Course Description Template
Course Description

This course description provides a concise summary of the main features of the course and the expected learning outcomes for the student to achieve, demonstrating whether they have made the most of the available learning opportunities. It is essential to link this description with the program description.

1. Educational Institution	**Shatt Al-Arab University**
2. Scientific Department	**Computer Science**
3. Module Code	Computer simulation
4. The available attendance types	**Mandatory**
5. Year	**2024 - 2025**
6. SWL (hr/sem)	**150**
7. Date	2025-08-20
. Module Aims: .8	
Definition of basic concepts in simulation and systems modeling	
Comparison of types of simulation models, their methods and methods of use	
Remember the steps and stages of building models and simulation processes.	
Expanding the student's awareness in this field to motivate him to build simulation systems in various fields needed by society.	
Proficiency in Matlab & Python programming languages to use in other fields after	

graduation

.9 Course outcomes, teaching, learning and assessment methods

أ A- Cognitive Objectives

A1 - The student will learn a programming language properly.

A2 - The ability to build a miniature model and simulate it programmatically.

A3 - The student will develop his analytical, deductive, cognitive, and self-learning abilities.

A-4: Identify the most important mathematical statistical distributions to build a sound mathematical foundation.

A-5: Identify the most important methods for generating random numbers used in research in various fields.

A-6: Benefit from the project curriculum by building intelligent systems.

B - Course specific skill objectives.

B1 - Writing and debugging software using MATLAB

B2 - Graduation research

B3 - Practical reports

B4 - Possess the ability to think critically, analyze, and solve problems

Teaching and learning methods

1 - Readings, self-study, and discussion groups 2 - Classroom exercises and activities 3 - Guiding students to websites they can benefit from 4 - Holding research sessions to explain and analyze programming codes
Evaluation methods
1 - Central and monthly exams 2 - Timely exams 3 - Practical reports 4 - Practical exams 5 - Research projects 6 - Participation in lessons and presenting activities
C- Affective and Value-Based Objectives C-1 Deduction and Analysis C-2 Comparison C-3 Discussion C-4 Research and Investigation C-5 Use of Computers and the Internet C-6 Conducting Research and Drawing Conclusions C-7 Making Decisions ر
Teaching and learning methods

1 - Theoretical lectures 2 - Practical labs 3 - Research and investigation 4 - Discussion groups within practical lessons
Evaluation methods
1 - Oral and written exams 2 - Research projects 3 - Class discussions 4 - Assessment of assignments and discussions
D - General and transferable skills (other skills related to employability and personal development). D1 - Develop the ability to work in a team and effectively. D2 - Develop the ability to learn independently. D3 - Develop the ability to present and discuss ideas. D4 - Develop the ability to address problems in a logical and organized manner.

10. Course structure					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	week
General questions and discussion or an exam	theoretical	An introductory lecture and introduction to the curriculum vocabulary	Introduction to simulation	2	1
General questions and discussion or an exam	theoretical	ntroduction to Simulation and Its Definition - Part One	Introduction to simulation	2	2
General questions and discussion or an exam	theoretical	Introduction to Simulation and Its Definition - Part Two	Introduction to simulation	2	3
General questions and discussion or an exam	theoretical	Definition of simulation and its basics	Introduction to simulation	2	4

General questions and discussion or an exam	theoretical	Understanding the Basics of System and Model in Simulation - Part One	Introduction to simulation	2	5
General questions and discussion or an exam	theoretical	Understanding the Basics of System and Model in Simulation – Part Two	Introduction to simulat	2	6
General questions and discussion or an exam	theoretical	What are the divisions and classifications of systems and models? - Part One	Introduction to simulation	2	7
General questions and discussion or an exam	theoretical	What are the divisions and classifications of systems and models? - Part Two	Introduction to simulation	2	8
General questions and discussion or an	theoretical	What are the divisions and classifications of	Introduction to simulation	2	9

exam		systems and models? - Part Three			
General questions and discussion or an exam	theoretical	How to develop a simulation model	Introduction to simulation	2	10
General questions and discussi	theoretical	What are the advantages, disadvantages, and applications of simulation?	Introduction to simulation	2	11
General questions and discussion or an exam	theoretical	Basic steps in developing a simulation study	Introduction to simulation	2	12
General questions and discussion or an exam	theoretical	What are the applications and problems? - Part One	Introduction to simulation	2	13
General questions and discussion or an exam	theoretical	What are the applications and problems? - Part Two	Introduction to simulation	2	14

General questions and discussion or an exam	theoretical	What are the applications and problems? - Part Three	Introduction to simulation	2	15
General questions and discussion or an exam	theoretical	Review previous lectures	Introduction to simulation	2	16
General questions and discussion or an exam	theoretical	What are the applications and problems? - Part Four	Introduction to simulation	2	17
General questions and discussion or an exam	theoretical	What are the applications and problems? - Part Five	Statistical distribution	2	18
General questions and discussion or an exam	theoretical	Learn about the applications of statistics in simulation studies.	Statistical distribution	2	19
General questions and	theoretical	What is a statistical distribution? - Part	Statistical distribution	2	20

discussion or an exam		One			
General questions and discussion or an exam	theoretical	What is a statistical distribution? - Part Two	Statistical distribution	2	21
General questions and discussion or an exam	theoretical	Learn about applications in the field of statistical distribution.	Statistical distribution	2	22
General questions and discussi	theoretical	What are random systems?	Random variables	2	23
General questions and discussion or an exam	theoretical	What are the methods for generating random variables? - Part One	Random variables	2	24
General questions and discussion or an exam	theoretical	What are the methods for generating random variables? - Part Two	Random variables	2	25

General questions and discussion or an exam	theoretical	Applications of Random Variable Generation in Simulation Studies - Part One	Random variables	2	26
General questions and discussion or an	theoretical	Applications of Random Variable Generation in Simulation Studies - Part two	Random variables	2	27
General questions and discussion or an exam	theoretical	Understanding Queuing Theory	Queuing theory	2	28
General questions and discussion or an exam	theoretical	What are the classifications of the queueing system and how are they represented?	Queuing theory	2	29
General questions and discussion or	theoretical	Queuing Systems Analysis Applications - Part One	Queuing theory	2	30

an exam					
General questions and discussion or an exam	theoretical	Queuing Systems Analysis Applications - Part Two	Queuing theory	2	31
General questions and discussion or an exam	theoretical	Review previous lectures	Queuing theory	2	32

. 11 Infrastructure	
Simulation: Principles and Methods By Wayne.J. Graybeal & Udo W. Pooch	- Required prescribed books
Probability, Statistics, and Stochastic) Processes by Peter Olofsson & Mikael Andersson,2011	-2 Main References (Sources)
Books, magazines, and websites related to simulation and modeling	Recommended books and references (scientific journals, reports, etc.)
Reliable websites that talk about simulation and modeling	b) Electronic references, Internet sites

12. Curriculum Development Plan
Submitting software projects by students during the semester that can be used by the community.

Comment [J1]:

فرح علاء
مدرس المادة

رئيس القسم

عميد الكلية