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|  |  | Ahsanullah University of Science and TechnologyBangladesh |

# **The** **Reporting of an Assessment related to**

# **(1) Seven Ranges of Complex Engineering Problem Solving, and**

# **(2) Five Ranges of Complex Engineering Activities**

**1. Course Code & Section**:

**2. Course Title**:

**3. Instructor(s)** :

**4. Semester**: ***Spring 2020***

**5. Type of Assessment: *{Quiz/Assignment/Project/Final Exam}***

**6. Rubrics have used for the assessment: *{Yes/No}***

**7. Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Bloom’s Taxonomy Level, Knowledge Profiles, Ranges of Complex Engineering (CE) Problem Solving, and CE Activities**

| Sl. No. | COs | POs | Bloom’s Taxonomy | | | Knowledge Profiles | Ranges of CE Problem Solving | Ranges of CE Activities |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| C | A | P |
| **1** |  |  |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |  |  |

**9. The Seven Ranges of Complex Engineering Problem Solving**

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| **"*Complex Engineering Problems have characteristic P1 and some or all of P2 to P7*" [p. 4-6, 1][[1]](#footnote-2)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Range** | **Attribute** | **PO** | **Relevance in the Project** | | **Related CO** |
| **P1** | Depth of Knowledge Required  “***Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach***” [1] | **PO1** | K3 (A systematic theory-based formulation of engineering fundamentals required in the engineering discipline) |  |  |
| **PO1** | K4 (Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline) |  |  |
| **PO3** | K5 (Knowledge that supports engineering design in a practice area) |  |  |
| **PO5** | K6 (Knowledge of engineering practice (technology) in the practice areas in the engineering discipline) |  |  |
| **PO4** | K8 (Engagement with selected knowledge in the research literature of the discipline) |  |  |
| **P2** | Range of Conflicting Requirements | **PO1 - PO7** |  | |  |
| **P3** | Depth of Analysis Required | **PO1 - PO7** |  | |  |
| **P4** | Familiarity of Issues | **PO1 - PO7** |  | |  |
| **P5** | Extent of Applicable Codes | **PO1 - PO7** |  | |  |
| **P6** | Extent of Stakeholder involvement and Conflicting requirements | **PO1 - PO7** |  | |  |
| **P7** | Interdependence | **PO1 - PO7** |  | |  |

**10. The Five Ranges of Complex Engineering Activities related to the Project (PO10)**

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| **"*Complex activities means (engineering) activities or projects that have some or all of the following characteristics*" [p. 4-7, 1]\*** |

|  |  |  |
| --- | --- | --- |
| **Range** | **Attribute** | **Relevance in the Assessment** |
| **A1**: Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information and technologies | Range of Resources |  |
| **A2** : Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues | Level of Interaction |  |
| **A3**: Involve creative use of engineering principles and research-based knowledge in novel ways | Innovation |  |
| **A4**: Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation | Consequences for Society and the Environment |  |
| **A5**: Can extend beyond previous experiences by applying principles-based approaches | Familiarity |  |

Signature of the Instructor/Course Coordinator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:

Name:

1. BAETE’s Accreditation Manual for Undergraduate Engineering Programs, March 2019, URL: https://baetebangladesh.org/2nd\_edi\_05.03.2019\_F.pdf [↑](#footnote-ref-2)