AAU
KING ABDULAZIZ UNIVERSITY
ACADEMIC ASSESSMENT UNIT

COURSE PORTFOLIO

FACULTY OF SCIENCE

MATHEMATICS DEPARTMENT

COURSE NAME:	Number Theory
COURSE NUMBER:	**444**
SEMESTER/YEAR:	Second term 2015/2016
DATE:	**23/1/2016**

PART II

COURSE SYLLABUS

Chapter I:Divisibility
  - *Division Algorithm.*
  - *The Greatest common Divisor.*
  - *The Euclidean Algorithm.*
  - *Fibonacci Numbers.*
  - *The Least common Multiple.*
  - *The Linear Diophantine Equations.*

Chapter II:Theory of Primes
  -The Fundamental Theorem of Arithmatic.
  -Determination of Primality.
  -Euclids Theorem.
  -Fermat Factorisation.
  -Fermat Numbers.
  -Mersenne Numbers.

Chapter III:Theory of Congruences
  -Introduction to Congruences.
  -Coungruent Classes and completeresidue system.
  -Different basses and Special Divisibility Tests.
  -Linear Congruences .
  -The Chinese Remainder Theorem.
  -Application of Congruences.

Chapter IV:Theorems of Wilson ,Fermat and Eular
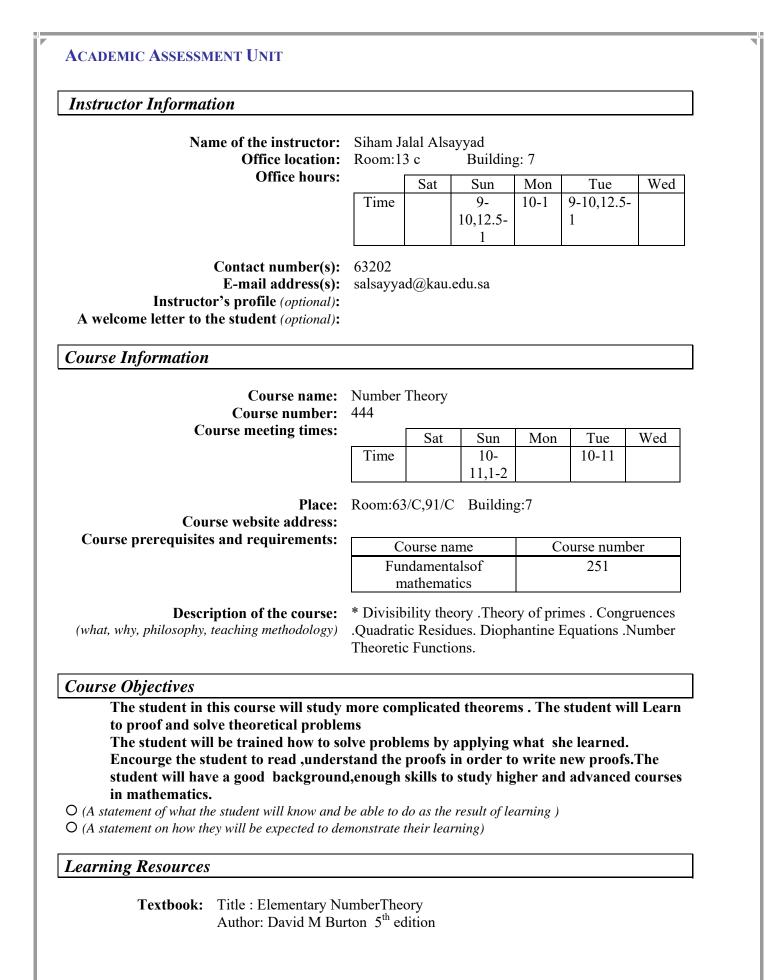 *-Wilson Theorem & examples.*
  -Fermat Little Theorem & examples.
  -Eulers Theorem & examples.

Chapter V:Number Theoretic Functions
  -The Functions and .

-*The Mobius Function.*
-*The Bracket Function.*
-*The binomial Coefficient.*
ChapterVI:Quadratic Residues
-*The Legendre Symbol.*
-*Eular Criterion.*
-*Gauss Lemma.*
-*The Law of Quadratic Reciprocity.*

Instructor Information

Name of the instructor: Siham Jalal Alsayyad
Office location: Room:13 c   Building: 7
Office hours:

	Sat	Sun	Mon	Tue	Wed
Time		9-10,12.5-1	10-1	9-10,12.5-1	

Contact number(s): 63202
E-mail address(es): salsayyad@kau.edu.sa
Instructor's profile *(optional)***:**
A welcome letter to the student *(optional)***:**

Course Information

Course name: Number Theory
Course number: 444
Course meeting times:

	Sat	Sun	Mon	Tue	Wed
Time		10-11,1-2		10-11	

Place: Room:63/C,91/C   Building:7
Course website address:
Course prerequisites and requirements:

Course name	Course number
Fundamentalsof mathematics	251

Description of the course:
(what, why, philosophy, teaching methodology)
* Divisibility theory .Theory of primes . Congruences .Quadratic Residues. Diophantine Equations .Number Theoretic Functions.

