



المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS) Photogrammetry (CE474)

Course Specifications

Institution: Majmaah University	Date: 23/12/1440H (04/09/2018)
College/Department : Engineering / Civil and Environmental Engineering	

A. Course Identification and General Information

1. Course title and code: Photogrammetry - CE 474	
2. Credit hours: (3) [3-1-0]	
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Civil Engineering	
4. Name of faculty member responsible for the course Dr. Sameh S Ahmed	
5. Level/year at which this course is offered: Level 9/ Year 4 (after Prep. Year)	
6. Pre-requisites for this course (if any): CE 372	
7. Co-requisites for this course (if any): None	
8. Location if not on main campus:	
9. Mode of Instruction (mark all that apply):	
a. traditional classroom	<input checked="" type="checkbox"/> What percentage? 70%
b. blended (traditional and online)	<input checked="" type="checkbox"/> What percentage? 20%
c. e-learning	<input type="checkbox"/> What percentage? <input type="text"/>
d. correspondence	<input type="checkbox"/> What percentage? <input type="text"/>
f. other	<input checked="" type="checkbox"/> What percentage? 10%
Comments: The course involves class room teaching with exclusive exercises. The teaching involves explanations & discussions subsequently with preparation of reports and additional work as assignments.	

B Objectives

1. What is the main purpose for this course?

- Recognize and tell main concepts in Photogrammetry including types of aerial photographs and cameras.
 - Calculate, design and measure distances and areas from aerial photographs.
 - Estimate and calculate the height of objects from aerial photographs.
 - Prepare the stereoscopes vision for a pair of photographs and conduct necessary measurements.
 - Explain Parallax theory and techniques of plotter orientation.
 - Ability to extraction of engineering information from single and two aerial photo and analyze the data.
 - Plan a photogrammetric project and able to calculate number of required photos and films for the task.
- Demonstrate their teamwork and leadership skills through functioning in groups during executing a mini-project.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Getting stereoscopic instruments and some aerial photographs for practical measurements of heights.
- Reserving 2-3 hrs for practice on Software to build DTM from aerial photos.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

The history of Photogrammetry, aerial cameras and camera calibration, geometry of the aerial photograph, stereoscopy and stereoscopes, parallax and the theory and techniques of plotter orientation. Extraction of engineering information from single aerial photo and from two interfaced photos, transformation, least squares, preparation and measuring of coordinates from aerial photos, introduction to analytical photogrammetric surveying, outputs of aerial surveying, Planning a photogrammetric project, Applications using computer software's.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
History of Photogrammetry	1	4
Aerial cameras and Camera calibration	2	8

Geometry of the aerial photograph: Principles points - Ground points - Control points - Central Projection - Interior and Exterior Orientation - Image Capture Practicalities	2	8
Stereoscopy and stereoscopes	1	4
Parallax theory and techniques of plotter orientation	1	4
Midterm 1	1	4
Extraction of engineering information from single aerial photo	1	4
Extraction of engineering information from two aerial photos	2	8
Least squares, preparation and measuring of coordinates from aerial photos	1	4
Planning a photogrammetric project	1	4
Midterm-II	-	-
Project #2, Cont.	1	
Applications using computer software's	1	8
Total	15	60

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planned	45	15	0			60
	Actual	43	15	0			58
Credit	Planned	3	0	0			3
	Actual	3	0	0			3

