



MANIPAL SCHOOL OF INFORMATION SCIENCES


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(A constituent unit of MAHE, Manipal)

Master of Engineering - ME (Embedded Systems)

Course File

Course Name	:	Database Programming in Java
Course Code	:	ESD 5133
Academic Year	:	2024 – 25
Semester	:	I
Name of the Course Coordinator	:	Dr. SATHYENDRANATH MALLI
Name of the Program Coordinator	:	Dr. DINESH RAO

	
Signature of Program Coordinator with Date	Signature of Course Coordinator with Date



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Program Education Objectives (PEOs)

The overall objectives of the Learning Outcomes-based Curriculum Framework (LOCF) for **ME (Embedded Systems)**, program are as follows.

PEO No.	Education Objective
PEO 1	Enable to draw upon fundamental and advanced knowledge to apply analytical and computational approaches to solve technological problems in embedded systems..
PEO 2	Introduce state of art technologies in the area of embedded systems and inculcate ethical practices to make industry-ready professionals.
PEO 3	Promote scientific and societal advancement through research and entrepreneurship.



Program Outcomes (POs)

By the end of the postgraduate program in **ME (Embedded Systems)**, graduates will be able to:

PO1	An ability to independently carry out research /investigation and development work to solve practical problems.
PO2	An ability to write and present a substantial technical report/document.
PO3	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
PO4	Ability to develop and implement embedded systems requirements based on theoretical principles and practical knowledge.
PO5	Ability to demonstrate knowledge of the underlying principles and evaluation methods for analyzing and decision-making.



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1. Course Plan

1.1 Primary Information

Course Name	:	Database Programming in Java [ESD 5133]
L-T-P-C	:	3-0-0-3
Contact Hours	:	36 Hours
Pre-requisite	:	Basic Programming Knowledge
Core/ PE/OE	:	Elective – 1



1.2 Course Outcomes (COs)

CO	At the end of this course, the student should be able to:	No. of Contact Hours	Program Outcomes (PO's)	BL
CO1	Analyze the object-oriented programming concepts	2	PO3, PO4	L3
CO2	Examine the various core java concepts	16	PO3, PO4	L3
CO3	Appraise the various techniques used to develop a user interface (UI) application	6	PO3, PO4, PO5	L2
CO4	Analyze the concepts of JDBC and SQL	12	PO3, PO4	L3



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1.3 Assessment Plan

Components	Mid semester	Flexible Assessments (2 – 3 in number)	End semester/ Makeup examination
Duration	90 minutes	To be decided by the faculty.	180 minutes
Weightage	0.3	0.2	0.5
Typology of questions	Applying; Analyzing and Evaluating.	Applying; Analyzing. Evaluating.	Applying; Analyzing; Evaluating.
Pattern	Answer all 5 questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks.	Assignment: Solving problems by applying, analyzing and evaluating Generative AI use cases. [To be decided by the faculty.]	Answer all 10 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks.
Schedule	As per academic calendar.	Assignment submission: November 2024	As per academic calendar.
Topics covered	Introduction to OOP's concepts, Core Java Concepts, Database concepts		



1.4 Lesson Plan

L. No.	TOPICS	Course Outcome Addressed
L0	Course delivery plan, Course assessment plan, Course outcomes, Program outcomes, CO-PO mapping, reference books	---
L1	Introduction to OOP's concepts	CO1
L2	Definition of class, object, encapsulation, inheritance, and polymorphism	CO1
L3	Introduction to Java language - evolution of the language, features of Java language	CO2
L4	Discussion on basic structure of java program. Setting a path to executing an application	CO2
L5	Java language structure - Data types	CO2
L6	Java language structure - Control statements	CO2
L7	Java language structure – Operators	CO2
L8	Definition of class and object concepts, Discussion on defining a class includes components such as variables, methods	CO2
L9	Understanding the concept of constructor	CO2
L10	Concepts of static and non-static which are applied to variables and methods.	CO2



