

**SCMS SCHOOL OF ENGINEERING & TECHNOLOGY**

VIDYA NAGAR, KARUKUTTY, ERNAKULAM – 683576, PHONE: 0484-2882900, 2450330

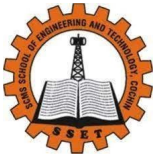
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## **Criteria 2**

# **Teaching Learning and Evaluation**

*Criteria 2.6: Student Performance and Learning Outcomes*



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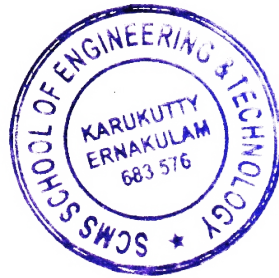
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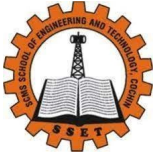
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2.6.2 Attainment of POs and COs are evaluated.

Sl. No	Particulars
1	Sample Course Plan
2	Sample CO Mapped Question Paper
3	Sample CO Attainment Calculation Sheet
4	Sample PO Attainment Calculation Sheet
5	Exit Survey Analysis
6	PO Attainment Graph



  
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## Sample Course Plan

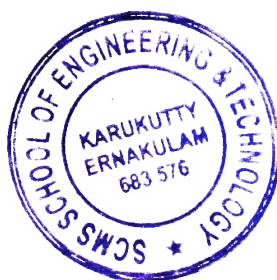
CST 205	OBJECT ORIENTED PROGRAMMING USING JAVA	CATEGORY	L	T	P	CREDIT	YEAR OF INTRODUCTION
			3	1	0		
		PCC	3	1	0	4	2019

**Preamble:** The purpose of this course is to enable learners to solve problems by breaking it down to object level while designing software and to implement it using Java. This course covers Object Oriented Principles, Object Oriented Programming in Java, Inheritance, Exception handling, Event handling, multithreaded programming and working with window-based graphics. This course helps the learners to develop Desktop GUI Applications, Mobile applications, Enterprise Applications, Scientific Applications and Web based Applications.

**Prerequisite:** Topics covered under the course PROGRAMMING IN C (EST 102)

Course Outcomes: After the completion of the course the student will be able to

CO1	Write Java programs using the object oriented concepts - classes, objects, constructors, data hiding, inheritance and polymorphism (Cognitive Knowledge Level: <b>Apply</b> )
CO2	Utilise datatypes, operators, control statements, built in packages & interfaces, Input/ Output Streams and Files in Java to develop programs (Cognitive Knowledge Level: <b>Apply</b> )
CO3	Illustrate how robust programs can be written in Java using exception handling mechanism (Cognitive Knowledge Level: <b>Understand</b> )
CO4	Write application programs in Java using multithreading and database connectivity (Cognitive Knowledge Level: <b>Apply</b> )
CO5	Write Graphical User Interface based application programs by utilising event handling features and Swing in Java (Cognitive Knowledge Level: <b>Apply</b> )



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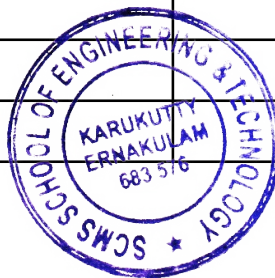
### Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓	✓								✓
CO2	✓	✓	✓	✓								✓
CO3	✓	✓	✓	✓						✓		✓
CO4	✓	✓	✓	✓								✓
CO5	✓	✓	✓	✓								✓

Abstract POs defined by National Board of Accreditation			
PO#	Broad PO	PO#	Broad PO
PO1	Engineering Knowledge	PO7	Environment and Sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design/Development of solutions	PO9	Individual and team work
PO4	Conduct investigations of complex problems	PO10	Communication
PO5	Modern tool usage	PO11	Project Management and Finance
PO6	The Engineer and Society	PO12	Life long learning

### Assessment Pattern

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	Test1 (Marks %)	Test2 (Marks %)	Marks (%)
Remember	30	30	30
Understand	30	30	30
Apply	40	40	40
Analyse			
Evaluate			
Create			



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## Mark Distribution

Total Marks	CIE Marks	ESE Marks	ESE Duration
150	50	100	3 hours

### Continuous Internal Evaluation Pattern:

Attendance : 10 marks

Continuous Assessment Tests : 25 marks

Continuous Assessment Assignment : 15 marks

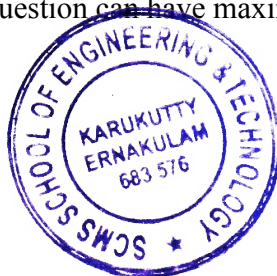
### Internal Examination Pattern:

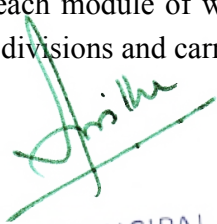
Each of the two internal examinations has to be conducted out of 50 marks

First series test shall be preferably conducted after completing the first half of the syllabus and the second series test shall be preferably conducted after completing remaining part of the syllabus.

There will be two parts: Part A and Part B. Part A contains 5 questions (preferably, 2 questions each from the completed modules and 1 question from the partly covered module), having 3 marks for each question adding up to 15 marks for part A. Students should answer all questions from Part A. Part B contains 7 questions (preferably, 3 questions each from the completed modules and 1 question from the partly covered module), each with 7 marks. Out of the 7 questions in Part B, a student should answer any 5.

**End Semester Examination Pattern:** There will be two parts; Part A and Part B. Part A contains 10 questions with 2 questions from each module, having 3 marks for each question. Students should answer all questions. Part B contains 2 questions from each module of which a student should answer any one. Each question can have maximum 2 sub-divisions and carry 14 marks.



  
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## SYLLABUS

### Object Oriented Programming Using Java

#### Module 1

##### Introduction:

Approaches to Software Design - Functional Oriented Design, Object Oriented Design, Case Study of Automated Fire Alarm System.

Object Modeling Using Unified Modeling Language (UML) – Basic Object Oriented concepts, UML diagrams, Use case model, Class diagram, Interaction diagram, Activity diagram, State chart diagram.

Introduction to Java - Java programming Environment and Runtime Environment, Development Platforms -Standard, Enterprise. Java Virtual Machine (JVM), Java compiler, Bytecode, Java applet, Java Buzzwords, Java program structure, Comments, Garbage Collection, Lexical Issues.

#### Module 2

##### Core Java Fundamentals:

Primitive Data types - Integers, Floating Point Types, Characters, Boolean. Literals, Type Conversion and Casting, Variables, Arrays, Strings, Vector class.

Operators - Arithmetic Operators, Bitwise Operators, Relational Operators, Boolean Logical Operators, Assignment Operator, Conditional (Ternary) Operator, Operator Precedence.

Control Statements - Selection Statements, Iteration Statements and Jump Statements.

Object Oriented Programming in Java - Class Fundamentals, Declaring Objects, Object Reference, Introduction to Methods, Constructors, *this* Keyword, Method Overloading, Using Objects as Parameters, Returning Objects, Recursion, Access Control, Static Members, Final Variables, Inner Classes, Command Line Arguments, Variable Length Arguments.

