

**Government College of Engineering, Karad**

**Second Year (Sem – III) B. Tech. Civil Engineering**

**IOE3341: Open Elective- I- ABAP Programming for SAP HANA**

Teaching Scheme		Examination Scheme	
Lectures	03 Hrs/week	ISE	50
Tutorials	00 Hrs/week	ESE	50
Total Credits	03		
		Duration of ESE	As applicable

**Prerequisite :**

**Course Outcomes (CO):**Students will be able to

<b>CO1</b>	Understand SAP HANA concepts, key technologies, and use of SAP HANA Studio and ADT
<b>CO2</b>	Identify and address ABAP code performance issues and understand SAP HANA's technical requirements and deployment options
<b>CO3</b>	Utilize Enhanced Open SQL, Core Data Services (CDS), and develop with SAP HANA Native SQL and ABAP Managed Database Procedures
<b>CO4</b>	Integrate SAP HANA models into ABAP, transport objects, and optimize reports with Full Text Search and ALV IDA.

Course Contents		CO	Hours
<b>Unit 1</b>	Introduction:-SAP HANA Basics and Technical Concepts, SAP HANA Studio, ABAP and SAP HANA Introducing the ABAP Development Tools (ADT), Taking ABAP to SAP HANA, SAP HANA as Secondary Database– Access via Open SQL.	<b>CO 1</b>	<b>(6)</b>
<b>Unit 2</b>	Code Checks to Prepare ABAP Code for SAP HANA, Tools to Analyse Potential Performance Issues, Guided Performance Analysis.SQL Performance Rules for SAP HANA, Database Independent Code-to-Data Classical Open SQL and Its Limitations.	<b>CO 2</b>	<b>(6)</b>
<b>Unit 3</b>	Enhanced Open SQL, The Basics of Core Data Services in ABAP, Associations in Core Data Services, Outlook: More Interesting Features of CDS.SAP HANA specific Code-to-Data, The Syntax of SAP HANA Native SQL, ABAP Managed Database Procedures, ABAP Managed Database Procedures.	<b>CO 3</b>	<b>(7)</b>
<b>Unit 4</b>	Use of SAP HANA Information Models in ABAP, Advanced Topics, Transporting SAP HANA Objects with ABAP Transport Requests. Using SAP HANA Full Text Search, ABAP List Viewer with Integrated Database Access (ALV IDA), Case Study: Optimize a Report on Flight Customer Revenue Case Study: Optimize a Report on Flight Customer Revenue	<b>CO 4</b>	<b>(7)</b>
<b>Unit 5</b>	Describing SAP HANA, Understanding the Need for a Modern Digital Platform, Describing How SAP HANA Powers a Digital Platform, Key Technologies of SAP HANA, Deploying SAP HANA, Identifying the Key Roles in an SAP HANA Implementation.	<b>CO 1</b>	<b>(6)</b>
<b>Unit 6</b>	Technical Requirements of SAP HANA, Technical Deployment Options High Availability and Disaster tolerance, SAP HANA Lifecycle Management Tools	<b>CO 2</b>	<b>(4)</b>

**Text Books**

<b>1.</b>	ABAP Programming for SAP HANA Author: Hermann Gahm, Thorsten Schneider, Christiaan Swanepoel, Eric Westenberger, Publisher: SAP Press, ISBN-13: 978-1493213049, Edition: 3rd Edition
<b>2.</b>	SAP HANA for ABAP Developers by Hermann Gahm, Thorsten Schneider, Eric Westenberger, Thomas Jung Publisher: SAP Press, ISBN-13: 978-1592298789, Edition: 2nd Edition
<b>3.</b>	ABAP to the Future: Advanced, Modern ABAP 7.5x Programming Techniques by Paul Hardy, Publisher: Espresso Tutorials, ISBN-13: 978-1946390073, Edition: 1st Edition

**Reference Books**

<b>1.</b>	SAP ABAP Advanced Cookbook, Author: Rehan Zaidi, Publisher: Packt Publishing, ISBN-13: 978-1782176440 Edition: 1st Edition
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**Useful Links**

<b>1.</b>	<a href="https://www.linkedin.com/learning/topics/sap">https://www.linkedin.com/learning/topics/sap</a>
<b>2.</b>	<a href="https://community.sap.com/t5/enterprise-resource-planning/ct-p/erp">https://community.sap.com/t5/enterprise-resource-planning/ct-p/erp</a>
<b>3.</b>	<a href="https://open.sap.com/">https://open.sap.com/</a>

