





# **Course Specifications**

<b>Course Title:</b>	Senior Project for CS 1
Course Code:	41011411
Program:	Computer Science
Department:	Computer Science and Engineering
College:	Computer Science and information technology
Institution:	Albaha University



### Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes4	
1. Course Description	4
2. Course Main Objective	4
3. Course Learning Outcomes	4
C. Course Content	
D. Teaching and Assessment5	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support5	
F. Learning Resources and Facilities6	
1.Learning Resources	6
2. Facilities Required	6
G. Course Quality Evaluation6	
H. Specification Approval Data7	

#### A. Course Identification

1. Credit hours: 3 hours		
2. Course type		
<b>a.</b> University College Department $\checkmark$ Ot	hers	
<b>b.</b> Required $\checkmark$ Elective		
<b>3.</b> Level/year at which this course is offered: 7 <sup>th</sup> level / 4 <sup>th</sup> year		
<ul> <li>4. Pre-requisites for this course (if any):</li> <li>- Earned 85 CH</li> <li>- Software Engineering(41011313)</li> </ul>		
5. Co-requisites for this course (if any): none		

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

No	Mode of Instruction	<b>Contact Hours</b>	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	
Contac	t Hours		
1	Lecture	30	
2	Laboratory/Studio	-	
3	E-learning	15	
4	Others (practical)	-	
	Total	45	
Other 2	Other Learning Hours*		
1	Study	20	
2	Assignments	-	
3	Library	-	
4	Projects/Research Essays/Theses	30	
5	Others(specify)	-	
	Total	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

This course is the first part of the capstone course for the CS program. The capstone project will involve integrating previous coursework into a project that has all the elements of a common business problem. Students will be required to develop solutions to these problems by problem definition, requirements analysis, and design planning of a solution. Oral and written reports will be required. Teamwork and communication skills will be part of the topics covered.

#### 2. Course MainObjective

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

- Outline a real-life problem.
- Describe a problem from inception to an CS solution planning.
- Create a requirements analysis for the real-life problem in the problem environment.
- Subdivide the required tasks to solve the outlined problem.
- Design a preliminary version of the solution.
- Write a project reports.
- Interact in groups collaboratively.
- Communicate concepts and techniques in oral presentations.

#### 3. Course Learning Outcomes

	AlignedPLO s	
1	Knowledge:	
1.1	Outline a real-life problem	K1
1.2	Describe a problem from inception to CS solution planning	K2
2	Skills :	
2.1	Create a requirements analysis for the real-life problem in the problem environment	S1
2.2	Subdivide the required tasks to solve the outlined problem	S2
2.3	Design a preliminary version of the solution	S3
2.4	Write a project reports	S4
3	Competence:	
3.1	Work both independently and 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	Initiation of the Project	4
2	Preliminary Investigation	
3	Requirements Analysis and Specification	
4	Dividing the project tasks	4
5	System Analysis	6

6	System Preliminary Design	4
7 Project documentation writing (reports, presentations, poster,)		4
Total		30

#### **D.** Teaching and Assessment

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

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	Knowledge	1	
1.1	Outline a real-life problem	- Lectures	- Midterm Evaluation - Final Evaluation
1.2	Describe a problem from inception to	- Lectures Project assignment	- Midterm Evaluation
2.0			
2.1	Create a requirements analysis for the real-life problem in the problem environment	- Lectures - Case study - Small Workshop	- Midterm Evaluation - Final Evaluation
2.2	Subdivide the required tasks to solve the outlined problem	<ul><li>Project assignment</li><li>Group discussion</li></ul>	- Oral presentations
2.3	Design a preliminary version of the solution	- Lectures - Case study - Small Workshop	- Midterm Evaluation - Final Evaluation
2.4	Write a project reports	- Case study - Small Workshop	<ul> <li>Project Report</li> <li>Final Evaluation</li> </ul>
3.0	Competence		
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.	- Project presentations	- Oral presentations

#### 2. Assessment Tasks for Students

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

\*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 groupof students as office hour. In addition, the students are welcomed to send their enquires viathe official email or the LMS (Rafid)

#### F. Learning Resources and Facilities

Required Textbooks	-No specific textbook is required	
Essential References Materials- Computer Science Curriculum 2013 – http://cs2013.org - ACM (Association for Computer Machinery) Curricula Recommendations - http://www.acm.org/education/curricula-recommendations		
Electronic Materials	<ul> <li>Access to the Saudi Digital Library (SDL).</li> <li>Using the learning management system of the university – Rafid System (<u>https://lms.bu.edu.sa/</u>).</li> <li>ACM (Association for Computer Machinery) Curricula Recommendations - http://www.acm.org/education/curricula- recommendations</li> </ul>	
Other Learning Materials	Project Specific.	

#### **1.Learning Resources**

#### 2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul> <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> <li>A digital image projection system with connection to desktop computer and laptop computer.</li> <li>High speed Internet connection.</li> </ul>
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Project Specific.

