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### Course description:

This introductory course is intended for students with little, if any, previous programming experience. Students will gain the basic knowledge and experience to solve simple programming problems using established techniques in program design and development. The practical work associated with the course enables students to learn how to edit, compile, run and test programs that cover all aspects of the Java language addressed in lectures. Through the tutorial system they are also given practice in evaluating and implementing designs produced by others. The Project is designed to enhance the student's team working skills and to further develop their interpersonal and communication skills.

### Aims of the course:

*Students are expected to*

1. Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
2. Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
3. Be aware of the important topics and principles of software development.
4. Have the ability to write a computer program to solve specified problems.
5. Be able to use the Java Netbeans environment to create, debug and run simple Java programs

### Intended Learning Outcomes: (ILOs)

#### A. Knowledge and Understanding

##### A1. Concepts and Theories:

1. Lists the concept of classes
2. Lists the concept of methods
3. Lists the concepts of variables
4. Lists the concepts of control structures.

##### A2. Contemporary Trends, Problems and Research:

##### A3. Professional Responsibility:

#### B. Subject-specific skills

##### B1. Problem solving skills:

Supply the student with the ability to solve different problems related to the topics

##### B2. Modeling and Design:

Learn how to design a complete java class

##### B3. Application of Methods and Tools:

Learn how to implement a complete java program

#### C. Critical-Thinking Skills

##### C1. Analytic skills:

Learn how to analyze a problem



## C2. Strategic Thinking:

Understand the required strategy to solve problems

## C3. Creative thinking and innovation:

Plane how to design algorithms to solve problems and implement them using programs.

## D. General and Transferable Skills (other skills relevant to employability and personal development)

**D1. Communication:** Express and communicate ideas in written and oral forms

**D2. Teamwork and Leadership:** Be cooperative members of a team

**D3. Organizational and Developmental Skills:** plan, prioritize, and achieve defined goals

**D4. Ethical and Social Responsibility:** Understand that they are accountable for their actions and there must be a balance between economic growth and the welfare of the society and environment.

## Course structure:

Week	Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1	3	A1, C2, C3	<b>Course Outline - Chapter1:</b> Introduction	Presentation methods and techniques, -Lecturing with active participations. -Problem solving. -Cooperative learning. Discussion. -Learning by activities. -Connecting students with different sources of information	Diagnostic tests to identify the students level and areas of weakness Formal (stage) evaluation a) Class Participation b) Exams c) Activities file
2,3	6	A1, B1, B2, C1, C2, C3, D1, D4	<b>Chapter2:</b> -Program Form -Keywords & Identifier -Print & println -Control code (Escape Sequences) -Comments -Data Types	=	=
4, 5	6	A1, B1, B2, B3, C1, C2, C3, D1, D4	<b>Chapter2:</b> -Variables Declarations -Concatenation (+) -Arithmetic Operators -Increment operators (x++, ++x, x+=) -Decrement operators (x--, --x, x-=)	=	=
6	3	A1, B1, B2, B3, C1, C2, C3, D1, D4	<b>Chapter2:</b> -Type casting -Precedence Rule -Programming Errors -Math methods -String -String methods	=	=



	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	<b>Chapter2:</b> <b>-Input / Output:</b> JOptionPane.showInputDialog JOptionPane.showMessageDialog <b>-Scanner: System.in</b>	=	=
			First Exam		
8	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	<b>Chapter3:</b> -Comparison Operators -Logical Operators -if statement types: if () - if () ... else ()	=	=
9	3	A1, B1, B2, B3, C1, C2, C3, D1	<b>Chapter3:</b> -If statement types (continue): if () ... if else () .. else () -Nested If -Switch Statement	=	=
10	3	A1, B1, B2, B3, C1, C2, C3, D1	<b>Chapter3:</b> -Convert Switch to If (Third Type) and Vice Versa -Break -Conditional Operator (?)	=	=
11	3	A1, B1, B2, B3, C1, C2, C3, D1	<b>Chapter4:</b> -While Loops -Do ... while -For loop	=	=
12	3	A1, B1, B2, B3, C1, C2, C3, D1	<b>Chapter4:</b> -Nested loop -Convert While to for and Vice Versa -Break and Continue	=	=
			Second Exam		
13	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	<b>Chapter5:</b> -Methods: Argument/Parameter correspondence -Methods output	=	=
14, 15	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	<b>Chapter6:</b> -Array-1D Declaration -Operations on Whole Arrays -Passing Arrays to Methods -Searching arrays. - 2D-Array.	=	=
16			Final Exam		

**References:****A. Main Textbook:**

Daniel Liang, 2012, Introduction to Java Programming. 9th ed. Prentice Hall

**B. Supplementary Textbook(s):**

Problem Solving with Java / Koffman, Elliot B. 2<sup>nd</sup> ed Addison-Wesley, 2002, ISBN: 0-201-72214-3.

**Assessment Methods:**

Methods	Grade	Date
First Exam	20%	specified later
Second Exam	20%	specified later
Participation (Quizzes- HWs ....)	10%	
Final Examination	50%	specified later

