

# Course Specifications

<b>Course Title:</b>	Parallel and Distributed Computing
<b>Course Code:</b>	41011412
<b>Program:</b>	Computer Science
<b>Department:</b>	Computer Science and Engineering
<b>College:</b>	Computer Science and Information Technology
<b>Institution:</b>	Albaha University

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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 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> 8 <sup>th</sup> Level/4 <sup>th</sup> Year			
<b>4. Pre-requisites for this course (if any):</b> Computer Networks (41011213)			
<b>5. Co-requisites for this course (if any):</b> None			

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50%
2	Blended		
3	E-learning		
4	Correspondence		
5	Other (Lab)	30	50%

## 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	<b>Total</b>	60
<b>Other Learning Hours*</b>		
1	Study	30
2	Assignments	10
3	Library	-
4	Projects/Research Essays/Theses	6
5	Others (specify)	-
	<b>Total</b>	46

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This course provides an overview of distributed and parallel systems, with special emphasis on cloud-based implementations. Topics include distributed systems and models, computer clusters for scalable parallel computing, virtual machines, cloud platform architecture, service-oriented architectures, grid computing, and peer-to-peer computing.

Lab :

In the lab part, students study: (1) several Cloud Computing infrastructures/platforms: Amazon Web Services, Azure (Microsoft), Google App Engine and OpenStack. (2) Study of tools and techniques for cloud portability and interoperability. (3) Study of NoSQL databases offered as a storage service (Amazon Dynamo, Google Datastore). (4) Study of application examples used by businesses that are run/deployed on cloud architectures.

### 2. Course Main Objective

The main purpose for this course is to teach students how to:

- Describe the concept of high-performance and high-throughput computing systems in parallel computers
- List the evolutionary changes that have occurred in parallel, distributed, and cloud computing over the past 30 years
- Describe concept of Internet clouds
- Recognize the service-oriented architecture
- Demonstrate the Internet of Things
- Interact in groups collaboratively
- Communicate concepts and techniques in oral presentations

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1	Describe the concept of high-performance and high-throughput computing systems in parallel computers	K1
1.2	List the evolutionary changes that have occurred in parallel, distributed, and cloud computing over the past 30 years	K1
1.3		
1...		
2	<b>Skills :</b>	
2.1	Describe concept of Internet clouds	S1
2.2	Recognize the service-oriented architecture	S2
2.3	Demonstrate the Internet of Things	S3
2...		
3	<b>Competence:</b>	
3.1	Communicate concepts and techniques in oral presentations	C1
3.2	Work both independently and collaboratively	C2
3.3		
3...		

### C. Course Content

No	List of Topics (Lecture)	Contact Hours
1	Distributed system models and enabling technologies	6
2	Computer clusters for scalable parallel computing	3
3	Virtual machines and virtualization of clusters and data centers	3
4	Cloud platform architecture over virtualized data centers	6
5	Service-oriented architectures for distributed computing	6
6	Cloud programming and software environments	3
7	Grid computing systems and resource management	3
8	Peer-to-peer computing and overlay networks	
<b>Total</b>		<b>30</b>

No	List of Topics (Lab)	Contact Hours
1	Cloud Computing infrastructures/platforms	4
2	techniques for cloud portability and interoperability	4
3	advanced features of SIMD Vectorization /NoSQL databases offered as a storage service	4
4	To learn sharing of work among threads using “Loop Construct”/ cloud architectures	2
5	Cloud platform/infrastructure	4
6	To learn sharing of work among threads using ‘Single Construct’	2
7	Understanding basic MPI (Message Passing Interface) Principles	4
8	To learn the communication using MPI processes/ heterogeneous set of resources	4
9	To learn the “MPI Collective” operations	2
<b>Total</b>		<b>30</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</b>		
1.1	Describe the concept of high-performance and high-throughput computing systems in parallel computers	Lectures Assignments	Homework Midterm exams Final Exam Lab.Exam
1.2	List the evolutionary changes that have occurred in parallel, distributed, and cloud computing over the past 30 years	Lectures Assignments	Homework Midterm exams Final Exam Lab.exam
...			
<b>2.0</b>	<b>Skills</b>		
2.1	Describe concept of Internet clouds	Lectures Assignments	Homework Midterm exams Final Exam
2.2	Recognize the service-oriented architecture	Lectures Assignments	Homework Midterm exams Final Exam
2.3	Demonstrate the Internet of Things	Lectures Assignments	Homework Midterm exams Final Exam
<b>3.0</b>	<b>Competence</b>		
3.1	Communicate concepts and techniques in oral presentations	Oral Presentations	Oral Presentations
3.2	Work both independently and collaboratively	Small groups	Course project presentation and report
...			