#### G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>	
Effectiveness of teaching	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Program Leader</li> <li>CourseCoordinator</li> </ul>	<ul> <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 teachingdifficulties and action plan,)</li> </ul>	
Effectiveness of assessment	<ul><li>Students</li><li>Faculty</li></ul>	<ul><li>Surveys (indirect).</li><li>Direct feedback from students.</li></ul>	

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>	
	<ul> <li>Peer Reviewers</li> <li>Course Coordinator</li> <li>Exam Evaluation Committee</li> </ul>	<ul> <li>Assessment results (direct)</li> <li>Course evaluation by Peer Reviewers (indirect).</li> <li>Comprehensive Course report (where we can find information about assessment difficulties and action plan,)</li> <li>Exam evaluation by the ExamEvaluation Committee (indirect)</li> </ul>	
Extent of achievement of course learning outcomes	<ul><li>Faculty</li><li>Program Leaders</li><li>Course Coordinator</li></ul>	<ul> <li>Student Results (direct)</li> <li>Comprehensive Course report (where we can find the CLO assessmentresults)</li> </ul>	
Quality of learning resources	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>CourseCoordinator</li> </ul>	<ul> <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 asconsequences and action plan,)</li> </ul>	

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality oflearning 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>	Information Security and Privacy
Course Code:	41011422
Program:	Computer Science
Department:	Computer Science
College:	Faculty of Computer Science & Information Technology
Institution:	Al-Baha University



### Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	
1. Course Description	3
2. Course Main Objective	4
3. Course Learning Outcomes	4
C. Course Content	
D. Teaching and Assessment5	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support5	
F. Learning Resources and Facilities6	
1.Learning Resources	6
2. Facilities Required	6
G. Course Quality Evaluation6	
H. Specification Approval Data7	

#### A. Course Identification

1.	Credit hours: 3hours			
2.	Course type			
a.	University College Department 🗸 Others			
b.	Required 🖌 Elective			
3.	Level/year at which this course is offered: 7 <sup>th</sup> level / 4 <sup>th</sup> year			
4.	4. Pre-requisites for this course (if any):			
5.	Co-requisites for this course (if any): none			

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

No	Mode of Instruction	<b>Contact Hours</b>	Percentage
1	Traditional classroom	3	80%
2	Blended		
3	E-learning	1	20%
4	Correspondence		
5	Other		

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

No	Activity	Learning Hours
Contac	et Hours	
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	45
Other	Learning Hours*	
1	Study	2
2	Assignments	2
3	Library	1
4	Projects/Research Essays/Theses	1
5	Others(specify)	
[	Total	6

\*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 introduction to the critical area of information security and privacy. Topics include cryptography, security principles, authentication, formal security models, malware, buffer overflows, Internet security, intrusion detection, and privacy protection.

#### 2. Course MainObjective

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

- Describe the computer security and privacy
- List themethods and techniques of computer security and privacy
- Describe computer security and privacy protection
- Recognize theoretical underpinnings of computer security and privacy
- Demonstrate the Devise methods, technologies, and solutions for protecting organizations and

individuals

- 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	Knowledge:	
1.1	Describe the computer security and privacy	K1
1.2	List the methods and techniques of computer security and privacy	K2
2	Skills :	
2.1	Describe computer security and privacy protection	S1
2.2	Recognize theoretical underpinnings of computer security and privacy	S2
2.3	Demonstrate the Devise methods, technologies, and solutions for protecting organizations and individuals	S3
3	Competence:	
3.1	Interact in groups collaboratively	C1
3.2	Communicate concepts and techniques in oral presentations	C2

#### C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Information Security	6
2	Classical EncryptionTechniques	9
3	Block Cipher Operation	6
4	Public Key Cryptography and RSA	9
5	IP Security	6
6	Web Security	3
7	Network Security Firewalls	3
8	Malicious Software	3
Total		

#### **D.** Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Describe the computer security and privacy	-Lectures -Assignments	-Homework -Midterm exams -Final Exam
1.2	List the methods and techniques of computer security and privacy	-Lectures -Assignments	-Homework -Midterm exams -Final Exam
2.0	Skills		
2.1	Describe computer security and privacy protection	-Lectures -Assignments	-Homework -Midterm exams -Final Exam
2.2	Recognize theoretical underpinnings of computer security and privacy	-Lectures -Assignments -Case study	-Quizzes -Midterm exams -Final Exam
2.3	Demonstrate the Devise methods, technologies, and solutions for protecting organizations and individuals	-Lectures -Assignments	-Homework -Midterm exams -Final Exam
3.0	Competence		
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 exercises and/or programming	Every two weeks	10%
2	Report, presentation, and Class discussions	Week 12	5%
3	Midterm	Within the 8th Week	20%
4	Quiz	Week 11	15%
5	Final Exam	Week 16	50%
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 3hours per week for each group of students as office hour. In addition, the students are welcomed to send their enquiresvia the official email or the LMS (Rafid)

