Module (Course Syllabus) Catalogue

2022-2023

College/ Institute	**Erbil Technology Institute**	
Department	**Surveying and Road Construction**	
Module Name	**Plane surveying**	
Module Code	**PLS202**	
Semester	**Second**	
Degree	**Technical Diploma** ■ **Bachler** ☐ **High Diploma** ☐ **Master** ☐ **PhD** ☐	
Credits	**10**	
Module type	**Prerequisite** ☐ **Core** ⬬ **Assist.** ☐	
Weekly hours	**8**	
Weekly hours (Theory)	**(2)hr Class**	**(102)hr Workload**
Weekly hours (Practical)	**(6)hr Class**	**(149)hr Workload**
Lecturer (Theory)	**Ahmed Redha Abdulrahman**	
E-Mail & Mobile NO.	**ahmed.abdul-rahman@epu.edu.iq** **(07504802152)**	
Lecturer (Practical)	**Dlawar Mohammad Karim**	
E-Mail & Mobile NO.	**dlawar@epu.edu.iq** **(07504947119)**	

Course Book

Course Description	The main objective in this program emphasizes theoretical principles as well as practical applications of surveying techniques deal with the introduction and basics of surveying importance, objectives, divisions, classifications and principles, and develop the ability of students in programs such as: • The ability to apply knowledge of mathematics, science, and engineering to understand the measurement techniques and equipment used in land surveying. • The ability to use techniques, skills, and modern engineering tools necessary for engineering practice • Ability to function as a member of a team Understand the importance of professional licensure to protect the public in the practice of land surveying and others
Course objectives	Survey subject is essential part of surveying department by which students can obtain empirical experiences as they practise all experiments in field for several type of surveying. By doing these, student will be confident to apply these experiments in real life. To enable the students have understanding what is surveying and the various ways of Classification of surveying, and how the surveying affects almost everything in our daily lives. For example it is being used(in developing databases for natural resource management, In establishing boundaries of public and private lands, In preparing navigational maps (land, air, water), to map the earth above and below the sea, in geological and geophysical studies and in planning. The main Principles and theories of the course are explain to students how Investigating land, using different measurement tools to work out the best position to build bridges, tunnels and roads etc., for examples (Horizontal distance – measured by tapes, chains, tachometers, EDM, pacing, odometer, etc., Vertical distance – measured by levels, tachometers., Horizontal angles – measured by theodolites, compasses., Vertical angles – measured by theodolites, clinometers.). And undertaken to provide special information for

	construction of Civil Engineering and building projects. The survey supply details for a particular engineering schemes and could include setting out of the work on the ground and dimensional control on such schemes. Skills of Students when they graduated in surveying department can easily obtained work in companies, organizations and they can do free works, because they able to use most of the surveying instruments
Student's obligation	Quality control improvements in exam policies entail improvement in exam. There are only two theoretical exams. the first one is the midterm exam which weighs 16 marks and second is final weighs 40 marks
Required Learning Materials	The subject is taught based on theoretical lectures and practical.
Assessment scheme	14% Homework 2% Class Activity 10% (Report, Seminar, Paper, Essay, Project) 4% Quiz 14% Lab. Report & Activities 16% Mid Term (Theory and practical) 40% Final
Specific learning outcome:	The lectures are six hours per week. Two hours for theoretical lectures, includes backgrounds and principles about the topic. Microsoft word and/or power point will be used during the lecture time. Students will be provided with notes and handouts, which contain the detail of the topics. Four hours practical lectures devoted to solve many problems and questions, with participation of students. It is will help them to prepare and face the examination with greater confidence.
Course References:	1. "Surveying with Construction Applications" (6th Edition) [Barry F. Kavanagh] 2. "Elementary Surveying" Charles D. Ghilani, Paul R. Wolf, K. Srinivasa Raju. 3. "Surveying for construction " Fourth Edition, willim irinie. 4. Engineering surveying (6th Ed) scholfield, .(Wilfred)

Course topics (Theory)	**Week**	**Learning Outcome**
Longitudinal profile	1st,2nd &3rd	

Cross-section	4th & 5th	
Control mapping	6th , 7th & 8th	
Theodolite (travers)	9th ,10th,11th & 12th	
Practical Topics	**Week**	**Learning Outcome**
Longitudinal profile	1st,2nd &3rd	
Cross-section	4th & 5th	
Control mapping	6th , 7th & 8th	
Theodolite (measurement of horizontal angle) ❖ **Direction method** ❖ **reputation method** ❖	9th ,10th,11th & 12th	
❖ **Measurement vertical angle** ❖ **measuring height of building**	13th	
Travers	14TH , 15TH & 16TH	

