



1-Course Specification of Surveying

I. Course Identification and General Information:						
1	Course Title:	surveying				
2	Course Code &Number:	CE100				
3	Credit hours:	C.H			TOTAL	
		Th.	Seminar	Pr		Tr.
		2		2	2	4
4	Study level/ semester at which this course is offered:	2 nd Level/ 1 st semester				
5	Pre –requisite (if any):	-----				
6	Co –requisite (if any):	-----				
8	Program (s) in which the course is offered:	Architectural engineering				
9	Language of teaching the course:	English+ Arabic				
10	Location of teaching the course:	Class room + site				
11	Prepared By:	Eng. Ahmed Saleh + Eng. Bashir Al.maswari				
12	Date of Approval					

II. Course Description:
<p>This course aims to provide students with an understanding of basic concepts of plane surveying including tape measurements, map scale, errors in the process of measurements of linear measurements. Understanding the areas of direct and indirect methods. Using tape, planimeter, compass, level and theodolite instruments for field works. Definition of contour lines, contour map And calculating the earthworks quantities from contour map.</p>

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III. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a.1	Define the basic concepts of surveying, scales, surveying, calculate area of lands, levelling and quantities of earthworks.	A1 (I)
a.2	Describe the process of the surveying in the practical life.	A5 (I)
b.1	Compare the survey equipments and select the appropriate device for the required field work	B1(I)
b.2	Analyze various types of errors during measurements and adopt different kinds of methods for the error adjustment	B2 (I)
c.1	Use the surveying devices (tape – compass- planimeter- level – theodolite) in field measurements	C1(E)
c.2	Apply the various surveying skills and methods to measure relative heights, Levels	C2 (I)
d.1	Engage with colleagues to draw different contour maps	D1(I)
d.2	Perform the tasks and costs entrusted to him by studying the course individually or within a team with high efficiency.	D3

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1 - Define the basic concepts of surveying, scales, surveying, calculate area of lands, levelling and quantities of earthworks.	<ul style="list-style-type: none"> - Lecture - Dialogue and discussion - Problem Solving 	Problem set- Written exam- Written assignment
a2 -Describe the process of the surveying in the practical life.	<ul style="list-style-type: none"> - Lecture - Dialogue and discussion - Problem Solving 	Project - Written exam- Written assignment

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(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Compare the survey equipments and select the appropriate instrument for the required field work	<ul style="list-style-type: none"> - Lecture - Dialogue and discussion - Brainstorming - Problem Solving - Practical application 	Participation- Written assignment-Project
b2 - Analyze various types of errors during measurements and adopt different kinds of methods for the error adjustment	<ul style="list-style-type: none"> - Lecture - Dialogue and discussion - Brainstorming - Problem Solving - Practical application 	Participation- Written assignment-Project

©Alignment Course Intended Learning Outcomes of Professional and Practical skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 - Use the surveying devices (tape – compass- planimeter- level– theodolite) in field measurements	<ul style="list-style-type: none"> - Dialogue and discussion - Brainstorming - Problem Solving - Practical application 	Written report and drawing - Group work – final exam
c2- Apply the various surveying skills and methods to measure relative heights, Levels	<ul style="list-style-type: none"> - Lecture and Site - Dialogue and discussion - Brainstorming - Problem Solving - Practical application 	Written report and drawing - Group work

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

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d1- Engage with colleagues to draw different contour maps	<ul style="list-style-type: none"> - Brainstorming - Problem Solving - Practical application 	Write the project, report including calculation and drawing
d2- Perform the tasks and costs entrusted to him by studying the course individually or within a team with high efficiency.	<ul style="list-style-type: none"> - Lecture - Dialogue and discussion - Brainstorming - Problem Solving - Practical application 	Write the project design report including calculation and drawing