#### F. Learning Resources and Facilities

#### **1. Learning Resources**

Required Textbooks	"Introduction to Computer Security," by Matt Bishop, Addison Wesley Professional, 2004. Cryptography&NetworkSecurityprinciple&practicesbyWilliamSta llings(ForthEditionsorLater)
Essential References Materials	Computer Science Curriculum 2013 – http://cs2013.org ACM (Association for Computer Machinery) Curricula Recommendations -http://www.acm.org/education/curricula- recommendations
Electronic Materials	Security Engineering-by Ross Anderson (Second Edition or later)
Other Learning Materials	

#### 2. Facilities Required

Item	Resources	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• A classroom or lecture hall with whiteboard for 25+6 students.	
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	None	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)		

#### G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>
Effectiveness of teaching	<ul> <li>Student</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Program Leader</li> <li>Course Coordinator</li> </ul>	<ul> <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> <li>Student</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Examination Committee</li> <li>Course Coordinator</li> </ul>	<ul> <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>

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>
Extent of achievement of course learning outcomes	<ul><li>Faculty</li><li>Program Leader</li><li>Course Coordinator</li></ul>	<ul> <li>Student Results (direct)</li> <li>Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Quality of learning resources	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Course Coordinator</li> </ul>	<ul> <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 oflearning 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>	Compiler Design and Theory
Course Code:	41011423
Program:	Computer Science
Department:	Computer Science and Engineering
College:	Computer Science and information technology
Institution:	Albaha University



### Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes4	
1. Course Description	4
2. Course Main Objective	4
3. Course Learning Outcomes	4
C. Course Content	
D. Teaching and Assessment	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	6
E. Student Academic Counseling and Support7	
F. Learning Resources and Facilities7	
1.Learning Resources	7
2. Facilities Required	7
G. Course Quality Evaluation8	
H. Specification Approval Data8	

#### A. Course Identification

1. Credit hours: 3 hours			
2. Course type			
<b>a.</b> University College Department $\checkmark$ Others			
<b>b.</b> Required $\checkmark$ Elective			
<b>3. Level/year at which this course is offered:</b> 7th level – 4th year			
<ul> <li><b>4. Pre-requisites for this course</b> (if any): Data Structures &amp; Algorithms (41021266) <u>and</u> Operating systems (41011314)</li> </ul>			
5. Co-requisites for this course (if any): None			

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

No	Mode of Instruction	<b>Contact Hours</b>	Percentage
1	Traditional classroom	30	50%
2	Blended	-	-
3	E-learning	-	-
4	Correspondence	-	-
5	Other	30	50%

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

No	Activity	Learning Hours	
Contac	Contact Hours		
1	Lecture	30	
2	Laboratory/Studio	30	
3	Tutorial	_	
4	Others (specify)	_	
	Total	60	
Other ]	Other Learning Hours*		
1	Study	30	
2	Assignments	10	
3	Library	_	
4	Projects/Research Essays/Theses	6	
5	Others(specify)	_	
	Total	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 is a course in the theory and design of modern programming languages. Students learn the basic elements of a language translator (compiler); lexical analysis, parsing, code generation, symbol table management, type checking, scope resolution, code optimization, and error recovery. They also learn to write regular expressions and context free grammars and understand the separate phases of compilation and the issues involved in designing a medium sized translator. To facilitate student understanding, a semester-long, incremental design project is employed. As a result of building their own compiler, students learn the operation and messages presented by any modern commercial translator.

#### Lab description:

The aim is to write a compiler for a small language. Familiarity with compiled codes (assembly language), writing a scanner, writing a predictive parser for a small language, a small experiment with scanner (lex/flex) and parser generator (such as translation of regular expressions to NFA or the construction of parse tree), writing scanner parse specification for a small language, translation of the language to an intermediate form (e.g. three-address code), generation of target code (in assembly language).

#### 2. Course MainObjective

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

- Describe the component of a compiler works.
- List of algorithms used in building compilers and their connections to system hardware
- Describe parsing theory and grammar implementation.
- Implement a simple working compiler.
- Explain the structure of compilers
- Develop compiler construction such as lexical analysis, top-down, bottom-up parsing, context-sensitive analysis, and intermediate code generation
- Demonstrate the basic data structures used in compiler construction such as abstract syntax trees, symbol tables, three-address code, and stack machines
- Interact in groups collaboratively.
- Communicate concepts and techniques in oral presentations.