Inheritance - Super Class, Sub Class, The Keyword *super*, protected Members, Calling Order of Constructors, Method Overriding, the Object class, Abstract Classes and Methods, using *final* with Inheritance.

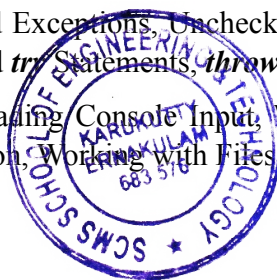
#### Module 3

##### More features of Java:

Packages and Interfaces - Defining Package, CLASSPATH, Access Protection, Importing Packages, Interfaces.

Exception Handling - Checked Exceptions, Unchecked Exceptions, *try* Block and *catch* Clause, Multiple *catch* Clauses, Nested *try* Statements, *throw*, *throws* and *finally*.

Input/Output - I/O Basics, Reading Console Input, Writing Console Output, PrintWriter Class, Object Streams and Serialization, Working with Files.



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## Module 4

### Advanced features of Java:

Java Library - String Handling – String Constructors, String Length, Special String Operations - Character Extraction, String Comparison, Searching Strings, Modifying Strings, using valueOf(), Comparison of StringBuffer and String.

Collections framework - Collections overview, Collections Interfaces- Collection Interface, List Interface.

Collections Class – ArrayList class. Accessing a Collection via an Iterator.

Event handling - Event Handling Mechanisms, Delegation Event Model, Event Classes, Sources of Events, Event Listener Interfaces, Using the Delegation Model.

Multithreaded Programming - The Java Thread Model, The Main Thread, Creating Thread, Creating Multiple Threads, Synchronization, Suspending, Resuming and Stopping Threads.

## Module 5

### Graphical User Interface and Database support of Java:

Swings fundamentals - Swing Key Features, Model View Controller (MVC), Swing Controls, Components and Containers, Swing Packages, Event Handling in Swings, Swing Layout Managers, Exploring Swings –JFrame, JLabel, The Swing Buttons, JTextField.

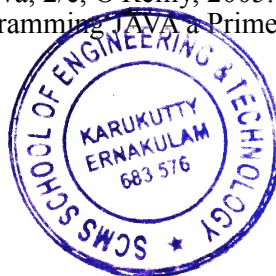
Java DataBase Connectivity (JDBC) - JDBC overview, Creating and Executing Queries – create table, delete, insert, select.

### Text Books:

1. Herbert Schildt, Java: The Complete Reference, 8/e, Tata McGraw Hill, 2011.
2. Rajib Mall, Fundamentals of Software Engineering, 4<sup>th</sup> edition, PHI, 2014.
3. Paul Deitel, Harvey Deitel, Java How to Program, Early Objects 11<sup>th</sup> Edition, Pearson, 2018.

### Reference Books:

1. Y. Daniel Liang, Introduction to Java Programming, 7/e, Pearson, 2013.
2. Nageswararao R., Core Java: An Integrated Approach, Dreamtech Press, 2008.
3. Flanagan D., Java in A Nutshell, 5/e, O'Reilly, 2005.
4. Barclay K., J. Savage, Object Oriented Design with UML and Java, Elsevier, 2004.
5. Sierra K., Head First Java, 2/e, O'Reilly, 2005.
6. Balagurusamy E., Programming Java a Primer, 5/e, McGraw Hill, 2014.



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## Sample Course Level Assessment Questions

**Course Outcome1(CO1):** For the following passage develop UML diagrams and then implement it as a Java program in accordance with your UML design.

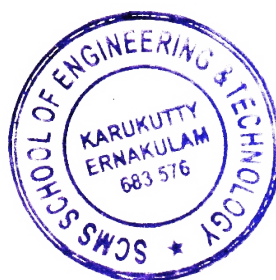
**Passage:** College Office collects semester fee and college bus fee for each student. A clerk at the college office collects the fees from each student. The bus fee is calculated depending on the distance of the corresponding bus stop from the college. The semester fee varies depending upon the semester as well as branch of each student. Students are supposed to pay the fees in full. Economically backward students are eligible for 50% discount in semester fee. The consolidated fees receipt is issued to each student by the clerk, which contains the student name, admission number, semester and branch of student along with details of fees collected. Students can log in and view the details of fees remitted and dues if any. The system allows students and clerk level login to the system. Clerk is able to view reports of each class showing status of fees payment of each student.

**Course Outcome 2(CO2):** Write a Java program to evaluate a post fix expression containing two operands and a single operator using stack. Stack should be implemented as a separate entity so as to reflect OOP concepts.

**Course Outcome 3(CO3):** Write a program to demonstrate the start, run, sleep and join methods in Thread class.

**Course Outcome 4(CO4):** Write a GUI based program with separate buttons to add, delete and display student details i.e. name, student ID, current semester and branch of study based on student ID.

**Course Outcome 5(CO5):** Using Swing create a JFrame with a JLabel and two JButtons. Set the texts of JButtons as “Yes” and “No” respectively. Set the JLabel’s text to the text of the button currently being pressed. Initially the JLabel’s text is blank.



  
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**Model Question Paper**

QP CODE:

PAGES:3

Reg No: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

**THIRD SEMESTER B.TECH DEGREE EXAMINATION, MONTH & YEAR**

**Course Code: CST 205**

**Course Name: Object Oriented Programming using Java**

**Max.Marks:100**

**Duration: 3 Hours**

**PART A**

**Answer all Questions. Each question carries 3 Marks**

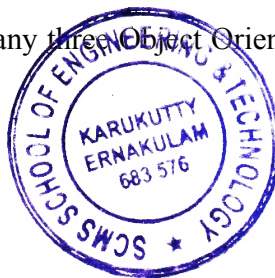
1. Briefly explain the portable, secure and robust features of Java.
2. Describe the concepts of object and class with a suitable Java program.
3. Explain the concept of method overriding with an example.
4. What is the use of the keyword *final* in Java?
5. Explain the concept of streams.
6. Explain any two applications of Serialization.
7. Distinguish the usage of “==” and *equals()* method when comparing String type?
8. What are Collections in Java? Explain any one Collection interface in Java.
9. Explain any two properties of Swing components in Java.
10. Explain JLabel component. With suitable examples explain any two of its constructors.

**Part B**

**Answer any one question completely from each module**

11.

- (a) Describe in detail any three Object Oriented Programming principles. Illustrate with suitable examples.



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(9)

(b) What is Java Runtime Environment? What is the role of Java Virtual Machine in it? (5)

OR

12.

(a) Compare and contrast Java standard edition and Java enterprise edition. (5)

(b) Why is Java considered to be platform independent? What is the role of Bytecode in making Java platform independent? (9)

13.

(a) Explain in detail the primitive data types in Java. (8)

(b) Explain automatic type conversion in Java with an example. What are the two conditions required for it? (6)

OR

14.

