



## Course Specifications

<b>Course Title:</b>	<b>Advanced Software Engineering</b>
<b>Course Code:</b>	<b>502PMAI-3</b>
<b>Program:</b>	<b>Professional Master of Artificial Intelligence</b>
<b>Department:</b>	<b>Computer Science</b>
<b>College:</b>	<b>Computer Science and information systems</b>
<b>Institution:</b>	<b>Najran University</b>

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## A. Course Identification

<b>1. Credit hours:</b> 3
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 1 <sup>st</sup> level/ 1 <sup>st</sup> year
<b>4. Pre-requisites for this course (if any):</b>
<b>5. Co-requisites for this course (if any):</b> NA

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	50	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	20
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	<b>50</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description:

Software technologies. New trends of software engineering: component-based software engineering, service-oriented based software engineering and agents-based software engineering. Introduction to software components. Benefits of software components. Software component technologies. Interfaces of .NET, Access Methods and interoperability. Building of software components based-on .NET component technology. Implementations of component-based client applications based-on .NET component technology. Component-based software process. Component- based software testing.. Building Distributed system based on software component. Introduction to software agent . Mobile agent communication. Agent-based software process .Agent –based software system development. Service-oriented software Engineering. Research paper.

## 2. Course Main Objective

After successful completion of this course students should be able to:

1. understand software technologies
- 2- understand the software component.
2. know software component technologies.
3. know how to build software components
4. know the Component-based software process.
5. know how to build component-based software systems.
6. understand software agents.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge and Understanding</b>	
1.1	understand software technologies	K2
1.2	understand the software component.	K2
1.3	know software component technologies.	K3
1...	know the Component-based software process.	K1
<b>2</b>	<b>Skills</b>	
2.1	know how to build component-based software systems.	S1
2.2	understand software agents.	S1
2.3		
2.4		
2.5		
<b>3</b>	<b>Competences:</b>	
3.1		
3.2		
3.3		
3...		

## C. Course Content

No	List of Topics	Contact Hours
1	Introduction to advanced software engineering (software technologies and products)	3
2	Introduction to software components	3
3	Implementing Component interfaces and Building software based on .NET component technology	3
4	Building component –based client application based on.NET component technology	3
5	Component –based software process	3
6	Component –based software process (cont.)	3
7	First presentation of the first part of the research paper	3
8	Component –based software testing	3

9	Component –based software testing (cont.)	3
10	Introduction to software agents + midterm exam	4
11	Mobile agents :implementation ,migration	5
12	Multi-agent system	5
13	Multi-agent system(cont.),mobile agent communication and security	3
14	Agent –based software process +building multi-agent system	3
15	Last Presentation of the full research paper	3
<b>Total</b>		<b>50</b>

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and Understanding</b>		
1.1	understand software technologies	TS-1: Relate Course Learning Outcomes (CLOs) to the topics TS-2: Giving Lectures in PPT, recalling the lecture through asking Questions. Clarifying doubts on Lecture. TS-3: Conducting a discussion of real life problems, among teacher, students	Quiz Assignments Midterm Examination Final Examination
1.2	understand the software component.		
...	know software component technologies.		
	know the Component-based software process.		
<b>2.0</b>	<b>Skills</b>		
2.1	know how to build component-based software systems.	TS-1: Relate Course Learning Outcomes (CLOs) to the topics TS-2: Giving Lectures in PPT, recalling the lecture through asking Questions. Clarifying doubts on Lecture. TS-3: Conducting a discussion of real life problems, among teacher, students TS-4: Cooperative learning among the students. Encourage students to browse different journals, seminars or websites at their leisure time to have a better understanding about the course	Quiz Assignments Midterm Examination Final Examination,
2.2	understand software agents.		Quiz, Assignments Final Examination
2.3			Quiz Assignments Final Examination
2.4			Lab Assignments, Midterm Examination, Final Examination
2.5			
<b>3.0</b>	<b>Competences</b>		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1			
3.2			
...			

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz1	3 <sup>rd</sup> week	5%
2	Midterm	6 <sup>th</sup> week	20%
3	Project	5 <sup>th</sup> week	10%
4	Theory Assignments	2 <sup>th</sup> , 5 <sup>th</sup> , 8 <sup>th</sup> , 10 <sup>th</sup> weeks	10%
5	Lab Assignments	7 <sup>th</sup> week	10%
6	Quiz2	10 <sup>th</sup> week	5%
7	Final Exam	12 <sup>th</sup> or 13 <sup>th</sup> week	40%

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**

- Weekly office hours + Appointments
- Weekly academic advising hours
- Extra weekly 2 office hours prior to exams.
- Tutorials are also provided to the students

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	COM and.NET component services By Juval Lowly
<b>Essential References Materials</b>	Software engineering, By : lan sommervil. 9/e , 2008
<b>Electronic Materials</b>	
<b>Other Learning Materials</b>	Inside com Microsoft`s component object model, By : Dale Rogerson Testing and quality Assurance for Component-based software, By: Jerry zeyu Gao, H.-S Jacob Tsao, Ye Wu, Publisher : Artech House

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Room B-58 Laboratory A-16L
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Data show, PCs.
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> <li>• Printer is important in the lab to print reports and some snapshots.</li> <li>• Projector and PC for the lab instructor is required</li> </ul>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Online course survey	Students	Indirect
Focus group discussion with small groups of students.	Instructor	Direct
Extent of achievement of course learning outcomes	instructor	Direct

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<b>Council / Committee</b>	Computer Science Department council
<b>Reference No.</b>	14440203-0185-00002
<b>Date</b>	1st Sep, 2022