

Faculty of Information Technology

Second Semester, 2023–2024
Course Handouts

Table of Content

S. No	Course Code	Course Title	Page No
BCA I Year			
1	CA122	Multimedia and Technology	1-3
2	CA124	Computer Organization	4-6
3	CA125	Web Technologies	7-9
4	CA126	Object Oriented Programming	10-12
5	EGL121	English Language Skills II	13-15
6	MATH123	Mathematics – II	16-18
BCA II Year			
7	CA221	Software Engineering	19-21
8	CA223	Operating Systems	22-25
9	CA224	Java Programming	26-28
10	CA225	Computer Graphics	29-32
11	EGL226	Technical Report Writing	33-36
12	MATH222	Operations Research	37-41
BCA III Year			
13	CA321	Asp.Net	42-44
14	CA402	Ecommerce	45-49
15	CA417	Artificial Intelligence	50-53
16	CA423	Theory of Computation	54-56
17	CA428	Digital Marketing	57-60
MCA I Year			
18	MCA123	Web Technology	61-63
19	MCA124	Software Engineering	64-66
20	MCA125	Artificial Intelligence	68-70

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA122	Multimedia and Technology	3	0	3

Instructor-in-charge: Dr.BHARATI PATEL

<ol style="list-style-type: none"> 1. Apply the knowledge of the basic fundamentals components of Multimedia 2. To apply the animatic effects for basic multimedia formats 3. Identify about compression and applying the video settings 4. Effective learning about hardware components and software tool devices 5. Functioning and creating of webpage with all the applications
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Textbook(s) T1	1. Multimedia: Making It Work, Tay Vaughan, 7th Edition, Tata Mc-Graw Hill., 2008.
Text Book (s) T2	2. Multimedia Systems, John F.Koegel Buford, Pearson edition, 2003.
Reference Book(s) R1	Ranjan Parekh, Principles of Multimedia, TMH, 2006.
Reference Book R2	Multimedia: Computing, Communication and applications, Ralf Steinmetz and KlaraNahrstedt, Pearson Edition, 2001.

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./Page Nos. of Text Book)
1-6	Introduction To Multimedia	Introduction to making Multimedia- Multimedia Skills and training- Text: Using text in Multimedia- Computer and Text- Font Editing and Design Tools- Hypermedia and Hypertext	T1:- Chpt 1
7-13	Multimedia File Handling	Sound – Images – Animation – Video	T1:- Chpt 2

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./Page Nos. of Text Book)
14-23	Digital Video And Image Compression	Evaluating a compression system – Redundancy and Visibility-Video compression techniques- Standardization of an algorithm – The JPEG image compression standard- ITU –T Standards – MPEG motion video compression standard-DVI Technology.	T1:- Chpt 3
24-34	Hardware, Software And Multimedia Authoring Tools	Multimedia Hardware: Macintosh and Windows production Platforms- Hardware Peripherals: Memory and Storage Devices, Input Devices, Output Devices, Communication Devices .Basic Software Tools	T1:- Chpt 4
35-40	Multimedia And Internet	Internetworking –connections – Internet services –Tools for WWW – Designing WWW.	T1:- Chpt 5

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	12-02-2024	1-15	CB
Test 2	60 Minutes	17	11-03-2024	16- 23	OB
Test 3	60 Minutes	17	15-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	18-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 06/01/2024

**Dr.BHARATI PATEL
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA124	Computer Organization	3	0	3

Instructor-in-charge: Dr.BHARATI PATEL

Learning Outcomes:

1. After successful completion of the course student will be able to:
2. To understand basic concepts and implementation of Computer Organization
3. To understand about Number systems, Logic Gates, Boolean algebra and Advanced Concepts.
4. To understand about Combinational and Sequential Circuits and its working architecture

Text Book T1	Computer Fundamental, Pradeep K. Sinha Sixth Edition BPB Publication.
Reference Book(s) R1	Computer Architecture & Organization by Moriss Manno, 3rd edition, Printice Hall of India Pvt Ltd.
Reference Book R2	Digital Computer electronics: An Introduction to microcomputers by Albert Malvino and Jerald Brown, Tata Mcgraw Hill.
NPTEL	http://www.nptelvideos.in/2012/11/computer-organization.html

