Course Specifications

Course Title:	**Advanced Programming**
Course Code:	**CPIT305**
Program:	**Bachelor of Science in Information Technology**
Department:	**Information Technology**
College:	**Faculty of Computing and Information Technology**
Institution:	**Northern Border University, Rafha**

Table of Contents

A. Course Identification

1. Credit hours:	3

2. Course type

a.   University ☐   College ☐   Department **X**   Others ☐

b.   Required **X**   Elective ☐

3. Level/year at which this course is offered: **Level 8 / Year 4**

4. Pre-requisites for this course (if any):
CPCS204 – Data Structures

5. Co-requisites for this course (if any):
Nil

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	45
2	Laboratory/Studio	15
3	Tutorial	
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	45
2	Assignments	10
3	Library	5
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	60

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course covers advanced programming concepts using Java programming language. It starts with building graphical user interface (GUI) focusing on different layout managers and user interface components along with handling events related to these user interface components. The students will then learn about parallel programming using multithreading and building database driven applications using JDBC. The course also covers building network applications using Java Socket Programming.

2. Course Main Objective

The main objective of this course is to teach the students advanced programming concepts enabling them to develop complete software systems using Java programming language.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	List advanced programming concepts needed to develop sophisticated software systems.	K1
1.2	Describe how using multiple threads can speedup program execution on multi-core systems.	K2
2	**Skills :**	
2.1	Develop Graphical User Interfaces of varying complexity to satisfy a given set of requirements	S1, S2
2.2	Design and Implement a database driven java application using a modern DBMS like Oracle.	S3, S5
3	**Competence:**	
3.1	Recognize professional, ethical, legal, security and social issues and responsibilities while developing a software solution to meet user needs	C1

C. Course Content

No	List of Topics	Contact Hours
1	Introduction. Review of Object-Oriented Programming.	6
2	Graphical User Interfaces	6
3	Event Driven Programming	6
4	Exception Handling and Text I/O	6
5	Strings	3
6	Multithreading and Parallel Programming	6
7	Java Database Connectivity JDBC	6
8	Network Programming	6
	Laboratory Works	
1	Revision exercises related to OOP	2
2	Making Graphical User Interface	2
3	Handling User interface events	1
4	Exception Handling	2
5	String Manipulation	1
6	Create a Multithreaded Application	2
7	Implement an application using JDBC	3
8	Create a network application using java sockets	2
	Total	60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	List advanced programming concepts needed to develop sophisticated software systems.	Interactive Lecture	Writing, Oral
1.2	Describe how using multiple threads can speedup program execution on multi-core systems.	Interactive Lecture	Writing, Oral
2.0	**Skills**		
2.1	Develop Graphical User Interfaces of varying complexity to satisfy a given set of requirements	Worked Examples, Lab Based	Writing, Performance
2.2	Design and Implement a database driven java application using a modern DBMS like Oracle.	Worked Examples, Lab Based	Writing, Performance
3.0	**Competence**		
3.1	Recognize professional, ethical, legal, security and social issues and responsibilities while developing a software solution to meet user needs	Collaborative Learning, Case Studies	Observation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz-1	3	2
2	Quiz-2	7	3
3	Assignment-1	5	5
4	Assignment-2	10	5
5	Oral questions	1 – 15	5
6	Lab tasks	1 – 14	10
7	Midterm exam	8/9	30
8	Final exam	16/17	40

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Every instructor has an announced office hours schedule. All students are encouraged to visit the concerned teacher according to the schedule. Students can also use Email address or Blackboard System to seek help or book an appointment.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Y. Daniel Liang, "Introduction to Java Programming and Data Structures, Comprehensive Version", 12th Edition, 2020, Pearson.
Essential References Materials	1. Cay Horstmann, "Core Java, Volume I--Fundamentals", 11th Edition, 2019, Pearson. 2. Cay Horstmann, "Core Java, Volume II--Advanced Features", 11th Edition, 2019, Pearson.
Electronic Materials	1. Blackboard System: https://lms.nbu.edu.sa/ 2. Northern Border University Electronic Library: https://www.nbu.edu.sa/AR/Deanships/Library_Issues 3. Saudi Digital Library (SDL): https://portal.sdl.edu.sa/english/
Other Learning Materials	Nil

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classroom • Laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	• Data Show (Projectors) in Classroom and Laboratory. • Desktop computers • OS: Windows 10 • Software: Java, JCreator, Oracle 11g Database
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	• Nil

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Indirect
Quality of learning resources	Students	Indirect
Extent of achievement of course learning outcomes	Faculty	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Information Technology Department Council
Reference No.	
Date	