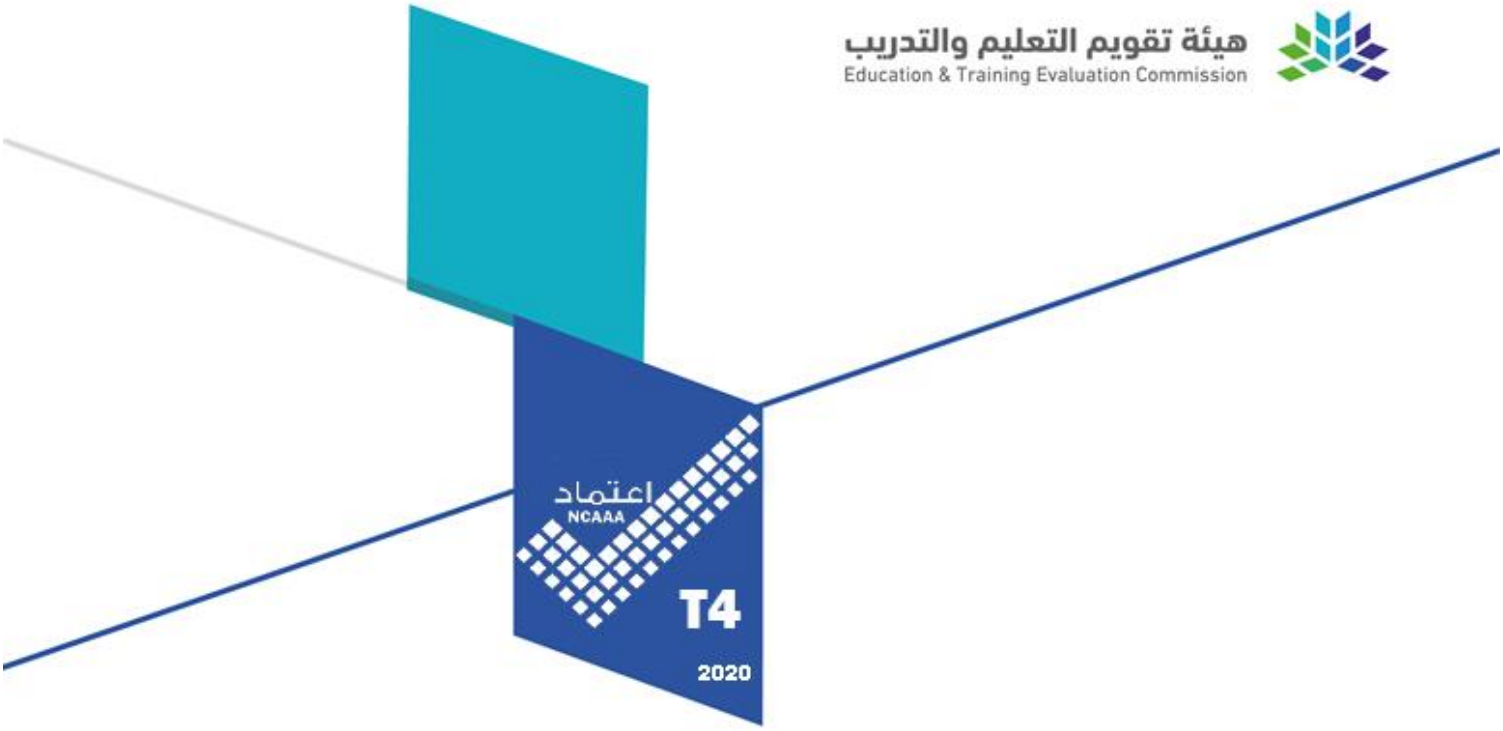
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Computer Mathematics
Course Code:	MTH0102
Program:	Network technology, Programming technology and Cybersecurity
Department:	Applied Sciences
College:	Applied College
Institution:	Imam Mohammad Ibn Saud Islamic University

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A. Course Identification

1. Credit hours: **3(2 theory, 2 lab)**
2. Course type **a.** University ☐ College ☑ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Second Level
4. Pre-requisites for this course (if any)**:** None
5. Co-requisites for this course (if any)**:** None

6. Mode of Instruction (mark all that apply)

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

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	36
2	**Laboratory/Studio**	12
3	**Tutorial**	
4	**Others** (specify)	
	Total	48

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces the students to a body of mathematical concepts essential for the mastery of some of the higher-level computer science courses. The course covers fundamental concepts of mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods.

2. Course Main Objective

Providing the ideas and mathematical concepts essential that are widely used in computer science and engineering. In addition, this course teaches the students techniques in how to think logically and mathematically and apply these techniques in solving problems. To achieve this goal, students will learn counting systems, sets, arithmetic operations of counting systems, logical operations, Boolean algebra, and logic gates.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and understanding**	
1.1	Describe the different numbering systems in computer science.	ع1,ع5
1.2	Identify the expressions, logic gates, and operations on them.	ع1,ع5
1.3	Define the concept of sets and operations and their properties.	ع1,ع5
2	**Skills:**	
2.1	Ability to convert between different counting systems.	م1, م2, م7
2.2	Perform various arithmetic operations on the binary system.	م1, م2, م7
2.3	Apply essential logical operations to expressions and logic gates.	م1, م2, م7
2.4	Design of logic circuits using logic gates.	م1, م2, م7
2.5	Perform various operations on sets.	م7, 2
3	**Values:**	
3.1	Cooperation, teamwork, and professional ethics.	ق1
3.2	Take responsibility for continuous learning and continuing personal development.	ق2
3.3	Efficient and effective time management when applying acquired knowledge and skills.	ق3

C. Course Content

No	List of Topics	Contact Hours

1	• **Counting Systems and Sets:**
	  ○ Counting Systems:
	  ▪ Decimal System.
	  ▪ Binary System.
	  ▪ Hexadecimal System.
	  ▪ Converting Between Counting Systems.
	  ○ Computer Coding Systems:
	  ▪ ASCII Code.
	  ▪ EBCDIC Code.
	  ▪ Unicode.
		8

2	• **Arithmetic Operations of Binary Systems:**
	  ○ Binary Addition.
	  ○ Binary Subtraction.
	  ○ Binary Multiplication.
	  ○ Binary Division.
		8

3	• **Logic expressions and operations:**
	  ○ The Concept of Logical Expressions.
	  ○ The Logical Operators:
	  ▪ AND.
	  ▪ OR.
	  ▪ NOT.
	  ▪ XOR.
	  ▪ XNOR.
	  ▪ NAND.
	  ▪ NOR.
	  ○ Tautology and Contradiction.
	  ○ Logical Equivalence.
	  ○ Laws of Algebra:
	  ▪ Commutative Laws.
	  ▪ Associative Laws.
	  ▪ Distributive Laws.
	  ▪ Idempotent Laws.
	  ▪ Identity Laws.
	  ▪ Complement Laws.
	  ▪ Double Negation Laws.
	  ▪ De Morgan's Laws.
	  ▪ Absorption Laws.
		8

