META information and Communication Technology Pathway Program 2014

KIP111	Introduction to Problem Solving
JEE103	Mathematics 1
KIC114	Operating Systems
KIC113	Website Development with PHP
KIP121	Introduction to Data Structures
KIP122	Database Fundamental
KIC123	Dynamic Composition of Web Services
KIC124	Object-oriented Software Development

Brief Unit Outlines

META Computing Pathway Program 2014

KIP111 Introduction to Problem Solving

Unit Outline

First Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

Java 5/E: Introduction to Problem Solving and Programming
Savitch | Pearson Education Asia

Introduction to the Course

This course is an introductory teaching of JAVA programming and students will learn what is all about JAVA. After Mid-term, students will learn intensively the object-orientations and the complicated concepts of class structure which is the paramount content in JAVA.

Objectives

With completing this course, students will grasp the clear and crystal concept of JAVA programming, particularly the object-orientations and the complicated concepts of class structure.

Lecture Topics

Week 1
Introduction of JAVA programming and its setting up: (Default setting up and loading and documentation of API and SDK)

Week 2
Basic input and output and data type
(Standard input/output, a variable, a constant, change of data type etc)

Week 3
Operator (unary, binary, trinomial and other operator, operator precedence)

Week 4
Control statement (if, switch, for, while etc)

Week 5
Array (one-dimensional array, two-dimensional array etc)

Week 6
Recursive structure and non-recursive structure

Week 7
Mid-term exam and lectures continue during this week

Week 8
The object-orientations and the concepts of class structure 1
(Grasping concept of class)

Week 9
The object-orientations and the concepts of class structure 2
(Member variable and type, method etc)

Week 10
Inheritance, interface, abstract class

Week 11
Polymorphic

Week 12
Review of the unit and key items check for final exam

Week 13
Review
Final exam

META Computing Pathway Program 2014

JEE103 Mathematics 1

Unit Outline

First Semester 2014

Assessment
Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

Erwin Kreyszig, Advanced Engineering Mathematics
9th Edition, John Wiley & Sons, Inc., 2006

Auxiliary text or references: Advanced Engineering Mathematics by DongPyo JI, YoungJiMunHwa Publishing, 2006.

Introduction to the Course

In this course, students will learn the fundamental concept and principles of Calculus, ordinary differential equation, linear differential equation, series and series solution of differential equation, Laplace Transportation.

Objectives

To learn the fundamental concept and principles of Calculus, ordinary differential equation, linear differential equation, series and series solution of differential equation, Laplace Transportation.
To foster students' mathematical quality by enhancing the understanding level of the fundamental principles and concept of mathematics and its applications
To have students acquire the ability of dealing with mathematical matters by reasonable and scientific thinking.

Lecture Topics.

Week 1
First-Order ODEs

Week 2
First-Order ODEs

Week 3
Second-Order Linear ODEs

Week 4
Second-Order Linear ODEs

Week 5
Second-Order Linear ODEs
Higher Order Linear ODEs

Week 6
Second-Order Linear ODEs

Week 7
Mid-term will be given in class1 and lectures will be given in class 2 and 3
Systems of ODEs

Week 8
Series Solutions of ODEc

Week 9
Series Solutions of ODEc

Week 10
Laplace Transforms

Week 11
Laplace Transforms

Week 12
Linear Algebra

Week 13
Review
Final exam

META Computing Pathway Program 2014

KIC114 Operating Systems

Unit Outline

First Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

BEGINNING LINUX PROGRAMMING (4TH EDITION)
Matthew, Neil

Introduction to the Course

Students will learn to practice the setting up of operating system and its utilization until mid-term and will learn the theory of operating system after mid-term.

Objectives

To learn the concept and function of operating system

Lecture Topics

Week 1
Introduction and setting up of Linux

Week 2
Completion of setting up

Week 3
Linux basic command language

Week 4
Dealing of account and file

Week 5
Dealing of Vi

Week 6
Dealing of RPM

Week 7
Mid-term will be given in class1, lectures will be given in class 2 and 3

Week 8
Deadlock, processor scheduling

Week 9
Management of memory

Week 10
Virtual memory

Week 11
Input/output and auxiliary memory unit

Week 12
Management of file

Week 13
Review
Final exam

META Computing Pathway Program 2014

KIC113 Website Development with PHP

Unit Outline

First Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

PHP PROGRAMMING FOR BEGINNER, HanBitMedia publishing
Author: DaeHyuk PARK, EuiSun KANG

Introduction to the Course

In this course, students will learn the essential skill of PHP to be a web programmer.
The teachings comprises the fundamental concept of PHP programming such as PHP grammar, form, function, array and object, database, debugging, security weakness of PHP
In the web. This course is a practice based course.

Objectives

To have students good at PHP, web programming language.
To have students' web design skill using PHP.