Lecture-Wise-Plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
1-2	Introduction to Computer Organization	CPU architecture, Stack organization, Instruction format	T1 : Chap 1, Chap 2
3-5	Addressing in Computer Organization	Address instructions, Addressing modes	T1 : Chap 12

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
6-9	Memory in Computer Cache Organization	Computer memory system, Memory and It's types	T1 : Chap 3
10-12	Binary arithmetic & Conversion	inter-conversion of number system	T1 : Chap 5
13-17	Digital codes	Binary coded decimal(BCD), Gray code, Excess-3 code, Format of ASCII code.	T1 : Chap 4
20-25	Logic Gates	Positive and negative logics, NOT gate, OR gate, AND gate, NAND gate, NOR gate, EX-OR and EX-NOR gates	T1 : Chap 6
26-28	Circuit diagram and Universal Gates	Truth table, Circuit diagram, universal property of NAND and NOR gates.	T1 : Chap 6
29-32	Boolean Algebra	Boolean operation, logic expressing, rules and laws of Boolean algebra,	T1 : Chap 6
32-36	Simplification & K-Map	Demorgan's theorems, simplification of Boolean expression using Boolean algebra techniques, Karnaugh map techniques	R1 : 1.4
37 -40	Combinational & Sequential Circuits	Half adder, Full adder, Multiplexer, Flip-Flops, Registers, Shift registers, counters	R1 : 1.5-1.7

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Test 1	60 Minutes	16	13-02-2024	1-15	CB
Test 2	60 Minutes	17	12-03-2024	16- 23	OB
Test 3	60 Minutes	17	16-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	22-05-2024	1- 40	CB

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Date: 07/01/2024

Dr.BHARATI PATEL
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA125	Web Technologies	3	0	3

Instructor-in-charge: Mr.NAVEEN KUMAR VAISHNAV

Scope & Objective of the Course:

After successful completion of the course student will be able to:

1. Understand the basics involved in publishing content on the World Wide Web. This includes the „language of the Web“ – HTML, the fundamentals of how the Internet and the Web function, a basic understanding of graphic production with a specific stress on creating graphics for the Web.
2. Understand a general grounding introduction to more advanced topics such as programming and scripting.
3. Expose to the basic tools and applications used in Web publishing.

Textbook T1	Deitel, Deitel, Goldberg, "Internet & World Wide Web How to Program", Third Edition, Pearson Education, 2006.
Reference books R1	Achyut Godbole, Atul Kahate "Web Technologies: TCP/IP, Web/Java Programming, and Cloud Computing", Third Edition, McGraw Hill Education.
R2	Raj Kamal, "Internet and Web Technologies", Tata McGraw-Hill. 4.
NPTEL	https://nptel.ac.in/courses/106/105/106105084/
SWAYAM	https://onlinecourses.swayam2.ac.in/nou20_cs05/preview

Lecture-wise-plan:

Lecture	Learning Objective	Topics to be covered	Reference (chapters)
1-2	Internet Concept:	Fundamental of Web, History o Web, Web developmentoverview, Domain Name System (DNS)	T1: 1.5-1.6