### Mapping of COs and POs

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	-	-	-	1	-	-	-	1	2	-	1
CO 2	3	2	-	3	3	-	-	-	3	3	-	1
CO 3	3	3	3	3	3	1	-	1	2	3	-	1
CO 4	3	3	3	3	3	1	-	1	3	3	2	1

### Assessment Pattern (with revised Bloom's Taxonomy)

Knowledge Level	ISE	ESE
Remember	8	8
Understand	8	8
Apply	8	8
Analyse	8	8
Evaluate	8	8
Create	10	10
TOTAL	50	50

**Government College of Engineering, Karad****Second Year (Sem – III) B. Tech. Civil Engineering****IOE3342 : OE I Lab- ABAP programming in Eclipse LAB**

<b>Laboratory Scheme:</b>			<b>Examination Scheme:</b>	
<b>Practical</b>	2 Hrs/week		<b>ISE</b>	<b>25</b>
<b>Total Credits</b>	<b>1</b>		<b>ESE</b>	<b>25</b>

**Prerequisite :****Course Outcomes (CO):**Students will be able to

<b>CO1</b>	Explain the role and functionality of Eclipse in SAP development, including installation and navigation
<b>CO2</b>	Develop ABAP projects by creating, editing, and debugging repository objects using Eclipse
<b>CO3</b>	Assess ABAP code performance and quality using static testing tools, ABAP Unit Tests, and the ABAP Profiler within Eclipse
<b>CO4</b>	Design and implement advanced SAP applications, including Web Dynpro components and ABAP Dictionary Objects, utilizing Eclipse's development environment

**Course Contents****CO**

<b>Experiment 1</b>	Introduction to Eclipse, Understanding How SAP Uses Eclipse, Installing Eclipse	CO 1
<b>Experiment 2</b>	Defining an ABAP Project, Organizing Work with the Eclipse Workbench, The ABAP Development Cycle in Eclipse.	CO 2
<b>Experiment 3</b>	Creating Repository Objects, Editing a Repository Object, Debugging ABAP in Eclipse.	CO 2
<b>Experiment 4</b>	Function Groups and Function Modules.	CO 2
<b>Experiment 5</b>	ABAP Dictionary Objects in Eclipse, Working With Data Element, Working With Structures, Modelling Views with ABAP Core Data Services	CO 4
<b>Experiment 6</b>	ABAP Objects and Eclipse, Creating a Global Class, Refactoring	CO 4
<b>Experiment 7</b>	Web Dynpro Development, Creating Web Dynpro Components	CO 4
<b>Experiment 8</b>	Navigating in Eclipse, Searching in Eclipse	CO 1
<b>Experiment 9</b>	Managing Version Control, Identifying Sources of Help and Information	CO 1
<b>Experiment 10</b>	Testing and Analysis, Performing Static Testing with the Syntax Check, Performing Static Testing with the ABAP Test Cockpit.	CO 3
<b>Experiment 11</b>	Performing ABAP Unit Tests, Analysing Performance with the ABAP Profiler.	CO 3
<b>Experiment 12</b>	Eclipse: An Extensible Toolkit, Lesson: Extending Eclipse Functionality with Other SAP Tools.	CO 1

**List of Submission:**

1.	Minimum number of Experiments : 10
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**Government College of Engineering, Karad****Second Year (Sem – IV) B. Tech. Civil Engineering****IOE3443: OE II- SAP HANA**

Teaching Scheme		Examination Scheme	
Lectures	02 Hrs/week	ISE	50
Tutorials	00 Hrs/week	ESE	50
Total Credits	02		
		Duration of ESE	As applicable

**Prerequisite :****Course Outcomes (CO):**Students will be able to

<b>CO1</b>	Describe the fundamentals of analytical processing, data management, and advanced analytics in SAP HANA
<b>CO2</b>	Develop calculation views, custom SQL data warehouses, and applications on SAP HANA
<b>CO3</b>	Evaluate the performance and integration of SAP Business Intelligence tools and SAP Business Warehouse with SAP HANA
<b>CO4</b>	Design and implement data tiring strategies, SAP Data Warehouse Cloud solutions, and enterprise suite applications on SAP HANA