Lecture Topics

Week 1
Introduction of PHP understanding of web and PHP

Week 2
Fundamental grammar of PHP

Week 3
Basic structure of PHP programming (variables, operators)

Week 4
Understanding of control statement in PHP

Week 5
Basic function1

Week 6
function2 (arrangement function, variable function)

Week 7
Midterm, understanding of file input and output
Lectures continue during this week

Week 8
Understanding of DB and DBMS

Week 9
Instruction of MySQL

Week 10
Making of dynamic image

Week 11
Managing of MySQL

Week 12
Understanding of API

Week 13
Review
File uploads understanding
Final exam

META Computing Pathway Program 2014

KIP121 Introduction to Data Structures

Unit Outline

Second Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

PROFESSIONAL JAVA SERVER PROGRAMMING J2EE EDITION

Introduction to the Course

This course is an advanced course of JAVA programming basic 1 wherein students will learn Thread and solving error i.e. Exception and GUI.

Objectives

Students will learn concept of Thread, solving error and GUI.

Lecture Topics

Week 1
Introduction of JAVA2 and review of JAVA1

Week 2
Dealing of character string

Week 3
Dealing of Exception

Week 4
Dealing of Thread

Week 5
Dealing of Collection in relation to Data Structure

Week 6
Introduction of JAVA Package to deal with GUI

Week 7
Mid-term will be given in class1, lectures will be given in class 2 and 3

Week 8
GUI (1)

Week 9
GUI (2)

Week 10
GUI (3)

Week 11
Applet

Week 12
Dealing of Database

Week 13
Review
Final exam

META Computing Pathway Program 2014

KIP122 Database Fundamental

Unit Outline

Second Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

Data Base System SaengNeung Publishing

Author: Henry F. Korth, Translated by ByoungWook LEE

Introduction to the Course

In this course students will learn the basic concept of database and foster the utilizing ability of DMBS by understanding the database component, database operating system, data modeling, database language and data dependency etc. And also students will design the database using SQL.

Objectives

To understand the theory and implementation method and utilization of database established so far by learning the basic knowledge of database.

To be able to use SQL which is the standard of database.

Lecture Topics

Week 1
Why database?(productivity & user requirement)
What is database? (user's data management tool)

Week 2
Components of database management system1

Week 3
Components of database management system2

Week 4
Data modeling

Week 5
What is relational database? Configuration of relational DB

Week 6
Design and restrict of relational database

Week 7
Mid term
Arithmetic operation of relational database
Lectures continue during this week

Week 8
SQL overview

Week 9
SQL data definition

Week 10
SQL VIEW

Week 11
INSERT, DELETE, SEARCH of SQL

Week 12
Concept of logical database, functional dependency

Week 13
Review
Final exam, normal form

META Computing Pathway Program 2014

KIC123 Dynamic Composition of Web Services

Unit Outline

Second Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

The Fundamentals of Internet Programming
HanBitMedia Publishing, Author: MinJung KO

Introduction to the Course

In this course, students will learn JAVA Script which is the main language of internet programming. Students will also learn the basic concept of HTML, CSS and the differences between JAVA and JAVA Script, the function of JAVA Script and its using method. And also students will learn the object of JAVA Script and event, built-in object and form related object etc and will make his or her own web site.

Objectives

To study and to practice the characteristics and theory of JAVA Script. That becomes the foundation of making web page.
To have students foster the ability as a professional through a project who can be passed for in real life.

Lecture Topics

Week 1
Beginning of internet programming
(Introduction of JAVA script)

Week 2
Framework of web page, practice of HTML

Week 3
CSS practice

Week 4
Beginning of JAVA script (basic structure, basic grammar)

Week 5
JAVA script and function1

Week 6
JAVA script and function2

Week 7
Midterm
Object and event of JAVA script
Lectures continue during this week

Week 8
Array, date, string, math, function, screen object

Week 9
Statement related object

Week 10
Form related object, input object, and select object

Week 11
DHTML by JAVA script and layer

Week 12
Project presentation

Week 13
Review
Final exam
Presentation

META Computing Pathway Program 2014

KIC124 Object-oriented Software Development

Unit Outline

Second Semester 2014

Assessment

Mid Exam =30% Final Exam = 40% Report = 30%

Text Books

Data Structures 2005.
Intervision Publishing, Author: Inkook Kim

Introduction to the Course

This course is a real project exercise course of JAVA and this course will be given in separation with the JAVA Programming Basic 1. In this course students will practice a real programming in line with the proceedings of Data Structure. Lastly, as a final project, students will practice the comprehensive project in which students can utilize the concept learned in JAVA Programming 1, 2.

Objectives

Students will learn the real JAVA Programming in relation to Data Structure.

Lecture Topics

Week 1
Practice of arithmetic progression, geometric sequence

Week 2
Practice of Stack, Queue in relation to Data Structure

Week 3
Practice of Sorting (Selection and insertion sort in relation to repetitive sentence (for, while do-while etc)

Week 4
Practice of polymorphic

Week 5
Practice of tree circulation

Week 6
Calculation of math and output of math using tree in relation to recursive structure
(Discussion by group)

Week 7
Mid-term will be given in class1, lectures will be given in class 2 and 3

Week 8
Practice of research (sequential retrieval, dichotomizing retrieval, binary retrieval) and analysis of source

Week 9
Making Tree (Insertion, Deletion, Retrieval) and analysis of source

Week 10
Introduction of final project and question, formation of group and discussion

Week 11
Practice of final project 1

Week 12
Practice of final project 2

Week 13
Review
Final exam