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| **(ENGR B40)** | | | | |
| **Student Learning Outcomes or AUO** | **Measure** | **PLO** | **ILO** | **GE** |
| 1. Perform office computations and design for differential leveling; traversing; area calculations; property/boundary surveys; topographic surveys/mapping; volume/earthwork; horizontal and vertical curves; and error analysis. | Project  Final Exam | 1 | II,III | N/A |
| 2. Operate survey equipment: tape, level, transit, theodolite, compass, total station, GPS. | Project  Lab Practical | 1 | II,III | N/A |
| 3. Reduce field notes using various mathematical techniques to generate meaningful records describing horizontal and vertical control of landforms. | Project  Lab Practical  Final Exam | 1,2 | II,III | N/A |
| 4. Plot plans and maps from field work data using manual and computer-aided drafting. | Project  Final Exam | 1,2,3 | II,III | N/A |
| 5. Work effectively in groups during field surveying and engineering design project which involve problem solving, report writing, and oral presentations. | Project  Lab Practical | 2,3 | II,III,IV | N/A |
| **PLOs:**  **1.** Students will demonstrate proficiency in technical skills and safety principles required for industrial employment.  **2.** Students will demonstrate problem solving skills used in industrial design and product development  **3.** Students will demonstrate a deep understanding of the core material required for transfer to a four year university degree program or for certification in the department programs.  **ILOs:**   1. **Think critically and evaluate sources and information for validity and usefulness.** 2. **Communicate effectively in both written and oral forms.** 3. **Demonstrate competency in a field of knowledge or with job-related skills.** 4. **Engage productively in all levels of society – interpersonal, community, the state and nation, and the world.**   **GELOs:**  **Use the GE categories from the catalog if this is a GE course.**  **A-E** | | | | |