(a) Using a suitable Java program explain the difference between *private* and *public* members in the context of inheritance. (8)

(b) Is it possible to use the keyword *super* within a static method? Give justification for your answer. (6)

15.

(a) Explain in detail about byte streams and character streams with suitable code samples. (6)

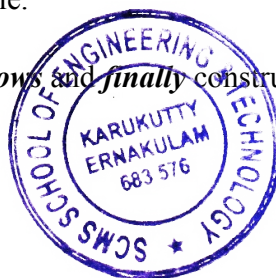
(b) Describe in detail about exception handling, *try* block and *catch* clause with the help of a suitable Java program. (8)

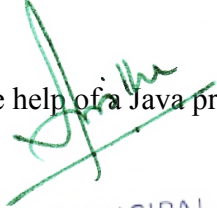
OR

16.

(a) Explain object streams in Java. Explain the role of Serializable interface with a suitable code sample. (8)

(b) Explain *throw*, *throws* and *finally* constructs with the help of a Java program. (6)



  
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17.

- (a) Describe in detail the creation of a thread using the Runnable interface and the Thread class with suitable examples. (10)
- (b) Explain List Interface. Mention any two exceptions thrown by its methods. (4)

**OR**

18.

- (a) Explain in detail the Delegation Event model for event handling in Java. (7)
- (b) Write a simple program by extending appropriate class to demonstrate the working of threads in java. (7)

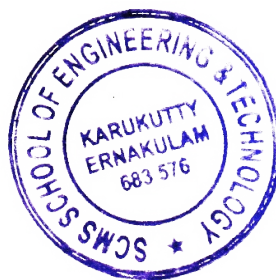
19.

- (a) Write a Java program to demonstrate the use of JLabel and JButton by adding them to JFrame. (7)
- (b) Explain step-by-step procedure of using Java DataBase Connectivity in Java programs. (7)

**OR**

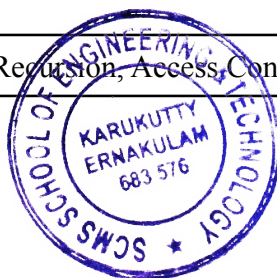
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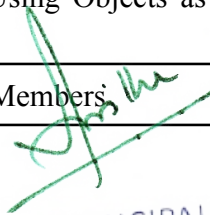
- (a) Explain the class hierarchy of Java Swing components. (7)
- (b) Write a Java Program to create a student table and to add student details to it using JDBC. (7)



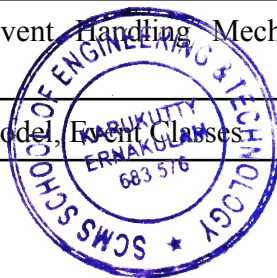
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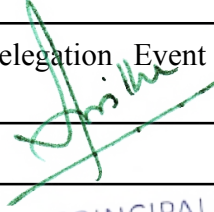
<b>Teaching Plan</b>		
<b>Module 1 : Introduction</b>		(8 hours)
1.1	Approaches to Software Design- Functional Oriented Design, Object-Oriented Design, Case Study of Automated Fire Alarm System.	1 hour
1.2	Object Modeling Using UML – Basic object oriented concepts	1 hour
1.3	Basic object oriented concepts	1 hour
1.4	UML diagrams, Use case model	1 hour
1.5	Class diagram, Interaction diagram	1 hour
1.6	Activity diagram, State chart diagram	1 hour
1.7	Java programming Environment and Runtime Environment, Development Platforms -Standard, Enterprise. JVM, Java compiler, Bytecode	1 hour
1.8	Java applet, Java Buzzwords, Java program structure, Comments, Garbage Collection, Lexical Issues	1 hour
<b>Module 2: Core Java Fundamentals</b>		(11 hours)
2.1	Core Java Fundamentals: Primitive Data types, Integers, Floating Point Types, Characters, Boolean	1 hour
2.2	Literals, Type Conversion and Casting, Variables, Arrays, Strings, Vector class.	1 hour
2.3	Operators: Arithmetic Operators, Bitwise Operators, Relational Operators, Boolean Logical Operators, Assignment Operator, Conditional (Ternary) Operator, Operator Precedence.	1 hour
2.4	Control Statements: Selection Statements, Iteration Statements and Jump Statements.	1 hour
2.5	Object Oriented Programming in Java: Class Fundamentals, Declaring Objects, Object Reference, Introduction to Methods	1 hour
2.6	Constructors, <i>this</i> Keyword, Method Overloading, Using Objects as Parameters	1 hour
2.7	Returning Objects, Recursion, Access, Control, static Members	1 hour



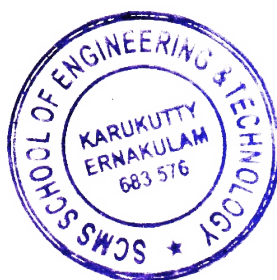
  
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2.8	Final Variables, Inner Classes, Command-Line Arguments, Variable Length Arguments	1 hour
2.9	Inheritance : Super class, Sub class, the keywords <i>super</i> , <i>protected</i> Members,	1 hour
2.10	Calling Order of Constructors, Method Overriding, the Object class,	1 hour
2.11	Abstract Classes and Methods, Using <i>final</i> with Inheritance	1 hour
<b>Module 3: More features of Java</b>		(8 hours)
3.1	Packages and Interfaces: Defining Package, CLASSPATH, Access Protection, Importing Packages	1 hour
3.2	Interfaces	1 hour
3.3	Input / Output: I/O Basics, Reading Console Input, Writing Console Output, PrintWriter Class	1 hour
3.4	Object Streams and Serialization	1 hour
3.5	Working with Files	1 hour
3.6	Exception Handling: Checked Exceptions, Unchecked Exceptions, <i>try</i> Block and <i>catch</i> Clause	1 hour
3.7	Multiple <i>catch</i> Clauses, Nested <i>try</i> Statements	1 hour
3.8	<i>throw</i> , <i>throws</i> and <i>finally</i>	1 hour
<b>Module 4: Advanced features of Java</b>		(10 hours)
4.1	Java Library: String Handling – String Constructors, String Length, Special String Operations	1 hour
4.2	Character Extraction, String Comparison, Searching Strings, Modifying Strings Using <code>valueOf()</code> , Comparison of String Buffer and String.	1 hour
4.3	Collections framework – Collections overview, Collections Interfaces-Collection Interface	1 hour
4.4	List Interface, Collections Class – ArrayList Class	1 hour
4.5	Accessing Collections via an Iterator.	1 hour
4.6	Event handling: Event Handling Mechanisms, Delegation Event Model	1 hour
4.7	Delegation Event Model, Event Classes	1 hour

