

EE5805: JAVA NETWORK PROGRAMMING

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Java Network Programming

Subject Code

EE - Electrical Engineering

Course Number

5805

Academic Unit

Electrical Engineering (EE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

P5, P6 - Postgraduate Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

CS2363 Computer Programming or equivalent; Experiences in software design, and knowledge in Data Structures and Relational Database are preferred

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

The aim of this course is to provide students with an understanding of the concepts and techniques of object-oriented design and Internet application development. Java, a prime object-oriented programming language for Internet application is used as the instruction and implementation tool.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Solve general computation problems using Java language.		x	x	
2	Recognize the communication models and architectures of Java network applications.		x	x	
3	Implement Java network applications that operate across intranet and internet.		x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Student engages with concepts of Java program design with emphasis on web-based applications and network communications.	1, 2, 3	2 hrs/wk
2	Tutorials	Students obtain hands-on experiences in Java program design.	1, 2, 3	2 hr/wk
3	Self-study	Students get familiar with the classes and interfaces available in the Java JDK.	1, 2, 3	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Tests (min.: 2)	1, 2, 3	30	-	No
2	#Assignments (min.: 3)	1, 2, 3	20	-	Yes

Continuous Assessment (%)

Examination (%)

50

Examination Duration (Hours)

2

Minimum Continuous Assessment Passing Requirement (%)

30

Minimum Examination Passing Requirement (%)

30

Additional Information for ATs

Remark: To pass the course, students are required to achieve at least 30% in course work and 30% in the examination. # may include homework, tutorial exercise, project/mini-project, presentation

Assessment Rubrics (AR)

Assessment Task

Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal level

Assessment Task

Coursework (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal level

Assessment Task

Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B) Medium

Marginal

(B-, C+, C) Low

Failure

(F) Not even reaching marginal level

Assessment Task

Coursework (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Achievements in CILOs

Excellent

(A+, A, A-) High

Good

(B+, B) Medium

Marginal

(B-, C+, C) Low

Failure

(F) Not even reaching marginal level

Additional Information for AR

Constructive Alignment with Programme Outcomes

PILO 1, 2, 3, 4 - This course provides essential knowledge and techniques for designing and implementing software applications in Java. Students will acquire hands-on experiences and improve their programming skills through the practical trainings offered in this course.

Part III Other Information

Keyword Syllabus

Overview of Object-oriented principles and design

Objects and classes; information hiding; encapsulation; data abstraction; inheritance and polymorphism; discovering class relationships; unified modeling language (UML) and diagrams.

Basic features of the Java language

Java technologies and platform; basic Java syntax and conventions; classes and interfaces; packages; inheritance and dynamic binding; data structures and collections; generic programming; functional interfaces and lambda expressions; I/O and exception handling; threads and issues in multithreaded program design; parallel computation using the fork/join framework

Network communications and web applications

TCP/IP network model; stream sockets and datagram sockets; overview of the HTTP protocol; HTML form processing; Java Server Pages (JSP) and Java Servlet; MVC design pattern; relational database queries using SQL; Java Database Connectivity (JDBC).

Reading List

Compulsory Readings

Title	
1	Nil

Additional Readings

Title	
1	Jan Graba, An Introduction to Network Programming with Java, Addison Wesley
2	H. M. Deitel, and P. J. Deitel, Internet & World Wide Web How to Program, 5th Ed., Prentice Hall 2012 ISBN: 978-0-13-21500-9
3	K. Sharan, Beginning Java 8 Language Features, Lambda Expressions, Inner Classes, Threads, I/O, Collections and Streams, Apress, 2015
4	Java SE 8 11 API Specification https://docs.oracle.com/en/java/javase/11/docs/api/
5	Sun Oracle Java Tutorials http://java.sun.com/docs/books/tutorial/index.html