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework exercises and/or programming assignments	Every two weeks	10%
2	Midterm	Every two weeks	20%
3	Quizzes	Within the 8th Week	10%
4	Lab exam	Week 14	20%
5	Final Exam	Week 14	40%
6	Total		100%

\*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 :**

The faculty offered 3 hours per week for each group of students as office hour. In addition, the students are welcomed to send their enquires via the official email or the LMS (Rafid).

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>Distributed and Cloud Computing: from Parallel Processing to the Internet of Things,” by Kai Hwang, Jack Dongarra, and Geoffrey C. Fox, Morgan Kaufmann, 2011.</li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>Computer Science Curriculum 2013 – <a href="http://cs2013.org">http://cs2013.org</a></li> <li>ACM (Association for Computer Machinery) Curricula Recommendations - <a href="http://www.acm.org/education/curricula-recommendations">http://www.acm.org/education/curricula-recommendations</a></li> </ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>Access to the Saudi Digital Library (SDL).</li> <li>Using the learning management system of the university – Rafid System (<a href="https://lms.bu.edu.sa/">https://lms.bu.edu.sa/</a>).</li> <li>ACM (Association for Computer Machinery) web site - <a href="http://www.acm.org/">http://www.acm.org/</a></li> <li>ACM SIGART (Special Interest Group on Computer Architecture) - <a href="http://www.sigarch.org/">http://www.sigarch.org/</a></li> <li>IEEE Computer Society web site - <a href="http://www.computer.org/portal/web/guest/home">http://www.computer.org/portal/web/guest/home</a></li> <li>Open access course material online</li> </ul>
<b>Other Learning Materials</b>	None

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) <ul style="list-style-type: none"> <li>A classroom or lecture hall with whiteboard for 25 students.</li> <li>A laboratory with 25 computers.</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>A digital image projection system with connection to desktop computer and laptop computer.</li> <li>High speed Internet connection.</li> <li>An instructor computer station.</li> </ul>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>Student</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Program Leader</li> </ul>	<ul style="list-style-type: none"> <li>Surveys (indirect).</li> <li>Direct feedback from students</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Class visit by Program Leader</li> </ul>


Evaluation Areas/Issues	Evaluators	Evaluation Methods
	<ul style="list-style-type: none"> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive Course report (where we can find information about teaching)</li> <li>difficulties and action plan, ...)</li> </ul>
Effectiveness of assessment	<ul style="list-style-type: none"> <li>Student</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Examination Committee</li> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Surveys (indirect).</li> <li>Direct feedback from students</li> <li>Assessment results (direct)</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Exam evaluation by the Exam Evaluation Committee (indirect)</li> </ul>
Extent of achievement of course learning outcomes	<ul style="list-style-type: none"> <li>Faculty</li> <li>Program Leader</li> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Student Results (direct)</li> <li>Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Surveys (indirect)</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Comprehensive Course report (where we can find information about difficulties and challenges about learning resources as well as consequences and action plan, ...)</li> </ul>

**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

Council / Committee	Computer science & Engineering department council 
Reference No.	Second meeting 2020-2021 academic year
Date	1-september-2020



# Course Specifications

<b>Course Title:</b>	<b>Senior Project for CS 2</b>
<b>Course Code:</b>	<b>41011421</b>
<b>Program:</b>	<b>Computer Science</b>
<b>Department:</b>	<b>Computer Science and Engineering</b>
<b>College:</b>	<b>Computer Science and Information Technology</b>
<b>Institution:</b>	<b>Albaha University</b>