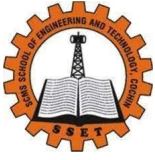


  
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4.8	Sources of Events, Event Listener Interfaces, Using the Delegation Model	1 hour
4.9	Multithreaded Programming: The Java Thread Model, The Main Thread, Creating Thread	1 hour
4.10	Creating Multiple Threads, Synchronization, Suspending, Resuming and Stopping Threads.	1 hour
<b>Module 5: Graphical User Interface and Database support of Java</b>		(8 hours)
5.1	Swings fundamentals, Swing Key Features	1 hour
5.2	MVC, Swing Controls, Components and Containers	1 hour
5.3	Swing Packages, Event Handling in Swings.	1 hour
5.4	Swing Layout Managers	1 hour
5.5	Exploring Swings –JFrame, JLabel, The Swing Buttons, JTextField.	1 hour
5.6	JDBC overview, Creating and Executing Queries – create table, delete, insert, select (Basics only, DBMS course is not a prerequisite).	1 hour
5.7	Creating and Executing Queries – create table, delete, insert, select.	1 hour
5.8	Creating and Executing Queries – create table, delete, insert, select.	1 hour



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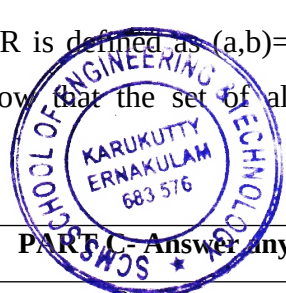
## Sample CO Mapped Question Paper



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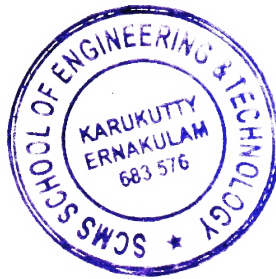
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Internal Test – 1		Regulations - 2015																						
Programme: B.Tech	Semester: 7	Max. Marks: 50	Duration: 2 Hrs																					
<b>Course Code &amp; Title: CS467 MACHINE LEARNING</b>																								
Batch: 2018	Class: S7CS1 & 2	Date: 08/11/2021	Time: 1:30PM – 3:30 PM																					
Knowledge Levels (KL)	K1 - Remembering	K3 - Applying	K5 – Evaluating																					
	K2 - Understanding	K4 – Analysing	K6 – Creating																					
<b>Part A - Answer ALL Questions.</b>																								
No	Question	Marks	CO	KL																				
1.	Identify the suitable learning method in each case and Explain it (a) Grouping people in a social network (b) Training a robotic arm	5	CO1	2																				
2.	Define VC dimension. Show that VC dimension of a line hypothesis is three dimension.	5	CO1	2																				
3.	Explain the concept of Probably Approximately Correct learning.	5	CO2	2																				
4.	Explain the necessity of Dimensionality reduction in Machine Learning	5	CO2	2																				
<b>(4*5 = 20 marks)</b>																								
<b>Part B - Answer any one full question</b>																								
No	Question	Marks	CO	KL																				
7.	Define the terms Hypothesis space and Version space for a binary classification problem. Determine the hypothesis space H and Version Space to the following Dataset D <table border="1" style="margin-left: 20px;"> <tr> <td>X</td> <td>2</td> <td>11</td> <td>17</td> <td>0</td> <td>1</td> <td>5</td> <td>7</td> <td>13</td> <td>20</td> </tr> <tr> <td>class</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> </tr> </table>	X	2	11	17	0	1	5	7	13	20	class	0	1	1	0	0	0	0	1	1	15	CO1	3
X	2	11	17	0	1	5	7	13	20															
class	0	1	1	0	0	0	0	1	1															
8.	(a) Define shattering of a set. (b) An open interval in $\mathbb{R}$ is defined as $(a,b) = \{x \in \mathbb{R} \mid a < x < b\}$ . It has two parameters a and b. Show that the set of all open interval has a VC dimension of 2.	15	CO1	3																				
<b>Part C - Answer any one full question</b>																								
No	Question	Marks	CO	KL																				

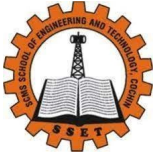


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9	Describe the Forward selection and Backward selection algorithm for implementing the subset selection procedure for Dimensionality Reduction.	15	CO2	2								
10	Is PCA a supervised learning algorithm? Justify your answer. Given the following data, compute the principal component vectors and the first principal components:	15	CO2	3								
	<table border="1"> <tr> <td>x</td> <td>2</td> <td>3</td> <td>7</td> </tr> <tr> <td>y</td> <td>11</td> <td>14</td> <td>26</td> </tr> </table>	x	2	3	7	y	11	14	26			
x	2	3	7									
y	11	14	26									
	<b>(2*15 = 30 marks)</b>											



  
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VIDYA NAGAR, KARUKUTTY, ERNAKULAM – 683576, PHONE: 0484-2882900, 2450330

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## Sample CO Attainment Calculation Sheet

**SCMS SCHOOL OF ENGINEERING & TECHNOLOGY, KARUKUTTY**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**ASSESSMENT OF ATTAINMENT OF COURSE OUTCOMES**

**Course Code & Name: CST204 Database management Systems**

**Faculty: Sindhya K Nambiar**

**Academic Year : 2021-2022**

**Class: S4CS1**

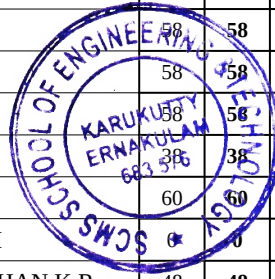
**Regulation: 2019**

After the completion of this course, students should be able to

CST204.1	Summarize and exemplify fundamental nature and characteristics of database systems (Cognitive Knowledge Level: <b>Understand</b> )
CST204.2	Model real word scenarios given as informal descriptions, using Entity Relationship diagrams. (Cognitive Knowledge Level: <b>Apply</b> )
CST204.3	Model and design solutions for efficiently representing and querying data using relational model (Cognitive Knowledge Level: <b>Analyze</b> )
CST204.4	Demonstrate the features of indexing and hashing in database applications (Cognitive Knowledge Level: <b>Apply</b> )
CST204.5	Discuss and compare the aspects of Concurrency Control and Recovery in Database systems (Cognitive Knowledge Level: <b>Apply</b> )
CST204.6	Explain various types of NoSQL databases (Cognitive Knowledge Level: <b>Understand</b> )

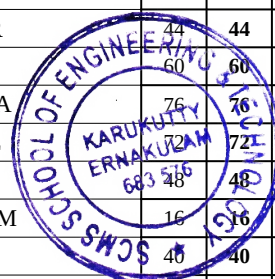
Outcome																					University exam		
			CST204.1		CST204.2			CST204.3			CST204.4			CST204.5			CST204.6						
Sl No	Reg No	Name of the Student	100	100	80	20	100	90	10	100	90	10	100	90	10	100	90	10	100	90	10	100	100
			IAT1	ASSIGNMENT	TOTAL	IAT2	QUIZ	TOTAL	IAT2	QUIZ	TOTAL	CLASS TEST	QUIZ	TOTAL	CLASS TEST	ASSIGNMENT	TOTAL	CLASS TEST	ASSIGNMENT	TOTAL	University Grade		
1	SCM20CS001	AAISHA NAEEMA K M	74	20	94	54	10	64	22	10	32	72	10	82	72	20	92						A
2	SCM20CS002	ABDULLA IMZAN SHAJI	22	20	42	43	10	53	4	10	14	54	10	64	54	20	74						D
3	SCM20CS003	ABHAY RAJEEV	37	20	57	58	10	68	24	81	10	91	81	20	101								C+
4	SCM20CS004	ABHIMANUE R	19	20	39	10	17	27	10	21	63	10	73	44	20	64							F