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Describe the component of a compiler works.	K1
1.2	List of algorithms used in building compilers and their connections to system hardware	К2
1.3	Describe parsing theory and grammar implementation.	K1
2	Skills :	
2.1	Implement a simple working compiler.	<b>S1</b>
2.2	Explainthe structure of compilers	S2
2.3	Develop compiler construction	<b>S3</b>
2.4	Demonstrate the basic data structures used in compiler construction	<b>S4</b>
3	Competence:	
3.1	Interact in groups collaboratively.	C1

#### **3.** Course Learning Outcomes

CLOs	Aligned PLOs
3.2 Communicate concepts and techniques in oral presentations	C2

#### **C. Course Content**

No	List of Topics (Lectures)	Contact Hours
1	Introduction to Compiling	2
3	Lexical Analysis.	4
4	Syntax Analysis	4
5	Syntax Directed Analysis	4
6	6 Type Checking	
7	Run time Environments	4
8	Intermediate Code Generation.	2
9	Code Generation.	4
10	Code Optimizations	4
	Total	15

No	No List of Topics (LAB)	
1	Lexical Analysis.	6
3	Syntax Analysis	6
4	4 Syntax Directed Analysis	
5	5 Type Checking	
6	6 Intermediate Code Generation.	
7	Code generation	6
Total		15

#### **D.** Teaching and Assessment

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

Code	Course Learning Outcomes	<b>Teaching Strategies</b>	Assessment Methods
1.0	Knowledge		
1.1	Describe the component of a compiler works.	<ul><li>Lectures</li><li>Assignments</li></ul>	<ul><li>Homework</li><li>Midterm exams</li><li>Quiz</li><li>Final Exam</li></ul>
1.2	List of algorithms used in building compilers and their connections to system hardware	<ul><li>Lectures</li><li>Assignments</li></ul>	<ul><li>Homework</li><li>Midterm exams</li><li>Quiz</li><li>Final Exam</li></ul>
1.3	Describe parsing theory and grammar implementation.	<ul><li>Lectures</li><li>Assignments</li></ul>	<ul> <li>Homework</li> <li>Midterm exams</li> <li>Quiz</li> <li>Final Exam</li> </ul>

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills	•	
2.1	Implement a simple working compiler.	- Lectures - Assignments - Lab	<ul> <li>Homework</li> <li>Midterm exams</li> <li>Quiz</li> <li>Final Exam</li> <li>Lab exam</li> </ul>
2.2	Explainthe structure of compilers	- Lectures - Assignments	<ul> <li>Homework</li> <li>Midterm exams</li> <li>Quiz</li> <li>Final Exam</li> </ul>
2.3	Develop compiler construction	<ul><li>Lectures</li><li>Assignments</li><li>Lab</li></ul>	<ul> <li>Homework</li> <li>Midterm exams</li> <li>Quiz</li> <li>Final Exam</li> <li>Lab exam</li> </ul>
2.4	Demonstrate the basic data structures used in compiler construction	- Lectures - Assignments - Lab	<ul> <li>Homework</li> <li>Midterm exams</li> <li>Quiz</li> <li>Final Exam</li> <li>Lab exam</li> </ul>
3.0	Competence		
3.1	Interact in groups collaboratively.	- Small groups	<ul> <li>Reports</li> <li>Class discussions</li> </ul>
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	Weekly homework exercises/ programming assignments/Lab work	Every Two Weeks	10%
2	Quizzes	5-10	10%
3	Midterm	8	20%
4	Lab exam	15	20 %
5	Final	16	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:

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

Teaching Assistant or Tutor - 3 hours per week

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

#### **1.Learning Resources**

8	
	Compilers: Principles, Techniques, and Tools (2nd Edition) by
<b>Required Textbooks</b>	Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman.
•	Addison Wesley, Boston, MA, 2006. ISBN 0321486811
	- Computer Science Curriculum 2013 – http://cs2013.org
<b>Essential References</b>	- ACM (Association for Computer Machinery) Curricula
Materials	Recommendations -
	http://www.acm.org/education/curricula-recommendations
	• ACM (Association for Computer Machinery) web site -
	http://www.acm.org/
	• IEEE Computer Society web site -
Electronic Materials	http://www.computer.org/portal/web/guest/home
	• Access to the Saudi Digital Library (SDL).
	Using the learning management system of the university – Rafid
	System (https://lms.bu.edu.sa/).
Other Learning Materials	C++ Using Visual Studio as compiler

#### 2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul> <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> <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>
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

#### G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>
Effectiveness of teaching	<ul> <li>Student</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Program Leader</li> <li>Course Coordinator</li> </ul>	<ul> <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> <li>Student</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Examination Committee</li> <li>Course Coordinator</li> </ul>	<ul> <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><li>Faculty</li><li>Program Leader</li><li>Course Coordinator</li></ul>	<ul> <li>Student Results (direct)</li> <li>Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Quality of learning resources	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Course Coordinator</li> </ul>	<ul> <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 oflearning 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>	Data Visualization
Course Code:	41021425
Program:	Computer Science
Department:	Computer Science and Engineering
College:	Computer Science and information technology
Institution:	Albaha University



### Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes4	
1. Course Description	4
2. Course Main Objective	4
3. Course Learning Outcomes	4
C. Course Content	
D. Teaching and Assessment	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	6
2. Assessment Tasks for Students	6
E. Student Academic Counseling and Support7	
F. Learning Resources and Facilities7	
1.Learning Resources	7
2. Facilities Required	7
G. Course Quality Evaluation	
H. Specification Approval Data9	