IV. Course Content:					
A – Theoretical Aspect:					
Order	Units /Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Introduction s	a1	-General introduction of plane surveying. -Definition of surveying. -Branches and types of surveying. -Measurement units.	1	2
2	Scales	a1,b2,d1	-Scale drawing. -Definition of drawing scale. -The importance of drawing scale in surveying. -Types of drawing scales. -Design and conclusion of the drawing scale.	1	2
3	Measurements	a1,b1,b2,d2	-Longitudinal measurements. -Measure distances and deduce horizontal distance. -Corrections needed for tape measurements.	1	2
4	Engineering Operations	a1,b1,b2,d2	-Engineering processes and measurement obstacles. -Some engineering operations.	1	2

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			-Types of obstacles and how to overcome them.		
5	Surveying	a1,b1,b2,d 2	-Definition of surveying and types of surveying. -Surveying by using prismatic compass.	3	6
6	Areas	a1,a2,b1,b 2, ,d2	-The importance of calculate areas in civil engineering. -methods of calculating areas (direct and indirect methods).	2	4
7	Levelling	a1,a2,b1,b 2, ,d2	-Definition of levelling and importance in civil engineering. -Types of levelling -Instrument used in the levelling -Levelling Uses -Contour lines and their characteristics -Calculate the quantities of earthworks from contour maps.	5	10
Number of Weeks /and Units Per Semester				14	28

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Problems on scales	1	2	a1,a2,b1,b2.d1
2	Problems on measuring distances and errors correction	1	2	a1,a2,b1,b2.d1
3	Problems of obstacles	1	2	a1,a2,b1,b2.d1
4	Problems of surveying	1	2	a1,a2,b1,b2.d1
5	Problems of land areas calculations	3	6	a1,a2,b1,b2.d1
6	Problems of correcting compass observations for blunders, gravity errors and calculate the area using coordinates method.	2	4	a1,a2,b1,b2.d1
7	Problems of levelling and calculations of quantities of earthworks from contour maps	5	10	a1,a2,b1,b2.d1

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Sana'a University
 Faculty of Engineering
 Department: Basic Engineering Sciences
 Title of the Program: B.Sc. Of Architectural Engineering



Number of Weeks /and Units Per Semester	14	28	
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C - Training Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Lecture how to write engineering reports	1	2	a1,c1
2	Training on how to measure a distance longer than the length of the tape and the required corrections	1	2	b1,c1,c2,d1,d2
3	Training on how to set up a column from a point on a straight line, how to drop a column from an outside on a straight line, types of obstacles in measurement and how to overcome	1	2	b1,c1,c2,d1,d2
4	Training on surveying, using tape only and engineering operations	2	4	b1,c1,c2,d1,d2
5	Training on surveying of tape and compass	2	4	a1,a2,b1,c1,c2.d1
6	Training to find the area on ground by applying different methods	1	2	a1,a2,b1,b2,c1,c2.d1
7	Training on how to find areas from maps or charts	1	2	a1,a2,b1,b2,c1,c2.d1
8	Training on how to identify the instrument and pursuits for levelling	1	2	a1,a2,b1,b2,c1,c2.d1
9	Training on network levelling	1	2	a1,a2,b1,b2,c1,c2.d1
10	Training on how to set up theodolite and how to read horizontal and vertical angles.	3	6	a1,a2,b1,b2,c1,c2.d1
Number of Weeks /and Units Per Semester		14	28	

V. Teaching strategies of the course:
<ul style="list-style-type: none"> - Lecture - Discussion - Brainstorming - Problem Solving - Practical application

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VI. Assignments:				
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Problems on scales	a1,a2,b1,b2.d1	2	0.5
2	Problems on measuring distances and errors correction	a1,a2,b1,b2.d1	3	0.5
3	Problem of obstacles	a1,a2,b1,b2.d1	4	0.5
4	Problem of surveying	a1,a2,b1,b2.d1	6	0.5
5	Problem of land areas calculations	a1,a2,b1,b2.d1	8	0.5
6	Problem of levelling	a1,a2,b1,b2.d1	10	0.5
7	Problem of levelling and calculations of quantities of earthworks from contour maps	a1,a2,b1,b2.d1	11	1