5	SCM20CS005	ABHISHEK S	56	56	54	20	74	58	10	68	14	10	24	54	10	64	54	20	74	C+
6	SCM20CS006	AISWARYA HARIGOPAL	56	56	61	20	81	61	10	71	22	10	32	45	10	55	45	20	65	B+
7	SCM20CS007	AJITH K A	52	52	54	20	74	61	10	71	18	10	28	54	10	64	54	20	74	D
8	SCM20CS008	AKHIL T S	28	28	32	20	52	32	10	42	4	10	14	72	10	82	72	20	92	P
9	SCM20CS009	ALAN VARGHESE PAUL	70	70	35	20	55	58	10	68	43	10	53	72	10	82	72	20	92	B
10	SCM20CS010	ALBIN STANLY	68	68	46	20	66	58	10	68	14	10	24	81	10	91	81	20	101	AB
11	SCM20CS011	ALEENA JOHNY	70	70	67	20	87	58	10	68	83	10	93	63	10	73	63	20	83	A+
12	SCM20CS012	ALINA MATHEW	70	70	69	20	89	54	10	64	22	10	32	81	10	91	81	20	101	C+
13	SCM20CS013	ALOCIOUS K JOSE	56	56	40	20	60	58	10	68	47	10	57	63	10	73	63	20	83	A
14	SCM20CS014	ALVIN BABU	42	42	29	11	39	0	10	10	0	10	10	81	10	91	34	11	45	AB
15	SCM20CS015	AMALJITH A A	34	34	45	20	65	54	10	64	0	10	10	54	10	64	54	20	74	D
16	SCM20CS016	AMAL ZAMAN K	46	46	32	20	52	18	10	28	11	10	21	54	10	64	54	20	74	P
17	SCM20CS017	AMITH SONI	2	2	0	20	20	4	10	14	4	10	14	72	10	82	34	20	54	C
18	SCM20CS018	AMRUTHA DILIP KUMAR	52	52	51	20	71	65	10	75	58	10	68	72	10	82	72	20	92	A+
19	SCM20CS019	AMRUTHA VIPIN	58	58	50	20	70	72	10	82	50	10	60	54	10	64	54	20	74	D
20	SCM20CS020	ANAGHA SHAJIKUMAR	72	72	45	20	65	54	10	64	29	10	39	81	10	91	81	20	101	P
21	SCM20CS021	ANANDAKRISHNAN DINEJ	74	74	64	20	84	54	10	64	47	10	57	72	10	82	60	20	80	C+
22	SCM20CS022	ANANDAKRISHNAN K B	34	34	35	20	55	58	10	68	43	10	53	72	10	82	72	20	92	D
23	SCM20CS023	ANANDANARAYAN J	8	8	6	20	26	25	10	35	4	10	14	63	10	73	63	20	83	F
24	SCM20CS024	ANANDHU MURALIDHARAN	10	10	40	20	60	32	10	42	14	10	24	45	10	55	45	20	65	F
25	SCM20CS025	ANANTHAKRISHNA K P	56	56	32	20	52	18	10	28	36	10	46	54	10	64	54	20	74	D
26	SCM20CS026	ANDREW SAJU	30	30	16	20	36	32	10	42	29	10	39	63	10	73	63	20	83	F
27	SCM20CS027	ANJALI KRISHNA	68	68	67	20	87	65	10	75	83	10	93	45	10	55	45	20	65	D
28	SCM20CS028	ANJUL MOHAMED UMMATHOOR	2	2	19	11	30	0	10	10	0	10	10	72	10	82	31	11	42	F
29	SCM20CS029	ANTONY AUSTIN C S	20	20	19	13	33	18	10	28	36	10	46	72	10	82	72	20	92	F
30	SCM20CS030	APARNA D ANIL	58	58	16	20	36	36	10	46	4	10	14	72	10	82	59	20	79	D
31	SCM20CS031	ARJUN J	58	58	26	20	46	58	10	68	29	10	39	81	10	91	81	20	101	F
32	SCM20CS032	ARJUN K R	48	48	20	20	68	54	10	64	18	10	28	45	10	55	45	20	65	F
33	SCM20CS033	ARJUN PRADEEP	34	34	20	20	54	4	10	14	7	10	17	81	10	91	81	20	101	D
34	SCM20CS034	ARJUN SURESH	60	60	54	20	74	58	10	68	61	10	71	81	10	91	81	20	101	F
35	SCM20CS035	AROMAL A SUDHI	20	20	0	20	20	0	10	10	10	10	10	63	10	73	30	13	43	F
36	SCM20CS036	ASHUTOSH DARSHAN K R	48	48	13	20	33	7	10	17	10	10	21	54	10	64	54	20	74	F



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37	SCM20CS037	ASHWIN P SAJI	36	36	22	20	42	18	10	28	22	10	32	81	10	91	81	20	101	D
38	SCM20CS038	ASHWIN SIVASANKARAN KOLAPADATH	70	70	64	20	84	54	10	64	50	10	60	63	10	73	63	20	83	B+
39	SCM20CS039	ASWIN BABU	46	46			78	58		68	36		46			91		20	101	D
40	SCM20CS040	ASWIN PRADEEP	50	50			84	61		71	54		64			73		20	83	D
41	SCM20CS041	BENEETA ANN JACOB	56	56	48	20	68	36	10	46	11	10	21	81	10	91	81	20	101	B
42	SCM20CS042	BIMAL DEV S	38	38	19	20	39	7	10	17	14	10	24	72	10	82	72	20	92	P
43	SCM20CS043	BRAMADATHAN	56	56			46	4		14	4		14	45	10	55	45	20	65	P
44	SCM20CS044	BRINDA NAVEEN	56	56	22	20	42	29	10	39	11	10	21	54	10	64	54	20	74	D
45	SCM20CS045	CATHERINE JOSE	56	56	13	20	33	58	10	68	22	10	32	54	10	64	54	20	74	C+
46	SCM20CS046	CHACKOCHAN SEBASTIAN	82	82	72	20	92	58	10	68	90	10	100	63	10	73	63	20	83	A+
47	SCM20CS047	DELNA VARGHESE	80	80			81	61		71	32		42			82		20	92	A+
48	SCM20CS048	DENIS SAJI	20	20			55	61		71	22		32	72	10	82	72	20	92	C
49	SCM20CS049	EBIN DAVIS	74	74			74	58		68	58		68			64		20	74	A+
50	SCM20CS050	EVELYN JOSSY ALOOKKARAN	16	16	19	20	39	14	10	24	7	10	17	72	10	82	42	20	62	P
51	SCM20CS051	FAAIZ LATHEEF P A	26	26	16	20	36	58	10	68	25	10	35	72	10	82	44	20	64	C+
52	SCM20CS052	FAHMITHA FARHATH	60	60	58	20	78	58	10	68	25	10	35	45	10	55	45	20	65	A
53	SCM20CS053	FARHAN NAEEM	72	72			81	61		71	22		32			82		20	92	P
54	SCM20CS054	FATHIMA SAFNA P	48	48	61	20	81	65	10	75	25	10	35	63	10	73	63	20	83	A
55	SCM20CS055	GAYATHRI S NAIR	44	44	32	20	52	14	10	24	4	10	14	81	10	91	81	20	101	P
56	SCM20CS056	GOKUL UNNI	60	60	29	20	49	0	10	10	0	10	10	45	10	55	45	20	65	F
57	SCM20CS057	GOPIKRISHNA M A	76	76	32	20	52	58	10	68	58	10	68	72	10	82	72	20	92	D
58	SCM20CS058	GOPIKRISHNAN L	72	72	56	20	76	72	10	82	83	10	93	54	10	64	54	20	74	B
59	SCM20CS059	H BHARATH	48	48	38	20	58	68	10	78	32	10	42	63	10	73	52	20	72	F
60	SCM20CS060	HISHAM A HASHIM	16	16	13	20	33	58	10	68	58	10	24	45	10	55	45	20	65	D
61	SCM20CS061	HRISHINADH M	40	40	19	20	39	65	10	75	60	10	71	45	10	55	45	20	65	D
62	SCM20CS062	HRITHUL P B	50	50	32	20	52	58	10	68	58	10	68	63	10	73	63	20	83	P



