

Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Science Department	QF01/0408-3.0E
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Faculty	Science and Information Technology	Department	Computer Science/ Computer Science
Course number	Visual Programming	Course title	0112322
Number of credit hours	3	Pre-requisite/co-requisite	Database (1)

Brief course description
 This module covers graphical user interface (GUI) programming in Java from the fundamentals of the Abstract Window Toolkit (AWT) through the Swing components in the Java Foundation Classes. It describes how to develop GUIs for stand-alone applications and applets for web pages. It also provides the necessary background for programming with Strings File I/O and the Java2D library.

Course goals and learning outcomes	
Goal 1	Understand the design principles of graphical user interfaces (GUIs), use GUI components, and event-handling classes and interfaces
Learning outcomes	1.1 The student should be able to use Java's elegant, cross-platform Nimbus look-and-feel. 1.2 The student should be able to build GUIs. 1.3 The student should Create and manipulate buttons, labels, lists, text fields and panels
Goal 2	Handle mouse events and keyboard events, use layout managers to arrange GUI components and Understand and be able to manipulate colors and fonts.
Learning outcomes	2.1 The student should handle events generated by user interactions with GUIs. 2.2 The student should be able to design GUI in deferent layouts. 2.3 The student should be able to create a colorful GUI and control the fonts of the GUI.
Goal 3	Understanding Graphics and Graphics2D.
Learning outcomes	3.1 Use methods of class Graphics to draw various shapes. 3.2 Use methods of class Graphics 2D from the Java 2D API to draw various shapes. 3.3 Specify Paint and Stroke characteristics of shapes displayed with Graphics2D.
Goal 4	Understanding slider, menus, pop-up menus and windows
Learning outcomes	4.1 Create and manipulate sliders, menus, pop-up menus and windows. 4.2 Programatically change the look-and-feel of a GUI, using Swing's pluggable look-and-feel. 4.3 Create a multiple-document interface with JDesktopPane and JInternalFrame. 4.4 Use additional layout managers BorderLayout and GridBagLayout.
Goal 5	Under standing the Relational database concepts
Learning outcomes	5.1 To use Structured Query Language (SQL) to retrieve data from and manipulate data in a database. 5.2 To use the JDBC™ API to access databases. 5.3 To use the RowSet interface from package javax.sql to manipulate databases.
Goal 6	Understand the String and character classes
Learning outcomes	6.1 Create and manipulate immutable character string objects of class String. 6.2 Create and manipulate mutable character-string objects of class StringBuilder.

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Textbook	1.- Java™ How to Program, 9th Edition, By H. M. Deitel. & P. J. Deitel , Prentice Hall, 2012.
Supplementary references	<ol style="list-style-type: none"> Bernd Bruegge, Allen H. Dutoit. Object-Oriented Software Engineering: Using UML, Patterns and Java, Pearson Education, 2004. 39th International Conference and Exhibition on Technology of Object-Oriented Languages and Systems, Santa Barbara, California, 2001 by IEEE Computer Society (Edition).

Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1 1 1	Introduction, <ul style="list-style-type: none"> Simple GUI-Based Input/Output with JOptionPane, Overview of Swing Components, Displaying Text and Images in a Window, Text Fields and an Introduction to Event Handling with Nested Classes. 	511-528	
02	1 1 1	<ul style="list-style-type: none"> Common GUI Event Types and Listener Interfaces How Event Handling Works JButton: Buttons That Maintain State 	529-536	
03	1 1 1	<ul style="list-style-type: none"> JCheckBox, JRadioButton JComboBox and Using an Anonymous Inner Class for Event Handling JList. Multiple-Selection Lists 	537-550	
04	1 1 1	<ul style="list-style-type: none"> Mouse Event Handling Adapter Classes JPanel Subclass for Drawing with the Mouse Key-Event Handling 	551-566	
05	1 1 1	<ul style="list-style-type: none"> Layout Managers. BorderLayout GridLayout Using Panels to Manage More Complex Layouts JTextArea 	567-581	
06	1 1 1	<ul style="list-style-type: none"> Graphics Contexts and Graphics Objects Color Control Font Control First Exam 	598-610	
07	1 1	<ul style="list-style-type: none"> Drawing Lines, Rectangles and Ovals Drawing Arcs 	611-628	

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	1	<ul style="list-style-type: none"> Drawing Polygons and Poly lines Java 2D API 		
08	1 1 1	<ul style="list-style-type: none"> Loading, Displaying and Scaling Images Animating a Series of Images Image Maps 	979- 986	
09	1 1 1	<ul style="list-style-type: none"> Loading and Playing Audio Clips Playing Video and Other Media with Java Media Framework 	987- 993	
10	1 1 1	<ul style="list-style-type: none"> JSlider: Windows: Additional Notes Using Menus with Frames JpopupMenu 	1006-1021	
11	1 1 1	<ul style="list-style-type: none"> Pluggable Look-and-Feel JDesktopPane and JInternalFrame JTabbedPane Layout Managers: BorderLayout and GridBagLayout 	1022-1046	
12	1 1 1	<ul style="list-style-type: none"> Second Exam Relational Databases SQL Basic SELECT Query WHERE Clause ORDER BY Clause Merging Data from Multiple Tables: INNER JOIN INSERT Statement UPDATE Statement DELETE Statement 	1191- 1205	
13	1 1 1	<ul style="list-style-type: none"> Creating Database in MySQL Manipulating Databases with JDBC Connecting to and Querying a Database Querying the Database Stored Procedures RowSet Interface 	1207- 1224	
14	1 1 1	<ul style="list-style-type: none"> Fundamentals of Characters and Strings Class String String Constructors String Methods length, charAt and getChars Comparing Strings Locating Characters and Substrings in Strings Extracting Substrings from Strings Concatenating Strings 	1352- 1363	

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		<ul style="list-style-type: none"> Miscellaneous String Methods String Method valueOf 		
15	1 1 1	<ul style="list-style-type: none"> Class StringBuffer StringBuffer Constructors StringBuffer Methods length, capacity, setLength and ensureCapacity StringBuffer Methods charAt, setCharAt, getChars and reverse StringBuffer append Methods StringBuffer Insertion and Deletion Methods Class Character Class StringTokenizer 	1364- 1378	
16	1 1 1	<ul style="list-style-type: none"> Review Project 		Final Exam

Theoretical course evaluation methods and weight	Participation = 10% First exam 20% Second exam 20% Final exam 50%	Practical (clinical) course evaluation methods	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher		Office Number	
Phone number (extension)		Email	_____@zug.edu.jo
Office hours			