#### A. Course Identification

1. Credit hours: 3 hours		
2. Course type		
a. University College Department 🗸 Others		
b. Required 🖌 Elective		
<b>3.</b> Level/year at which this course is offered: 7 <sup>th</sup> level / 4 <sup>th</sup> year		
4. Pre-requisites for this course (if any):Scientific Programming (41011156)		
5. Co-requisites for this course (if any): None		

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

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

#### Lecture:

This course provides students with an overview of essential concepts and principles of data and information visualization. The course provides an introduction to data analytics conceptsand methods and presents methodsfor gaining insight from data and drawing conclusions foranalytical reasoning and decision making. The course presents taxonomy for data types, their characteristics and relations. The course comprises methods for the analyticsof document data, image data, high-dimensional data, time-series data, and geospatial data. Moreover, concepts for the analysis of hierarchical relations are beingtaught.

#### Lab:

The lab is used for analyzing and visualizing data with Excel. Excel is one of the most widely used solutions for analyzing and visualizing data. It includes tools that enable the analysis of more data, with improved visualizations and more sophisticated business logics. The students will learn how to import data from different sources, create "mashups" between data sources, and prepare data for analysis. Also, the students will find out how business calculations can be expressed using the DAX calculation engine. The students will learn how the data can be visualized and shared to the Power BI cloud service, after which it can be used in dashboards, queried using plain English sentences, and even consumed on mobile devices.

#### 2. Course MainObjective

Upon successful completion of the course, the student will develop fundamental understanding and competency in:

- Recognize data and information visualization principles and techniques
- Describe Criteria for designing successful visualizations
- Apply and design best practices in visualization
- Use visualization techniques in practical situations.
- Apply Communication of visualization results to business management
- Communicate concepts and techniques in oral presentations
- Work both independently and collaboratively

#### **3.** Course Learning Outcomes

	Aligned PLOs		
1	Knowledge:		
1.1	Recognize data- and information visualization principles and techniques	K1	
1.2	1.2 Describe Criteria for designing successful visualizations		
1.3 Use visualization techniques in practical situations.		K2	
2	Skills :		
2.1	2.1 Apply best practices of visualization		
2.2 Apply Communication of visualization results to business management		S2	
3	Competence:		
3.1	Work both independently and collaboratively	C1	

CLOs		Aligned PLOs
3.2	Communicate concepts and techniques in oral presentations	C2

### **C.** Course Content

No	List of Topics(Lecture)	Contact Hours
1	Introduction to Data Visualization	2
2	Data analytics	2
3	Visual Encoding	2
4	Interactions	2
5	Multidimensional Data (Dimensionality Reduction)	2
6	Multidimensional Data (Non-linear Projections and Interactive Analysis)	2
7	Clustering	2
8	Tree-Based Methods	2
9	Text and Document Analytics	2
10	Geospatio-temporal Data Analytics (Time Series Data Analytics)	2
11	Geospatio-temporal Data Analytics (Geospatial Data Analytics)	2
12	Image Data Analytics (processing, segmentation, and collection)	2
13	Image Data Analytics (Image descriptors)	2
14	Color Mapping (color schemes)	2
15	Color Mapping (color map construction)	2
	Total	30

No	List of Topics(Lab)	Contact Hours
1	Self-Service Business Intelligence with Excel 2016	2
2	Power View and Tables	2
3	Filtering Data in Power View	2
4	Charts in Power View	2
5	Advanced Charting with Power View	2
6	Interactive Data Selection in Power View	2
7	Images and Presentation in Power View	2
8	Mapping Data in Power View	2
9	3D Maps	2
10	Discovering and Loading Data with Get & Transform in Excel 2016	2
11	Transforming Data Sets Using Get & Transform	2
12	Data Cleansing with Get & Transform	2
13	Data Mashup with Get & Transform	2
14	Extending the Excel Data Model Using Power Pivot	2
15	Extending the Data Model with Calculated Columns	2
	Total	30