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<b>C. Course Content .....</b>	<b>4</b>
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1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods .....	5
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1.Learning Resources .....	6
2. Facilities Required.....	6
<b>G. Course Quality Evaluation.....</b>	<b>6</b>
<b>H. Specification Approval Data .....</b>	<b>7</b>

## A. Course Identification

<b>1. Credit hours: 3</b>			
<b>2. Course type</b>			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 8 <sup>th</sup> level / 4 <sup>th</sup> year.			
<b>4. Pre-requisites for this course (if any):</b> Senior Project for CS 1 - 41011411			
<b>5. Co-requisites for this course (if any): none</b>			

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50%
2	Blended	-	-
3	E-learning	15	25%
4	Correspondence	-	-
5	Other (practical)	15	25%

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	-
3	E-learning	15
4	Others (practical)	15
	<b>Total</b>	60
<b>Other Learning Hours*</b>		
1	Study	20
2	Assignments	-
3	Library	-
4	Projects/Research Essays/Theses	30
5	Others(specify)	-
	<b>Total</b>	50

\*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

Final Year Projects represent the culmination of study towards the Bachelor of Computer Science degree. This project serves as a capstone to the Computer Science Major. This course is a 2-semester sequence. Senior Project 1 can be used to find, research, and design the project. Senior Project 2 can be used to implement, document, and orally present the results of the project.

### 2. Course Main Objective

The main purpose for this course is to teach students how to:

- Recall the results of requirements analysis.
- Recognize the design approach appropriate for the problem.
- Design a problem solution.
- Develop the system components.
- Evaluate the developed system.
- Write a project reports.
- Interact in groups collaboratively
- Communicate concepts and techniques in oral presentations.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1	Recall the results of requirements analysis.	K1
1.2	Recognize the design approach appropriate for the problem.	K2
2	<b>Skills :</b>	
2.1	Design a problem solution.	S1
2.2	Develop the system components.	S2
2.3	Evaluate the developed system.	S3
2.4	Write a project report.	S4
3	<b>Competence:</b>	
3.1	Interact in groups collaboratively	C1
3.2	Communicate concepts and techniques in oral presentations	C2
3.3	Demonstrate ability to communicate with, and learn from, experts from different domains throughout the career.	C3

## C. Course Content

No	List of Topics (Lecture)	Contact Hours
1	Recall the results of requirements analysis	3
2	Recognize the design approach appropriate for the problem	3
3	Design a problem solution	9
4	Develop the system components	12
5	System Integration	6
6	System Testing and Verification	6

7	Final preparation of Project Report	6
<b>Total</b>		<b>45</b>

## **D. Teaching and Assessment**

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

<b>Code</b>	<b>Course Learning Outcomes</b>	<b>Teaching Strategies</b>	<b>Assessment Methods</b>
<b>1.0</b>	<b>Knowledge</b>		
1.1	Recall the results of requirements analysis.	- Lectures	- Midterm Evaluation - Final Evaluation
1.2	Recognize the design approach appropriate for the problem.	- Lectures - Project assignment	- Midterm Evaluation - Final Evaluation
<b>2.0</b>	<b>Skills</b>		
2.1	Design a problem solution.	- Lectures - Case study - Small Workshop	- Midterm Evaluation - Final Evaluation
2.2	Develop the system components.	- Project assignment - Group discussion	- Midterm Evaluation - Final Evaluation
2.3	Evaluate the developed system.	- Lectures - Project assignment - Group discussion	- Midterm Evaluation - Final Evaluation
2.4	Write a project reports	- Case study - Small Workshop	- Project Report - Final Evaluation
<b>3.0</b>	<b>Competence</b>		
3.1	Interact in groups collaboratively	- Small Groups	- Oral presentations
3.2	Communicate concepts and techniques in oral presentations	- Project presentations	- Oral presentations
3.3	Demonstrate ability to communicate with, and learn from, experts from different domains throughout the career.	-Group discussion	- Oral presentations

### **2. Assessment Tasks for Students**

<b>#</b>	<b>Assessment task*</b>	<b>Week Due</b>	<b>Percentage of Total Assessment Score</b>
<b>1</b>	Midterm Evaluation and oral presentation	8	30%
<b>2</b>	Final Evaluation, Project Report and oral presentation	15	70%