3. Additional private study/learning hours expected for students per week.

2-3 hrs

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Recognize and tell main concepts in Photogrammetry including types of aerial photographs and cameras.	<ul style="list-style-type: none"> - Course delivery by citing real life examples and problems. - Emphasis on understanding concepts and illustrating applications to problems. - Placing before the class mind-provoking and thinking questions 	<ul style="list-style-type: none"> • Reports • Assignments • Quizzes • Midterm and final exam
2.0	Cognitive Skills		
2.1	The students will be able to calculate, design and measure distances and areas from aerial photograph	<ul style="list-style-type: none"> - Solving problems through assignments on each topic. - Assignment problems, Exercise / tutorial problems for applications - Asking the students to suggest a solution before giving them the correct answer. 	<ul style="list-style-type: none"> • Assignment and mini project • Questions in Quiz, Midterms and End exam.
2.2	The students will be able to estimate and calculate the height of objects from aerial photographs.		
2.3	The students will be able to prepare the stereoscopes vision for a pair of photographs and conduct necessary measurements.		
2.4	The students will be able to Explain Parallax theory and techniques of plotter orientation.		
2.5	The students will be able to extract engineering information from single and two aerial photo and analyse the data.		
2.6	The students will be able to plan a photogrammetric project and to calculate number of required photos and films for the task.		
3.0	Interpersonal Skills & Responsibility		
3.1	The students shall be able to demonstrate their skills in the subject and be able to assess themselves.	<ul style="list-style-type: none"> - Solve the problems by asking sequential questions. - Paying personal attention to each 	<ul style="list-style-type: none"> • Bonus marks to on time submission of HW and Assignments.

		student and caring about his situation	
4.0	Communication, Information Technology, Numerical		
4.1	The students will be able to demonstrate their teamwork and leadership skills through functioning in preparing and presenting reports.	- Asking students to solve problems in the class by guiding him.	Evaluation of student ability to report and present facts
4.2	The students shall be able to demonstrate their communication skills in the subject.	- Highlighting the concepts and principles through real life problems - Asking the students to speak on a particular topic.	Bonus marks to those who are improving and participating effectively in the class.
5.0	Psychomotor		
5.1	N/A		

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First midterm exam	8	20
2	Second midterm exam	14	20
3	Quizzes		10
4	Report, and homework assignments		10
5	Final Exam	15	40
6	Total		100

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

There is 2 hrs set weekly and marked as Office Hour in the Time Table of teaching staff. During this hour the students can consult the teacher individually or in a group for their difficulties in the subject.

E Learning Resources

1. List Required Textbooks

- Paul R. Wolf, "Elements of Photogrammetry", Mc Graw Hill, (Latest edition).

2. List Essential References Materials (Journals, Reports, etc.)

- Burr, F. K. and Glemen Bird, S. J., "Surveying, Principles and Applications", Prentice Hall, 2000.

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

- Selected Papers and demonstrations from trustable web sites.

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

- Available: Surfer 11, ARC/GIS and AutoCAD software's

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

- Lecture room available - (20 students/class - this semester we have 2 students) to avoid student movement. It is necessary to keep lectures for one course / level in the same classroom.
- Some pocket stereoscopic instruments and aerial photographs are needed..

2. Technology resources (AV, data show, Smart Board, software, etc.)

- Available for students in the GIS Lab.
- Smart board and data show are available in the class rooms.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

- Some instruments for aerial photogrammetric surveying are required.

G Course Evaluation and Improvement Processes

<p>1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <ul style="list-style-type: none"> • Importance of feedback should be first explained. Only then the feedback should be taken. Have a question as to how the teaching can be improved - speed, more problems etc.
<p>2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <ul style="list-style-type: none"> • Ask the students if the speed of teaching and the approach is helping the students in learning the subject. • Students are free to report any difficulties to the Head of the department.
<p>3. Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> • Review of strategy at the mid-semester and after assessment of Mid Term - 1. • Group discussion and using different ways in teaching (seminars, Power Point presentations, reading, .. etc.).
<p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <ul style="list-style-type: none"> • Independent checking of End-Semester assessment (another faculty member). • Checking of course files by the Quality Centre Nominee and give suggestions for improvement in writing.
<p>5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> - Mid Semester review of Course files. - End Semester review of Course files. - Student feedback at end of the semester from CEE-Quality Unit. - Feedback of the assessment at the beginning of the next semester. - Departmental meeting at the beginning of the next semester on improvements suggested.

Name of Course Instructor: Sameh S Ahmed

Signature: *Sameh*

Date Specification Completed: **04/09/2018**

Program Coordinator: **Dr. Abdullah Alshehri**

Signature: *Alshehri*

Date Received: **Meeting # 3 on 11/09/2018**