**Course Contents**

		CO	Hours
<b>Unit 1</b>	Analytical Processing with SAP HANA, Developing Calculation Views with SAP HANA, Advanced Analytics with SAP HANA.	CO 1, CO 2	(04)
<b>Unit 2</b>	Connecting SAP Business Intelligence Tools to SAP HANA, Data Management with SAP HANA, Data Tiering with SAP HANA, Describing Data Acquisition Tools.	CO 1, CO 3, CO 4	(06)
<b>Unit 3</b>	Powering Data Warehouses with SAP HANA, Running SAP Business Warehouse on SAP HANA.	CO3,	(05)
<b>Unit 4</b>	Developing Custom SQL Data Warehouses with SAP HANA, SAP Data Warehouse Cloud.	CO 2, CO 4	(04)
<b>Unit 5</b>	Running SAP Enterprise Suites on SAP HANA, Running SAP Enterprise Suites on SAP HANA.	CO 4	(04)
<b>Unit 6</b>	Developing Applications on SAP HANA, Developing ABAP applications for SAP HANA, Developing Native SAP HANA Applications.	CO 2, CO 4	(04)

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<b>2.</b>	<a href="https://community.sap.com/t5/enterprise-resource-planning/ct-p/erp">https://community.sap.com/t5/enterprise-resource-planning/ct-p/erp</a>
<b>3.</b>	<a href="https://open.sap.com/">https://open.sap.com/</a>

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CO 1	3	-	-	-	1	-	-	-	1	2	-	-
CO 2	3	3	3	3	3	1	-	1	2	2	1	1
CO 3	3	3	3	3	3	1	-	1	3	2	2	1
CO 4	3	3	3	3	3	1	-	-	1	3	2	1

## Assessment Pattern(with revised Bloom's Taxonomy)

Knowledge Level	ISE	ESE
Remember	8	8
Understand	8	8
Apply	8	8
Analyse	8	8
Evaluate	8	8
Create	10	10
<b>TOTAL</b>	<b>50</b>	<b>50</b>

**Government College of Engineering, Karad**

**Third Year (Sem – V) B. Tech. Civil Engineering**

**IOE3544: OE III- SAP PROJECT**

Teaching Scheme		Examination Scheme	
Lectures	02 Hrs/week	ISE	50
Tutorials	00 Hrs/week	ESE	50
Total Credits	02		
		Duration of ESE	As applicable

**Prerequisite :**

**Course Outcomes (CO):** Students will be able to

<b>CO1</b>	Perform detail literature survey on the research topic of work.
<b>CO2</b>	Carry out detailed mathematical modelling or experimental validation.
<b>CO3</b>	Draw inferences from the findings and present conclusion.
<b>CO4</b>	Develop presentation and technical report writing skills.

Course Contents		CO
	<p>The student shall choose any of the topics of interest for Project work using SAP. Project group shall consists of minimum THREE and maximum FIVE students. The group is required to do literature survey, formulate the problem, propose and execute methodology required for project..</p> <ul style="list-style-type: none"> <li>Students will prepare a technical report in prescribed format based on their work.</li> <li>The assessment of the project will be done at the end of the semester by a committee consisting of three faculty members from the department along with Project Guide.</li> <li>The students will present their project work before the committee. The presentation of the project shall be of 45 min followed by viva voce.</li> <li>The project guide will award the marks to the individual student depending on the group average awarded by the committee.</li> </ul> <p>Each Project Guide shall be allotted maximum TWO groups for guidance. Each group will submit the copies of the completed project report.</p>	<b>CO 1, CO 2, CO 3, CO 4</b>
	<b>Submission: Project report in standard format.</b>	

**Mapping of COs and POs**

PO → CO ↓	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	-	1	1	1	3	2	2	1	3	2	3	3
CO 2	2	3	3	3	3	3	3	1	3	2	3	3
CO 3	3	3	2	3	3	3	3	3	3	1	3	3
CO 4	1	-	1	-	3	1	1	1	3	3	3	3

**Assessment Pattern (with revised Bloom's Taxonomy)**

Knowledge Level	ISE	ESE
Remember	9	9
Understand	9	9
Apply	9	9
Analyse	9	9
Evaluate	9	9
Create	5	5
TOTAL	50	50