

**SYLLABUS FOR
THE FOUR-YEAR UNDERGRADUATE
PROGRAMME (FYUGP)**

**As per provision of NEP-2020 to be implemented from
Academic Year 2022 onwards**



Session 2025-26

Semester – V & VI

DEPARTMENT OF COMPUTER SCIENCE

**GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE,
RAJNANDGAON (C.G.)**

B. SC. (Multiple Major) – DEGREE COURSE (Session 2025-26)

Major – Computer Science

	SEMESTER	COURSE TYPE	Theory/ Practical	COURSE CODE	PAPER TITLE	CREDIT			Max Marks	ESE	IA
						L	T	P			
THIRD YEAR	V	DSC-VA	Theory		Programming in JAVA	3	0	0	100	80	20
		DSC-VA	Practical		Programming in JAVA - LAB	0	0	1	50	40	10
		DSE-IIIA	Theory		Software Engineering	3	1	0	100	80	20
		DSE-IVA	Theory		Internet of Things	3	1	0	100	80	20
		SEC-VA	Theory		(Choose from SEC Pool) PHP & MySQL - I	2	0	0	50	40	10
	VI	DSC-VIA	Theory		Mobile Application Development	3	0	0	100	80	20
		DSC-VIA	Practical		Mobile Application Development - LAB	0	0	1	50	40	10
		DSE-VA	Theory		Introduction to Artificial Intelligence	3	1	0	100	80	20
		DSE-VIA	Theory		Computer Graphics	3	1	0	100	80	20
		SEC – VI A	Practical		(Choose from SEC Pool) PHP & MySQL - II	0	0	2	50	40	10

ESE- End Semester Exam, IA-Internal Assessment

Instruction for Question paper setting

End Semester Exam (ESE) for DSC, DSE and GE

There will be 03 sections of question of 80 marks

Section A- section A will be very short answer type questions consisting 8 questions of 2 marks, two questions from each unit.

Section B- section B will be short answer type questions consisting 4 questions of 6 marks each, one question from each unit with internal choice.

Section C- section B will be long answer (Descriptive) type questions consisting 4 questions of 10 marks each, one question from each unit with internal choice.

End Semester Exam (ESE) for SEC-There will be 8 questions of 8 marks each, out of which any 5 question to be answer. Total marks will be 40.

Minimum Pass Marks 40%

Section	Maximum Marks (80)		Maximum Marks (40)	
A	2 x 8 = 16	Very short answer type questions consisting 8 Questions of 2 marks, two question from each unit.	8 x 5 = 40	8 questions of 8 mark each, out of which any 5 question to be answer.

B	$6 \times 4 = 24$	Short answer type questions consisting 4 questions of 6 marks each, one question from each unit with internal choice.		
C	$10 \times 4 = 40$	long answer (Descriptive) type questions consisting 4 questions of 10 marks each, one question from each unit with internal choice		

**SYLLABUS OF 4 YEARS UG PROGRAM (FYUGP) IN COMPUTER SCIENCE,
GOVT. DIGVIJAY AUTONOMOUS P G COLLEGE, RAJNANDGAON,
AS PER NEP 2020 (SEMESTER- V AND VI)**

Program Objective

- Po1- It is to give foundation knowledge for the students to understand advance Computer Science including applied aspect for the same.
- Po2- It is to develop enhanced quantitative skills and pursuing higher Computer Science and research as well as.
- Po3- Students will be able to develop software as well as operating knowledge computer application.
- Po4- Students will become employable in various governments, public and private sectors.
- Po5- Scientific tempers in general and computer temper in particular will be developed in students.
- Po6- Sufficient subject matter competence and enable students to prepare for various competitive examinations such as GATE, UGC-CSIR, NET/JRF and Civil Services Examinations.

Program Specific Outcome (PSO)

- PSO1- Student should be able to understand the Programming knowledge of JAVA Programming Language.
- PSO2- Student should be able to know the Software engineering.
- PSO3- Student understand and programming knowledge of Mobile Application for Android OS..
- PSO4- Student should be able to working in IOT.
- PSO5- Student should be able to website development using PHP and MySQL..
- PSO6- Student should be able to know functions and applications and basics of Internet of Things..





GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)
FYUGP (CBCS/LOCF Course)
Department – Computer Science

Session: 2025-26	Program: B.Sc. (Maths)
Semester: V	Subject: Computer Science
Course Type: DSC	Course Code:
Course Title:	Programming in JAVA
Credit: 4 (3 Theory + 1 Practical)	Lecture: 60
M.M. 100 = Theory (ESE 80 + IA 20) (Theory)	Minimum Passing Marks: 40%
M.M. 50 = 50 (Internal 10 + Practical (Practical) Record – 20 + Practical 10 + Viva 10)	Minimum Passing Marks: 40%

Title	Programming in JAVA
Course Learning Outcome:	<ul style="list-style-type: none"> • Knowledge of the structure and model of the Java programming language, • Use the Java programming language for various programming technologies • Develop software in the Java programming language, • Evaluate user requirements for software functionality required to decide whether the • Java programming language can meet user requirements

Units	Lectures	Lectures (15 x 3 = 45)	Credits
I	15	Genesis of java, importance to the Internet, overview of features. OOP features, data types, control structures, arrays, methods and classes, nested & inner classes, string and String Buffer class, Wrapper Class, vectors	1
II		Inheritance : Basics type, method Override, using abstract and final classes, using super. Packages and Interfaces : Defined CLASSPATH, importing packages, implementing interface.	
III	15	Input/Output : Basic Streams, Byte and Character Stream, predefined streams, reading and writing from console and files. Using standard Java Packages (lang,util,io) Networking :Nasecs. TCP/IP client & server sockets, URL connection.JDBC: Setting the JDBC connectivity with backend database.	1
IV	15	Applets : Fundamentals, life cycle, overriding update, HTML APPLET tag, Passing parameters. Developing single applets. Introduction to AWT : Window fundamentals, creating windowed, programs waking with graphics, using AWT controls, menus. Delegation event model, handling mouse and keyboard events.	1

[Handwritten signatures]

BOOKS RECOMMENDED:

TEXT BOOKS

E Balaguruswamy, Programming with JAVA, A Primer (5e), Kindle Edition

REFERENCE BOOKS

1. Bruce Eckel, Thinking in Java (4e)
2. Herbert Schildt, Java: The Complete Reference (9e)
3. Y. Daniel Liang, Introduction to Java Programming (10e)
4. Paul Deitel, Harvey Deitel, Java: How To Program (10e)
5. Cay S. Horstmann, Core Java Volume I –Fundamentals (10e)

Practical - Programming in JAVA - LAB

Max Mark: 50

Credit = 1

Min Marks: 40%

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator. The consent teacher may modify the assignment questions as required.

1. In every program there should be comment for each coded line or block of code.
2. Practical files should contain printed program with name of author, date, path of program, unit no and printed output.
3. All the following programs or a similar type of programs should be prepared.

List of Practical

Note: This is tentative list, consultant teacher may add or remove assignments as required.

- 1 WAP that implements the Concept of Encapsulation.
- 2 WAP to demonstrate concept of Polymorphism (function Overloading and constructor Overloading).
- 3 WAP the use boolean data type and print the Prime number Series up to 50.
- 4 WAP to print first 10 number of the following Series using Do---While Loops 0, 1, 1, 2, 3, 5, 8, 11.....
- 5 WAP to sort the element of One Dimensional Array in Ascending order.
- 6 WAP for matrix multiplication using input/output Stream.
- 7 WAP to add the elements of Vector as arguments of main method (Run time) and rearrange them, and copy it into an Array.
- 8 WAP to check that the given String is palindrome or not.
- 9 WAP to arrange the String in alphabetical order.
- 10 WAP for StringBuffer class which perform the all methods of that class.
- 11 WAP to calculate Simple Interest using the Wrapper Class.
- 12 WAP to calculate Area of various geometrical figures using the abstract class.
- 13 WAP where Single class implements more than one interfaces and with help of interface reference variable user call the methods.
- 14 WAP that use the multiple catch statements within the try-catch mechanism.
- 15 WAP where user will create a self-Exception using the “throw” keyword.
- 16 WAP for multithread using the isAlive(), join() and synchronized() methods of Thread class.
- 17 WAP to create a package using command and one package will import another package.
- 18 WAP for AWT to create Menu and Popup Menu for Frame.
- 19 WAP for Applet that handle the KeyBoard Events.
- 20 WAP, which support the TCP/IP protocol, where client gives the message and server will receive the message.
- 21 WAP to illustrate the use of all methods of URL class.
- 22 WAP for JDBC to insert the values into the existing table by using prepared Statement.
- 23 WAP for JDBC to display the records from the existing table.
- 24 WAP to demonstrate the Border Layout using applet.
- 25 WAP for Applet who generate the MouseMotionListener Event.
- 26 WAP for display the checkboxes, Labels and TextFields on an AWT.