4	• **Boolean Algebra and logic gates:**
	  ○ Boolean Functions.
	  ○ Truth Tables.
	  ○ Logic Gates.
	  ○ Circuits Design Using Logic Gates.
	  ○ Converting Truth Tables into Boolean Expressions.
	  ○ Converting Digital Circuits into Boolean Expressions.
	  ○ Minimization of Circuits.
		12

5	• **Sets and Relations.**
	  ○ Sets:
	  ▪ Concept of Set Theory.
	  ▪ Set Theory Symbols.
	  ▪ Partly Set.
	  ▪ Inclusion and Exclusion.
	  ▪ Equality of Sets.
	  ▪ Universal and Empty Sets.
	  ○ Operations on Sets:
	  ▪ Union of Sets.
	  ▪ Intersection of Sets.
	  ▪ Complement of a Set.
	  ▪ Difference of Sets.
	  ▪ Symmetric Difference.
		12

Total		48

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 and Understanding**		
1.1	Describe the different numbering systems in computer science.	- Lecture. - Discussion. - Survey. - Discovery learning. - Self-education. - Developed lecture. - Brainstorming. - Web survey. - KWL - Learning Schedule. - Mind maps. - Concept maps.	- Traditional and online achievement tests. - Questions. - Assignments and assessments. - Presentations. - Discussion and debates. - Cognitive performance tests. - Achievement file.
1.2	Identify the expressions, logic gates, and operations on them.		
1.3	Define the concept of sets and operations and their properties.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Ability to convert between different counting systems.	- Demonstration. - Developed lecture. - Discovery learning. - Peer learning. - Self-education. - Discussion. - Web survey. - Brainstorming. - Cooperative learning. - Problem Solving. - Project. - Online discussion.	- Presentations. - Rating ladders. - Performance tests. - Production metrics. - Observation. - Projects. - Achievement file. - Peer assessment. - Self-calendar.
2.2	Perform various arithmetic operations on the binary system.		
2.3	Apply essential logical operations to expressions and logic gates.		
2.4	Design of logic circuits using logic gates.		
2.5	Perform various operations on sets.		
3.0	**Values**		
3.1	Cooperation, teamwork, and professional ethics.	- Demonstration. - Developed lecture. - Discovery learning. - Peer learning. - Self-education. - Discussion. - Web survey. - Brainstorming. - Cooperative learning. - Problem Solving. - Project. - Online discussion.	- Presentations. - Rating ladders. - Performance tests. - Production metrics. - Observation. - Projects. - Achievement file. - Peer assessment. - Self-calendar.
3.2	Take responsibility for continuous learning and continuing personal development.		
3.3	Efficient and effective time management when applying acquired knowledge and skills.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	Week7	20%
2	Quizzes	Continuous	20%
3	Assignments	Continuous	10%
4	Participation, Attendance	Continuous	10%
5	Final Exam	Week13	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 academic advising and support:

4 office hours per week.
Contact through the LMS
Communication/interact with students via academic e-mails

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Discrete Mathematics and Its Applications 8th edition, By Kenneth Rosen, 2019, 8th Edition, ISBN13: 9781259676512
Essential References Materials	Mathematics for Computer Scientists, By Gareth J. Janacek, Mark Lemmon Close, 2011, ISBN 978-8776814267
Electronic Materials	Online resources will be provided during class lectures.
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom included: 1. An equipped computer lab with at least 25 seats. 2. A projector connected to a PC, preferably with Internet access. 3. A vertical sliding board.
Technology Resources (AV, data show, Smart Board, software, etc.)	Computing resources (AV, data show, Smart Board, software, etc.)
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N\A

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Assessment of teaching effectiveness	Student	1. Students feedback (collected through surveys) as per university policy/procedure 2. Teacher's Course report
Strategies for Evaluation of Teaching by the Instructor or by the Department	Faculty	1. Review of Course Reports 2. Review of Student feedback
Processes for Improvement of Teaching	Program Leaders	Continuous review of the course contents and teaching strategies, and utilizing the best practices
Quality of learning resources	Student and Faculty	Indirect using course evaluation and faculty survey

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	
Reference No.	
Date	

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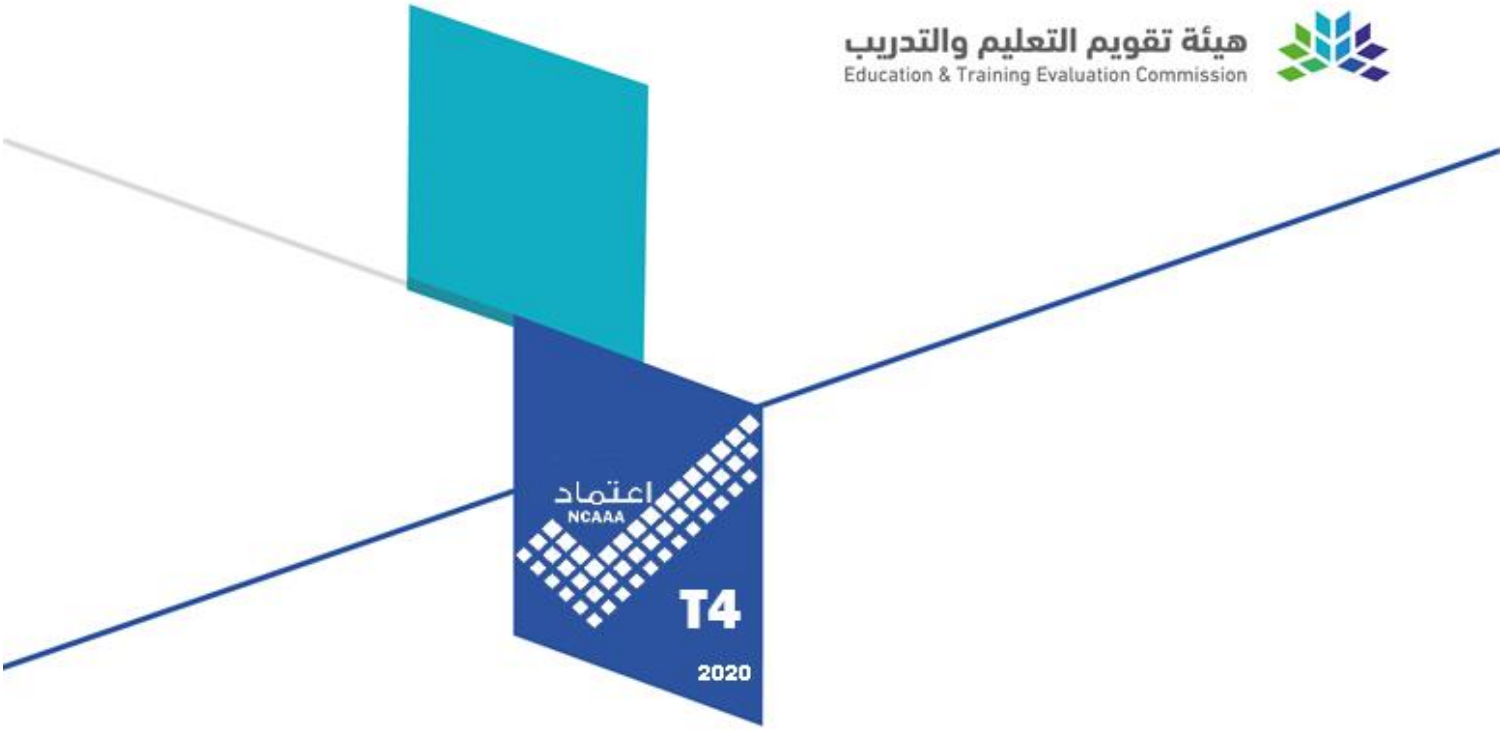