Course Objectives

The student in this course will study more complicated theorems . The student will Learn to proof and solve theoretical problems
The student will be trained how to solve problems by applying what she learned.
Encourge the student to read ,understand the proofs in order to write new proofs.The student will have a good background,enough skills to study higher and advanced courses in mathematics.

◯ *(A statement of what the student will know and be able to do as the result of learning)*
◯ *(A statement on how they will be expected to demonstrate their learning)*

Learning Resources

Textbook: Title : Elementary NumberTheory
Author: David M Burton 5th edition

Reading material: Title: Elementary NumberTheory and its Application
Author : Keneth Rosen   3rd edition

Lab guide: Title:
Author:
Publisher:
Found in:
E-resources:
The computer usage:
(if it applies)
Software needed:
Lab location:
Lab hours:
Safety precautions:
Instructions for use:

Course Requirements and Grading

Student assessment:
(A clear rationale and policy on grading)

Test one 25% Test two 25%,10% Quizes ,Final 40% total 100%.The letters grading systems (A B C D F +) will be used in this course . A = Excellent work .B= Good work. C = Acceptable work. D= Marginally acceptable work. F= Unacceptable work.

Expectations from students:
(Attitudes, involvement, behaviors, skills, and ethics)

The student must be quite during lectures .The student must respect the teacher as well as other students in the same class .The student must be cooperative and helpful with others. The student must close the cell phone during lectures.

Student responsibilities to the course:

We all must be actively involved in the class .First ,we must attend .Second we must share our thoughts . Students must do all home work .Students must attend all tests and quizzes.. If a student couldnot attend an exam because of illness she will have a percent of the final exam

Expectations for each assignment and project:
Important rules of academic conduct:
Lab plan and assignments:
(if it applies)

6. Detailed Course Schedule

(Included templates of tables for course schedule and practical sessions)

**Course Schedule Model
(meeting two times a week)**

Week #	Date	Topic	Reading Assignment	What is Due?
1		Introduction to number theory	Chapter 1	Buy Book
		Division Algorithm		
2		EucledianAlgorithm	Chapter 1	Homework assignment #1
		Least common multiple		
3		Theory of primes	Chapter 2	Homework 2
	….	Determination of primality		
4	…	Euclids theorem	Chapter 2	Homework 3
		Fermat factorization		
5		Fermat numbers	Chapter 2	
		Introduction to congrunce		
6		**Congruence classes**	**Chapter 3**	**Homework 4**
		First Exam		
7		Different bassis &special divisibility tests	Chapter 3	
		Application of congrunces		
8		Wilson Theorem&examples	Chapter 4	Home work 5
		Fermat little Theorem		
9		Eular theorem	Chapter 4	
		Eular theorem		
10		Number theoretic functions	Chapter 5	
		The Mobius function		
11		Second Exam	Chapter 5	Homework 6
		The binomial coefficient		
12		Quadratic Residues	Chapter 6	
		The legendre symbol		

Week #	Date	Topic	Reading Assignment	What is Due?
13		Eular Criterion	Chapter 6	Homework 7
		Euler criterion		
14		Gauss lemma	Chapter 6	
		The law of quadratic reciprocity		
15				
		Final Exam all sections		

Course Schedule Model
(meeting three times a week)

Week #	Date	Topic	Reading Assignment	What is Due?
1	Sep 10			Buy Book
	Sep 12		Chapter 1	
	Sep 13			
2	Sep 17		Chapter 1	Homework assignment #1
	Sep 19			
	Sep 20			
3	Sep 24		Chapter 2	Home work 2
	Sep26		Chapter 2	
	Sep 27			
4	Oct 1		Chapter 2	Home work 3
	Oct 3		Chapter 2	
	Oct 4			
5	Oct 8		Chapter 2	
	Oct 10		Chapter3	Home work 4
	Oct 11		Chapter3	

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Week #	Date	Topic	Reading Assignment	What is Due?
6	Oct 15		Chapter 3	
	Oct 17		Chapter3	
	Oct 18		Chapter3	
7	Oct 22			
	Oct 24		Chapter3	
	Oct 25		Chapter4	
8	Nov 12		Chapter4	
	Nov 14		Chapter4	
	Nov 15		Chapter4	
9	Nov 19			
	Nov21		Chapter4	
	Nov 22		Chapter4	
10	Nov 26		Chapter5	
	Nov 28			
	Nov 29		Chapter5	
11	Dec 3			
	Dec 5			
	Dec 6		Chapter5	
12	Dec 10		Chapter6	
	Dec 12			
	Dec 13			
13	Dec 17		**Chapter6**	
	Dec 19			
	Dec20			
14	Dec 24		Chapter6	
	Dec 26			
	Dec 27		Chapter6	
15	Dec 31			
	Jan 2		Chapter6	

Week #	Date	Topic	Reading Assignment	What is Due?