**FYUGP (CBCS/LOCF Course)**

Department: -Computer Science

Session: 2025-26	Program: B.Sc.(Maths)
Semester: V	Subject: Computer Science
Course Type: DSE - 1	Course Code: DSE-III A
Course Title:	Software Engineering
Credit: 4 (Theory)	Lecture: 60
M.M. 100 = (ESE 80+IA 20)	Minimum Passing Marks: 40%

Title	Software Engineering
Course Learning Outcome:	<ul style="list-style-type: none"> • Basic knowledge and understanding of the analysis and design of complex systems. • Ability to apply software engineering principles and techniques. • To produce efficient, reliable, robust and cost-effective software solutions. • Ability to work as an effective member or leader of software engineering teams. • To manage time, processes and resources effectively by prioritising competing • demands to achieve personal and team goals Identify and analyzes the common threats in each domain.

Units	Lectures	Lectures (15 x 4 = 60)	Credits
I	15	Software Development Approaches: Introduction; Evolving Role of Software; Software Characteristics; Software Applications. Software Design Processes: Introduction; What is Meant by Software Engineering?, Definitions of Software Engineering; The Serial or Linear Sequential Development Model; Iterative Development Model; The incremental Development Model	1
II	15	Software Design Principles: Introduction, System Models: Data -flow Models, Semantic Data Models, Object Models, Inheritance Models, Object Aggregation, Service Usage Models, Data Dictionaries; Software Design: The Design Process, Design Methods, Design description, Design Strategies, Design Quality; Architectural Design: System Structuring, The Repository Model, The Client-Server Model, The Abstract Machine Model	1
III	15	Object Oriented Design: Introduction; Object Oriented Design: Objects, Object Classes & Inheritance,	1

		Inheritance, Object Identification, An Object -Oriented Design Example , An Assessment of Process Life-Cycle Models: Introduction; Overview of the Assessment of Process; The Dimension of Time; The Need for a Business Model in Software Engineering	
IV	15	Software Testing Techniques: Introduction; Software Testing Fundamental; Testing Principles; White Box Testing; Control Structure Testing; Black Box Testing; Boundary Value Analysis; Testing GUIs; Testing Documentation and Help Facilities; Software Testing Strategies: Introduction; Organizing for Software Testing; Software Testing Strategy, Unit Testing: Unit Test Considerations, Top -Down Integration, Bottom-Up Integration.	1

Reference Book

- R. G. Pressman – Software Engineering, TMH
- Sommerville, Ian, Software Engineering, Pearson Education
- Pankaj Jalote – An Integrated Approach to Software Engineering, Narosa Publications.
- Pfleeger, Shari Lawrence, Software Engineering Theory and Practice, second edition. Prentice- Hall
- Object Oriented & Classical Software Engineering (Fifth Edition), SCHACH, TMH



GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (CBCS/LOCF Course)

Department: - Computer Science

Session: 2025-26	Program: B.Sc.
Semester: V	Subject: .Computer Science
Course Type: DSE - 2	Course Code: DSE IV - A
Course Title:	Internet of Things
Credit: 4 (Theory)	Lecture: 60
M.M. 100 = (ESE 80 + IA 20)	Minimum Passing Marks: 40%

Title	Internet of Things
Course Learning Outcome:	<p>After completion of course the students will able to:-</p> <ul style="list-style-type: none"> Identify the level of IOT stack and be familiar with the key technologies & protocol. Apply the knowledge & skills acquired during the course to build and test a complete. Working IOT system involving prototyping, programming and data analysis.