Course Specifications

Course Title:	Information Security Foundations
Course Code:	CYB 0101
Program:	Computer Science (Cybersecurity)
Department:	Applied Sciences
College:	Applied College
Institution:	Imam Muhammad Bin Saud Islamic University

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1.Learning Resources 6

2. Facilities Required 6

G. Course Quality Evaluation 7

H. Specification Approval Data 7

A. Course Identification

1. Credit hours: **3(2 theory , 2 lab)**
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: First Semester
4. Pre-requisites for this course (if any)**:** None
5. Co-requisites for this course (if any)**:** None

6. Mode of Instruction (mark all that apply)

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

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	20
3	**Tutorial**	
4	**Others** (specify)	
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

This course covers the basics of information security, where the student will learn information security models, including achieving physical security of information, security of procedures and operations, control of access to information and methods of defense against various risks, including piracy and unauthorized access to electronic systems and others. This course also covers tools for protecting the confidentiality of information such as encryption, securing networks and the Internet, reducing the risks of virus attacks, and firewalls to reduce attacks. It also covers methods of protection to ensure the availability and integrity of information. Also this course will mention the risk management and the legal and ethical issues.

2. Course Main Objective

The course aims to train the student on the basics of information security and how to identify risks and methods of defense against these risks. This course aims to enhance the skill of information protection at its various levels and mechanisms of application.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	To understand different types of attacks and threatened systems, the access control, accuracy, and intrusiveness.	ع1,ع2
1.2	Demonstrate information security and its needs, and to understand information security implementations.	ع2
2	**Skills :**	
2.1	To examine cryptographic system, and to deal with Information Security Management.	م1,م2
2.2	To be able to analyze Legal, ethical, and professional to defend against vulnerabilities.	م7
2.3	To examine how key security technology deal with systems.	م1
3	**Values:**	
3.1	To implement information security system.	ق1,ق2,ق3,م7

C. Course Content

No	List of Topics	Contact Hours
1	Module1:Introduction to information Security	4
2	Module2:The need for information security	3
3	Module3:Information Security Management	4
4	Module5:Planning for Security	3
5	Module6:Legal, ethical, and professional issues in information security	4
6	Module8:Security technology; Access control, firewall, and VPNs	7
7	Module9:Security technology; Intrusion detection and prevention systems and other security tools	5
8	Module10:Cryprography	4
9	Module11:Implemeting Information Security	3
10	Module12:Information Security Maintenance	3
Total		40

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 and Understanding**		
1.1	To understand different types of attacks and threatened systems, the access control, accuracy, and intrusiveness.	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Demonstrate information security and its needs, and to understand information security implementations.	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
2.0	**Skills**		
2.1	To examine cryptographic system, and to deal with Information Security Management.	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
2.2	To be able to analyze Legal, ethical, and professional to defend against vulnerabilities.	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
2.3	To examine how key security technology deal with systems.	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
3.0	**Values**		
3.1	To implement information security system.	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes	Week3,5	10%
2	Midterm1	Week 6	15%
3	Midterm2	Week9	15%
4	Pass CISCO Networking Academy course	Week10	10%
5	Lab Evaluations	All Semester	10%
6	Final	Week13	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 :

6 office hours per week.
3 hours of weekly meetings
Contact through the LMS
Communication/interact via e-mails with students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Principles of Information Security, Michael E. Whitman, Herbert J. Mattord · 2021
Essential References Materials	Information Security principles and practice, marks stamp, 2d Edition, 2011. Information Security and IT Risk Management , Manish Agrawal, Wiley. CompTIA Security+ All-in-One Exam Guide, Authors: WM. Arthur Conklin, Gregory White, Chuck Cothren, Roger L.Davis, Dwayne Williams. 6th Edition.
Electronic Materials	Online resources will be provided during class lectures.
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room with Smart board Lab with 25 Pcs
Technology Resources (AV, data show, Smart Board, software, etc.)	PC and WiFi Internet access within the class room

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N\A

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Student	Indirect using course evaluation survey
Quality of learning resources	Student and Faculty	Indirect using course evaluation and faculty survey

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	
Reference No.	
Date	

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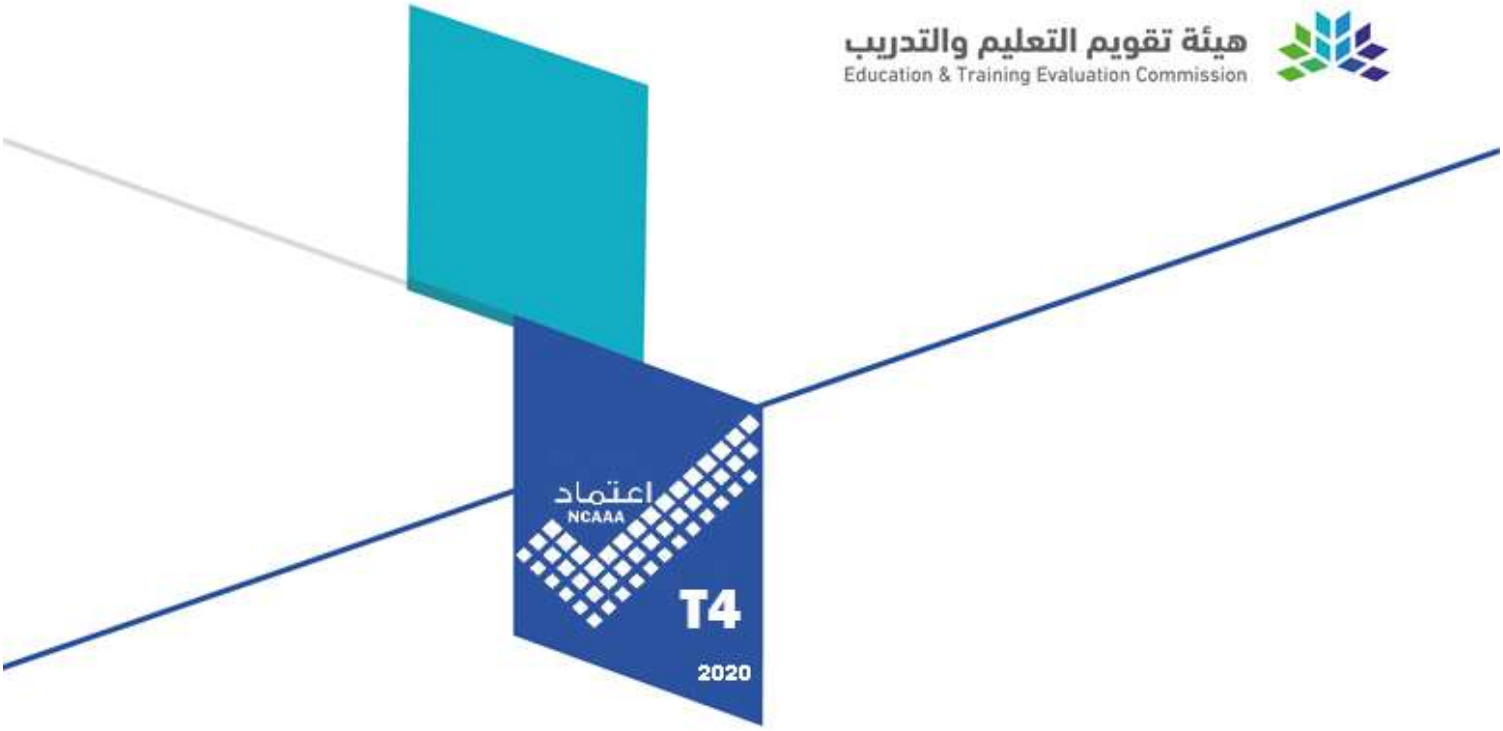

