Module (Course Syllabus name) Catalogue

2022-2023

College/ Institute	**Erbil Technology College**	
Department	**Surveying and Road Construction**	
Module Name	**Surveying / 1**	
Module Code	**Sur 202**	
Degree	**Technical Diploma** [ ] **Bachelor** [/] **High Diploma** [ ] **Master** [ ] **PhD** [ ]	
Semester	**2**	
Qualification	**B.Sc Degree**	
Scientific Title	**Assistant Lecturer**	
ECTS (Credits)	**8**	
Module type	**Prerequisite** [ ] **Core** [/] **Assist.** [ ]	
Weekly hours		
Weekly hours (Theory)	**(2)hr Class**	**(216) Total hrs Workload**
Weekly hours (Practical)	**(4)hr Class**	
Number of Weeks	**12**	
Lecturer (Theory)	**Galawezh Mohamad Ahmad**	
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Lecturer (Practical)	**Hoshyar Bakr Wali**	
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Websites		

Course Book

Course Description	In this section the lecturer shall write an overview about the subject he/she is giving. The course overview must cover: ▪ Surveying is the art and science of taking field measurement on or near the surface of the earth. preparation of surveying and related mapping specification. ▪ Surveys are usually performed for one of two reasons. first, surveys are to collect data, which can then be drawn to scale on a plan or map; second field surveys are made to lay out dimensions taken from a design plan and thus define precisely the location of the proposed construction facility. ▪ Introduces you to traditional and state of the art techniques in data collection, lay out, and presentation of field data. ▪ Design and provision of horizontal and vertical control survey networks.
Course objectives	Introducing the fundamentals, purposes, & the required calculations of the plane surveying to the student as well as qualifying him to use the different kinds of surveying instruments in designing & executing the project of civil engineering.
Student's obligation	The roles of students and their obligations throughout the year are such as: - reports of all exercises- Prepare their self's of examination good.
Required Learning Materials	Are done by -DATA SHOW -WHITE BOARD -AND SHEETS

			Task	Weight (Marks)	Due Week	Relevant Learning Outcome
Evaluation	Paper Review					
	Assignments	Homework		5		
		Class Activity		2		
		Report		5		
		Seminar		5		
		Essay				
		Project				
	Quiz			8		
	Lab.			10		
	Midterm Exam			25		
	Final Exam			40		
	Total			100		

Specific learning outcome:	This course has been read and studied to provide a practice for a survey work. It covers the fundamentals of surveying and those basic surveying procedures that make up the great bulk of surveying practices.
Course References:	1-ELEMENTARY SURVEYING (BREED AND HOSMER) 2-SURVEYING INSTRUMENTS AND METHODS (PHILIP KISSAM) 1- SURVEYING WITH CONSTRUCTION APPLICATIONS(sixEdition) (Barry F. Kavanagh) 4-Plane Surveying (ALAK DE).

Course topics (Theory)	Week	Learning Outcome
History of surveying. General basics of surveying. Types of surveying. International system of units (SI) of measuring. And understanding scales.	1	
Liner measurement. means for measuring distances direct and indirect measurement (obstacles). And plotting angles by tapping.	2	
Levelling, Types of levelling. Theory and methods (HI and Rise-fall method)	3+4	
Levelling –field procedures and computation (profile and cross section). Design formation level, (DL). Calculation of cut and fill.	5+6	
Some difficulties in levelling, testing and adjusting levels measure distances by stadia hair (indirect method).	7	
Topographic surveys. definition of topographic surveying, contour lines, method of drawing and construction (indirect method)	8	
Theodolite, Setting up of theodolite, Measurement angles, horizontal and vertical angles.	9	
Angles, bearings and azimuths. (Compass surveying). Bearing and azimuth calculation.	10	
Traversing. Types of traverses, computation coordinates and adjusting. With plotting.	11+12	

Practical Topics	Week	Learning Outcome
Definition of survey library (Tools& instruments), field notes, methods measurement, pacing, tapping on horizontal distance.	1A	
Chaining operation, chaining along a sloping ground, chaining by steps, indirect method measurement.	1B	
Geometrical construction (*Erecting and* offsetting). for setting right angle ((فیساغورس to a chain line, and layout oblique angle	2A	
Obstacles in chaining, types of obstruction. And passing them.	2B	
Levelling equipment. Setting up of level... Levelling between two points.	3A	
Methods of Computing Elevations. (HI) method.	3B	
Methods of Computing Elevations. (Rise &fall) method	4A	
Longitudinal sections (profile), plotting Longitudinal sections.	4B	
Cross-sections observation, Plotting Cross-sections.	5A	
Adjustment of level, Measurement horizontal distance (stadia method)	5B	
Areas and volumes: Area and volume computation from cross-section, and from regular shapes.	6A	
Areas and volumes: Area and volume computation from un regular shapes (Plano meter instrument)	6B	

Some difficulties in leveling. a) Leveling a cross obstruction to the line of sight. b) Leveling a cross a lake of large Extent. (Reciprocal leveling) c) Reverse leveling. (Finding height of tunnel).	7A	
Method of contouring (In direct method). Drawing map contours	8A	
Theodolite, Setting up of theodolite, Measurement angles, horizontal and vertical angles.	9A	
(Compass surveying). Angle and azimuth calculation.	9B	
Traversing. Types of traverses, interior and exterior angles measurement	10A	
Correction the angles	10B	
Calculate azimuths and bearings.	11A	
Calculation ΔE &ΔN	11B	
Correction ΔE &ΔN	12A	
Computation Easting &Northing (E, N).and Plotting traverse.	12B	

Questions Example Design

Q1/A triangle (ABC) in which the value of length of sides are as follows
AB = 12m
BC = 8m
AC = 8m
Calculate the values of angles using tape.
Answer:-
Tan^{-1} (12/16) = 36º 52' 12"

Q2/ An area of 250cm² was measured on a plan given that the plan scale is 1:500 calculate the ground area in m^2.
Answer:-
Plan areas = 250cm²
RF scales 1:500
Ground areas = plan area × (scale factor) ²
= 250 × (500)²cm
= 250 × (500/100)² m²
= 250 × 25
= 6250 m²

Q3\ Match the correct answer from group (B) for the statement given in group (A)

Group (A)		Group (B)	
A	The first staff reading taken after setting up the instrument is called	A	Positive
B	The last staff reading taken before moving the instrument is called	B	Station point
C	When the point in above the datum the (R.L) of the point will be	C	Back sight
D	A point on which the staff is held is called	D	Fore sight

Answer
A----C, B------D, C-------A, D----B

Extra notes:

The subjects and titles of all topics are covered the objectives of each topic, and this also includes a brief description of each topic. And I suggest using new technical or connected part theory with practices together.

External Evaluator

The course book of surveying subject of first year road department. Consists of detailed description of syllabus of the course for a academic year 2019- 2020.

The content of the syllabus is up to date which is suitable for the need of the modern local projects. **Proved by Nyazi R. Maroof / M sc in civil Engineering**