\*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 :**

*-The faculty offered 3hours per week for each group of students as office hour. In addition, the students are welcomed to send their enquires via the official email or the LMS (Rafid)*

## **F. Learning Resources and Facilities**

## 1. Learning Resources

<b>Required Textbooks</b>	- No specific textbook is required
<b>Essential References Materials</b>	- ACM (Association for Computer Machinery) Curricula Recommendations - <a href="http://www.acm.org/education/curricula-recommendations">http://www.acm.org/education/curricula-recommendations</a>
<b>Electronic Materials</b>	- Access to the Saudi Digital Library (SDL). - Using the learning management system of the university – Rafid System ( <a href="https://lms.bu.edu.sa/">https://lms.bu.edu.sa/</a> ).
<b>Other Learning Materials</b>	Project specific

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>A classroom or lecture hall with whiteboard for 5 students or more.</li> <li>A laboratory with 5 computers or more.</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>A digital image projection system with connection to desktop computer and laptop computer.</li> <li>High speed Internet connection.</li> </ul>
<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>Project Specific</li> </ul>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Program Leader</li> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Surveys (indirect).</li> <li>Direct feedback from students.</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Class visit by Program Leader</li> <li>Comprehensive Course report (where we can find information about teaching difficulties and action plan, ...)</li> </ul>
Effectiveness of assessment	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Course Coordinator</li> <li>Exam Evaluation Committee</li> </ul>	<ul style="list-style-type: none"> <li>Surveys (indirect).</li> <li>Direct feedback from students.</li> <li>Assessment results (direct)</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Comprehensive Course report (where we can find information about assessment)</li> </ul>


Evaluation Areas/Issues	Evaluators	Evaluation Methods
		difficulties and action plan, ...) <ul style="list-style-type: none"> <li>Exam evaluation by the Exam Evaluation Committee (indirect)</li> </ul>
Extent of achievement of course learning outcomes	<ul style="list-style-type: none"> <li>Faculty</li> <li>Program Leaders</li> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Student Results (direct)</li> <li>Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>Surveys (indirect)</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Comprehensive Course report (where we can find information about difficulties and challenges about learning resources as well as consequences and action plan, ...)</li> </ul>

**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

Council / Committee	Computer science & Engineering department council 
Reference No.	Second meeting 2020-2021 academic year
Date	1-september-2020

# Course Specifications

<b>Course Title:</b>	<b>Selected Topics in Computer Science</b>
<b>Course Code:</b>	<b>41011616</b>
<b>Program:</b>	<b>Computer Science</b>
<b>Department:</b>	<b>Computer Science and Engineering</b>
<b>College:</b>	<b>Computer Science and information technology</b>
<b>Institution:</b>	<b>Albaha University</b>



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<b>E. Student Academic Counseling and Support .....</b>	<b>6</b>
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1.Learning Resources .....	6
2. Facilities Required.....	7
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<b>H. Specification Approval Data .....</b>	<b>8</b>

## A. Course Identification

<b>1. Credit hours: 3</b>			
<b>2. Course type</b>			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 8 <sup>th</sup> level / 4 <sup>th</sup> year			
<b>4. Pre-requisites for this course (if any): none</b>			
<b>5. Co-requisites for this course (if any): none</b>			

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50%
2	Blended	-	-
3	E-learning	-	-
4	Correspondence	-	-
5	Other (Lab)	30	50%

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	30
3	E-learning	-
4	Other	-
	<b>Total</b>	60
<b>Other Learning Hours*</b>		
1	Study	30
2	Assignments	10
3	Library	-
4	Projects/Research Essays/Theses	10
5	Others(specify)	-
	<b>Total</b>	50

\*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

Lecture:

In this course, topics are selected from different areas in Computer Science that are not covered in the description of the courses listed in the curriculum. This course will cover subjects of recent issues and trends in Computer Science. Topic is based on current market trends, but not limited to the following advanced subjects: big data, Hadoop, python, cloud computing, internet of things, Blockchain technology, and more. The instructor is responsible to plan for the course including learning outcomes, teaching methods, subjects, textbook and references, etc. like any other topic.