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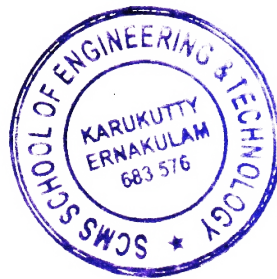
63	LSCM20CS129	ASWINI GILSON	56	56	32	20	52	29	10	39	14	10	24	72	10	82	51	20	71	D
	<b>No of Students scored set attainment level</b>		20	20	23	61	28	38	63	38	11	63	13	54	63	54	45	63	59	39
	<b>% of Students scored set attainment level</b>		32	32	37	97	44	60	100	60	17	100	21	86	100	86	71	100	94	62
	<b>Level of Attainment</b>		0	0	0	3	0	1	3	1	0	3	0	3	3	3	2	3	3	1

CO1            0  
CO2            0  
CO3            1  
CO4            0  
CO5            3  
CO6            3  
1.17

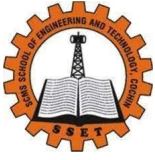
Level 1:	60 % of Students scored more than set attainment level
Level 2:	70 % of Students scored more than set attainment level
Level 3:	80 % of Students scored more than set attainment level

Method	Weightage
Internal Assessment	33
University Assessment	67

### 1.055



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## Sample PO Attainment Calculation Sheet



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE WISE - PO AND PSO ATTAINMENT

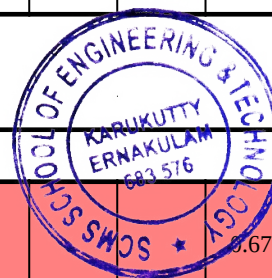
Name of Faculty:	Sindhya K Nambiar												AY 2020-21		
Course Code:	CST204												SEM : S4		
Course Name:	DATABASE MANAGEMENT SYSTEMS												CLASS : CS1		
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CST204.1	1	2	2									2	2	2	
CST204.2	3	2	2	2								2	2	2	
CST204.3	2	2	2	2								2	2	2	
CST204.4	2	1	2							2		2	2		2
CST204.5	2	2	2							2		2		2	2
CST204.6	3	2	2		2					2		2	2	2	2
Average	2.17	1.83333	2	2	2					2		2	1	2	2.00

Actual CO - PO Attainment for the Final CO attained Value of

PO Attainment	0.00	0.00	0.00		0.00								0.00	0.00	0.00
---------------	------	------	------	--	------	--	--	--	--	--	--	--	------	------	------

PO - Indirect Attainment

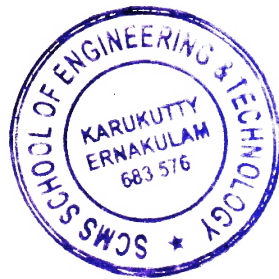
PO & PSO Indirect Attainment	1.44	1.22	1.33		1.33								0.67	1.33	
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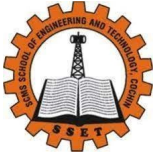
*Sindhya K Nambiar*

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Course Outcomes	DIRECT ATTAINMENT		INDIRECT ATTAINMENT
	CO Attainment Level	CO Attainment Level	CO Attainment Level
	Internal Assessment	University Exam	Course Exit Survey
	0		2
	0		2
	1		2
	0		2
	3		2
	3		2
<b>Average</b>	1.17		<b>1.00</b>
		<b>1.06</b>	



  
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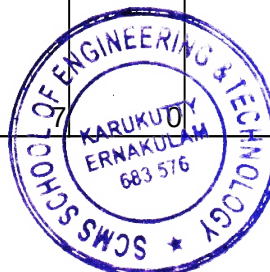
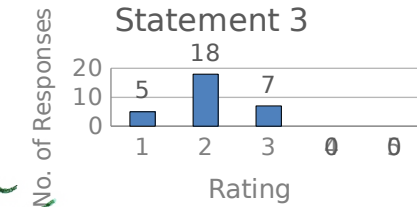
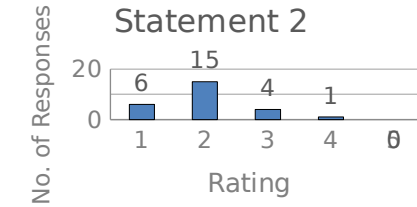
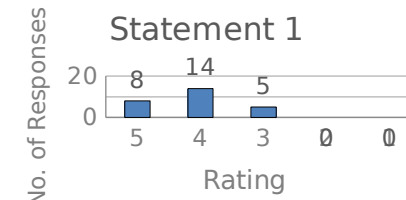
E-Mail: [sset@scmsgroup.org](mailto:sset@scmsgroup.org) Website: [www.scmsgroup.org/sset](http://www.scmsgroup.org/sset)

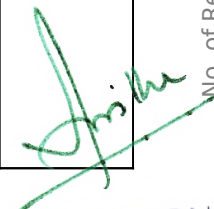
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## Exit Survey Analysis