#### **D.** Teaching and Assessment

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

Code	Course Learning Outcomes	<b>Teaching Strategies</b>	Assessment Methods
1.0	Knowledge		
1.1	Recognize data- and information visualization principles and techniques	<ul><li>Lectures</li><li>Assignments</li></ul>	<ul> <li>Quizzes</li> <li>Midterm exams</li> <li>Final Exam</li> </ul>
1.2	Describe Criteria for designing successful visualizations	<ul><li>Lectures</li><li>Assignments</li></ul>	<ul><li> Quizzes</li><li> Midterm exams</li><li> Final Exam</li></ul>
1.3	Use visualization techniques in practical situations.	<ul><li>Lectures</li><li>Assignments</li><li>Lab Exercises</li></ul>	<ul> <li>Quizzes</li> <li>Midterm exams</li> <li>Final Exam</li> </ul>
2.0	Skills		
2.1	Apply best practices of visualization	<ul><li>Lectures</li><li>Assignments</li><li>Lab Exercises</li></ul>	<ul> <li>Quizzes</li> <li>Midterm exams</li> <li>Lab Exam</li> <li>Final Exam</li> </ul>
2.2	Apply Communication of visualization results to business management	<ul> <li>Lectures</li> <li>Assignments</li> <li>Lab Exercises</li> </ul>	<ul> <li>Quizzes</li> <li>Midterm exams</li> <li>Lab Exam</li> <li>Final Exam</li> </ul>
3.0	Competence		
3.1	Work both independently and collaboratively	<ul><li>Assignments</li><li>Oral Presentations</li></ul>	• Reports
3.2	Communicate concepts and techniques in oral presentations	• Small Groups	• Reports

#### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework, assignments, and reports	Every two Weeks	15%
2	Midterm Exam	7	15%
3	Quiz	12	10%
4	Lab Exam	15	20%
5	Final Exam	16	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 :

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

#### F. Learning Resources and Facilities

#### **1.Learning Resources**

	Matthew O. Ward, Georges Grinstein, and Daniel Keim, "Interactive	
<b>Required Textbooks</b>	Data Visualization: Foundations, Techniques, and Applications",	
	Second Edition (2015), A K Peters_CRC Press.	
Essential References Materials	<ul> <li>Computer Science Curriculum 2013 – <u>http://cs2013.org</u></li> <li>ACM(Association for Computer Machinery) Curricula Recommendations - <u>http://www.acm.org/education/curricula-recommendations</u></li> <li>Adam Aspin, "<i>High Impact Data Visualization in Excel with</i> <i>Power View, 3D Maps, Get &amp; Transform and Power BI</i>", (2016, Apress).</li> </ul>	
Electronic Materials	<ul> <li>ACM (Association for Computer Machinery) web site - http://www.acm.org/</li> <li>IEEE Computer Society web site - http://www.computer.org/portal/web/guest/home</li> <li>Access to the Saudi Digital Library (SDL).</li> <li>Using the learning management system of the university – Rafid System (https://lms.bu.edu.sa/).</li> </ul>	
Other Learning Materials	None	

#### 2. Facilities Required

Item	Resources	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul> <li>A classroom or lecture hall with whiteboard for 25 students.</li> <li>Desktop Computers.</li> <li>A laboratory with access to at least one visualization development tool</li> </ul>	
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul> <li>A digital image projection system with connection to desktop computer and laptop computer</li> <li>An instructor computer station</li> <li>All students shall have <ul> <li>A laptop or access to a desktop computer with access to a visualization development tool</li> <li>High speed Internet connection</li> <li>Power outlets for student's laptop plug-in</li> </ul> </li> </ul>	
Other Resources (Specify, e.g. if specific laboratory	• The laboratory should have computers with visualization development tools.	

Item	Resources	
equipment is required, list requirements or attach a list)	• Software tools may be one of the following:	
	<ul> <li>Microsoft Power BI in Excel 2016 (our lab)</li> <li>Tableau</li> </ul>	
	<ul><li>Python &amp; Pygal</li></ul>	
	R & R Graphics	
	✤ C & OpenGL	
	✤ JavaScript & D3	

#### G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>
Effectiveness of teaching	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Program Leader</li> <li>CourseCoordinator</li> </ul>	<ul> <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 teachingdifficulties and action plan,)</li> </ul>
Effectiveness of assessment	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>Course Coordinator</li> <li>ExamEvaluation Committee</li> </ul>	<ul> <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 difficulties and action plan,)</li> <li>Exam evaluation by the ExamEvaluation Committee (indirect)</li> </ul>
Extent of achievement of course learning outcomes	<ul><li>Faculty</li><li>Program Leaders</li><li>Course Coordinator</li></ul>	<ul> <li>Student Results (direct)</li> <li>Comprehensive Course report (where we can find the CLO assessmentresults)</li> </ul>
Quality of learning resources	<ul> <li>Students</li> <li>Faculty</li> <li>Peer Reviewers</li> <li>CourseCoordinator</li> </ul>	<ul> <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 asconsequences and action plan,)</li> </ul>

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

Course Title:	Innovation, Design & Prototyping
Course Code:	410421427
Program:	B.Sc. in Computer Science
Department:	Computer Science
College:	Computer Science & Information Technology
Institution:	



#### Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes4	
3. Course Learning Outcomes	5
C. Course Content	
D. Teaching and Assessment	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	6
2. Assessment Tasks for Students	7
E. Student Academic Counseling and Support7	
F. Learning Resources and Facilities8	
1. Learning Resources	8
2. Facilities Required	9
G. Course Quality Evaluation9	
H. Specification Approval Data 11	

