



T-104  
2022

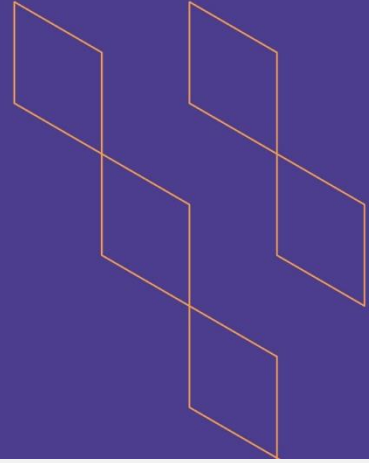
# Course Specification





T-104  
2022

## Course Specification



Course Title:	<b>Number Theory</b>
Course Code:	<b>263Math-3</b>
Program:	<b>B.Sc. of Mathematics</b>
Department:	<b>Mathematics</b>
College:	<b>Art &amp; Sciences</b>
Institution:	<b>Najran University</b>
Version:	<b>1</b>
Last Revision Date:	<b>07-05-2023</b>



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## A. General information about the course:

Course Identification	
1. Credit hours:	3
2. Course type	
a	University <input type="checkbox"/> College <input type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others <input type="checkbox"/>
b	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	4 / 2
4. Course general Description	
<p>This course will cover the foundations of Number Theory. The main objectives of this course is focus on basic concepts and properties of Number Theory: Divisibility, prime numbers and their properties, congruence and its properties, some numerical functions, and the Pythagorean triplets</p>	
5. Pre-requirements for this course (if any):	
6. Co- requirements for this course (if any):	
7. Course Main Objective(s)	
Apply calculus and its applications to the geometry of curves and surfaces in space.	

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

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	3	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	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	<b>Total</b>	<b>45</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 the basis terminology of Numbers theory.	K1	Lecture Discussions	Exercises Homework Quiz Written Exam
1.2	State famous elementary results of number theory.			
2.0	Skills			
2.1	Solve linear Diophantine equations and linear congruencies.	S1	Lecture Discussions	Exercises Homework Quiz Written Exam
2.2	Distinguish prime numbers using the Euclid algorithm and Generalizing the results of number representation theorems to different cases	S1		
2.3	Apply the fundamental theorem of arithmetic.	S2		
3.0	Values, autonomy, and responsibility			
3.1	Work independently and in a group	V1	Assigning each group of students to collect and write topic in number theory and explain it to their classmates.	Oral Exam Rubrics

## C. Course Content

No	List of Topics	Contact Hours
1	The first and second principle in mathematical induction, and the well ordering principle .	9
2	Primes numbers and their distribution	4
3	Linear Diophantine equations	6
4	Linear Congruence and the Chinese Remainder Theorem.	4
5	Fermat's Little Theorem.	6



6	Euler theorem, and Wilson theorem	6
7	Number-Theoretic Functions.	6
8	Pythagoras Trilogy and some cases of the recent Fermat theorem	4
Total		45

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam 1	6-8	20
2.	Midterm Exam 2	11-13	20
3.	Assignments & Quizzes	During classes	10
4.	Final Exam	16-17	50

\*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	فوزي الذكير، معروف سمحان، مقدمة في نظرية الأعداد، مطبوعات جامعة الملك سعود
Supportive References	Elementary number theory ,6th Edition ,by Burton
Electronic Materials	
Other Learning Materials	

### 2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Hall by the number of seats = 25 seat approximately.
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> <li>• Data show</li> <li>• Smart Board</li> <li>• Wi Fi</li> </ul>
Other equipment (depending on the nature of the specialty)	None





## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Student Questionnaire (Indirect)
Effectiveness of students assessment	Peer Reviewer	Rubrics (Indirect)
Quality of learning resources		
The extent to which CLOs have been achieved	Faculty	Direct

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

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval Data

COUNCIL /COMMITTEE	Council of Mathematics Department
REFERENCE NO.	14441017-0208-00014
DATE	17-10-1444H