Title	Internet of Things		
Units	Lectures	Lectures (15 x 4 = 60)	Credits
I	15	Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, M2M and IOT technology fundamental -Device, gateways, local & wide area network, Everything as a service(XaaS),	1
II	15	IOT Architecture: Introduction state of Art, Refrence Model& architecture, IOT refrence architecture, functional view, information view, deployment & operational view, PHY/MAC layer(3GPP MTC, IEEE802.11,IEEE 802.15), Z wave, Bluetooth, Zigbee smart energy, DASH7- Network layer-IPv4,IPv6, 6LoWPAN, DHCP,ICMP, RPL.	1
III	15	Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage, Introduction to Hadoop. Introduction to data Analytics, Types of Data analytics, Local Analytics, Cloud analytics and applications	1

[Handwritten signatures]

IV	15	One M2M, European telecommunication , standard institute(ETSI), M2M(machine to machine) , OMA, BBF- security in IOT protocol – Mac 802.15.4, Routing protocol for low power & lossy network, Application layer, Applications of IoT.	1
----	----	--	---

Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
- Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759
- Raspberry Pi Cookbook, Software and Hardware Problems and solutions, Simon Monk, O'Reilly (SPD), 2016, ISBN 9789352133895

Reference Books Recommended:

- Peter Waher, 'Learning Internet of Things', Packt Publishing, 2015 3. Editors Ovidiu Vermesan
- Peter Friess, 'Internet of Things – From Research and Innovation to Market Deployment', River Publishers, 2014
- N. Ida, Sensors, Actuators and Their Interfaces, SciTech Publishers, 2014.

Online Resources:

- Swayam/NPTEL: https://www.youtube.com/channel/UC6ZY_csXZc7YZZm2W8HcQ6A
- Javatpoint: <https://www.javatpoint.com/iot-internet-of-things>
- Tutorialspoint: https://www.tutorialspoint.com/internet_of_things/index.htm
- Topics Related to IOT from data-flair: <https://data-flair.training/blogs/iot-tutorial/>
- Topics Related to IOT from edureka: <https://www.edureka.co/blog/iot-tutorial/>
- https://www.lnmiit.ac.in/Department/ECE/uploaded_files/Internet_of_Things_Lab_manual.pdf
- https://www.iare.ac.in/sites/default/files/lab1/IARE_IOT%20LAB%20MANUAL.pdf
- https://www.amirajcollege.in/wp-content/uploads/2020/06/2180709-iot_manual.pdf

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)



FYUGP (CBCS/LOCF Course)

Department – Computer Science

Session: 2025-26	Program: B.A./B.Sc./B.Com/BCA
Semester: V	Subject: Computer Science
Course Type: SEC	Course Code:
Course Title:	PHP & MySQL - I
Credit: 2	Lecture: 30
M.M. 50 = (ESE 40 + IA 10)	Minimum Passing Marks: 40%

Title	PHP & MySQL - I
Course Learning Outcome:	<p>After completion of course the students will able to:-</p> <ul style="list-style-type: none"> • To implement PHP script using Decisions and Loops • To develop PHP applications using Strings, Arrays and Functions. • To design object-oriented programming (OOP) principles for PHP and use HTML form elements that work with any server-side language. <p>To display and insert data using PHP and MySQL</p>

Units	Lectures	Lectures (15 x 2 = 30)	Credits
I	15	Embedding PHP in web pages, redirecting output to browser, data types, expressions, control structures; Functions– Creation, passing arguments ,default argument values, returning values, recursive functions; Arrays-Creating,processing,sorting, merging, slicing, splicing, and dissecting arrays. Constructors, static class members, auto loading objects, inheritance, interfaces, abstract classes, error logging,	1
II	15	exceptional handling; Strings - regular expressions and other string functions. Introduction to MySQL - Data types, attributes, working with databases, working with tables, altering table structure; Database Connectivity- Using the MYSQLI extension, setting up the connection, handling errors, querying the database, working with prepared statements, auto commit mode, committing and rolling back a transaction.	1

