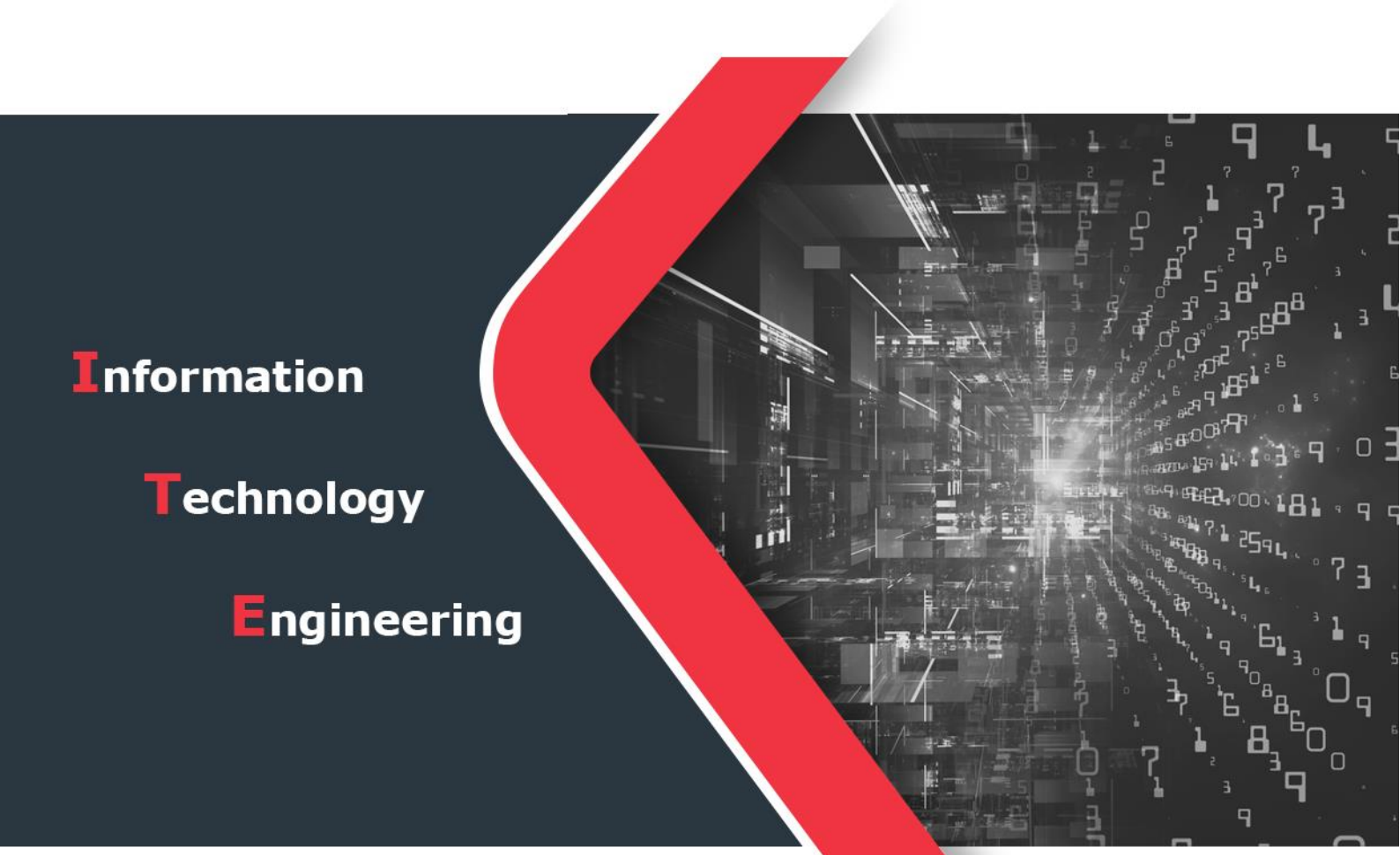
الجامعة الافتراضية السورية
SYRIAN VIRTUAL UNIVERSITY

Course Definition

Epistemology and Computer Science



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Syrian Arab Republic		الجمهورية العربية السورية
Ministry of Higher Education and Scientific Research		وزارة التعليم العالـــي والبحث العلمي
Syrian Virtual University		الجامعة الافتراضية السورية

1. Basic Information:

Course Name	Epistemology and Computer Science
Course Code	GEP601
Number of Presentational Sessions*	20
Number of Synchronous Sessions**	10
Number of Shorter Tests***	2
Number of Exams***	1
Theoretical Sessions Work Load (hrs.)	60
Practical Sessions Work Load (hrs.)	30
Credit Hours	4

***Each presentational session comprises both recorded lecture (1.5 hrs.) and interactive learning content (1.5 hrs.).**

****Each synchronous session comprises the interactive lecture carried out in real time in a virtual class (1.5 hrs.).**

*****Each shorter test is 0.5 hr. long. The final exam is 2 hrs. long.**

N.B.