#### A. Course Identification

1.	1. Credit hours: 3H					
2.	Course type		1 10			
a.	University	College	Depar	tment X	Others	
b.	Required		Elective			
3.	Level/year at which	this cou	se is offere	d: Level 7/	/4 <sup>th</sup> Year	
<b>4. Pre-requisites for this course</b> (if any): N/A						
5.	5. Co-requisites for this course (if any):					
N/	N/A					

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

No	Mode of Instruction	<b>Contact Hours</b>	Percentage
1	Traditional classroom	45 Hours	80%
2	Blended		
3	E-learning	12Hour	20%
4	Correspondence		
5	Other (Lab)		

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

No	Activity	Learning Hours	
Conta	ct Hours		
1	Lecture	45	
2	Laboratory/Studio		
3	Tutorial		
4	Others (specify)		
	Total		
Other Learning Hours*			

1	Study	3
2	Assignments	3
3	Library	3
4	Projects/Research Essays/Theses	4
5	Others(specify)	
	Total	13

\* 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 insightful view of how to design, develop, and innovate a prototype in a short period to generate concrete ideas. The course introduces the engineering and technological processes of design, innovation, and prototyping including ethical, social, and environmental responsibilities to young professionals. Through this course, the student gets knowledge about various stages of product development. During product design and innovation, it's very important to be very much specific about the product's attributes and the product is well-differentiated among other products. Although different approached such as revolutionary and evolutionary exist, for product development, it's very normal that an entrepreneur may even start with one approach and then change to a different approach as the venture moves forward. This course will further aid the students how the perceptual mapping is used, which helps to define a market, the benefits, price, and position.

#### 2. Course Main Objective

The Objectives for this course is to teach students how to:

- Understand the basic principles of software design
- Learn the components involving innovation
- Understand the role of prototyping
- Get an idea of the most important techniques and philosophies of prototyping
- Practice on covered topics by solving given assignments periodically.
- Learn to study the prototyped ideas in field conditions and challenging environment
- Interact in groups collaboratively.
- Communicate concepts and techniques in oral presentations.

#### 3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge:	
1.1	Explain the engineering method and how it applies to the product life cycle from conception through product design and prototyping	K.1
1.2	Practise the creative processes of engineering design and innovation	К.2
2	Skills :	
2.1	Design, Implement procedures, policies and methodologies for performing the prototyping	S1
2.2	Identify and analyses the critical areas which are essential in performing prototyping	S2
2.3	Are able to plan the development of a prototype within limited time	S2
2.4	Demonstrable skill in developing a prototype to demonstrate an innovative idea	S3
3	Competence:	
3.1	Provide a high quality leadership and able to work and cooperate in a team to perform the prototyping	C1
3.2	Effectively able to communicate the concepts, techniques, procedures, policies, methodologies related to Design, innovation & prototyping in oral presentation.	C2
3.3	Understanding of the value of other disciplines in the development of innovative solutions	C2

#### **C. Course Content**

No	List of Topics (Lectures)	
1	Introduction to software design principles	6
2	Applying Innovation in software development	4
3	Concepts of Risk Management, monitoring and mitigation in software development	4

4	Introduction to software prototyping	4	
5	Prototyping Models (Rapid Throwaway, Evolutionary Prototyping, Incremental, Extreme )	8	
6	Prototyping and User Interface	6	
7	Prototyping tools	4	
8	Prototyping and Usability Testing your designs	5	
9	Intellectual property law: legal aspects of innovation and competition	4	
	Total		

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods		
1.0	Knowledge				
1.1	Explain the engineering method and how it applies to the product life cycle from conception through product design and prototyping	<ul><li>Lectures</li><li>Assignment</li></ul>	<ul> <li>Homework</li> <li>Quiz</li> <li>Midterm exam</li> <li>Final exam</li> </ul>		
1.2	Practise the creative processes of engineering design and innovation	<ul><li>Lectures</li><li>Assignment</li></ul>	<ul> <li>Homework</li> <li>Quiz</li> <li>Midterm exam</li> <li>Final Exam</li> </ul>		
1					
2.0	Skills				
2.1	Design, Implement procedures, policies and methodologies for performing the prototyping	<ul><li>Lectures</li><li>Case Study</li></ul>	<ul><li> Quizzes</li><li> Final exam</li></ul>		
2.2	Identify and analyses the critical areas which are essential in performing prototyping	<ul><li>Lectures</li><li>Assignment</li><li>Case study</li></ul>	<ul><li>Homework</li><li>Final exam</li></ul>		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Are able to plan the development of a prototype within limited time	<ul> <li>Give prompt and frequent feedback to students' work.</li> <li>Provide a written policy for submission of assignments.</li> </ul>	<ul><li>Homework</li><li>Class participation</li></ul>
2.4	Demonstrable skill in developing a prototype to demonstrate an innovative idea		
3.0	Competence		
3.1	Provide a high quality leadership and able to work and cooperate in a team to perform the prototyping	Small groups	<ul><li>Oral presentation</li><li>Reports</li></ul>
3.2	Effectively able to communicate the concepts, techniques, procedures, policies, methodologies related to Design, innovation & prototyping in oral presentation.	Oral presentation	Oral presentation

#### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework	Every two Weeks	5%
2	Report, presentation, and Class discussions	Week 10	5%
3	Midterm Exam	Within Week 8	20%
4	Quiz	Week 13	10%
5	Project	Week 14	10%
6	Final Exam	Week 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 :

• 6 Hours per week

## **F. Learning Resources and Facilities** 1. Learning Resources

<b>Required Textbooks</b>	ed Textbooks Dave and Andy, Pragmatic Programmers (2019), ISBN: 978-0- 1359-5705-9, Pearson	
Essential References Materials	<ul> <li>Effective Prototyping for Software Makers (Interactive Technologies) Jonathan Arnowitz, ISBN-10: 0120885689</li> <li>The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, Eric Ries, 2011</li> <li>Computer Science Curriculum 2013: <u>http://cs2013.org</u></li> <li>ACM(Association for Computer Machinery) Curricula Recommendations: <u>http://www.acm.org/education/curricula-recommendations</u></li> <li>Communications of ACM (Association for Computer Machinery): <u>http://cacm.acm.org/</u></li> <li>Journal of the ACM: <u>http://jacm.acm.org/</u></li> <li>ACM SIGCSE (Special Interest Group on Computer Science Education) bulletin: <u>http://www.sigcse.org/Bulletin</u></li> <li>ACM Transactions on Computing Education (TOCE): <u>http://toce.acm.org/</u></li> </ul>	
Electronic Materials	<ul> <li>Access to the Saudi Digital Library (SDL).</li> <li>ACM (Association for Computer Machinery) web site - http://www.acm.org/</li> <li>ACM SIGCSE (Special Interest Group on Computer Science Education) resource web site: <u>http://www.sigcse.org/SIGresources</u></li> <li>IEEE Computer Society web site: <u>http://www.computer.org/portal/web/guest/home</u></li> <li>Intel <i>The Journey Inside</i> web site (has a collection of interactive, online lessons about technology, computers, and society): <u>http://educate.intel.com/en/TheJourneyInside/</u></li> <li>Google Code University Curriculum Resource web site: <u>http://code.google.com/edu/resources/index.html</u></li> </ul>	
Other Learning Materials	None	

#### 2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul> <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> <li>An instructor computer station with Unix/Linux and Windows operating systems installed.</li> <li>Desktop computers, for students, with Unix/Linux and Windows operating systems installed.</li> <li>High speed Internet connection.</li> <li>Power outlets for student's laptop plug-in.</li> </ul>
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

#### G. Course Quality Evaluation

	Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>
1.	Strategies for Obtaining Student Feedback on Effectiveness of Teaching		
•	NCAAA surveys (anonymous student evaluation forms and questionnaires on teaching either distributed during the final week of class or administered via a web-based evaluation of instruction submitted to the Department during the final week of class).	Students	Surveys
•	Focus group discussion with small groups of students.		

	Evaluation Areas/Issues	Evaluators	Evaluation Methods
2.	Other Strategies for Evaluation of Teaching by the Instructor or by the Department		
	<ul> <li>Self-assessment.</li> <li>Lecture class visits by the chair or a senior member of the department.</li> <li>Informal review by course group members and supervisor.</li> <li>Observations and assistance from colleagues.</li> <li>Independent assessment of standards achieved by students.</li> <li>Independent advice on assignment tasks.</li> </ul>	Instructor/Department	Self-Assessments/ Visits
3. • •	Processes for Improvement of Teaching Receiving annual evaluations based on results of student evaluations. Attending international forums on computer networks. Attending faculty workshops on teaching experience. Review of recommended teaching strategies. Revising the course contents based on needs of the latest curriculum proposed.	Instructor/ Department	Feedback

	Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>
<ul> <li>4. Proc Stan Achi marl mem samp perio rema samp staff</li> <li>Asse selec rando facul</li> <li>Revia cours to en</li> <li>Frequassig with stand</li> </ul>	tesses for Verifying dards of Student ievement (e.g. check king by an independent ober teaching staff of a ple of student work, odic exchange and arking of tests or a ple of assignments with a tanother institution) essment of a randomly eted student's work by a omly selected Department lty. ewing final exams by se group and chairperson usure quality and standard. uent review of exams and gaments and compare them internal/external dards.	Department Quality Committee	Feedback
<ul> <li>5. Des arra peri cou plan</li> <li>Revie speci</li> <li>Revie from</li> <li>The cand s revie conti comr of im</li> <li>Adap colle</li> <li>Follo and r</li> </ul>	acribe the planning angements for iodically reviewing rse effectiveness and nning for improvement. ew the course ification periodically. ew similar specifications other universities end of semester surveys student's feedback is ewed by the department inuous improvement mittee in order to see areas approvements. by the best practices by ragues. ow up on the latest books references.	Department	Feedback

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

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