VII. Reports:				
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Report of measure a distance longer than the length of the type and corrections needed	b1,c1,c2,d1,d2	1	2
2	Report of set up a column from a point on a straight line, how to drop a column from an outside on a straight line, types of obstacles in measurement and how to overcome	b1,c1,c2,d1,d2	2	2
3	Report of surveying by using tape only	b1,c1,c2,d1,d2	3	2
4	Report of surveying of tape and compass	a1,a2,b1,c1,c2.d1	5	2
5	Training to find the area on ground by applying different methods	a1,a2,b1,b2,c1,c2.d1	6	2
6	Report of find area from maps or charts	a1,a2,b1,b2,c1,c2.d1	7	2
7	Report of the instrument and pursuits for levelling	a1,a2,b1,b2,c1,c2.d1	8	2
8	Report on network levelling	a1,a2,b1,b2,c1,c2.d1	9	2
9	Report on using theodolite instrument	a1,a2,b1,b2,c1,c2.d1	10	4

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VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Tasks and Assignments	weekly	4	2%	a1,a2,b1,b2.d1
2	Quiz 1_&2	4,10	6	3%	a1,a2,b1,b2.d1
3	Midterm Exam	7	30	15%	a1,a2,b1,b2,c1,c2.d1,d2
4	Reports	weekly	20	10%	b1,b2.c1,c2d1,d2
5	Final Exam (practical + Rep.)	13	20	10%	a1,a2,b1,b2,c1,c2.d1,d2
6	Final Exam (theoretical)	14	120	60%	a1,a2,b1,b2,c1,c2.d1,d2
	sum		200	100%	

IX. Learning Resources:	
<ul style="list-style-type: none"> Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher). 	
1- Required Textbook(s) (maximum two).	
	1-Engineering Survey, first edition 2015 2- Field sheets.
2- Essential References.	
	1-fundamental Surveying, 2-Origins in the Survey, 2001

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X. Course Policies:	
1	Class Attendance: - The regulations are applied, which state that a student who desires more than 25% of attending lectures is deprived of the final examination.
2	Tardy: - If the student is late for attending the lecture time, his degree will be deducted for each delay in the attendance grades.
3	Exam Attendance/Punctuality: - The student must rely on himself for exam.
4	Assignments & Projects: - The assignment is given to the students after each lecture or chapter, the student has to submit all the assignments for checking on time. The student must submit the report for checking on time
5	Cheating: - If the student is caught cheating, he will be deprived of the exam in the subject.
6	Plagiarism: - In the case of student impersonation, the Vice Dean for student Affairs will be referred to the College's Student Affairs Committee the necessary action.
7	Other policies: - If the student dose not attend more than 75% in the process, he will be deprived of the practical exam.

Reviewed By	<u>Vice Dean for Academic Affairs and Post Graduate Studies Dr. Tarek A. Barakat</u> <u>Quality Assurance Unit Dr. Mohammad Algorafi</u> <u>Name of Reviewer from the Department: Dr. Mohammad Algorafi</u>
	<u>Deputy Rector for Academic Affairs Dr. Ibrahim AlMutaa</u> <u>Dr. Ahmed Mujahed</u> <u>Dr. Munaser Alsubri</u>

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Template for Course Plan (Syllabus) of Surveying

I. Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Eng. Ahmed M. Saleh	Office Hours					
Location & Telephone No.	Engineering Faculty	SAT	SUN	MON	TUE	WED	THU
E-mail	Saahmed299@gmail.com			8 - 12			

II. Course Identification and General Information:						
1-	Course Title:	surveying				
2-	Course Number & Code:	CE100				
3-	Credit hours:	C.H				TOTAL Th.
		Th.	Seminar	Th.	Seminar	
		2		2	2	
4-	Study level/year at which this course is offered:	2 nd Level/ 1 st semester				
5-	Pre –requisite (if any):	-----				
6-	Co –requisite (if any):	-----				
7-	Program (s) in which the course is offered	Architectural engineering				
8-	Language of teaching the course:	English+ Arabic				
9-	System of Study:	Regular				
10-	Mode of delivery:	Lecture				
11-	Location of teaching the course:	Class room + site				

