STATE UNIVERSITY OF-YOGYAKARTA
FACULTY OF-MATHEMATICS AND NATURAL SCIENCE
SILLABY

Faculty   : Mathematics and Natural Science
Study Program   : International Mathematics Education
Course/Code   : Number Theory / MAA 209
Credit   : Teory = 2 (two) SKS, Practise = - (-) SKS
Semester   : 2 (two)
Prerequisite/Code   : Logic and Set, MAA301
Professor   : Nikenasih Binatari, M.Si

I. Course Description

Number theory is one of the oldest and most beautiful branches of Mathematics. It abounds in problems that yet simple to state, are very hard to solve. In this course, we will discuss about number, particularly integer, and it properties. First of all, we cover some preliminary tools we need such as well ordering, mathematical induction, and pigeon hole principle. Next, we will study about divisibility, congruence, unique factorization, gcd and lcm, fundamental theorem of arithmetic, linear diophantine equation and arithmetic functions.

II. Standard of Competence

Upon completing this course, students should be able to understand the properties of integer and then apply the properties to solve some integer problems.

III. Activity Plan

Meeting	Basic Competence	Essential Concept	Learning Strategies	Referencee	Character
I,II	Students should understand the preliminary tools needed to study number theory	Preliminaries - Introduction - Well Ordering - Mathematical Induction - Pigeon Hole Principle	Lecturing and Exercises	A,B	Curiousity, reasonable Understand
III,IV	Students should be able to determine wether a number is divisbile by other or not	Divisibility - Divisibility - Division Algorithm	Lecturing, Discussion and Exersices	A, B	Understand, creative
V,VI	Students should be able to determine the remainder of a number if it's divided by other	Congruences - Congruences - Complete residues	Lecturing, Discussion and Exersices	A, C	Creative
VII,VIII,IX	Students should be able to find the gcd and lcm of two numbers, to determine wether a number is prime or not, then to determine the number of factor, sum of factor of a number.	Unique Factorization - GCD and LCM - Primes - Fundamental Theorem of Arithmetic - Arithmetic Functions	Lecturing, Discussion and Exersices	A, B	Creative
X	Midterm Exam				
XI,XII	Students should be able to find the gcd of two number using euclidean algorithm, to solve linear diophantine equation and to solve linear congruences	Linear Diophantine Equation - Euclidean Algorithm - Linear Congruences	Lecturing, Discussion and Exersices	A, C	Creative

XIII,XIV,XV	Students should be able to understand some theorem about integer	More of congruences - Fermat Little's Theorem - Wilson's Theorem - Euler's Theorem	Lecturing, Discussion and Exersices	A, C	Creative
XVI	Final Exam				

IV. Reference
Compulsory :

  [A] Lecturer Notes. David A. Santos. *Number Theory for Mathematical Contests*. 2005.

Additional :

  [B] Sukirman. 2006. *Pengantar Teori Bilangan*. Yogyakarta : Hanggar Kreator.

  [C] Ore Oystein. 1948. *Number Theory and Its History*. First Edition. USA : McGraw-Hill Book Company, Inc.

V. Evaluation

Component	Worth
Attendance	10%
Assignment	20%
Midterm Exam	35%
Final Exam	35%
Total	**100%**

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Head of Mathematics Educational Department   Lecturer

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