(Handwritten signatures)



GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)
FYUGP (CBCS/LOCF Course)
 Department: - Computer Science

Session: 2025-26	Program: .B.Sc (Maths)
Semester: VI	Subject: Computer Science
Course Type: DSC	Course Code:
Course Title:	Mobile Application Development
Credit: 4 (3 Lecture + 1 Practical)	Lecture: 60
M.M. 100 = Theory (ESE 80 + IA 20) (Theory)	Minimum Passing Marks: 40%
M.M. 50 = 50 (Internal 10 + Practical (Practical) Record – 20 + Practical 10 + Viva 10)	Minimum Passing Marks: 40%

Title	Mobile Application Development
Course Learning Outcome:	<ul style="list-style-type: none"> • To understand Android platform and its architecture. • To learn about mobile devices types and different modern mobile operating systems. • To learn activity creation and Android User Interface designing. • To learn basics of Intent, Broadcast and Internet services. • To learn about different wireless mobile data transmission standards. • To understand and learn how to integrate basic phone features, multimedia, • camera and Location based services in Android Application. • To learn about different systems for mobile application development, • deployment and distribution in Mobile market place (Android, iOS). • To understand and carry out functional test strategies for mobile applications.

Units	Lectures	Lectures (15 x 3 = 45)	Credits
I	15	(Introduction) What is Android, Android Versions and its Feature Set, Various Android Devices on the Market, Android Market Application Store, Android Development Environment System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs)	1
II		(Android Architecture Overview and Application) Android Software Stack, The Linux Kernel, Android Runtime - Dalvik Virtual Machine, Android Runtime – Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings,	

[Handwritten signatures]

		Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files,	
III	15	(Android Software Development Platform and Framework) Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes , Launching Mobile Application: The Android Manifest.xml File, Android Application Components, Android Activities: Defining the UI, Android Service s: Processing in the Background, Broadcast Receivers: Announcements and Notifications Content Providers: Data Management, Android Intent Objects: Messaging for Components, Android Manifest XML: Declaring Your Components	1
IV	15	(Understanding Android User Interfaces, Views and Layouts) Designing for Different Android Devices, Views and View Groups, Android Layout Managers, The View Hierarchy, Designing an Android User Interface using the Graphical Layout Tool Displaying Text with TextView, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menus using views, Gallery, Image Switcher, Grid View, and Image View views to display images, Creating Animation	1

TEXTBOOKS

- Android Programming Unleashed (1 st Edition) by Harwani.
- Beginning Mobile Application Development in the Cloud (2011), Richard Rodger.

Practical : Mobile Application Development LAB

Credit = 1

1. In every program there should be comment for each coded line or block of code.
2. Practical files should contain printed program with name of author, date, path of program, unit no and printed output.
3. All the following programs or a similar type of programs should be prepared.

List of Practical

Note: This is tentative list. consultant teacher may add or remove assignments as required.

1. Download and setup Android Environment.
2. Using the Development environment.
 - i. Create a new Project using wizard
 - ii. Add source and resource files.
 - iii. Import existing projects into workspace
 - iv. Create testing Emulator
 - v. Compile and run the project
 - vi. Debug the project
 - vii. Debug on android device.
3. Write a program to print hello message using Toast.

4. Write a program to add two integer values.
5. Write a program to demonstrate CheckBox.
6. Write a program to demonstrate RadioButton.
7. Write a program to demonstrate ListView.
8. Write a program for navigation between two activities.

A series of handwritten marks in blue ink. From left to right: a stylized 'G' with a horizontal line, a wavy line with an arrow pointing right, the word 'Sohyok' written in a cursive script, and a final stylized signature or mark.



GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (CBCS/LOCF Course)

Department: - Computer Science

Session: 2025-26	Program: B.Sc.
Semester: VI	Subject: .Computer Science
Course Type: DSE - 1	Course Code: DSE - VA
Course Title:	Introduction To Artificial Intelligence
Credit: 4 (Theory)	Lecture: 60
M.M. 100 = (ESE 80 + IA 20)	Minimum Passing Marks: 40%

Title	
Course Learning Outcomes	<p>At the end of the course, students will be able to :</p> <ul style="list-style-type: none">• Understand the various searching techniques, constraint satisfaction problems and example problems- game playing techniques.• Apply techniques to solve the AI problems.• Provide a strong foundation of fundamental concepts in Artificial Intelligence.• Provide a basic exposition to the goals and methods of Artificial Intelligence.• Understand real world applications of AI.