Questions Example Design

Ministry of Higher Education & Scientific Research
Erbil Polytechnic University
Erbil Technology Institute
Dept. of Surveying

Academic year: 2016 – 2017
Exam: (Final Exam)

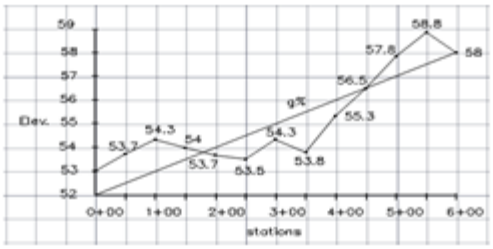
Class: First
Subject: Surveying/1
Time: 2 ½ Hours
Date: 5 / 6 /2017
Code:

Q1/ 1. Define (a. Contour line , b. Contour interval). — 15 Mark
2. Contour intervals depend on.
3. What are the characteristics of contours (write five of them).

Q2/ Two tangents intersect at the change (P.I=1190 m), the deflection angle being (Δ= 36°). Calculate all the data necessary (Dc, T, Lc, L, E and M) for setting out a circular curve with radius of (R=300 m) by deflection angle method. The peg interval is (25 m). — 20 Mark

Station	L(m)	Partial Defl. Angle	Total Defl. Angle
PC=	0	0	0
1110	17.48	.....	.....
....	.....	.....	.....
.....			...

Q3/ From figure shown below:
1. Tabulate the data for natural ground and design elevation, then redrawing the longitudinal profile with scale (1/5000) for stations & (1/100) for elevation.
2. Find the grad of the design (g %). — 25 Mark



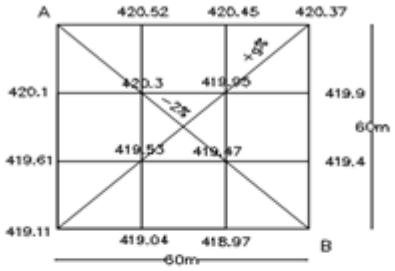
Q4/ The area within the contour lines at the site of a reservoir and the face of a proposed dam are as follows in the table. Find the maximum capacity of the reservoir by:
1) (Trapezoidal Rule).
2) (Prismodal Rule). — 15 Mark

Contour	510	515	520	525	530	535	540
Area(m^2)	3020	15300	84100	115200	171400	410200	515200

Q5/ For the terrain shown in the figure below:

1. Find elevations of point (A, B and g %)
2. Draw a contour lines (419,419.5, 420 and 420.5) with calculate the exact position of line (419m), using scale 1:500.

15 Mark



Q6) From the information's in the table:

1. Draw the cross-section of stations, if the width of road (8m) with scale 1/100 for distance &1/100 for elev., side slope (1:2).
2. Calculate the volume between the two cross-sections.

10 Mark

Station	Ground Elev.					Grade Elev.	Depth	
	L		CL	R				
	10	5		5	10		C	F
4+00	35.5	34.8	35.1	35.4	35.25	35.75		
4+50	34.4	33.8	34.2	34.35	34.1	34.75		

$T = R\tan\frac{\Delta}{2}$, $E = T\tan\frac{\Delta}{4}$, $M = E\cos\frac{\Delta}{2}$, $Lc = 2R\sin\frac{\Delta}{2}$, $Dc = \frac{573}{R}$, $L = \Delta R \sin 1°$

$Pc = PI - T$, $PT = Pc + L$, $\sin^{-1} = 1/2R$

volume (V)= $h\left(\frac{A1+An}{2} + A2 + A3 \ldots + An-1\right)$, A = d (b+S*d)

volume (V)= $\frac{h}{3}[(A1+An) + 4(A2+A4+A6\ldots) + 2(A3+A5+A7\ldots)]$, volume (V)= (A1+A2 / 2)* D

Extra notes:

External Evaluator

This course book is reviewed by (Sadiq R. Younes) as he is lecturer in Surveying department in Hawler Institute. He assessed and approved all content of the Computer Essentials subject as he admitted the course book is almost covered the several terms of Computer principls in both theoretical and practical aspects. The course can be presented in the classes for entire curriculum year.

Sadiq R. Younes
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