Labs:

A suitable lab work based on appropriate software for the topic selected must be recommended by the instructor ahead.

### 2. Course Main Objective

The main purpose for this course is to teach students how to:

- Describe current technology trends in computer science related to the selected topic
- Define core concepts of topic selected.
- Define the basic architecture of the systems concerned by the selected topic (e.g Big data Platform if Big data was the selected topic) and supported technologies (e.g. Hadoop and Spark for big data topic)
- Outline any programming, design, analytical tools related to the selected topic (e.g. Python for implementation and predictive analysis for big data applications when Big Data topic is selected).
- Solve problems by applying different mathematical and logical principles.
- Practice on covered topics by solving given assignments periodically.
- Interact in groups collaboratively.
- Communicate concepts and techniques in oral presentations.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1		
1.2		
2	<b>Skills :</b>	
2.1		
2.2		
2.3		
2.4		
3	<b>Competence:</b>	
3.1		
3.2		

## C. Course Content

No	List of Topics (Lecture)	Contact Hours
1		
2		
3		
4		
5		
6		
7		
<b>Total</b>		<b>30</b>

No	List of Topics (Lab)	Contact Hours
1		
2		
3		
4		
5		
6		
7		
<b>Total</b>		<b>30</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</b>		
1.1	Describe current technology trends in computer science related to the selected topic	- Lectures - Assignments	- Assignments - Midterm exam - Quiz - Final Exam
1.2	Define core concepts of topic selected.	- Lectures - Assignments	- Assignments - Midterm exam - Quiz - Final Exam
1.3	Define the basic architecture of the systems concerned by the selected topic (e.g Big data Platform if Big data was the selected topic) and supported technologies (e.g. Hadoop and Spark for big data topic)	- Lectures - Assignments	- Assignments - Midterm exam - Quiz - Final Exam
1.4	Outline any programming, design, analytical tools related to the selected topic (e.g. Python for implementation and predictive analysis for big data applications when Big Data topic is selected).	- Lectures - Assignments	- Assignments - Midterm exam - Quiz - Final Exam
<b>2.0</b>	<b>Skills</b>		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	Solve problems by applying different mathematical and logical principles.	- Lectures - Assignments	- Assignments - Midterm exam - Quiz - Final Exam
2.2	Practice on covered topics by solving given assignments periodically.	- Lectures - Assignments	- Assignments (exercises, programming) - Midterm exam - Quiz - Final Exam
<b>3.0</b>	<b>Competence</b>		
3.1	Interact in groups collaboratively.	Small groups	- Reports - Class discussions
3.2	Communicate concepts and techniques in oral presentations.	Oral Presentations	- Oral Presentations

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework	Every two weeks	5%
2	Midterm Exam	7	20%
3	Quiz	10	5%
4	Project with oral presentation	13 or 14	10%
5	Lab	15	20%
6	Final Exam	16	40%
	<b>Total</b>		<b>100%</b>

\*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:**

The faculty offered 3 hours per week for each group of students as office hour. In addition, the students are welcomed to send their enquires via the official email or the LMS (Rafid).

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	- To be recommended by the instructor(s) upon topic selection.
<b>Essential References Materials</b>	- To be recommended by the instructor(s) upon topic selection.
<b>Electronic Materials</b>	- To be recommended by the instructor(s) upon topic selection.

<b>Other Learning Materials</b>	- To be recommended by the instructor(s) upon topic selection.
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## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>• A classroom or lecture hall with whiteboard.</li> <li>• A instructor computer station with High speed Internet connection installed with required tools</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>• A projector</li> <li>• Internet connection</li> <li>• Topic specific tools.</li> </ul>
<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>• To be recommended by the instructor(s) upon topic selection to suit the selected topic especially the lab resources (software tools or otherwise needed)</li> </ul>