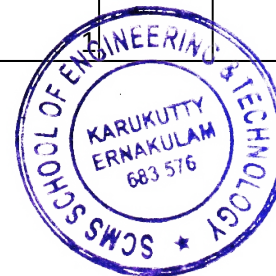
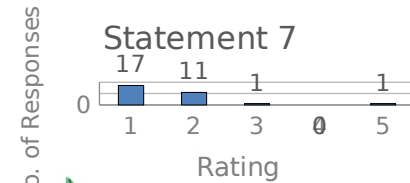
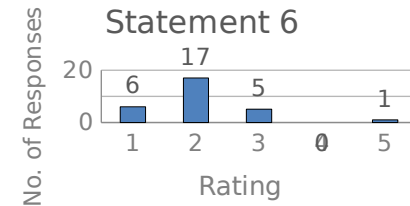
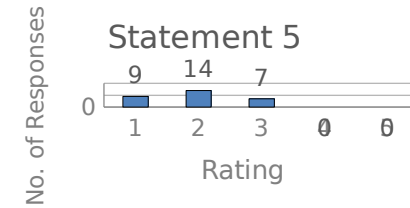
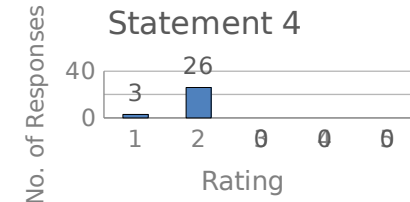
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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**EXIT SURVEY [2019-2023]**

Sl. No	Statement	Assessment					Percentage rating above 4	PO & PSO Attainment Level through Program Exit Survey
		Strongly Agree	Agree	Neither disagree nor agree	Disagree	Strongly Disagree		
		5	4	3	2	1		
1	The program had a good mix of required technical courses and electives.	8	14	5	0	0	73.33	
2	The computer facilities in the institute were adequate.	6	15	4	1	0	70.00	
3	The laboratory facilities in the institute were adequate.	5	18	0	0	0	76.67	



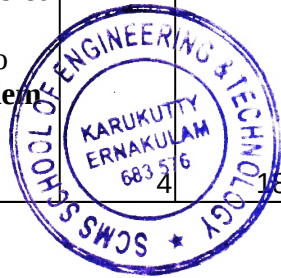
  
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4	My class advisor and mentor were helpful and knowledgeable.	3	26	0	0	0	96.67
5	I had adequate opportunity for interaction with faculty outside the class room.	9	14	7	0	0	76.67
6	Class room facilities were conducive to learning.	6	17	5	0	1	76.67
7	The library facilities in the institute were adequate.	17	11	1	0	0	93.33



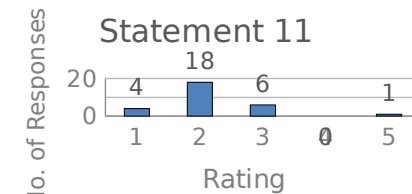
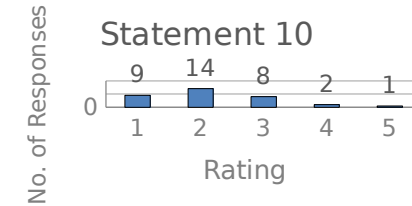
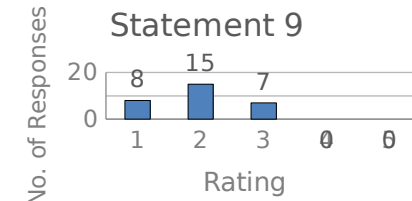
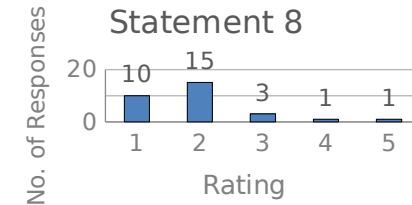
*Amitha*  
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8	The internet facilities in the campus were adequate.	10	15	3	1	1	83.33
9	The training and placement activities in the institute were adequate.	8	15	7	0	0	76.67
10	My learning experience at SSET provided me with the ability to apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems ( <b>Engineering knowledge</b> ).	9	14	8	2	1	76.67
11	My engineering studies have enabled me with the ability to design and conduct experiments as well as to analyze and interpret data ( <b>Problem analysis</b> ).	4	18	6	0	1	73.33

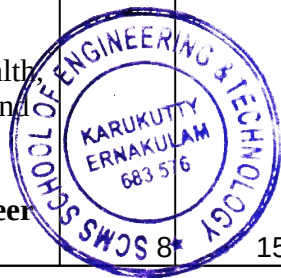


*Prinhu*  
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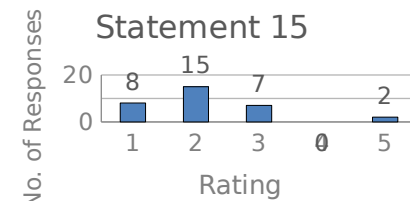
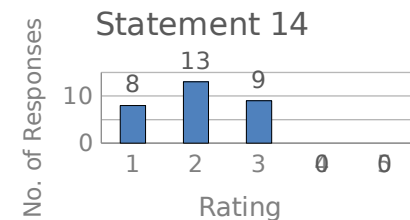
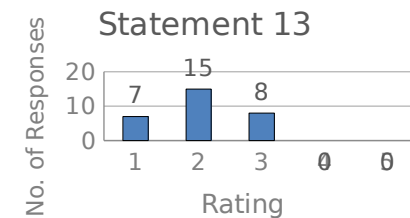
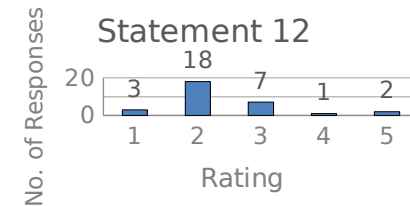
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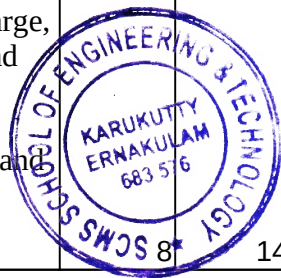
12	I am prepared to identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences <b>(Design/development of solutions).</b>	3	18	7	1	2	70.00
13	I am prepared to use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions <b>(Conduct investigations of complex problems).</b>	7	15	8	0	0	73.33
14	I have the skills necessary create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations <b>(Modern tool usage).</b>	8	13	9	0	0	70.00
15	I am capable to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice <b>(The engineer and society).</b>	8	15	0	2	0	76.67



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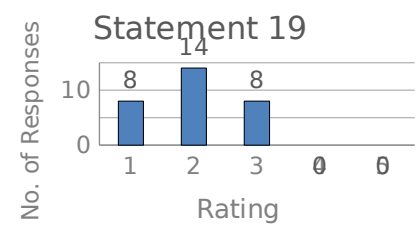
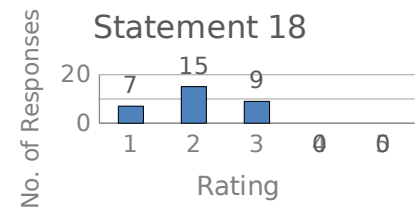
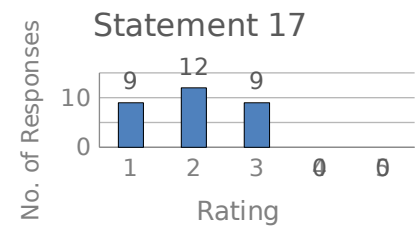
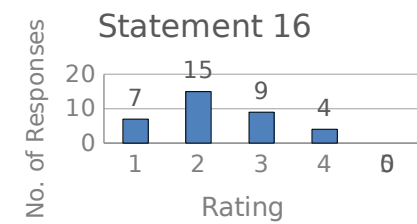


