



T-104  
2022

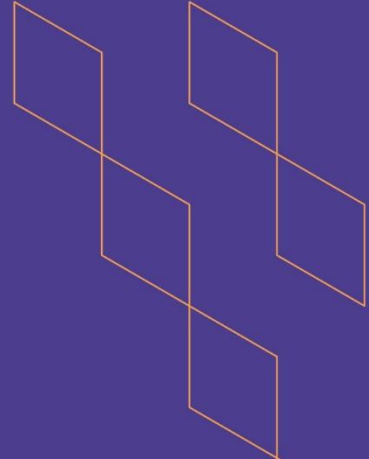
# Course Specification





T-104  
2022

## Course Specification



Course Title: <b>Mathematics</b>
Course Code: <b>1211 MATH</b>
Program: <b>Information Systems &amp; WMAD</b>
Department: <b>NA</b>
College: <b>Applied College</b>
Institution: <b>King Khalid University</b>
Version: <b>1</b>
Last Revision Date: <b>7 August 2023</b>



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## A. General information about the course:

### Course Identification

1. Credit hours: 2

#### 2. Course type

a. University  College  Department  Track  Others

b. Required  Elective

3. Level/year at which this course is offered: 1<sup>st</sup> Level

#### 4. Course general Description:

This course provides an essential foundation in number systems and logic design for students of information systems and web and mobile application development. The course covers the following topics:

- Different types of numbers and their properties, such as natural, integer, rational, irrational, real, and complex numbers.
- Number systems and their conversions, such as binary, octal, decimal, and hexadecimal systems.
- Logic gates and Boolean algebra, and how to use them to design and simplify digital circuits.
- Sets, relations, functions, and graphs, and how to use them to model and solve problems in computer mathematics.
- Karnaugh maps (K-maps) and their applications in minimizing Boolean expressions and simplifying digital circuits.

By the end of this course, students will be able to perform arithmetic operations and conversions on different kinds of numbers, create and analyze digital circuits using logic gates and Boolean algebra, and use sets, K-maps, and graphs to solve problems in computer mathematics.

#### 5. Pre-requirements for this course (if any):

#### 6. Co- requirements for this course (if any):

#### 7. Course Main Objective(s):

Our focus in this course is to:

- 1) Highlight the importance of mathematics in overall curriculum and variety of discipline.
- 2) Build a strong mathematical background for future study in computer science.
- 3) Help students to develop their mathematical skills by using the proper logical thinking.
- 4) Train students to know methods and solution strategies.
- 5) Give a basic background in analysis.





### 1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	32	100
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4.	Distance learning		

### 2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	32
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	<b>Total</b>	<b>32</b>



## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define basics sets and their operations	k1	Lectures	Exams, Assignments and Quizzes
1.2	Understand the number system	k2	Lectures	Exams, Assignments and Quizzes
1.3	Basic concepts of logic gates, Boolean algebra and functions	k2	Lectures	Exams, Assignments and Quizzes
2.0	Skills			
2.1	Explain number system and inter conversion	s1	Lectures	Exams and Assignments
2.2	Build truth tables for Boolean expressions	s2	Lectures	Exams and Assignments
2.3	Explains logic gates, function and differential equations	s3	Lectures	Exams and Assignments
3.0	Values, autonomy, and responsibility			
3.1	effectively work with number systems and their inter conversion	v1	Lectures	Exams, Assignments and presentation
3.2	Practice and work professionally with the help of mathematics	v2	Lectures	Exams, Assignments and presentation

## C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to number systems, Binary, Decimal, Octal and Hexadecimal	3
2.	Number System and their Conversion. Decimal to binary, decimal to octal, decimal to hexadecimal.	5
3.	Binary to decimal, binary to octal, binary to hexadecimal. Octal to binary, octal to decimal and octal to hexadecimal.	5
4.	Hexadecimal to decimal, hexadecimal to binary and hexadecimal to octal	5
5.	Logical gates: Truth table, AND, OR, NOT, BUFFER, NAND, NOR XOR, XNOR GATES.	5



6.	Introduction to Boolean Algebra: Logical diagram, Basic identities of Boolean algebra, functions and differentiation rules.	5
7.	Introduction to sets, K-Maps and graphs.	4
Total		32

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1	4	5
2.	Midterm Exam 1	7	15
3.	Midterm Exam 2	12	15
4.	Quiz 2	14	5
5.	Assignments	5 - 15	20
6.	Final Exam	After week 16	40

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



## E. Learning Resources and Facilities

### 1. References and Learning Resources

Essential References	Will be provided by the course coordinator
Supportive References	
Electronic Materials	<a href="https://lms.kku.edu.sa/">https://lms.kku.edu.sa/</a>
Other Learning Materials	All other materials will be made available via course's Blackboard page

### 2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Room with enough capacity Chairs Projector/Screen.
Technology equipment (projector, smart board, software)	Projector and smart board
Other equipment (depending on the nature of the specialty)	

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of students assessment	Course Teacher	Direct
Quality of learning resources	Program Supervisor, Quality Unit	Direct
The extent to which CLOs have been achieved	Course Teacher	Direct
Other	Course Teacher, Quality Unit	Direct

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

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	





