Kurdistan Region Government
Ministry of Higher Education and Scientific Research
Erbil Polytechnic University

زانکۆی پۆلیتەکنیکی هەولێر
ERBIL POLYTECHNIC UNIVERSITY

Module (Course Book)

2023-2024

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| College/ Institute | Erbil Technical College |
| Department | Civil Engineering Department |
| Module Name | Plane and Applied Surveying -1 |
| Module Code | PAS; 304 |
| Degree | Technical Diploma Bachler [ ] High Diploma [X] Master [ ] PhD [ ] |
| Semester | Second stage – Third semester |
| Qualification | B.Sc. |
| Scientific Title | Engineer |
| ECTS (Credits) | 7.0 x 27 |
| Module type | Prerequisite Core [x] Assist. [ ] |
| Weekly hours | 5 |
| Weekly hours (Theory) | ( 2 )hr Class — (189)Total hrs Workload |
| Weekly hours (Practical) | ( 3 )hr Class |
| Number of Weeks | 20 |
| Lecturer (Theory) | Kamal Yaseen Abdulla;<br>Dilveen Hassan Omar |
| E-Mail & Mobile NO. | kamal.yaseen@epu.edu.iq; (+9647504521060)<br>dilveen.omar@epu.edu.iq; |
| Lecturer (Practical) | Kamal Yaseen Abdulla;<br>Dilveen Hassan Omar<br>Aveen Omar Hamad |
| E-Mail & Mobile NO. | kamal.yaseen@epu.edu.iq, Tel:(+9647504521060)<br>dilveen.omar@epu.edu.iq;<br>aveen.hamad@epu.edu.iq |
| Websites | epu.edu.iq |

Course Book

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|---|---|
| Course Description | The Surveying lectures have divided into two main parts, theoretical and practical parts. Theoretical Surveying lectures will help students to learn and easily recognize of the surveying subject contents such as Distance Measurement, Learning how to measure the distance by tape and chain. Knowing effects of temperatures on standard tape, leveling instrument How to calculate height of instrument and reduce level of points on earth and determine bench mark elevation. Calculating area and volumes. Determining the quantity of earth works which consist of cutting and filling quantities. |

<table>
<tr><td>Course objectives</td><td colspan="5">The main aim and purpose behind the study of engineering surveying is to<br>• The surveyor can possess a thorough understanding of surveying techniques and can determine most systematic methods required to obtain optical results over a wide variety of surveying problems.<br>• Rigorous mathematical techniques are used to analyze and adjust the field survey data.</td></tr>
<tr><td>Student's obligation</td><td colspan="5">The students should be available during lecture time table when the student absence more than the allowed hours the student will be dismissed. Students should be doing quizzes, practical reports, seasonal tests and final exams in order to able to collect required mark to success</td></tr>
<tr><td>Required Learning Materials</td><td colspan="5">During lecturing the data show is used for showing lecture notes using power point program while the white board is used for explanation and solving problems and using surveying instruments in laboratory.</td></tr>
<tr><td rowspan="12">Evaluation</td><td colspan="2">Task</td><td>Weight (Marks)</td><td>Due Week</td><td>Relevant Learning Outcome</td></tr>
<tr><td colspan="2">Paper Review</td><td>N/A</td><td></td><td></td></tr>
<tr><td rowspan="6">Assignments</td><td>Homework</td><td>5%</td><td>12</td><td>1,2,3</td></tr>
<tr><td>Class Activity</td><td>2%</td><td>2</td><td>1,2,3</td></tr>
<tr><td>Report</td><td>5%</td><td>2</td><td>1,2,3</td></tr>
<tr><td>Seminar</td><td>N/A</td><td></td><td></td></tr>
<tr><td>Essay</td><td>N/A</td><td></td><td></td></tr>
<tr><td>Project</td><td>5%</td><td>10</td><td>1,2,3</td></tr>
<tr><td colspan="2">Quiz</td><td>8%</td><td>2</td><td>1,2</td></tr>
<tr><td colspan="2">Lab. Reports and Activity</td><td>10%</td><td>12</td><td>4</td></tr>
<tr><td colspan="2">Midterm Exam/Theory</td><td>10%</td><td>1</td><td>1,2</td></tr>
<tr><td colspan="2">Final Exam/ Theory</td><td>20%</td><td>1</td><td>1;2</td></tr>
<tr><td colspan="2">Midterm Exam/Practical</td><td>15%</td><td>1</td><td>4</td></tr>
<tr><td colspan="2">Final Exam/ Practical</td><td>20%</td><td>1</td><td>4</td></tr>
<tr><td colspan="2">Total</td><td>100%</td><td></td><td></td></tr>
<tr><td>Specific learning outcome:</td><td colspan="5">Basic and very important objective of studying Surveying is;<br>1. The Surveying lectures will help students to learn and easily recognize the main aspects of surveying, which is relates to all of the civil engineering and highway engineering works.<br>2. Familiarise with the fundamental instruments used in surveying.<br>3. Using most new software used in surveying</td></tr>
<tr><td>Course References:</td><td colspan="5">- James R. Wirsing and Roy H. Worshing “Introductory surveying” Schaum’s outline series in engineering” Mc Grow Hill Book Company.<br>- Barry F. Kavanogh“Surveying Principles and application”, 7th edition, Parson Principle hall, parson edition. Inc, upper Saddle River, New Jersey, Columbus , Ohio, 2006<br>- Late David Clarck“ Plan and Geodetic surveying” sixth edition constable and company ltd, London WC2 2001<br>- S. K. Hussain, “Text book of Surveying”, India 2000.</td></tr>
</table>