Title		Introduction To Artificial Intelligence	
Units	Lectures	Lectures (15 x 4 = 60)	Credits
I	15	Introduction: Overview of Artificial Intelligence (AI), Foundations of AI, Areas and Applications of AI in various domains, AI Agents: Meaning, Types, Environments, and examples.	1
II	15	Problem Solving: Problem Solving as State Space Search, Production System, Some AI Classical Problems: Water-Jug Problem, Cannibal-Missionaries Problem, Tower of Hanoi, Tic-Tac-Toe, 8-Puzzle Problem, Search Techniques: Breadth First Search, Depth-First Search, Hill-Climbing, Best-First Search, A* Algorithms.	1
III	15	AI Programming languages: Introduction to LISP, Basic list manipulation functions, Input/output and local variables, Lists and Arrays, simple program in LISP, Introduction to PROLOG.	1
IV	15	Knowledge Representation: What is knowledge?, Approaches and issues, Knowledge representation techniques: Frame, Conceptual dependency, Semantic Net, Scripts etc., Propositional Logic, First order, Propositional Logic (FOPL), Conversion to clausal form, Inference rules, Resolution principal.	1

Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

1. Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson, PHI Publication.
2. Artificial Intelligence, Elaine Rich and Kevin Knight TMH publication.

Reference Books Recommended:

3. Artificial Intelligence and machine learning, Vinod Chandra S.S., Anand Hareendrn S., PHI learning private Ltd.
4. Foundations of Artificial Intelligence and Expert Systems, Macmillan Series in Computer Science, V.S. Jankiraman, K. Sarukesi and P. Gopala Krishnan.

Online Resources:

- Introduction to Artificial Intelligence from SWAYAM:
https://www.youtube.com/watch?v=pKcVMlkFpRc&list=PLwdnzlV3ogoXaceHrrFVZCJKBm_laSHcH&index=2
- Artificial Intelligence: Knowledge Representation And Reasoning from SWAYAM
https://onlinecourses.nptel.ac.in/noc24_cs14/preview
- An introduction to Artificial Intelligence from SWAYAM:
https://onlinecourses.nptel.ac.in/noc24_cs08/preview
- Introduction to Artificial Intelligence from Coursera: <https://www.coursera.org/learn/introduction-to-ai>
- Problem Solving as State Space Search from SWAYAM:
https://www.youtube.com/watch?v=fLw8SfvaJWA&list=PLwdnzlV3ogoXaceHrrFVZCJKBm_laSHcH&index=3
- Heuristic Search from SWAYAM:
https://www.youtube.com/watch?v=0awSpFyh2MY&list=PLwdnzlV3ogoXaceHrrFVZCJKBm_laSHcH&index=5
- Introduction to Artificial Intelligence:
<https://www.javatpoint.com/artificial-intelligence-ai>
- How to Learn Artificial Intelligence from Coursera: <https://www.coursera.org/articles/how-to-learn-artificial-intelligence>
- What is knowledge representation:
<https://courses.csail.mit.edu/6.803/pdf/davis.pdf>





GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (CBCS/LOCF Course)

Department: -.Computer Science

Session: 2025-26	Program: B.Sc.
Semester: VI	Subject: Computer Science
Course Type: DSE - 2	Course Code: DSE VI A
Course Title:	Computer Graphics
Credit: 4 (Theory)	Lecture: 60
M.M. 50 = (ESE 80 + IA 20)	Minimum Passing Marks: 40%

Title	Computer Graphics
Course Learning Outcome:	<p>After completion of course the students will able to:-</p> <ul style="list-style-type: none">• Understand the basics of computer graphics, different graphics systems and applications of computer graphics.• Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.• Use of geometric transformations on graphics objects and their application in composite form.• Extract scene with different clipping methods and its transformation to graphics display device.• Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.

