جامعة الإسراء
ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Computer Applications in Civil engineering

Course Number: 04035201

General Course Information:

Course title	**Computer Applications in Civil engineering**
Course number	**04035201**
Credit hours	**3**
Education type	**[Face-to-Face]**
Prerequisites/corequisites	**Department Approval.**
Academic Program	**Civil engineering**
Program code	**03**
Faculty	**Engineering**
Department	**Civil engineering**
Level of course	**bachelor**
Academic year /semester	**First Semester 2022-2023**
Awarded qualification	**B.Sc**
Other department(s) involved in teaching the course	**-**
Language of instruction	**English**
Date of production/revision	**2022/2023**

Course Coordinator:

Coordinator's name	**Dr. Wissam Alkhadour**
Office No	**4207**
Office Phone extension number	
Office Hours	**Tue& Thur [12:00-1:00] , Mond& Wed.[11:00-1:00]**
Email	**Wesam.alkhadour@iu.edu.jo**

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	The course is a training for students to use one or more of the engineering programs that are used in various civil engineering fields (roads and transportation, water and environment, construction and geotechnical.
Arabic	المادة عبارة عن تدريب للطلاب على استخدام واحد أو أكثر من البر ا مج الهندسية الجاهزة والتي تستخدم في مجالات االهندسة المدنية المختلفة (الطرق والمواصلات، المياه والبيئة، الإنشاءات والجيوتقنية).

Textbook: ***Author(s), Title, Publisher, Edition, Year, Book website.***

"Mastering Arc GIS Pro" Maribeth H.Price 2th edition,2023

References: ***Author(s), Title, Publisher, Edition, Year, Book website.***

1. Getting Started with Geographic Information Systems" K. C. Clarke, PrentsHall company, 2017.
2. http://www.esri.com/
3. George B., Korte, pe, 2005. The GIS Book, 5th. Edition. Thomson Delmar Learning. U.S.A. Note: You can read this book through Internet: (Website) http://books.google.jo/books?id=_C6oPvJ5S_EC&printsec=frontcover&hl=en
4. http://www.usgs.gov/research/gis/title.html.

Course Educational Objectives (CEOs):

1.	**Provide a thorough understanding and practical applications of Geographic Information Systems using Arc GIS Pro.**
2.	**Establish foundation knowledge and skills in preparation for applying GIS in various civil engineering fields (roads and transportation, water and environment using Arc GIS Pro.**
3.	**Develop the skills required to analyze vector and raster data using Arc GIS Pro.**

Intended Learning Outcomes (ILO's):

	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	**Relationship to CEOs**	**Contribution to PLOs**	**Bloom Taxonomy Levels***	**Descriptors****
A	**Knowledge and Understanding:**				
A1	**The students will be able to explain the basic concepts of Geographic Information Systems and the importance of these applications in solving engineering problems.**	**1**	**1**	**1**	**K**
A2					
A3					
B	**Intellectual skills:**				
B1					
B2					
B3					
C	**Subject specific skills:**				

C1	**The students will be able to apply GIS in several engineering fields.**	**2**	**1,7**	**3**	**K,C**
C2	**The students will be able to analyze vector and raster data.**	**3**	**1,7**	**4**	**K,C**
D	**Transferable skills:**				
D1					
D2					
D3					

***Bloom Taxonomy Levels**

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (CE) program will demonstrate:		Descriptors**		
		K	S	C
1.	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	K		
2.	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.			C
3.	An ability to communicate effectively with a range of audiences.		S	
4.	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.			C
5.	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.		S	
6.	An ability to develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgment to draw conclusions.		S	
7.	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	K		C

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Weekly Schedule *(please choose the type of teaching)*

✓ **Face to Face**

□ **Hybrid** *(**2 Lectures** Face – To - Face **+1 Lecture** Asynchronous)*

□ **Hybrid (***1 Lectures* Face – To - Face ***+1 Lecture*** Asynchronous)

□ **Online** *(**2 Lectures** Synchronous **+1 lecture Asynchronous**)*

Week	First Hour (……)	Second Hour (……)	Third Hour (……)	Ach. ILOs	Ach. PLOs	Descriptors*
1	Course syllabus, Introduction to Geographic Information Systems.	Importance of Geographic Information Systems in solving	Concepts of Geographic Information Systems.	A1	PLO1	K

		engineering problem.				
2	**Mapping GIS Data**	**Mapping GIS Data**	**Mapping GIS Data**	**C1**	PLO1,7	K,C
3	**Presenting GIS Data**	**Presenting GIS Data**	**Presenting GIS Data**	**C1**	PLO1,7	K,C
4	**Coordinate Systems**	**Coordinate Systems**	**Coordinate Systems.**	**C1**	PLO1,7	K,C
5	**Managing Vector**	**Managing Vector**	**Managing Vector**	**C1**	PLO1,7	K,C
6	**Managing Raster Data**	**Managing Raster Data**	**Managing Raster Data**	**C1**	PLO1,7	K,C
7	**Attribute Data**	**Attribute Data**	**Attribute Data**	**C1**	PLO1,7	K,C
8	**Editing**	**Editing**	**Editing**	**C1**	PLO1,7	K,C
9	**Editing**	**Editing**	**Editing**	**C1**	PLO1,7	K,C
10	**Queries**	**Queries**	**Mid-Term Exam**	**C2**	PLO1,7	K,C
11	**Queries**	**Queries**	**Queries**	**C2**	PLO1,7	K,C
13	**Joins and Overlay**	**Joins and Overlay**	**Joins and Overlay**	**C2**	PLO1,7	K,C
14	**Raster Analysis**	**Raster Analysis**	**Raster Analysis**	**C2**	PLO1,7	K,C
15	**Sharing GIS**	**Sharing GIS**	**Final Exam**	**C2**	PLO1,7	K,C

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- **Interactive videos**
- **Practice Labs**
- **Discussion Forums**
- **✓Quizzes**
- **Other Interactive online activities**
- **Reports**

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at:** https://elearn.iu.edu.jo/course/view.php?id=2107
- **E-learning plan**
- **Satisfaction questionnaires for online and face-to-face learning**
- **Software for e-learning**
- **Training**
- **ArcGISPro software.**

Assessment Tools implemented in the course:

- ✓ Final Exam
- ✓ Midterm Exam
- ✓ Quizzes
- ✓ Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:…….

Responsible Persons and their Signatures:

Course Coordinator	**Dr. Wissam Alkhadour**	**Completed Date**	**6/ 12 / 2022**
		Signature	

Received by (Department Head)	**Dr.**	**Received Date**	**15/ 12 / 2022**
		Signature	