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III. Course Description:
<p>This course aims to provide students with an understanding of basic concepts of plane surveying including tape measurements, map scale, errors in the process of measurements of linear measurements. Understanding the areas of direct and indirect methods. Using tape, planimeter, compass, level and theodolite instruments for field works. Definition of contour lines, contour map And calculating the earthworks quantities from contour map.</p>

IV. Intended learning outcomes (ILOs) of the course:	
•	Brief summary of the knowledge or skill the course is intended to develop:
a.1	Define the basic concepts of surveying, scales, surveying, calculate area of levelling and quantities of earthworks.
a.2	Describe the process of the surveying in the practical life.
b.1	Compare the survey equipments and select the appropriate device for the required field work
b.2	Analyze various types of errors during measurements and adopt different kinds of methods for the error adjustment
c.1	Use the surveying devices (tape – compass- planimeter- level – theodolite) in measurements
c.2	Apply the various surveying skills and methods to measure relative heights, Levelling
d.1	Engage with colleagues to draw different contour maps
d.2	Perform the tasks and costs entrusted to him by studying the course individually within a team with high efficiency.

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V. Course Content:				
<ul style="list-style-type: none"> Distribution of Semester Weekly Plan Of course Topics/Items and Activities. 				
A –Theoretical Aspect:				
Order	Order	Order	Order	Order
1	Introductions	-General introduction of plane surveying. -Definition of surveying. -Branches and types of surveying. -Measurement units.	1	2
2	Scales	-Scale drawing. -Definition of drawing scale. -The importance of drawing scale in surveying. -Types of drawing scales. -Design and conclusion of the drawing scale.	2	2
3	Measurements	-Longitudinal measurements. -Measure distances and deduce horizontal distance. -Corrections needed for tape measurements.	3	2
4	Engineering Operations	-Engineering processes and measurement obstacles. -Some engineering operations. -Types of obstacles and how to overcome them.	4	2
5	Surveying	-Definition of surveying and types of surveying. -Surveying by using prismatic compass.	5-6-7	6
6	Midterm Exam		8	2
7	Areas	-The importance of calculate areas in civil engineering. -methods of calculating areas (direct and indirect methods).	9-10	4
8	Levelling	-Definition of levelling and importance in civil engineering. -Types of levelling -Instrument used in the levelling -Levelling Uses -Contour lines and their characteristics -Calculate the quantities of earthworks from contour maps.	11 to 15	10

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9	Final Exam	16	2
Number of Weeks /and Units Per Semester		16	32

B - Tutorial Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Problems on scales	1	2	a1,a2,b1,b2.d1
2	Problems on measuring distances and errors correction	1	2	a1,a2,b1,b2.d1
3	Problems of obstacles	1	2	a1,a2,b1,b2.d1
4	Problems of surveying	1	2	a1,a2,b1,b2.d1
5	Problems of land areas calculations	3	6	a1,a2,b1,b2.d1
6	Problems of correcting compass observations for blunders, gravity errors and calculate the area using coordinates method.	2	4	a1,a2,b1,b2.d1
7	Problems of levelling and calculations of quantities of earthworks from contour maps	5	10	a1,a2,b1,b2.d1
Number of Weeks /and Units Per Semester		14	28	

C – Training Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1	Lecture how to write engineering reports	1	2
2	Training on how to measure a distance longer than the length of the tape and the required corrections	1	2
3	Training on how to set up a column from a point on a straight line, how to drop a column from an outside on a straight line, types of obstacles in measurement and how to overcome	1	2

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4	Training on surveying, using tape only and engineering operations	2	4
5	Training on surveying of tape and compass	2	4
6	Training to find the area on ground by applying different methods	1	2
7	Training on how to find areas from maps or charts	1	2
8	Training on how to identify the instrument and pursuits for levelling	1	2
9	Training on network levelling	1	2
10	Training on how to set up theodolite and how to read horizontal and vertical angles.	3	6
Number of Weeks /and Units Per Semester		14	28