## G. Course Quality Evaluation


Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>• Student</li> <li>• Faculty</li> <li>• Peer Reviewers</li> <li>• Program Leader</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Surveys (indirect).</li> <li>• Direct feedback from students</li> <li>• Course evaluation by Peer Reviewers (indirect).</li> <li>• Class visit by Program Leader</li> <li>• Comprehensive Course report (where we can find information about teaching</li> <li>• difficulties and action plan, ...)</li> </ul>
Effectiveness of assessment	<ul style="list-style-type: none"> <li>• Student</li> <li>• Faculty</li> <li>• Peer Reviewers</li> <li>• Examination Committee</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Surveys (indirect).</li> <li>• Direct feedback from students</li> <li>• Assessment results (direct)</li> <li>• Course evaluation by Peer Reviewers (indirect).</li> <li>• Exam evaluation by the Exam Evaluation Committee (indirect)</li> </ul>
Extent of achievement of course learning outcomes	<ul style="list-style-type: none"> <li>• Faculty</li> <li>• Program Leader</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Student Results (direct)</li> <li>• Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>• Students</li> <li>• Faculty</li> <li>• Peer Reviewers</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Surveys (indirect)</li> <li>• Course evaluation by Peer Reviewers (indirect).</li> <li>• Comprehensive Course report (where we can find information about difficulties and challenges about learning resources as well as consequences and action plan, ...)</li> </ul>

**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>	<b>Computer science &amp; Engineering department council</b> 
<b>Reference No.</b>	Second meeting 2020-2021 academic year
<b>Date</b>	1-september-2020

# Course Specifications

<b>Course Title:</b>	Ethics in Computing and Professional Issues
<b>Course Code:</b>	41021428
<b>Program:</b>	Computer Science
<b>Department:</b>	Computer Science and Engineering
<b>College:</b>	Computer Science and Information Technology
<b>Institution:</b>	Albaha University



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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 type="checkbox"/>	Department <input checked="" type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 8 <sup>th</sup> Level /4 <sup>th</sup> Year			
<b>4. Pre-requisites for this course (if any):</b> None			
<b>5. Co-requisites for this course (if any):</b> None			

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	67%
2	Blended	6	13%
3	E-learning	9	20%
4	Correspondence		
5	Other		

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	45
2	Laboratory/Studio	--
3	Tutorial	--
4	Others (specify)	--
	<b>Total</b>	<b>45</b>
<b>Other Learning Hours*</b>		
1	Study	15
2	Assignments	07
3	Library	05
4	Projects/Research Essays/Theses	05
5	Others (specify)	05
	<b>Total</b>	<b>37</b>

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

Introduction to Social and Ethical Computing , to create an environment for the students in which they will have an understanding of what the computer is, the major players in the computing , the history of computer crimes, the security and vulnerabilities of computer networks, to create a context in which the students can discuss the major computer crimes that have occurred, the types of such crimes, their topology, their costs to individuals and society, and the detection and prevention of those , the Digital Millennium Copyright Act discussed.

### 2. Course Main Objective

Upon successful completion of this course, the student will be able to:

- Describe positive and negative ways in which computer technology impact social interaction at the personal level.
- Describe ways in which computer professionals may contribute to public policy.
- Identify ethical issues in software development and determine how to address them technically and ethically
- Recognize the ethical responsibility of ensuring software correctness, reliability and safety.

Describe the consequences of inappropriate professional behavior. organizational structure, strategic planning, goal setting, corporate social responsibility, international arena, changing market intermediaries, resource allocation and customer service.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1	Describe positive and negative ways in which computer technology impact social interaction at the personal level	K1
1.2	Describe ways in which computer professionals may contribute to public policy	K2
1.3	Identify ethical issues in software development and determine how to address them technically and ethically	K3
1.4	Recognize the ethical responsibility of ensuring software correctness, reliability and safety	K3
2	<b>Skills :</b>	
2.1	Describe positive and negative ways in which computer technology impact social interaction at the personal level	S1
2.2	Describe the consequences of inappropriate professional behavior	S2
3	<b>Competence:</b>	
3.1	Work both independently and collaboratively	C1
3.2	Communicate concepts and techniques in oral presentations	C2

