Object Oriented Programming Methodology

Faculty Name: Archana Lopes

Course Code: ELXL 304

Subject Name: Object Oriented Programming Methodology

Academic Year and Term: 2018-2019   *Jul-Dec 2018*

1. Syllabus

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Practical	Tutorial	Theory	TW/Practical	Tutorial	Total
ELXL304	Object Oriented Programming Methodology Laboratory	02 Classwise	02 Batchwise	--	--	02	--	02

Course Code	Course Name	Examination Scheme						
		Theory Marks				Term Work	Oral &Practical	Total
		Internal assessment			End Sem. Exam			
		Test1	Test 2	Avg.				
ELXL304	Object Oriented Programming Methodology Laboratory	--	--	--	--	25	25	50

Prerequisite:
FEC205: Structured Programming Approach

Course Objective:
1.To learn the object oriented programming concepts.
2.To study various java programming concept like multithreading, exception handling, packages etc.
3.To explain components of GUI based programming.

Course Outcomes: At the end of the course Student should be able:
1.To apply fundamental programming constructs.
2.To illustrate the concept of packages, classes and objects.
3.To elaborate the concept of strings, arrays and vectors.
4.To implement the concept of inheritance and interfaces.
5.To implement the notion of exception handling and multithreading.
6.To develop GUI based application.

Module No	Unit No	Topic	Hours
1		**Introduction to Object Oriented Programming**	**02**
	1.1	OOP Concepts: Object, Class, Encapsulation, Abstraction, Inheritance, Polymorphism	
	1.2	Features of Java, JVM	
	1.3	3 Basic Constructs/Notions: Constants, variables and data types, Operators and Expressions, Revision of Branching and looping	
2		**Classes, Object and Packages**	**05**
	2.1	Class, Object, Method	
	2.2	Constructor, Static members and methods	
	2.3	Passing and returning Objects	
	2.4	Method Overloading	
	2.5	Packages in java, creating user defined packages, access specifiers.	
3		**Array, String and Vector**	**04**
	3.1	Arrays, Strings, String Buffer	
	3.2	Wrapper classes, Vector	
4		**Inheritance and Interface**	**03**
	4.1	Types of Inheritance, super keyword, Method Overriding, abstract class and abstract method, final keyword	
	4.2	Implementing interfaces, extending interfaces	
5		**Exception Handling and Multithreading**	**04**
	5.1	Error vs Exception, try, catch, finally, throw, throws, creating own exception	
	5.2	Thread lifecycle, Thread class methods, creating threads, Synchronization	
6		**GUI programming in JAVA**	
	6.1	Applet: Applet life cycle, Creating applets, Graphics class methods, Font and Color class, parameter passing.	
	6.2	Event Handling: Event classes and event listener	

2.Course Outcomes

Course Objective:
- To learn the object oriented programming concepts
- To study various java programming concept like multithreading, exception handling, packages etc.
- To explain components of GUI based programming

Course Outcomes:
At the end of the course student will be able to

        ELXL 304.1   **Apply fundamental programming constructs**.

        ELXL 304.2   **Illustrate the concept of packages, classes and objects, Strings and arrays**

        ELXL 304.3   **Implement the concept of inheritance and interfaces**

        ELXL 304.4   **Implement the notion of exception handling and interfaces**

        ELXL 304.5   **Develop a GUI based application**

Mapping of CO with PO/PSO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ELXL 304.1	**1**				**3**									
ELXL 304.2			**3**		**3**									
ELXL 304.3			**3**		**3**									
ELXL 304.4			**3**		**3**									
ELXL 304.5	2	**2**	**3**	2	**3**				2	2	3		2	**3**

Mapping of CO with PO with Justification

CO	PO	Justification
ELXL 304.1	**PO1**	Acquiring the understanding of various programming constructs in programming by applying knowledge of mathematics.
	PO5	Use JDK to implement all the java programs.
ELXL	**PO3**	Develop a complex java programming by applying concept of classes and

CO	PO	
304.2		objects, arrays and strings
	PO5	Use JDK to implement java program using class and objects.
ELXL 304.3	PO3	Develop a java program using concept of inheritance and interface.
	PO5	Use JDK to implement java program using concept of inheritance.
ELXL 304.4	PO3	Implement the concept of exception handling and multi threading in java program.
	PO5	Use JDK to implement and test multi threading.
ELXL 304.5	PO1	Apply the basic engineering knowledge while developing an application
	PO2	Analyze the problem at hand while developing the solution
	PO3	Design the application modules
	PO4	Investigate the problem at hand before developing the solution for it.
	PO5	Use JDK or any java environment to develop an application
	PO9	Function effectively as an individual, and as a member of the team
	PO10	Prepare students to write project report and to give project presentation
	PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these while completing the project.

