-7 | M | L | L | **H** |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) |
| SO-1 |  | X |  |  |  |  |  |  |  |  |  |
| SO-2 | X |  |  | X |  | X |  |  |  | X |  |
| SO-3 |  |  |  |  | X |  | X |  |  |  |  |
| SO-4 |  |  |  |  |  |  |  | X | X |  | X |
| SO-5 |  |  |  |  | X |  |  | X |  |  |  |
| SO-6 | X |  | X |  |  |  |  |  |  |  |  |
| SO-7 |  | X |  | X |  | X | X |  |  | X |  |

The program educational objectives (PEO) of the EESP are as follows:

* + 1. PEO-1 - The EESP graduates have a mastery in basic sciences and mathematics relevant to the basic competency in the field of electrical engineering (*Basic Science Skills*).
    2. PEO-2 - The EESP graduates have an ability to anticipate, to formulate and to solve problems related to the field of electrical engineering (*Professional Skills*).
    3. PEO-3 - The EESP graduates have the spirit of leadership and entrepreneurship, the academic attitude, and have an ability to compete to work in various sectors all over the world, especially in Indonesia and Asia-Pacific region (*Entrepreneur Skills*).
    4. PEO-4 - The EESP graduates have capability to continue their study to higher degree of education all over the world (*Research Skills*).

EESP Student Outcomes:

##### SO-1 - An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

##### SO-2 - An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

##### SO-3 - An ability to communicate effectively with a range of audiences

##### SO-4 - An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

##### SO-5 - An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

##### SO-6 - an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

##### SO-7 - an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

ABET Electrical Engineering Criteria:

1. AEEC(1) - the application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems;
2. AEEC(2) - the application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical/electronic systems;
3. AEEC(3) - the ability to analyze, design, and implement one or more of the following: control systems, instrumentation systems, communications systems, computer systems, or power systems;
4. AEEC(4) - the ability to apply project management techniques to electrical/electronic(s) systems; and
5. AEEC(5) - the ability to utilize differential and integral calculus, as a minimum, to characterize the performance of electrical/electronic systems.

ABET’s Students Outcomes (Engineering Criteria):

1. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
2. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
3. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
4. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
5. an ability to function effectively as a member or leader on a technical team;
6. an ability to identify, analyze, and solve broadly-defined engineering technology problems;
7. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
8. an understanding of the need for and an ability to engage in self-directed continuing professional development;
9. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
10. a knowledge of the impact of engineering technology solutions in a societal and global context; and
11. a commitment to quality, timeliness, and continuous improvement.

Tabel Hubungan SO dengan ABET Engineering Criteria:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) |
| SO-1 |  | X |  |  |  |  |  |  |  |  |  |
| SO-2 | X |  |  | X |  | X |  |  |  | X |  |
| SO-3 |  |  |  |  | X |  | X |  |  |  |  |
| SO-4 |  |  |  |  |  |  |  | X | X |  | X |
| SO-5 |  |  |  |  | X |  |  | X |  |  |  |
| SO-6 | X |  | X |  |  |  |  |  |  |  |  |
| SO-7 |  | X |  | X |  | X | X |  |  | X |  |

Tabel Hubungan SO dengan ABET Electrical Engineering Criteria:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | AEEC-1 | AEEC-2 | AEEC-3 | AEEC-4 | AEEC-5 |
| SO-1 |  | X |  |  | X |
| SO-2 | X | X | X |  |  |
| SO-3 |  |  |  | X |  |
| SO-4 |  |  |  | X |  |
| SO-5 |  |  |  | X |  |
| SO-6 | X |  | X |  |  |
| SO-7 | X | X | X |  | X |