Units	Lectures	Lectures (15 x 4 = 60)	Credits
I	15	Basic elements of Computer Graphics: Applications of Computer Graphics, Input Devices: Keyboard, Mouse, Trackball & Space ball, Joystick, Data Glove, Digitizers, Image Scanners, Touch panels, Light Pens systems. Output display devices: Refresh CRT, Raster-Scan display and Random-scan display technique, Color display techniques-Beam penetration method and Shadow-mask method, Direct view storage tubes, Emissive & Non-emissive flat-panel, Displays-Plasma panels, LED and LCD monitor.	1
II	15	Fundamental Techniques in Graphics: Line-drawing algorithms, DDA algorithm and I Bresenharri's Line drawing Algorithm, Midpoint Algorithm for Circle and Ellipse Generation, Curve generation. Attributes for output primitives: Area-filling Algorithms - Scan-line Polygon-fill.	1
III	15	Geometrical Transformation: 2D Transformation (translation, rotation, scaling, reflection and shearing),	1

		Homogeneous Coordinates and Matrix Representation of 2D Transformations, Successive and composite 2D Transformations, the Window-to-Viewport Transformations, Introduction to 3D Transformations Matrix.	
IV	15	Curves & Surfaces: Polygon Surfaces and polygon meshes, Quadratic and super quadrics surfaces, Spline curve and representation Definition of Bezier curve and its properties, Algorithms for Bezier curves and surfaces, Hermite curve.	1

Learning Resources	
Text Books, Reference Books and Others	
<i>Text Books Recommended:</i>	
<ul style="list-style-type: none"> Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles & practice, 2000. D.J. Gibbs & D.C. Tschritz: Multimedia programming Object Environment & Frame work, 2000. 	
<i>Reference Books Recommended:</i>	
<ul style="list-style-type: none"> Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication and Applications, Pearson, 2001 D. Haran & Baker. Computer Graphics Prentice Hall of India, 1986. 	
<i>Online Resources:</i>	
<ul style="list-style-type: none"> NPTEL: https://onlinecourses.nptel.ac.in/noc20_cs90 https://mrcet.com/downloads/digital_notes/CSE/III%20Year/COMPUTER%20GRAPHICS%20NOTES.pdf http://www.aagasc.edu.in/cs/COMPUTER%20GRAPHICS%20NOTES.pdf https://archive.mu.ac.in/myweb_test/S.Y.B.Sc.(IT)%20(Sem%20%20III%20)%20Computer%20Graphics.pdf 	





GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (CBCS/LOCF Course)

Department – Computer Science

Session: 2025-26	Program: B.A./B.Sc./B.Com/BCA
Semester: VI	Subject: Computer Science
Course Type: SEC	Course Code:
Course Title:	PHP & MySQL - II
Credit: 2	Lecture: 30
M.M. 50 = (Internal 10 + Practical Record – 20 + Practical 10 + Viva 10)	Minimum Passing Marks: 40%
Title	PHP & MySQL - II
Course Learning Outcome:	<p>.After completion of course the students will able to:-</p> <ul style="list-style-type: none"> • To implement PHP script using Decisions and Loops • To develop PHP applications using Strings, Arrays and Functions. • To design object-oriented programming (OOP) principles for PHP and use HTML form elements that work with any server-side language. • To display and insert data using PHP and MySQL

Units	Lectures	Lectures (15 x 2 = 30)	Credits
I	15	Introduction to MySQL - Data types, attributes, working with databases, working with tables, altering table structure; Database Connectivity-Using the MYSQLI extension, setting up the connection, handling errors, querying the database, working with prepared statements, auto commit mode, committing and rolling back a transaction.	1
II	15	List of Practical :- <ol style="list-style-type: none"> 1. Creating web pages using different XHTML elements like lists ,images, tables, frames , form. 2. Formatting web pages using cascading style sheets 3. Creating dynamic web pages using form elements 4. Implementing various control structures using PHP script 5. OOP exercises using PHP 6. PHP application to handle forms 7. Database connectivity using PHP 8. CRUD operations on database using PHP <p>Note: List of Practicals may be changed by the concerned teacher.</p>	1