Generally, each chapter requires two presentational sessions: one for the recorded content and one for the interactive content (unless the chapter is too long, in which case it may require more sessions (. This note applies to synchronous sessions as well, where each chapter requires one synchronous session generally.

2. Prerequisites courses:

Course	Code
Ethics of Profession and Society	GET601

3. Course Objectives:

This course aims to introduce students to the concepts of philosophy and epistemology and their relationship to computer science. Computer science is a science that studies the concepts, theories, and technologies that revolve around the design and development of computers and various software. The philosophy of computer science aims to understand the philosophical foundations, concepts, and ethics that underpin these technologies and their applications. The philosophy of computer science deals with deeper and more complex problems and fundamental inquiries related to the use of computer technologies and their applications and the formulation of basic concepts in computer science at a higher level.

4. Learning Outcomes (LO):

By the end of this course the learner is expected to:

- Identify the concepts of philosophy and its relationship to computer science.
- Recognizing the epistemology as a practical tool to investigating the serviceable merits of any kind of knowledge.
- Understanding the fundamental role of algebra in computer science.
- Recognizing the importance of logic in all programming.
- Exploring the uncertainty, its classifications and limits.
- Identify the role of constructive skepticism in computer science.
- Learn about the ontology and ethics in dealing with computers.

5. Assessment Results:

Chapter Number	Chapter Title	General Objectives	Assessment Type				
			Interactive Content & Recorded Sessions	Applied Activities (Synch. Sessions)	Final Exam*/ Shorter Tests**	Presentations and Interviews***	Reports****
CH1	**Introduction**	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH2	**Epistemology and Algebra**	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH3	**Epistemology and logic**	Comprehension – Analytical	√	√	√	√	√

		Thinking – Tools and Application Hands–On					
CH4	**Uncertainty**	Comprehension – Analytical Thinking – Tools and Application Hands–On	√	√	√	√	√
CH5	**The role of humans in computer technologies**	Comprehension – Analytical Thinking – Tools and Application Hands–On	√	√	√	√	√

***The final exam is two hours long and is given at the end of the course.**

****Shorter tests are about 30 minutes long and are given after three or four lectures throughout the semester during synchronous sessions.**

***Presentations, interviews, and reports are submitted once after each three or four lectures throughout the semester during synchronous sessions.**

6. Course Syllabus:

Chapter	Subject	Content	Number of Learning Objects	Number of synchronous Learning Objects
CH1	Introduction	1. The computer science epistemology 2. knowledge about knowledge 3. Epistemology as a practical tool 4. The epistemic feedback loop 5. The evolutionary process of representation 6. Practical and relativistic representation of computer understanding 7. The observational and epistemic novelty of computer technology 8. Knowledge depth 9. Our conceptual world is Math	9	4

CH2	**Epistemology and Algebra**	1. Introduction to the Game of Life and thinking 2. Algebra, the ladder from counting to coordinatizating the universe 3. Sets, other entity abstractions 4. Algebraic operations in highly practical roles: computational classes 5. Two examples of application algebraic methods 6. Abstracted reality	**6**	**3**
CH3	**Epistemology and logic**	1. Logic and programming 2. Basic problems 3. Logic in computers, now	**3**	**1**
CH4	**Uncertainty**	1. The story of uncertainty 2. The models of random motion 3. Models as hypotheses or prejudices 4. An uncertain classification of uncertainty 5. The pragmatic view of methodologies	**5**	**2**
CH5	**The role of humans in**	1. Ontology, homunculus, constructive skepticism	**4**	**2**

	computer technologies	2. Ethics: our pragma: useful and necessary 3. Analytic versus metaphysical, logic versus pattern 4. Future human roles and attitudes and constructive skepticism		

7. Practical Activity:

- **Tools and Labs:**

Tool Name	Description
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- **Practical Activities per Chapters:**

Chapter	Activities Type	Remarks
CH1	☐ Exercises ☐ Homework ☑ Webinars ☐ Project ☐ Experiment ☐ Other	
CH2	☐ Exercises ☐ Homework ☑ Webinars	

	☐ Project ☐ Experiment ☐ Other	
CH3	☐ Exercises ☐ Homework ☑ Webinars ☐ Project ☐ Experiment ☐ Other	
CH4	☐ Exercises ☑ Homework ☑ Webinars ☐ Project ☐ Experiment ☐ Other	
CH5	☐ Exercises ☐ Homework ☑ Webinars ☐ Project ☐ Experiment ☐ Other	

8. References:

1. Tibor Vamos, "KNOWLEDGE AND COMPUTING, A course on computer epistemology", 2010.
2. William J. Rapaport, “Philosophy of Computer Science”, 2020.