Lecture	Learning Objective	Topics to be covered	Reference (chapters)
3-4	Functionality of Internet	DHCP and SMTP and other servers ,Internet serviceprovider (ISP), Concept of IP Address,	T1: 1.8, 2.1
5-6	Protocols and Components of internet	Internet Protocol, TCP/IP Architecture, Web Browser and Web Server.	T1: 2.1, 2.7
7-10	HTML and DHTML	HTML Tag, Rules of HTML, Text Formatting and Style, List, Adding Graphics to Html Document,	T1: 4.1- 4.9
11-15	HTML Tables and Frames	Tables and Layout , Linking Documents, Frame, Forms, Project in HTML	T1: 4.10 - 4.11
16-20	DHTML & CSS	Introduction to DHTML, CSS, Class and DIV, External Style Sheet.	T1: 5.1 - 5.8
21-24	Java Script	JavaScript(JS) in Web Page, Advantage of JavaScript ,JS object model and hierarchy	T1: 6.1 – 6.5
25-28	Java Script Functions	JS Function, Client side JS Vs. Server side JS, JS security,	T1: 9.1 – 9.11
29-33	PHP	PHP Syntax, Variables, Data Types , Strings, Constants, Operators, Control structure, Functions, Array, PHP Forms, Forms Handling	R1: 8.1- 8.6
34-38	PHP Connectivity	Working with PHP and MySQL, Connecting to Database, Creating, Selecting, Deleting, Updating Records in a table, Inserting Multiple Data	R1: 8.7- 8.9
39-40	Latest Technologies	Introduction to CodeIgniter, Laravel, Wordpress etc.	Refer Google & Follow Instructor in Charge

Evaluation Scheme:

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Test 1	60 Minutes	16	14-02-2024	1-15	CB
Test 2	60 Minutes	17	13-03-2024	16- 23	OB
Test 3	60 Minutes	17	18-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	24-05-2024	1- 40	CB

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General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 07/01/2024

**Mr.NAVEEN KUMAR VAISHNAV
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA126	Object Oriented Programming	3	0	3

Instructor-in-charge: Mr.ASHISH KUMBHARE

Learning Outcomes:

After successful completion of the course student will be able to

1. Isolate and fix common errors in C++ programs
2. Manipulate various C/C++ Data types, such as arrays, strings, and pointers
3. Use memory appropriately, including proper allocation/deallocation procedures
4. Apply object-oriented approaches to software problems in C++
5. Understand and use the basic programming constructs of C/C++
6. Write small-scale C++ programs using the above skills

Text Book T1	E. Balagurusamy – Object Oriented Programming with C++, Fifth edition, Tata McGraw Education Hill, 2011.
Text Book T2	Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India
Reference Book(s) R1	Herbert Schildt , The complete reference C++Fourth Edition Tata McGraw- Hill

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)R1
1	To learn the OOPs fundamentals	What is OOPs? Procedure Oriented Programming vs. Object Oriented Programming.	255
2-4	To learn the OOP's principles	Abstraction Encapsulation, Polymorphism and Inheritance	257-260

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)R1
5-7	To learn about Classes and Objects	Objects and Instances Class Members	289
8-9	To know about Language Constructs	Programming basics, data type, loops and decisions, Control statements	70-88
10-13	To Learn about Class Member functions and Objects	Classes and Member functions Constructors and destructors	289-324
14-16	To learn about Strings Objects	Creation and Manipulation of Strings String I/O	683-693
17-19	To define and use operators for user defined types	Operator Overloading and multiple overloading with type conversion	384-414
20-23	To learn about Inheritance	Class Single and Multiple Inheritance,	417-425
24-25	To learn about Inheritance	Member Specifiers Derived classes	426-430
26-29	To learn about Polymorphism and need and importance of Virtual Functions	Virtual Function, function call binding, late binding	444-447
30-32	To learn about Polymorphism and need and importance of Virtual Functions	Friend and static function, this operator	332,310-315,297-302
33-34	To learn about handling the file Object	Creating and Manipulating File and Streams	488
35-36	To learn about handling the file Object	Mechanism, try, throw and catch	494

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)R1
37-38	To learn about handling the file Object	Catching all Exceptions, Multiple catches	495
39-42	To learn about handling the file Object	Programs related to exception handling	506

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Test 1	60 Minutes	16	13-02-2024	1-10	CB
Test 2	60 Minutes	17	12-03-2024	11- 24	OB
Test 3	60 Minutes	17	16-04-2024	25- 42	CB
Presentations/Assignments/	Continuous	10	**	**	**
Comprehensive Exam	3 Hours	40	20-05-2024	1- 42	CB

** To be announced in the class OB* = Open Book Exam CB = Closed Book Exam

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General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc.