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L11	Concepts of Inner classes	CO2
L12	Introduction to Inheritance. Implementation of an application using inheritance in java	CO2
L13	Concepts of method overriding and method overloading	CO2
L14	Discussion on the mechanism called dynamic method dispatch (run-time polymorphism)	CO2
IT1		CO1 & CO2
L15	Concepts of abstract class and final class	CO2
L16	Interface and package	CO2
L17	Exception handling in java	CO2
L18	Introduction to IO Streams	CO2
L19	Discussion on AWT components, and types of layout managers to build a window based application	CO3
L20	Steps for developing window based applications (UI)	CO3
L21	Introduction to swing package	CO3
L22	Event handling concepts	CO3
L23	Discussion on event delegation model	CO3
L24	Steps for developing menu driven applications	CO3
L25	Introduction to database concepts. Discussion on characteristics and advantages of database	CO4
L26	Definition of various data models, discussion on database overall systems	CO4
L27	Definition of schema. Discussion on three tier schema architecture	CO4
L28	Introduction to JDBC. Types of JDBC drivers	CO4



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L29	Steps to connect database using JDBC	CO4
L30	Introduction to SQL	CO4
L31	Discussion on various SQL statements as part of data definition language	CO4
IT2		CO3 & CO4
L32	SQL statements associated with Data manipulation language	CO4
L33	Discussion on ordered by, group by, and having clauses	CO4
L34	Discussion on views, stored procedure	CO4
L35	Steps to implement transaction	CO4
L36	Database normalization	CO4

1.5 References

1. "JAVA 2 – The Complete Reference" Patrick Naughton and Herbert Schildt –VII Edition, Tata McGraw Hill.
2. “Database Programming with JDBC and Java” George Reese, O'Reilly, 2nd Edition
3. “Fundamentals of Database systems, Third Edition”. Author: Elmasri and Navath
4. “Database system Concepts, Third Edition”, Author: Abraham Silberschatz (Bell Laboratories), Henry F. Korth(Bell Laboratories) and S. Sudarshan (Indian Institute of Technology, Bombay, Publishers: The McGraw-Hill Companies, Inc.



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1.6 Other Resources (Online, Text, Multimedia, etc.)

1. Web Resources: Blog, Online tools and cloud resources.
2. Journal Articles.



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1.7 Course Timetable

1 st Embedded Systems				Lecture Hall: LG1 LH2				
	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
MON								
TUE			DBPJ			DBPJ LAB		
WED								
THU			DBPJ					
FRI								
SAT			DBPJ					



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1.8 Assessment Plan

COs		Marks & Weightage			
CO No.	CO Name	Mid semester (Max. 50)	Assignment (Max. 20)	End Semester (Max. 100)	CO wise Weightage
CO1	Analyze the object-oriented programming concepts	10	8	10	0.11
CO2	Examine the various core java concepts	30	5	40	0.44
CO3	Appraise the various techniques used to develop a user interface (UI) application		2	20	0.16
CO4	Analyze the concepts of JDBC and SQL	10	5	30	0.29
	Marks (weightage)	0.3	0.2	0.5	1.0

Note:

- In-semester Assessment is considered as the Internal Assessment (IA) in this course for 50 marks, which includes the performances in class participation, assignment work, class tests, mid-term tests, quizzes etc.
- End-semester examination (ESE) for this course is conducted for a maximum of 100 and the same will be scaled down to 50.



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- End-semester marks for a maximum of 50 and IA marks for a maximum of 50 are added for a maximum of 100 marks to decide upon the grade in this course.

Weightage for CO1 = (mid semester marks for CO1 / 1.6666 + Assignment marks for CO1/1.0 + ESE marks for CO1 / 2)/100

1.9 Assessment Details

The assessment tools to be used for the Current Academic Year (CAY) are as follows:

SI. No.	Tools	Weightage	Frequency	Details of Measurement (Weightage/Rubrics/Duration, etc.)
1	Internal Test	0.3	1	<ul style="list-style-type: none">• Performance is measured using internal test attainment level.• Reference: question paper and answer scheme.• Each internal test is assessed for a maximum of 50 marks and scaled down to 40 marks.
2	Assignments	0.2	2	<ul style="list-style-type: none">• Performance is measured using assignments/quiz attainment level.• Assignments/quiz are evaluated for a maximum of 10 marks.
3	End semester	0.5	1	<ul style="list-style-type: none">• Performance is measured using ESE attainment level.• Reference: question paper and answer scheme.• ESE is assessed for a maximum of 100 marks and scaled down to 50 marks.



1.10 Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5
CO1			Y	Y	
CO2			Y	Y	Y
CO3			Y	Y	
CO4			Y	Y	
Average Articulation Level			*	*	*