16	My studies provided me with the ability to understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development <b>(Environment and sustainability).</b>	7	15	9	4	0	73.33
17	The education I received at SSET has enabled me to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice <b>(Ethics).</b>	9	12	9	0	0	70.00
18	The education I received at SSET has enabled me to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings <b>(Individual and team work).</b>	7	15	9	0	0	73.33
19	The education I received at SSET has enabled me to communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions <b>(Communication).</b>	8	14	8	0	0	73.33



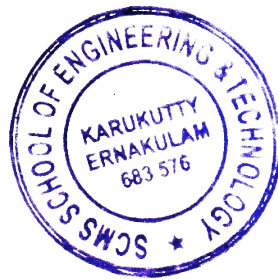
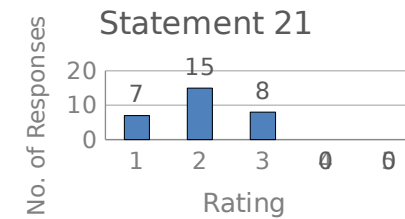
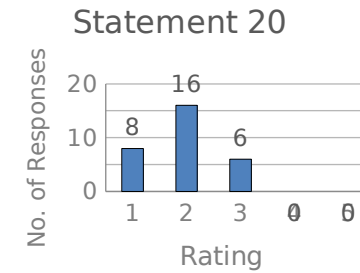
*Dr. Inku*

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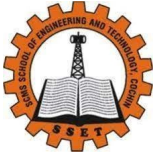




20	The education I received at SSET has enabled me to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments <b>(Project management and finance).</b>	8	16	6	0	0	80.00
21	The education I received at SSET has enabled me to Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change <b>(Life-long learning).</b>	7	15	8	0	0	73.33



*[Signature]*  
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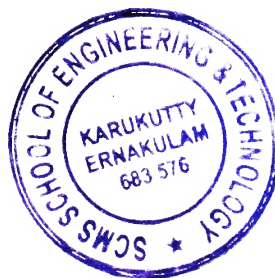
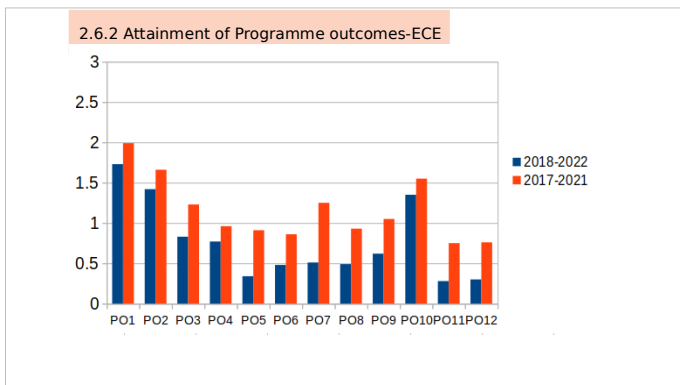
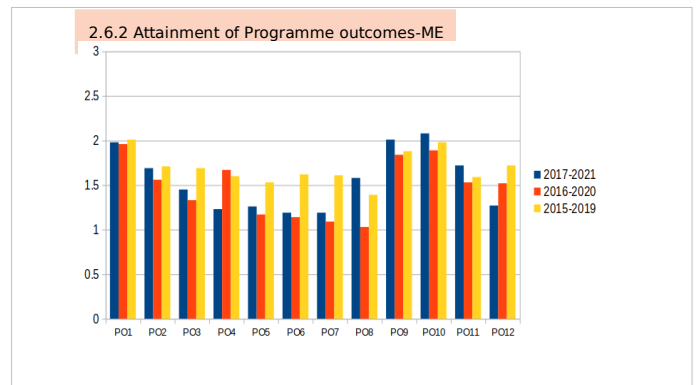
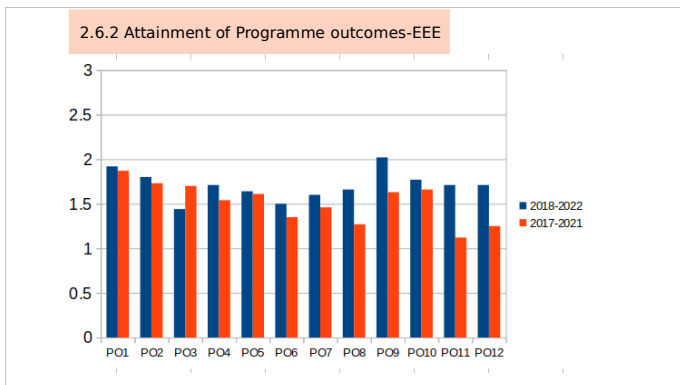
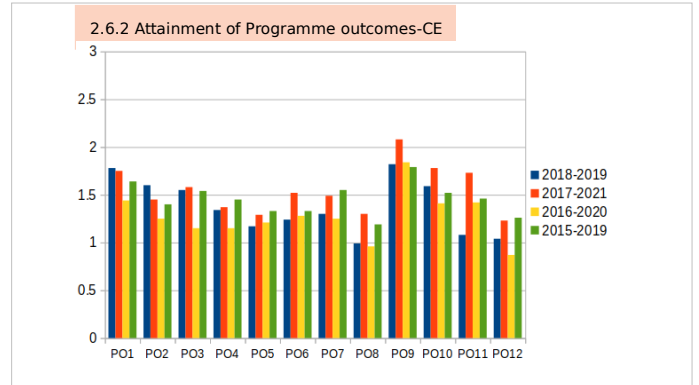
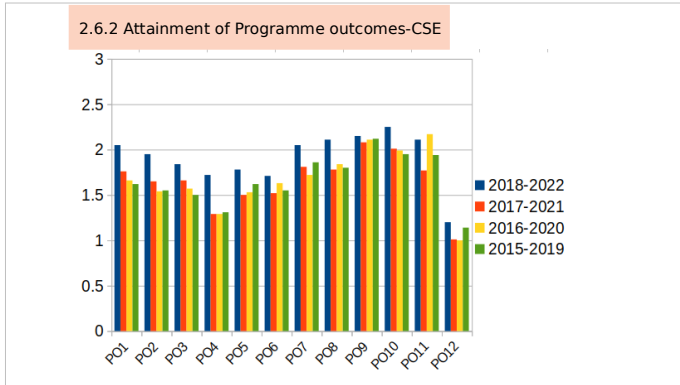
## PO Attainment Graph



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