Date: 07/01/2024

Mr.ASHISH KUMBHARE
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
EGL121	English Language Skills II	3	0	3

Instructor-in-charge: Dr.SHUBHRA TIWARI

Learning Outcomes:

After successful completion of the course student will be able to

1. Understand and speak English
2. Write correct English.
3. Write effective formal letters
4. Participate in Group discussion and put their points effectively.
5. Understand and develop a liking for learning English

Text Books T1	English Language Skills-II by Aruna Koneru
Reference books R1	English Language Skills-I by Aruna Koneru
Reference Book R2	Wren & Martin
Reference Book R3	Soft Skills- K.Alex

Lecture-wise-plan:

Lecture Nos	Learning Objective	Topics to be covered	Reference
1	Learning to pronounce words	Word Accent,	R1, R2, R3
2		Word Accent,	R1, R2, R3
3,4,5,6	Learning to read sentences correctly	Sentence Accent	R1, R2, R3

Lecture Nos	Learning Objective	Topics to be covered	Reference
7,8,	Learning to participate in debate	Effective Speech, Debate	R1, R2, R3
9,10,11	Learning discussion strategy	Group Discussion	R1, R2, R3
12,13,14,15,16	Learning writing skills	Writing Paragraphs, Note Making, Precis writing and Summary writing.	R1, R2, R3
17,18,19,20,21	Mastering formal communication	Enquiries and Quotation letters, Orders and acknowledgement letters, Complaint and adjustment letter, Sales letter and circulars.	R1, R2, R3
22	Learning correct English	Learning Spelling,	R1, R2, R3
23		Punctuation,	R1, R2, R3
24		Common Error in English	R1, R2, R3
25	Learning to master English	English for competitive examination (For written test & interview skill	R1, R2, R3
26-40	Practical sessions (presentation & participation)	Students practical for practicing debate, group discussion, presentation, writing effective letters	Practical session

Class Room Practical:

S.No	Name of the Practical
1	Debate, Group Discussion & Presentation
2	Preparation and presentation on subject based and current topic
3	Writing practice for formal communication

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Test 2	60 Minutes	17	11-03-2024	16- 23	OB
Test 3	60 Minutes	17	15-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	16-05-2024	1- 40	CB

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Date: 06/01/2024

Dr.SHUBHRA TIWARI
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
MATH123	Mathematics II	3	0	3

Instructor-in-charge: Dr.ANIMESH KUMAR SHARMA

Scope & Objective of the course:

The Course is designed to provide basic concepts of Linear Algebra and an introduction to the theory of functions of a complex variable.

Textbook(s) T1	Higher Engineering Mathematics, B.S. Grewal, J.S. Grewal, J.K. Dhanoa, Khanna Publishers, 44 th Edition, 2017
Reference Book(s) R1	Complex Variables and Applications, J. W. Brown, R. V. Churchill, McGraw-Hill, 7th Ed, 2003.
Reference Book(s) R2	Complex analysis for Mathematics & Engineering, John H. Mathews & Russel W. Howell, Jones & Bartlett Publishers, 2001.

Lecture-wise-plan:

Lecture No.	Learning Objective	Topics to be covered	Reference (Ch/Sec/Pg Nos of Text Book)
1-4	To understand algebraic and geometric properties of complex numbers	Differential Equations, Complex Numbers, argand Plane, Demoivre's theorem, Roots of complex number	639-642, 647-650, 651-653 (T1)
5-7	To learn the concept of a function of a complex variable and the properties of complex function	Complex Functions, Exponential function of a complex variable, circular functions, Hyperbolic functions,	656-661(T1)