Mapping of CO with PSO with Justification

CO	PSO	Justification
ELXL 304.5	PSO1	Design and develop an application for the real life problem.
	PSO2	Test the working of the application developed.

Contribution to outcomes will be achieved through content delivery:
Modes of Content Delivery:

i	Class Room Teaching	v	Self Learning Online Resources	ix	Industry Visit
ii	Tutorial	vi	Slides	x	Group Discussion
iii	Remedial Coaching	vii	Simulations/Demonstrations	xi	Seminar

iv	Lab Experiment	viii	Expert Lecture	xii	Case Study

Modes of delivery

Modes of Delivery	Brief description of content delivered	Attained COs	Attained POs
Class room lecture	• **Introduction to Object Oriented Programming** • **Classes , Objects and Packages** • **Arrays , String and vector** • **Inheritance and Interface** • **Exception handling and multi threading** • **GUI programming in Java**	**ELXL 304.1** **ELXL 304.2** **ELXL 304.3** **ELXL 304.4**	**PO1** **PO3** **PO5**
Assignments	• **Assignment 1 on Arrays and Classes** • **Assignment 2 on Inheritance and multi threading**	**ELXL 304.1** **ELXL 304.2** **ELXL 304.3** **ELXL 304.4**	**PO1** **PO3** **PO5**
Mini Project and Poster Presentation	• **GUI based application**	**ELXL 304.5**	**PO1** **PO2** **PO3** **PO4** **PO5** **PO9** **PO10** **PO11**

CO Assessment Tool

Course Outcome			Assessment Method			
	Direct Method (70 %)					Indirect Method (30%)
	Assignments		Laboratory Practical	Mini Project	End Sem Result	Course exit survey
	1	2				
ELXL 304.1			50%		50%	100%
ELXL 304.2	20		30%		50%	100%
ELXL 304.3		20%	30%		50%	100%
ELXL 304.4		20%	30%		50%	100%
ELXL 304.5				50%	50%	100%

Rubrics for assessing Course Outcome with each assessment tool:

Rubrics				
Assignment	Timeline(2)	Level of content(4)	Reading and Understanding(4)	
Laboratory Experiments	Timeline(3)	Knowledge(4)	Skill(3)	
Mini Project	Timeline(10)	Implementation(20)	Understanding(05)	Poster Presentation(5)

3.

Lesson Plan

Faculty : Archana Lopes

CLASS	SE Electronics, Semester III
Academic Term	July-Dec 2018
Subject	**Object Oriented Programming Methodology Laboratory**

Periods (Hours) per week	*Lecture*	*2*
	Practical	*2*
	Tutorial	*--*

Evaluation System		*Hours*	*Marks*
	Theory examination	--	--
	Internal Assessment	--	--
	Practical Examination	--	--
	Oral Examination	--	25
	Term work	--	25
	Total	--	50

Time Table	*Day*	*Time*
	Temp Time Table(First Two Weeks)	
	Monday	*11.00 a.m.*
	Wednesday	*8.45a.m.*
	Thursday	*12.00 p.m.*
	Final Time Table	
	Monday	1.30 p.m.
	Friday	11.00 a.m.

Course Content and Lesson plan

Module 1: Introduction to Object Oriented Programming

Week	Lecture No.	Date		Topic	Remarks(If any)	Text Book	CO	PO
		Planned	Actual					
1	1	02/07/2018	02/07/2018	Introduction to the subject and COs		B1 B2	**ELXL 304.1**	PO1 PO5
	2	03/07/2018	05/07/2018	OOP concepts		B5		