## C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Social and Ethical Computing	3
2	Morality and the Law	6
3	Ethics, Technology, and Value	6
4	Ethics and the Professions	6
5	Anonymity, Security, Privacy, and Civil Liberties	6
6	Intellectual Property Rights and Computer Technology	6
7	Software Issues: Risks and Liabilities	6
8	Computer Crimes	6
<b>Total</b>		<b>45</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</b>		
1.1	Describe positive and negative ways in which computer technology impact social interaction at the personal level	- Lectures -Assignments	- Homework - Midterm - Final exam
1.2	Describe ways in which computer professionals may contribute to public policy	- Lectures -assignments	- Homework - Midterm - Final exam
1.3	Identify ethical issues in software development and determine how to address them technically and ethically	- Lectures -assignments	- Homework - Midterm - Final exam
1.4	Recognize the ethical responsibility of ensuring software correctness, reliability and safety	- Lectures -assignments	- Homework - Midterm - Final exam
<b>2.0</b>	<b>Skills</b>		
2.1	Describe positive and negative ways in which computer technology impact social interaction at the personal level	- Lectures -Assignments -Case study	- Homework - Final exam Course project presentation and report
2.2	Describe the consequences of inappropriate professional behavior	-Lectures -Assignments -Case study	- Homework - Midterm Final exam
<b>3.0</b>	<b>Competence</b>		
3.1	Work both independently and collaboratively	Small groups	Course project presentation and report
3.2	Communicate concepts and techniques in oral presentations	- Lectures assignments	- Homework - Midterm Final exam

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework	Every two	10%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
		Weeks	
2	Midterm	7	20%
3	Quiz	13	20%
5	Final Exam	16	50%

\*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 :**

The faculty offered 3 hours per week for each group of students as office hour. In addition, the students are welcomed to send their enquires via the official email or the LMS (Rafid).

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	Students can update their knowledge by visiting different websites related to discrete structures and their concepts. <ul style="list-style-type: none"> <li>David Gries Fred B. Schneider , TEXTS IN COMPUTER SCIENCE Editors, 2012</li> <li>Computer Science Curriculum 2013 – <a href="http://cs2013.org">http://cs2013.org</a></li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>ACM (Association for Computer Machinery) Curricula Recommendations - <a href="http://www.acm.org/education/curricula-recommendations">http://www.acm.org/education/curricula-recommendations</a></li> </ul>
<b>Electronic Materials</b>	ACM (Association for Computer Machinery) web site - <a href="http://www.acm.org/">http://www.acm.org/</a> • IEEE Computer Society web site - <a href="http://www.computer.org/portal/web/guest/home">http://www.computer.org/portal/web/guest/home</a> • Access to the Saudi Digital Library (SDL). • Using the learning management system of the university – Rafid System ( <a href="https://lms.bu.edu.sa/">https://lms.bu.edu.sa/</a> ).
<b>Other Learning Materials</b>	None

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration)	Each class room size is provided with 20-25 seats which are more enough to accommodate registered students

Item	Resources
rooms/labs, etc.)	
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Class room with smart boards Desk tops with genuine Operating systems and Anti-virus Smart Podiums
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Needed Internet facility to explain real time examples by on line

## G. Course Quality Evaluation


Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>• Student</li> <li>• Faculty</li> <li>• Peer Reviewers</li> <li>• Program Leader</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Surveys (indirect).</li> <li>• Direct feedback from students</li> <li>• Course evaluation by Peer Reviewers (indirect).</li> <li>• Class visit by Program Leader</li> <li>• Comprehensive Course report (where we can find information about teaching</li> <li>• difficulties and action plan, ...)</li> </ul>
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Extent of achievement of course learning outcomes	<ul style="list-style-type: none"> <li>• Faculty</li> <li>• Program Leader</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Student Results (direct)</li> <li>• Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>• Students</li> <li>• Faculty</li> <li>• Peer Reviewers</li> <li>• Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>• Surveys (indirect)</li> <li>• Course evaluation by Peer Reviewers (indirect).</li> <li>• Comprehensive Course report (where we can find information about difficulties and challenges about learning resources as well as consequences and action plan, ...)</li> </ul>

**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

Council / Committee	Computer science & Engineering department council 
Reference No.	Second meeting 2020-2021 academic year
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