Course Specifications

Course Title:	Introduction To Computer Applications
Course Code:	عال 114
Program:	Network Technology
Department:	Applied Sciences
College:	Applied College
Institution:	Imam Muhammad Bin Saud Islamic University

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F. Learning Resources and Facilities **7**

1.Learning Resources 7

2. Facilities Required 7

G. Course Quality Evaluation **8**

H. Specification Approval Data **8**

A. Course Identification

1. Credit hours: 3(2 theory , 2 lab)
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Second Level
4. Pre-requisites for this course (if any)**:** N/A
5. Co-requisites for this course (if any)**:** N/A

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**		
2	**Blended**	44	100%
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	12
2	**Laboratory/Studio**	48
3	**Tutorial**	
4	**Others** (specify)	150
	Total	210

B. Course Objectives and Learning Outcomes

1. Course Description

The course is an introduction to computer applications and dealing with the operating system used in personal computers, in addition to the use of office applications (word processing, electronic tables and presentations). That helps the computer users to complete their work. It includes training on the basic principles of using the internet and e-mail.

This course covers:

• Microsoft Office Specialist Associate Certification (Word, Excel, PowerPoint, Outlook and Access).

• Certificate in Information Technology (CIT)

• The first four levels of the International Computer Driving License (ICDL).

• International Certificate for Computer and Internet (Internet and Computing Cor -IC3).

2. Course Main Objective

The course aims to train the student on the use of a personal computer and how to operate it, in addition to using the most popular office applications that help in completing work, and how to use the Internet and e-mail.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Identify with the basic concepts of information technology.	ع1، ع5
1.2	Understand the computer hardware and software components.	ع1، ع5
1.3	Knowledge of e-learning and distance education systems.	ع1، ع5
2	**Skills :**	
2.1	The ability to deal with operating systems and file management.	م1، م2، م8
2.2	Understand the basic skills in word processor software (MS Word).	م1، م2، م8
2.3	Understand the basic skills in spreadsheet software (MS Excel).	م1، م2، م8
2.4	Create professional presentations using a presentation software (MS PowerPoint).	م1، م2، م8
2.5	Proficiency in using the internet and e-mail	م1، م2، م8
2.6	The use of information technology in communication, exchange of ideas, scientific research, performance of tasks.	م1، م2، م8
2.7	Practicing critical thinking and solving problems facing the learner in the course in creative ways.	م1، م2، م8
3	**Values:**	
3.1	Collaboration, teamwork, and professional ethics.	ق1
3.2	Take the responsibility for continuous learning, and self-development.	ق2
3.3	Effective and efficient time management when applying acquired knowledge and skills.	ق3

C. Course Content

No	List of Topics	Contact Hours
1	**Information technology basics:** o Introduction to computer definition, its history and types of computers. o Hardware and software components of the computer. o Computer networks, benefits and division in terms of scope. o Physical components of computer networks, benefits and features. o An overview of known computer networks, types and uses.	4
2	**Operating system and file management:** o The concept of the operating system, functions and its types. o An introduction to the Windows system, and how to work with it. o Managing files and applications in Windows	4
3	**Word processor software (MS Word):** o Create and save a new document. o Designing and modifying templates. o Format texts and paragraphs (font, size, color, bold, italic). o Insert paragraph and page borders. o Insert header and footer. o Page numbering. o Search and replace. o Inserting, formatting and modifying tables. o Preview the document before printing and printing it. o Page layout.	10

4	**Presentation software (MS PowerPoint):** o Create and save a new document. o Layout slides. o Coordinating slides, backgrounds and patterns. o Add text to slides. o Inserting, modifying, and deleting movement of slides and objects. o Insert slide header and footer, and slide numbering. o Insert and format images, AutoShapes, and charts. o Inclusion of movies and audio. o Insert hyperlinks and action buttons for slides. o Print slides. o Slide show.	8
5	**Spreadsheet software (MS Excel):** o Create and save a new document. o Layout and presentation of the worksheet. o Worksheet formatting and renaming. o Sorting and filtering. o Inserting data into the table o Functions (Sum, Average, Max, Min)	8
6	**Outlook software (MS Outlook)** o Creating emails. o Attaching files to messages. o Making appointments and changing them as needed. o Customizing the ribbon. o Using reminders. o Moving emails between folders. o Creating signatures. o Searching for messages.	6
7	**Internet, email management and data protection:** o The internet concept and internet services. o Internet browsers o Use of the internet, hackers' deceptions, and electronic protection. o Viruses, types and classification. o Employing the internet in the fields of education and commerce. o The most important terms and concepts of the internet. o E-learning and distance education systems.	4
Total		44