Lecture No.	Learning Objective	Topics to be covered	Reference (Ch/Sec/Pg Nos of Text Book)
8-10		Real and Imaginary parts of circular and hyperbolic functions, Logarithmic function of a complex variable, Summation of series 'C+iS' method	662-669
11-13	Calculus of Complex functions	Limit of a complex function ,derivative of $f(z)$, C-R equations	672-674
14-17	To learn the concept of Riemann Sphere, C-R equations and harmonic	Analytic functions, Harmonic functions, Orthogonal system, Milne-Thomson's Method	674-684
18-21	To learn the concepts of integrals and anti-derivatives of complex valued functions of a single variable	Complex integrations, (line integrals), Cauchy theorem, Cauchy Integral Formula(Without proof)	694-700
22-24	To understand the form of Taylor's and Laurent series for an analytic function of a complex variable	Taylor's and Laurent series, Zero's of analytic function	704-710
25-28	Develop the skill to find the residues, poles and zeros of analytic functions	Residues, Residue theorem, Poles of analytic Functions	710-715
29-31	Evaluation of certain types of definite and improper integrals using the theory of residues	Application of residues, Evaluation of real definite integrals	716-722
32-33	To learn theory of equations	General properties, Intermediate value property, Descarte's rule of signs, Relation between roots and coefficients	1-5

Lecture No.	Learning Objective	Topics to be covered	Reference (Ch/Sec/Pg Nos of Text Book)
34-36	Develop the skill to find various kind of roots	Transformation of equations, Reciprocal equations	5-8
37-41	Solution of Cubic and Bi-quadratic equations	Cardon's method, Ferrari's method	9-15

Evaluation Scheme:

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Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	14-02-2024	1-15	CB
Test 2	60 Minutes	17	13-03-2024	16- 23	OB
Test 3	60 Minutes	17	18-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	27-05-2024	1- 40	CB

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Date: 07/01/2024

**Dr.ANIMESH KUMAR SHARMA
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA221	Software Engineering	3	0	3

Instructor-in-charge: Ms.SNEHAL YADAV

Scope and Objective of the Course:

1. Student will learn to apply fundamental software engineering concepts, design, analysis and testing methodologies while incorporating the software engineering quality metrics to produce high quality correct software in a scheduled amount of time
2. Students will learn object-oriented methodologies for proving programs are correct and methods of testing programs to demonstrate correctness.
3. Students will learn to use the Unified Modeling Language (UML) programming to achieve course goals.

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.ofText Book)
1-2	Key concepts, software characteristics	Introduction	Chapter 1 (T1)
3-4	Generic framework activities, agility	Generic View of Process	Chapter 2 (T1)
5-7	Perspective models, RAD, spiral model	Process models	Chapter 3 (T1)
8-9	Philosophy & a set of guidelines	An agile view of process	Chapter 4 (T1)
10-12	Practice encompasses the technical activities	Software Engineering Practice	Chapter 5 (T1)
13-15	It provides with a solid approach for addressing requirements challenges	Requirements Engineering	Chapter 7 (T1)

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.ofText Book)
16-18	Diagrammatic forms, provides view of one or more model elements	Analysis Modeling	Chapter 8 (T1 & R1)
19-21	Design is the place where software quality is established	Design Engineering	Chapter 9 (T1 & R1)
22-25	The preliminary blue print from which software is constructed	Architectural Engineering	Chapter 10(T1 & R1)
26-28	Design guide lines for avoiding errors as procedural design evolves	Component level Design	Chapter 11(T1 & R1)
29-31	User scenarios will be created and screen layouts will be developed	User Interface Design	Chapter 12(T1 & R1)
32-34	Different strategies for testing software.	Testing Strategies	Chapter 13 (T1)
35-37	Software Maintenance	Characteristics of Software management, types of maintenance, Software reverse Engineering	
38-40	Estimation	Estimation of Maintenance Cost. Emerging trends and various tools.	

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Test 1	60 Minutes	16	12-02-2024	1-10	CB
Test 2	60 Minutes	17	11-03-2024	11- 24	OB
Test 3	60 Minutes	17	15-04-2024	25- 40	CB
Presentations/Assignments/	Continuous	10	**	**	**
Comprehensive Exam	3 Hours	40	16-05-2024	1- 40	CB

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Date: 07/01/2024

**Mrs.SNEHAL YADAV
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA223	Operating Systems	3	0	3

Instructor-in-charge: Dr.PALAK KESHWANI

Learning Outcomes:

After Successful completion of the course student will be able to:

1. To understand the basic concepts and functions of operating systems
2. To understand process and Threads
3. To analyze Scheduling algorithms.
4. To understand the concept of Deadlocks
5. To analyze various memory management schemes
6. To understand I/O management and File systems.