						B6		
	3	05/07/2018	16/07/2018	OOP concepts and features of Java		B7		
						B8		
	4	09/07/2018	16/07/2018	Basic constructs in Java				
2	5	10/07/2018	20/07/2018	Operators and Expressions				
	6	12/07/2018	27/07/2018	Branching and Looping statements				
Module 2: Classes , Objects and Packages						B1	**ELXL**	PO3
2	7	16/07/2018	27/07/2018	Class, Object and Method		B2	**304.2**	PO5
						B5		
	8	20/07/2018	30/07/2018	Constructors, method overloading, static methods and members		B6		
						B7		
						B8		
3	9	23/07/2018	03/08/2018	Passing and returning objects				
	10	27/07/2018	06/08/2018	Packages in Java, creating user defined packages, access specifiers				
Module 3: Arrays, Strings and Vector								
4	11	30/07/2018	10/08/2018	Arrays				
	12	03/08/2018	20/08/2018	String , String buffer				
5	13	06/08/2018	24/08/2018	Wrapper classes				
	14	10/08/2018	24/08/2018	vector				
Module 4: Inheritance and Interface								
6	15	20/08/2018	27/08/2018	Types of inheritance, super keyword		B1	**ELXL**	PO3
						B2	**304.3**	PO5
	16	24/08/2018	30/05/2018	Method overriding, abstract class and abstract method		B5		
						B6		
						B7		

7	17	27/08/2018	31/08/2018	Final keyword, extending interfaces		B8		

Module 5: Exception handling and multi threading

8	18	31/08/2018	31/08/2018	Error vs exception, try, catch, throw , throws		B1 B2	**ELXL 304.4**	PO3 PO5
	19	03/09/2018	07/09/2018	Thread lifecycle, Thread class methods		B5 B6		
9	20	10/09/2018	07/09/2018	Synchronization		B7 B8		

Module 6: GUI Programming in Java

9	21	14/09/2018	10/09/2018	Applet		B1 B2	**ELXL 304.5**	PO1 PO2 PO3 PO4 PO5 PO9 PO10 PO11
10	22	17/09/2018	21/09/2018	Creating Applets, graphics class methods		B5 B6		
	23	21/09/2018	24/09/2018	Font and colour class, Parameter passing		B7 B8		
11	24	24/09/2018	01/10/2018	Event handling: event class and event listener				
	25	28/09/2018	02/10/2018 03/10/2018	Introduction to AWT, Programming using JDBC				

Text- Books:
1. Herbert Schildt. "JAVA: The Complete Reference", Ninth Edition, Oracle Press
2. Sachin Malhotra and Saurabh Chaudhary, " Programming in Java"
3. Ivor Hortan, "Beginning JAVA"
4. "JAVA Programming". Black Book
5. www.nptelvideosin
6. www.w3schools.com
7. http://spoken-tutorial.org
8. www.staredusolutions.org

Term Work:
The term work shall consist of at least **two assignments and ten experiments and a mini project** covering the whole of syllabus, duly recorded and graded.
The final certification and acceptance of term-work ensures the satisfactory performance of laboratory work and minimum passing in the term-work.

4. *Practical Session Plan*

Faculty : Archana Lopes

CLASS	BE Electronics, SemesterIII
Academic Term	July-Dec 2018
Subject	**Object Oriented Programming Methodology Laboratory**

Evaluation System		Hours	Marks
	Practical Examination	--	--
	Oral Examination	--	25
	Term work	--	25
	Total	--	50

Time Table	Day	Batch	Time
	Monday	*B*	*8.45-10.45*
	Tuesday	*C*	*8.45-10.45*
	Thursday	*D*	*8.45-10.45*
	Friday	*A*	*8.45-10.45*

Title of Experiments

Sr. No.	Title	Module	Attained POs
1	Write a Program to calculate the distance travelled by light in n days	Fundamentals of OOP	PO1 PO5
2	Write a Program to convert the temperature in Faenheit to degrees	Fundamentals of OOP	PO1 PO5
3	Write a Program to print Armstrong numbers till n.	Fundamentals of OOP	PO1 PO5
4	Write a Program to display string representation of the number	Arrays, String and Vector	PO3 PO5
5	Write a Program on method overloading	Classes, Objects and Packages	PO3 PO5
6	Write a Program on constructor and constructor overloading	Classes, Objects and Packages	PO3 PO5
7	Write a Program to search an element in an array	Arrays, String and Vector	PO3 PO5