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 and Understanding**		
1.1	Understand the basic concepts of information technology.	Class lectures. Class discussion. Questions/Answers session in class. Home work. Learning by discovery. Self-education. Brainstorming. Online search. KWL learning table. Mind maps. Concept maps.	Quizzes. Homework and Assignments. Written and online exams. Writing reports. Presentations. Discussion and debate. Achievement file. Performance tests.
1.2	Understand the computer hardware and software components.		
1.3	Knowledge of e-learning and distance education systems.		
2.0	**Skills**		
2.1	The ability to deal with operating systems and file management.	Class lectures. Class discussion. Questions/Answers session in class. Home work. Learning by discovery. Self-education. Brainstorming. Online search. Mind maps. Concept maps.	Quizzes. Homework and Assignments. Written and online exams. Writing reports. Presentations. Discussion and debate. Achievement file. Performance tests.
2.2	Understand the basic skills in word processor software (MS Word).		
2.3	Understand the basic skills in spreadsheet software (MS Excel).		
2.4	Create professional presentations using a presentation software (MS PowerPoint).		
2.5	Proficiency in using the internet and e-mail		
2.6	The use of information technology in communication, exchange of ideas, scientific research, performance of tasks.		
2.7	Practicing critical thinking and solving problems facing the learner in the course in creative ways.		
3.0	**Values**		
3.1	Collaboration, teamwork, and professional ethics.	Class lectures. Class discussion. Questions/Answers session in class. Home work. Learning by discovery. Self-education. Brainstorming. Online search. Mind maps. Concept maps.	Quizzes. Homework and Assignments. Written and online exams. Writing reports. Presentations. Discussion and debate. Achievement file. Performance
3.2	Take the responsibility for continuous learning, and self-development.		
3.3	Effective and efficient time management when applying acquired knowledge and skills.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term	Week 7, 11	10%
2	Quizzes (From 3-4 Quizzes)	Week 4, 8, 10	15%
3	1st Practical Evaluation	Week 6	25%
4	2nd Practical Evaluation	Week 11	25%
5	Participation	All Semester	5%
6	Final	Week12	20%
7	Total Marks		100%

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

E. Student Academic Counseling and Support

- Publishing the guidelines prepared by the Deanship of Admission and Registration Affairs.
- Allocating office hours for faculty members to follow up on students' academic inquiries, respond to e-mail, communicate through electronic systems, and provide feedback.
- Seeking to solve the academic problems for students and all related to the causes of dismissal, academic stumbling, delay and low average.

F. Learning Resources and Facilities

1.Learning Resources

Course reference	○ Microsoft Office Step by Step (Office 2021 and Microsoft 365)1st edition, ISBN: 0137544766, Authors: Joan Lambert, Curtis Frye. ○ Microsoft Office 2019 Step by Step, 1st edition Published by Microsoft Press (December 7th 2018) - Copyright © 2019. ○ Computer Skills, King Abdulaziz University 9th edition Published by Khawarizm Academic - Copyright © 2021.
Essential References Materials	N/A
Electronic Materials	Online resources will be provided during class lectures on LMS.
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom – A computer lab equipped and connected to a shared printer and the internet.
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart board, data projector, Microsoft Office suite in English, Internet browser.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N\A

G. Course Quality Evaluation

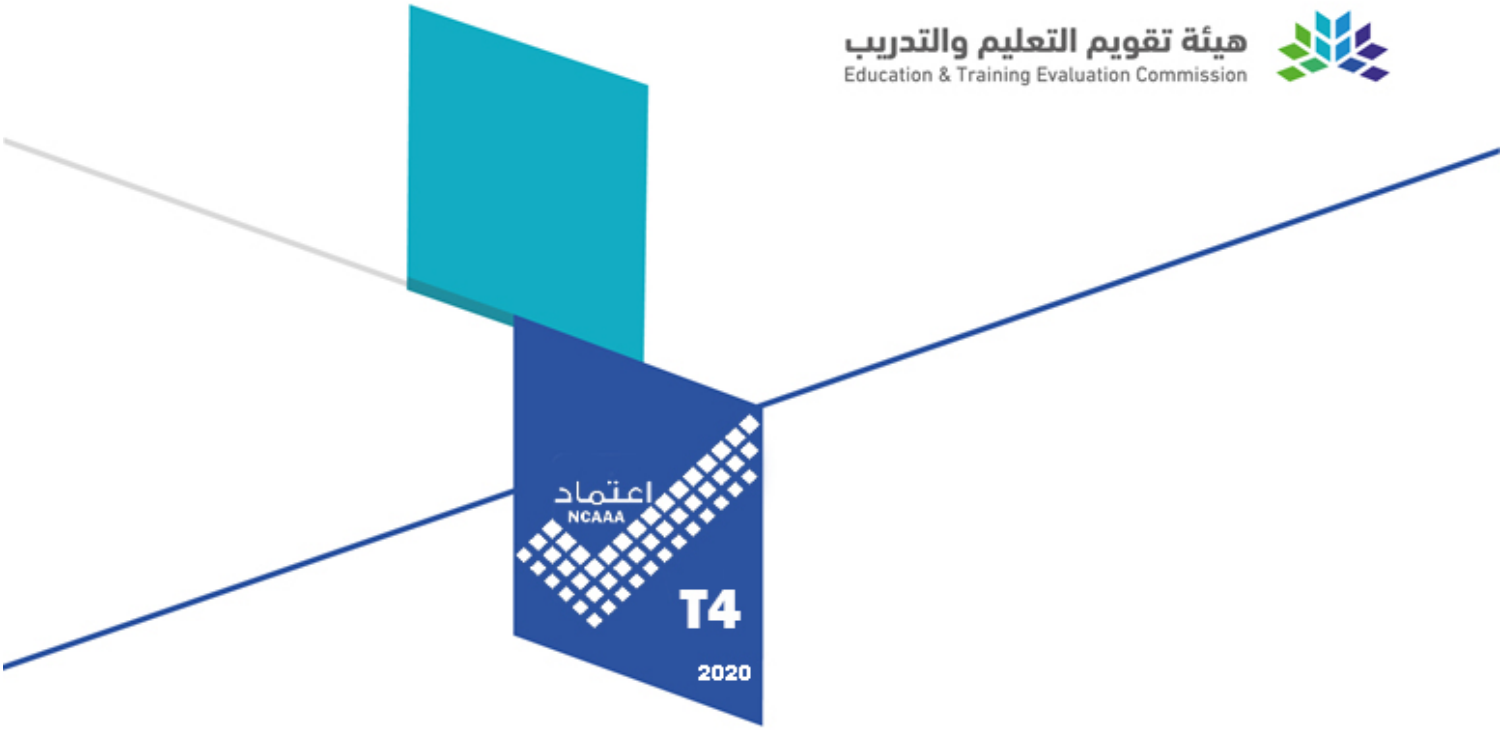
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Peer references – students.	1. Questionnaires and referendums approved by the department. 2. Peer evaluation of faculty members. 3. Review the results of the students' evaluation.
Effectiveness of student assessment methods.	Peer references - program leaders - faculty members – students.	1. Questionnaires and referendums approved by the department. 2. Review course descriptions and course reports periodically. 3. Peer evaluation and periodic exchange of correction and scrutiny among fellow faculty members. 4. Review samples of students' work.
Learning Resources.	Program leaders - faculty members - students	1. Questionnaires and referendums approved by the department. 2. Write-offs and monitoring.
Achieved learning outcomes of the course.	Program leaders - faculty members.	1. Review the course report. 2. Analysis of exams forms, grades, students' work and records of achievement.