Practical Sessions Schedule Model

Lab. #	Date	Exp/Practical title	Reading Assignment	What is Due?
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

PART III

COURSE RELATED MATERIAL

Contains all the materials considered essential to teaching the course, includes:

Quizzes, lab quizzes, mid-terms, and final exams and their solution set
Paper or transparency copies of lecture notes/ handouts (optional)
Practical Session Manual (if one exists)
Handouts for project/term paper assignments

(use the following template for Quizzes, lab quizzes, mid-terms, and final exams and their solution set)

King Abdul Aziz University
Faculty of Science
Mathematics Department

Math 101 - Exam 1
2nd Semester 2005/2006
Date: *(the exam date)*
Time allowed: *(time allowed)*

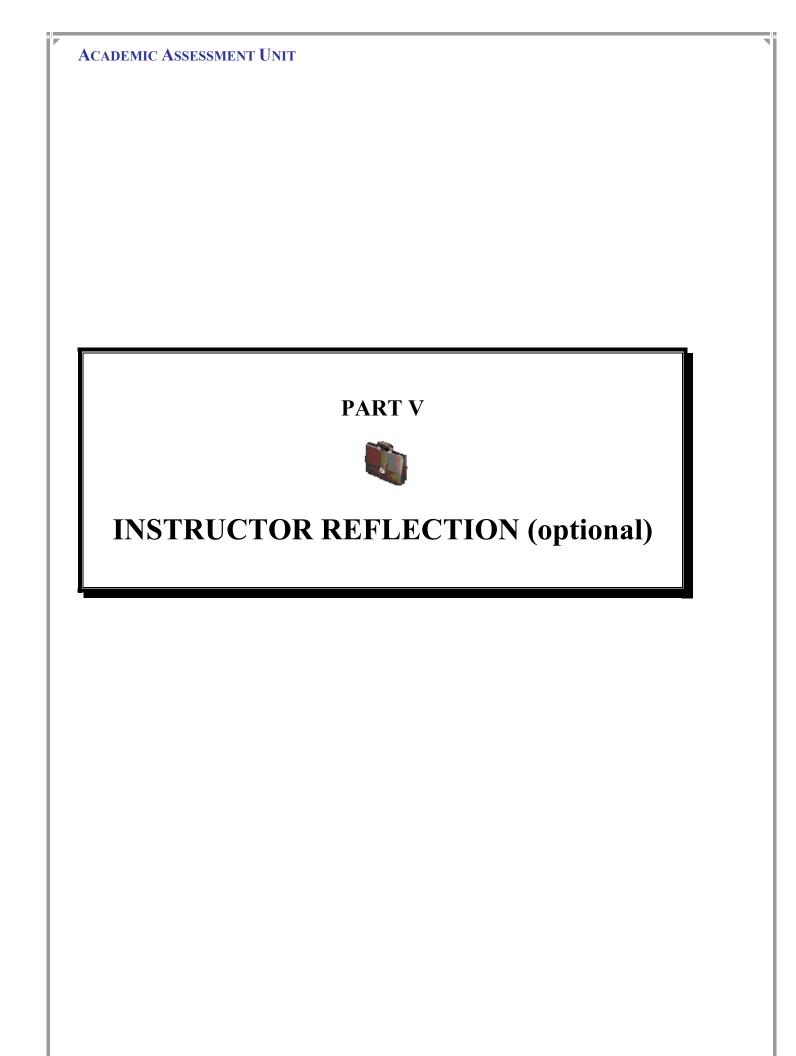|		
Q1	*(Insert question one here)*	8 marks
Q2	*(Insert question two here)*	8 marks
Q3	*(Insert question three here)*	8 marks
Q4	*(Insert question four here)*	8 marks
Q5	*(Insert question five here)*	8 marks
	Total	25

PART IV

EXAMPLES OF STUDENT LEARNING

Examples of student work. (Included good, average, and poor examples)

Graded work, *i.e.* **exams, homework, quizzes**
Students' lab books or other workbooks
Students' papers, essays, and other creative work
Final grade roster and grade distribution
Examples of instructor's written feedback of student's work, (optional)
Scores on standardized or other tests, before and after instruction, (optional)
Course evaluation, self evaluation or students comments (optional)

PART V

INSTRUCTOR REFLECTION (optional)

Part V. Instructor Reflections on the Course

- ✍ Instructor feedback and reflections
- ✍ Propose future improvement and enhancement
- ✍ Evaluate student competency and reflect on their course evaluation for improvements to the course
- ✍ Conceptual map of relationships among the content, objective, and assessment
- ✍ Recent trends and new approaches to teach the course.

COURSE PORTFOLIO
CHECKLIST

☐ **TITLE PAGE**

☐ **COURSE SYLLABUS**

☐ **COURSE RELATED MATERIAL**

☐ **EXAMPLES OF EXTENT OF STUDENT LEARNING**

☐ **INSTRUCTOR REFLECTION ON THE COURSE**