8.	Write a Program to find whether the matrix is symmetric	Arrays, String and Vector	PO3 PO5
9.	Write a Program to add complex numbers	Classes, Objects and Packages	PO3 PO5
10.	Write a Program to implement single and multi level inheritance	Inheritance and Interface	PO3 PO5
11	Write a Program to demonstrate try, catch, throw and throws, finally	Exception Handling and Multi threading	PO3 PO5
12	Write a Program using multi threading- create two threads one is calculating factorial of the given number and other is calculating Fibonacci series	Exception Handling and Multi threading	PO3 PO5
13	Write a Program to draw different shapes on Applet	GUI Programming in Java	PO3 PO5
14	Write a Program to create GUI application without event handling using AWT controls	GUI Programming in Java	PO3 PO5
15	Mini Project	All the above Units	PO1,PO2,PO3,PO4,PO5,PO9,PO10,PO11

Newly added Experiments

Overall (all experiments together) mapping with POs

	Programme Outcomes
HI	**PO1, PO5**
MI	**PO3**
LI	PO2,PO4,PO5,PO9,PO10,PO11

Practical Session Plan

	Planned	Actual	
Experiment No. 1		Write a Program to calculate the distance travelled by light in n days	
B	16-07-2018	16-07-2018	
C	17-07-2018	17-07-2018	

D	18-07-2018	18-07-2018	
A	19-07-2018	19-07-2018	
Experiment No. 2		Write a Program to convert the temperature in Farenheit to degrees	
B	16-07-2018	16-07-2018	
C	17-07-2018	17-07-2018	
D	18-07-2018	18-07-2018	
A	19-07-2018	19-07-2018	
Experiment No. 3		Write a Program to print Armstrong numbers till n.	
B	16-07-2018	16-07-2018	
C	17-07-2018	17-07-2018	
D	18-07-2018	18-07-2018	
A	19-07-2018	19-07-2018	
Experiment No. 4		Write a Program to display string representation of the number	
B	23-07-2018	30-07-2018	
C	24-07-2018	24-07-2018	
D	25-07-2018	25-07-2018	
A	26-07-2018	26-07-2018	
Experiment No. 5		Write a Program on method overloading	
B	23-07-2018	30-07-2018	
C	24-07-2018	24-07-2018	
D	25-07-2018	25-07-2018	
A	26-07-2018	26-07-2018	
Experiment No. 6		Write a Program on constructor and constructor overloading	
B	23-07-2018	30-07-2018	
C	24-07-2018	24-07-2018	
D	25-07-2018	25-07-2018	
A	26-07-2018	26-07-2018	
Experiment No. 7		Write a Program to search an element in an array	
B	30-07-2018	04-08-2018	
C	31-08-2018	07-08-2018	
D	01-08-2018	01-08-2018	
A	02-08-2018	02-08-2018	
Experiment No. 8		Write a Program to find whether the matrix is symmetric	

B	30-07-2018	04-08-2018	
C	31-08-2018	07-08-2018	
D	01-08-2018	01-08-2018	
A	02-08-2018	02-08-2018	
Experiment No. 9		Write a Program to add complex numbers	
B	06-08-2018	06-08-2018	
C	07-08-2018	07-08-2018	
D	08-08-2018	08-08-2018	
A	09-08-2018	22-08-2018	
Experiment No. 10		Write a Program to implement single and multi level inheritance	
B	20-08-2018	20-08-2018	
C	21-08-2018	21-08-2018	
D	29-08-2018	29-08-2018	
A	23-09-2018	27-08-2018	
Experiment No. 11		Write a Program to demonstrate try, catch, throw and throws, finally	
B	27-08-2018	27-08-2018	
C	28-08-2018	28-08-2018	
D	05-09-2018	05-09-2018	
A	30-08-2018	30-08-2018	
Experiment No. 12		Write a Program using multi threading- create two threads one is calculating factorial of the given number and other is calculating Fibonacci series	
B	03-09-2018	05-09-2018	
C	04-09-2018	04-09-2018	
D	05-09-2018	05-09-2018	
A	06-09-2018	06-09-2018	
Experiment No. 13		Write a Program to draw different shapes on Applet	
B	10-09-2018	10-09-2018	
C	11-09-2018	11-09-2018	
D	12-09-2018	12-09-2018	
A	14-09-2018	27-09-2018	
Experiment No. 14		Write a Program to create GUI application without event handling using AWT controls	

B	24-09-2018	24-09-2018	
C	18-09-2018	18-09-2018	
D	19-09-2018	19-09-2018	
A	27-09-2018	27-09-2018	
Experiment No. 15		Mini Project	
B	01-10-2018	03-10-2018	
C	09-10-2018	04-10-2018	
D	03-10-2018	03-10-2018	
A	04-10-2018	04-10-2018	