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	Department of Applied Sciences – Applied College
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Network Fundamentals
Course Code:	Net 103
Program:	Computer Science (Networking)
Department:	Applied Sciences
College:	Applied College
Institution:	Al Imam Muhammad bin Saud Islamic University

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A. Course Identification

1. Credit hours: 3 (2 hours Lecture, 2 hours Lab)
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: First year/ Second Semester
4. Pre-requisites for this course (if any)**:** None
5. Co-requisites for this course (if any)**:** None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**		
2	**Blended**	44	100%
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22
2	**Laboratory/Studio**	22
3	**Tutorial**	
4	**Others** (specify)	
	Total	44

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces the basic concepts of computer networks, protocols, topologies, hardware and their main components to make students equipped with the theoretical basis and practical experiences necessary to design, implement, manage, and upgrade networks. This course will prepare students for the following certificates:

- CompTIA Network +.
- CompTIA A+.

2. Course Main Objective

This course aims to provide students with the necessary knowledge and skills related to the computer networks and the techniques used into it.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Understanding the concept of computer networks, their classifications, layers, and its software and hardware components.	ع1، ع5
1.2	Analysis of fundamentals and components of network security.	ع1، ع5
1.3	Knowledge of network addressing and segmentation techniques.	ع1، ع5
1.4	Knowledge of other networking techniques.	ع1، ع5
2	**Skills :**	
2.1	Determining the methods of installing and operating computer network devices.	م1، م2، م7
2.2	Technical skills in managing, establishing, operating, maintaining, and solving network infrastructure problems.	م1، م2، م7
2.3	The use of information and communication technology in communication, exchanging ideas, scientific research, and tasks accomplishments.	م1، م2، م7
2.4	Practicing critical thinking and solving problems that the learner faces in the course in creative ways.	م1، م2، م7
3	**Values:**	
3.1	Cooperation, teamwork, and professional ethics.	ق 1
3.2	Take responsibility for continuous learning and continuing personal development.	ق 2
3.3	Efficient and effective time management when applying acquired knowledge and skills.	ق 3

C. Course Content

No	List of Topics	Contact Hours
1	**Networking Basics:** • Defining a network. • Benefits of a network. • What is the internet? • Internet services. • History of computer networking and the internet.	8 Hours

	• Network components:
	  ○ Hardware
	  ▪ Computers.
	  ▪ Connectivity devices:
	  • Firewall.
	  • Hub.
	  • Switch.
	  • Repeater.
	  • Bridge.
	  • Router.
	  • Gateway.
	  • Modems.
	  • Wireless Access Point.
	  ▪ Network Interface Cards (NIC).
	  ▪ Cables:
	  • Twisted -Pair cabling.
	  • Coaxial cables.
	  • Fiber-Optic cables.
	  ○ Software
	  ▪ Network OS
	• Protocols
	  ○ Internet Protocol.
	  ○ Transmission Control Protocol.
	  ○ User Datagram Protocol.
	  ○ File Transfer Protocol.
	  ○ Simple Mail Transfer Protocol.
	  ○ Hypertext Transfer Protocol.
	  ○ Hypertext Transfer Protocol Secure.
	  ○ Post Office Protocol V 3/ Internet Access Protocol V4.
	  ○ Secure Shell.
	  ○ Telnet.
	  ○ Internet Control Message Protocol.
	  ○ Dynamic Host Configuration Protocol.	

2	**Network Classification:**
	• Types of network topologies:
	  ○ Bus topology.
	  ▪ Definition.
	  ▪ Advantages and disadvantages.
	  ○ Ring topology.
	  ▪ Definition.
	  ▪ Advantages and disadvantages.
	  ○ Star topology.
	  ▪ Definition.
	  ▪ Advantages and disadvantages.
	  ○ Mesh topology.
	  ▪ Definition.
	  ▪ Advantages and disadvantages.
	• Types of network architectures:
	  ○ Client/Server model.
	  ○ Peer-to-Peer Model.
		4 Hours

	• Types of networks based on the communication media:
	  ○ Wired.
	  ○ Wireless.
	• Types of networks based on the geographical areas:
	  ○ LAN.
	  ○ WAN.
	  ○ MAN.
	  ○ CAN.
	  ○ PAN.
	  ○ SAN.	

3	**Networking Models:**
	• What is the OSI networking model?
	• Following a packet through the layers.
	• The OSI Seven - Model Layers:
	  ○ The Physical Layer.
	  ○ The Data Link Layer.
	  ○ The Network Layer.
	  ○ The Transport Layer.
	  ○ The Session Layer.
	  ○ The Presentation Layer.
	  ○ The application Layer.
	• The TCP/IP Model:
	  ○ The Application Layer.
	  ○ The Transport Layer.
	  ○ The Internet Layer.
	  ○ The Network Interface Layer.
	• Comparing the OSI model to the four-layer TCP/IP Model.
		8 Hours

4	**Network Addressing, Routing, and Switching:**
	• The Internet Protocol (IP) address:
	  ○ IPv4 address.
	  ○ Classifying IP addresses:
	  ▪ Class A addresses.
	  ▪ Class B addresses.
	  ▪ Class C addresses.
	  ○ IPv4 Public and Private Networks.
	  ○ IPv4 addresses types:
	  ▪ Unicast Address.
	  ▪ Broadcast Address.
	  ▪ Multicast.
	• Subnetting Networking:
	  ○ Subnets.
	  ○ Purpose of Subnetting.
	  ○ Subnet Masks.
	• IPv6 Address:
	  ○ Understanding of IPv6 address.
	  ○ IPv6 addresses types:
	  ▪ Unicast IPv6 addresses.
	  ▪ Global Unicast addresses.
	  ▪ Link-Local addresses.
	  ▪ Site-Local addresses.
		8 Hours

	▪ Multicast addresses. ▪ Anycast addresses. • Assigning IP Addresses: o Static addressing. o Dynamic addressing. • Media Access Control (MAC) address. • Domain Name Service (DNS).	
5	**Data Link Layer and Network Traffic:** • Network access methods definition. • Purpose of network access methods. • What is carrier sensing? • What is a collision detection? • Types of network access methods: o CSMA/CD. o CSMA/AD. o Token passing.	4 Hours
6	**Cloud Computing:** • What is cloud computing? • Types of cloud services: o SaaS o PaaS o IaaS • Cloud delivery models: o Private o Public o Hybrid	4 Hours
7	**Network Security and Network Troubleshooting:** • What is network security? • Network security model. • How to secure your network? o Physical security and device hardening. ▪ Lock and Key. ▪ Swipe card and pin access. ▪ Biometrics. o Two factor and multifactor authentication. o Secure versus unsecured protocols. o Additional device hardening. o Access control. o Securing wireless networks. • Malicious software. • Common network attacks. • Vulnerability prevention. • Troubleshooting steps and procedures.	8 Hours
Total		44