| Course topics (Theory) | Week | Learning Outcome |
|---|---|---|
| 1. Basic Principles. | 1 | 1 |
| 2. Distance measurement and chain surveying. | 2-3 | 1,2 |
| 3. Level and leveling, tests and adjustment of level | 4-6 | 1,2 |
| 4. Fly leveling and Benchmarks Leveling (BM). | 7-8 | 1,2 |
| 5. Cross-section and profile. | 9 | 1,2 |
| 6. Contour and contouring operation. | 10 | 1,2,3 |
| 7. Area measurement and calculation. | 11 | 1,2,3 |
| 8. Volume calculation and correction. | 12 | 1,3 |
| Practical Topics | Week | Learning Outcome |
| 1. Length and distance measurement. | 1 | 4 |
| 2. Erecting and Dropping Perpendiculars | 2 | 4 |
| 3. Offsets-Obstacles in Chain surveying. | 3 | 4 |
| 4. Level and leveling, tests | 3-6 | 4 |
| 5. Adjustment of level instrument. | 7 | 4 |
| 6. Fly level and Benchmarks Leveling (BM). | 8 | 4 |
| 7. Cross-section and profile. | 9 | 4 |
| 8. Contour and contouring operation. | 10-11 | 4 |
| 9. Area measurement and Volume calculation and correction. | 12 | 4 |

Questions Example Design

Q1 / What are contour lines? Define contour interval? enumerate the Five of Characteristics of contour lines??

Q2) In the process of examining level instrument, the settlement device collimation method has been obtained to produce the following:
Instrument placed at center distance between A and B which are 60m apart, staff readings were recorded at points A=1.616m, and B=1.125, instrument level then moved to location 10m away from point A and staff reading were A=2.236m, B =1.912m.
Find the angle of the line of sight. to give correct readings to show the? horizontal line?

Q3 a) Describe stepping method of chaining on sloping ground?

Extra notes:

External Evaluator

As Professor I have reviewed the Course Book related to the subject of surveying for second year, Department of Civil Engineering, College of Technology, I found that the course Book is very good describing the aim and objectives of the subject. Moreover it is covering all the required syllabus and contents of the course and describes satisfactorily the aspects related to the course, which is approved by the department.

Professor Dr.
Meren Hassan Fahmi