VI. Teaching strategies of the course:
<ul style="list-style-type: none"> - Lecture - Discussion - Brainstorming - Problem Solving - Practical application

VII. Assignments:				
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Problems on scales	a1,a2,b1,b2.d1	2	0.5
2	Problems on measuring distances and errors correction	a1,a2,b1,b2.d1	3	0.5
3	Problem of obstacles	a1,a2,b1,b2.d1	4	0.5

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4	Problem of surveying	a1,a2,b1,b2.d1	6	0.5
5	Problem of land areas calculations	a1,a2,b1,b2.d1	8	0.5
6	Problem of levelling	a1,a2,b1,b2.d1	10	0.5
	Problem of levelling and calculations of quantities of earthworks from contour maps	a1,a2,b1,b2.d1	11	1

VIII. Reports:				
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Report of measure a distance longer than the length of the type and corrections needed	b1,c1,c2,d1,d2	1	2
2	Report of set up a column from a point on a straight line, how to drop a column from an outside on a straight line, types of obstacles in measurement and how to overcome	b1,c1,c2,d1,d2	2	2
3	Report of surveying by using tape only	b1,c1,c2,d1,d2	3	2
4	Report of surveying of tape and compass	a1,a2,b1,c1,c2.d1	5	2
5	Training to find the area on ground by applying different methods	a1,a2,b1,b2,c1,c2.d1	6	2
6	Report of find area from maps or charts	a1,a2,b1,b2,c1,c2.d1	7	2
7	Report of the instrument and pursuits for levelling	a1,a2,b1,b2,c1,c2.d1	8	2
8	Report on network levelling	a1,a2,b1,b2,c1,c2.d1	9	2
9	Report on using theodolite instrument	a1,a2,b1,b2,c1,c2.d1	10	4

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IX. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Tasks and Assignments	weekly	4	2%
2	Quiz 1_&2	4,10	6	3%
3	Midterm Exam	7	30	15%
4	Reports	weekly	20	10%
5	Final Exam (practical + Rep.)	13	20	10%
6	Final Exam (theoretical)	14	120	60%
	sum		200	100%

X. Learning Resources:
• Written in the following order: (Author – Year of publication – Title – Edition – Place of publication – Publisher).
1- Required Textbook(s) (maximum two).
1-Engineering Survey, first edition 2015 2- Field sheets.
2- Essential References.
1-fundamental Surveying, 2-Origins in the Survey, 2001
3- Electronic Materials and Web Sites etc.

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 Prof. Dr.
 Mohammed AL-
 Bukhaiti

Academic
 Development
 Center & Quality
 Assurance
 Assoc. Prof. Dr.
 Huda Al-Emad

Rector of Sana'a
 University
 Prof. Dr. Al-Qassim
 Mohammed Abbas



XI. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the Faculty of ----- apply. For the policy, see: -----	
1	Class Attendance: - The regulations are applied, which state that a student who desires more than 25% of attending lectures is deprived of the final examination.
2	Tardy: - If the student is late for attending the lecture time, his degree will be deducted for each delay in the attendance grades.
3	Exam Attendance/Punctuality: - The student must rely on himself for exam.
4	Assignments & Projects: - The assignment is given to the students after each lecture or chapter, the student has to submit all the assignments for checking on time. The student must submit the report for checking on time
5	Cheating: If the student is caught cheating, he will be deprived of the exam in the subject.
6	Plagiarism: - In the case of student impersonation, the Vice Dean for student Affairs will be referred to the College's Student Affairs Committee the necessary action.
7	Other policies: - If the student dose not attend more than 75% in the process, he will be deprived of the practical exam.

Head of
 Department
 Dr. Samir Mohsen
 Al-Sirry

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Sana'a University
Faculty of Engineering
Department: Basic Engineering Sciences
Title of the Program: B.Sc. Of Architectural Engineering



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