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 and Understanding**		
1.1	Understanding the concept of computer networks, their classifications, layers, and its software and hardware components.	- Lectures. - Discussions. - Surveys. - Experimental learning. - Self- Learning. - Development lectures. - Brainstorming. - Web Survey. - KWL - Learning Schedule. - Mind maps. - Concept maps.	- Traditional and online achievement tests. - Questions. - Assignments. - Participations. - Presentations. - Discussions - Debates. - Cognitive Tests. - Student Activity File.
1.2	Analysis of fundamentals and components of network security.		
1.3	Knowledge of network addressing and segmentation techniques.		
1.4	Knowledge of other networking techniques.		
2.0	**Skills**		
2.1	Determining the methods of installing and operating computer network devices.	- Demonstrations. - Development Lectures. - Experimental learning. - Peers Learning. - Self- Learning. - Discussions. - Web Survey. - Brainstorming. - Teamwork. - Problem Solving. - Projects. - Online Discussions.	- Presentations. - Rubrics. - Auditions. - Production metrics. - Observations. - Labs. - Student Activity File. - Peer Assessments. - Self-Assessment.
2.2	Technical skills in managing, establishing, operating, maintaining, and solving network infrastructure problems.		
2.3	The use of information and communication technology in communication, exchange of ideas, scientific research, and performance tasks and costs.		
2.4	Practicing critical thinking and solving problems that the learner faces in the course in creative ways.		
3.0	**Values**		
3.1	Cooperation, teamwork, and professional ethics.	- Demonstrations. - Development Lectures. - Experimental learning. - Peers Learning. - Self- Learning. - Discussions. - Web Survey. - Brainstorming. - Teamwork. - Problem Solving. - Projects.	- Presentations. - Rubrics. - Auditions. - Production metrics. - Observations. - Labs. - Student Activity File. - Peer Assessments. - Self-Assessment.
3.2	Take responsibility for continuous learning and continuing personal development.		
3.3	Efficient and effective time management when applying acquired knowledge and skills.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		- Online Discussions.	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	One Midterm Exam	Week 6	20
2	Quizzes	The whole semester	10
3	Passing CISCO Networking Academy Course	The whole semester	10
4	Labs	The whole semester	15
5	Attendance and Classroom Participation	The whole semester	5
6	Final Exam	Week 12	40
7	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:

4 office hours per week.

4 hours of weekly meetings

Contact through the LMS

Communication/interact via e-mails with students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	CompTIA Network+ Certification All-in-One Exam Guide, by Scott Jernigan, 6th Edition.
Essential References Materials	Computer Networking: A Top-Down Approach, by James F. Kurose, 6th Edition. Networking All-in-One For Dummies, by Doug Lowe, 8th Edition. Networking Fundamentals by Crystal Panek.
Electronic Materials	Course Lectures on the blackboard.
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room with Smart board Lab with 25 Pc
Technology Resources (AV, data show, Smart Board, software, etc.)	PC and WIFI Internet access within the classroom .Projector, and Smart Board

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N/A

G. Course Quality Evaluation

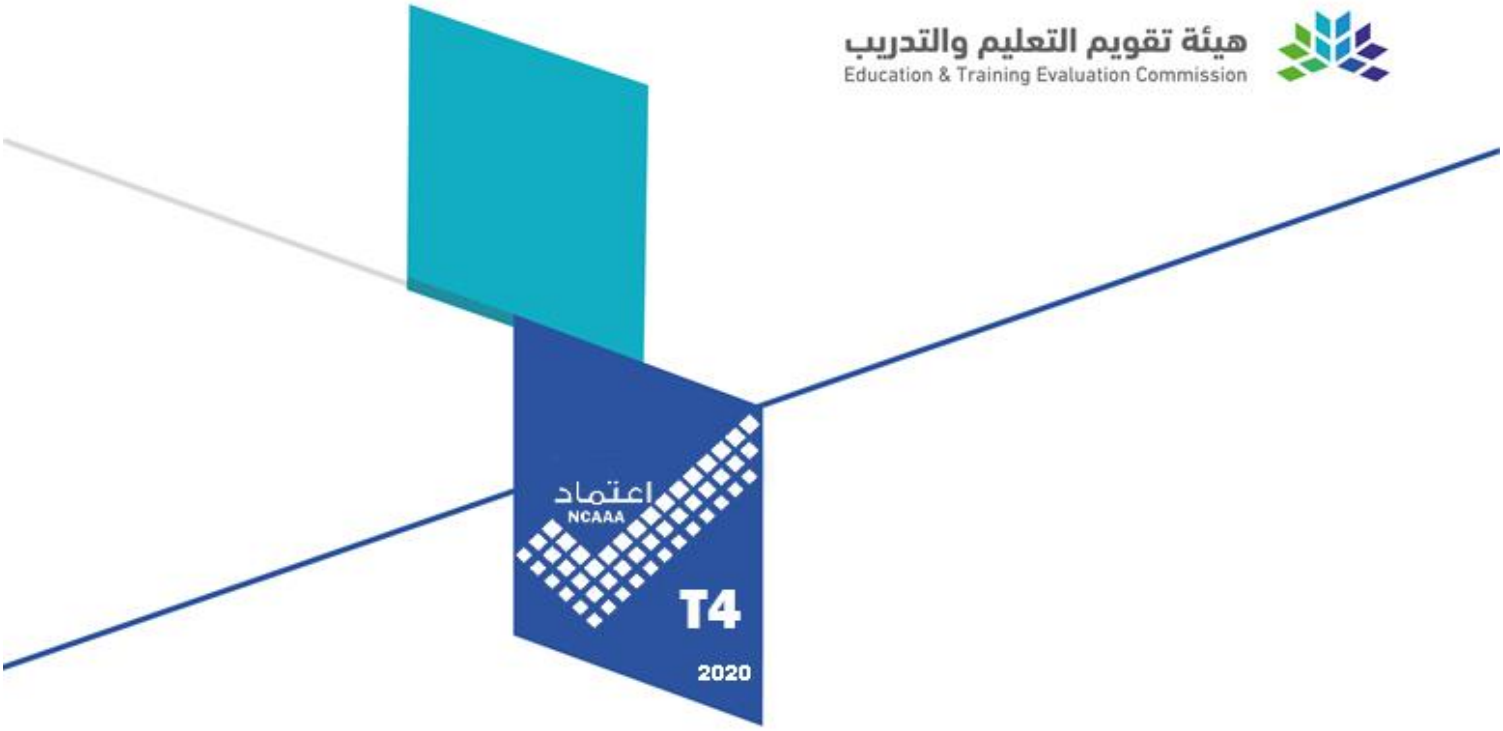
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessments.	Students – Peers Review	1. Questionnaires and surveys approved by the department. 2. Faculty peer evaluations. 3. Reviewing the results of the students' evaluation.
Effectiveness of student assessment methods.	Peers Reviews, Program Leaders, Faculty, Students.	1. Questionnaires and surveys approved by the department. 2. Review course specifications and course reports periodically. 3. Peer evaluation. 4. Review samples of student work.
Learning resources	Program Leaders, Faculty, Students.	1. Approved questionnaires and surveys from the department. 2. Students grade records.
Quality of learning resources	Program Leaders, Faculty.	1. Review course report. 2. Analyze exam models and student grade records.

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 Programs Development Committee
Reference No.	The First Semester of the year 1445
Date	03 / 09 / 2023 G, 17/ 02 /1444 H

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Programming Fundamentals
Course Code:	CS115
Program:	Computer Science (Cybersecurity- Programming-Networks)
Department:	Applied Sciences
College:	Applied College
Institution:	Imam Muhammad Bin Saud Islamic University

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E. Student Academic Counseling and Support **7**

F. Learning Resources and Facilities **7**

1.Learning Resources 7

2. Facilities Required 7

G. Course Quality Evaluation **8**

H. Specification Approval Data **8**

A. Course Identification

1. Credit hours: 4(3 theory , 2 lab)
2. Course type **a.** University ☐ College ☐ Department ☐ Program ☑ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Second Semester
4. Pre-requisites for this course (if any)**:** None
5. Co-requisites for this course (if any)**:** None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**		
2	**Blended**	55	100%
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22
2	**Laboratory/Studio**	33
3	**Tutorial**	
4	**Others** (specify)	
	Total	55

B. Course Objectives and Learning Outcomes

1. Course Description This course includes a set of topics that represent an introduction to the study of programming science, including talking about the nature of programming of all kinds and its role in the field of informatics and methods of thinking in solving problems by studying algorithms and the basics of sequential programming that constitute the core of the component units of any program. Throughout the semester, the course includes an integrated case study in which all previous tools are used to build an integrated project.
2. Course Main Objective The course aims to give the student the basics of programming science to be able to propose solutions to problems so that they are valid for formulation in the form of a computer program and the ability to write programs in the Java language to solve problems and solve some simple problems.

3. Course Learning Outcomes

CLOs		Aligned-PLOs
1	**Knowledge and Understanding**	
1.1	Knowledge of programming languages concepts.	ع١، ع٢، ع٥
1.2	Classification of programming languages according to their uses and levels.	ع١، ع٢، ع٥
1.3	Comparison between types of programming languages.	ع١، ع٢، ع٥
1.4	Demonstrate the software development life cycle.	ع١ ، ع٥
1.5	Familiarity with the concept of algorithm, its types, methods of representation, and the types of problems that are solved by it.	ع١ ، ع٥
1.6	Knowledge of the Java development environment.	ع١ ، ع٥
1.7	Knowledge of the components of Java language and the rules for writing them.	ع١، ع٢، ع٥
2	**Skills :**	
2.1	Tracking the stages of the software development life cycle for its production.	م١،م٢،م٣،م٤،م٥، م٧
2.2	Solving problems using algorithms.	م١،م٢،م٦،م٧
2.3	Mastering the basic components and stages of programming.	م١،م٢،م٤،م٥،م٧
2.4	Converting sequential algorithms into a Java program.	م١،م٢،م٣،م٤،م٥، م٦،م٧
2.5	Write a simple sequential program in Java.	م١،م٢،م٣،م٤،م٥، م٧
2.6	Using information and communication technology in communication, exchange of ideas, scientific research, and performance of tasks.	م١،م٢،م٧
2.7	Practicing critical thinking and solving problems facing the learner in the course in creative ways.	م١،م٢،م٧
3	**Values:**	
3.1	Collaboration, teamwork, and professional ethics.	ق١
3.2	Take responsibility for continuous learning and continuing personal development.	ق٢
3.3	Effective and efficient time management when applying the acquired knowledge and skills.	ق٣

C. Course Content

No	List of Topics	Contact Hours
1	▪ **Programming Concepts:** ○ Programming Terms ○ Programming Languages ○ Levels Of Programming Languages ▪ Low Level ▪ High Level ○ Problem Solving Approach ▪ Analyze the problem ▪ Design an algorithm ▪ Implement the algorithm ▪ Compile the code ▪ Run the program	10

2	▪ **Algorithms** o Definition Of Algorithms o Example Of Algorithms o Methods Of Representing Algorithms ▪ Pseudo-Code • Example of Algorithm and Pseudo Code ▪ Flow Chart • Flowchart Symbols • Flowchart Examples o Control Structures ▪ Sequential Logic Structure ▪ Selection/ Decision Logic Structure ▪ Repetition/Loop Logic Structure • Simple Loop • Multiple/Nested Loop o Counter o Grosses o Automatic Counter Loop	20
3	▪ **Introduction To Java Language** o Objective Of Developing Java o Java Language Editions o Java Language Features o Java Programming Tools o What We Need To Start With Java? ▪ Operating System ▪ Developing Environment o Basic Structure Of Java Code o Java Language Components o Rules o Java Keywords o Variables And Constants o Data Types o Statements ▪ Declaration Statements ▪ Comments Statements ▪ Input/Output Statements o Escape Characters o Operations ▪ Assignment Operations ▪ Arithmetic Operations ▪ Logical Operations ▪ Relational Operations	20
4	▪ **From Algorithms To Java Program Code** o Examples	5
Total		55

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 and Understanding**		
1.1	Knowledge of programming languages concepts.	Class lectures Class Discussion Questions/Answers Sessions in class Home work Assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports.
1.2	Classification of programming languages according to their uses and levels.		
1.3	Comparison between types of programming languages.		
1.4	Demonstrate the software development life cycle.		
1.5	Familiarity with the concept of algorithm, its types, methods of representation, and the types of problems that are solved by it.		
1.6	Knowledge of the Java development environment.		
1.7	Knowledge of the components of Java language and the rules for writing them.		
2.0	**Skills**		
2.1	Tracking the stages of the software development life cycle for its production.	Class lectures Class Discussion Questions/Answers Sessions in class Home work Assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports
2.2	Solving problems using algorithms.		
2.3	Mastering the basic components and stages of programming.		
2.4	Converting sequential algorithms into a Java program.		
2.5	Write a simple sequential program in Java.		
2.6	Using information and communication technology in communication, exchange of ideas, scientific research, and performance of tasks.		
2.7	Practicing critical thinking and solving problems facing the learner in the course in creative ways.		
3.0	**Values**		
3.1	Collaboration, teamwork, and professional ethics.	Class lectures Class Discussion Questions/Answers Sessions in class Home work Assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports
3.2	Take responsibility for continuous learning and continuing personal development.		
3.3	Effective and efficient time management when applying the acquired knowledge and skills.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes (3-4 Quizzes)	All Semester	15%
2	Midterm	Week 7	20%
3	Participation	All Semester	5%
4	Lab Evaluations	All Semester	20%
5	Final	Week 12-13	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 :
office hours per week.
5 hours of weekly meetings
Contact through the LMS
Communication/interact via e-mails with students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Java™ Programming: From Problem Analysis to Program Design (Introduction to Programming) by D. S. Malik, 5th Edition.
Essential References Materials	- Deitel P.J., Deitel H.M. - Java. How to Program, 10th Edition - Problem Solving and Programming Concepts by Maureen Sprankle and Jim Hubbard, 9th Edition.
Electronic Materials	Online resources will be provided during class lectures.
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom, Computer lab
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board, NetBeans software, Edraw Max software
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	Evaluation Methods
Effectiveness of teaching and assessment	Student	Indirect using course evaluation survey
Quality of learning resources	Student and Faculty	Indirect using course evaluation and faculty survey

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	
Reference No.	
Date	