Text Book T1)	Operating System Concepts, Silberschatz, A and Galvin, P.B 7 th edition, Addison, Wesley, 1998
Text Book T2	Operating Systems- A Concept bases approach, Dhamdhare D.M. 2 nd edition TMH 2006
Reference Book (R1)	Operating Systems, Stallings W, 4 th edition, PHI, 2001
Reference Book R2	The design of the Unix Operating System, Bach, M.J PHI, 1986
Reference Book R3	Modern Operating System, Tanenbaum, A.S PHI 1996
NPTEL	https://nptel.ac.in/courses/106/105/106105214/

Lecture wise Plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.of Text Book)
1	To understand operating system, functions and its types	Overview	T1 CH-1
2		Operation System objectives and functions	T1 CH-1
3		The Evolution of operating Systems	T1 CH-1
4		Batch, interactive time sharing and real time systems	T1 CH-1
5		Operating System Structure, operating system service,	T1 CH-3
6	To understand the concept of process and its various states	Process overview (State, PCB)	T1 CH-4
7-8		Process Scheduling	T1 CH-4
9		Threads	T1 CH-5
10		Inter ProcessCommunication(IPC)	T1 CH-5
11	To know what is scheduling and its importance	CPU cheduling Overview	T1 CH-6
12-13		Scheduling Algorithms	T1 CH-6
14	To understand the problem of Critical Section and its solution	Critical Section Problem	T1 CH-7
15		Multi Process Solution	T1 CH-7
16		Semaphores	T1 CH-7
17		Classical Problems of Synchronization	T1 CH-7
18-20	To know what is deadlock and its handling	Deadlock Handling	T1 CH-8
21	To understand various memory management schemes and their relative advantages and disadvantages	Memory Management Overview	T1 CH-9
22-23		Paging	T1 CH-9
24		Segmentation	T1 CH-9
25		Segmentation with Paging	T1 CH-9
26		Virtual Memory	T1 CH-10

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.of Text Book)
27		Demand Paging	T1 CH-10
28		Page Replacement	T1 CH-10
29		Page Replacement Algorithms	T1 CH-10
30		Thrashing	T1 CH-10
31	To understand concept of files and brief introduction to distributive O.S	File Operations	T1 CH-11
32-33		Directory and File system Structure	T1 CH-11
34-35		Allocation Methods,	T1 CH-12
36-38		Disk Scheduling	T1 CH-12
39-40		Types, features and uses of distributive O.S	T1 CH-12

Evaluation Scheme:

Student evaluation is based on the series of Tests and Quizzes conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec. No.)	Remarks
Test 1	60 Minutes	16	13-02-2024	1-10	CB
Test 2	60 Minutes	17	12-03-2024	11- 24	OB
Test 3	60 Minutes	17	16-04-2024	25- 40	CB
Presentations/Assignments/	Continuous	10	**	**	**
Comprehensive Exam	3 Hours	40	22-05-2024	1- 40	CB

** To be announced in the class OB* = Open Book Exam CB = Closed Book Exam

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only However prior and proper intimation to the competent authority is required.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc.

Date: 08/01/2024

Dr.PALAK KESHWANI
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA224	Java Programming	3	0	3

Instructor-in-charge: Dr.PALAK KESHWANI

Scope & Objective of the course:

The course exposes the concepts of object-oriented programming. It also covers the fundamental programming aspects of Java. It includes a 'practical' content as well as weightage for the same in evaluation.

Text Book(s) T1	An Introduction to Object-Oriented Programming with Java, C Thomas Wu, TMH, 2006.
Reference Book(s) R1	The Complete Reference Java J2SE, Herbert Schildt, 5th Edition, TMH, 2005
Reference Books R2	Programming with Java: A Primer, E Balagurusamy, 2nd Edition, TMH, 2006.
Reference Books R3	Core Java 2: Volume I- Fundamentals, Cay S. Horstmann, Gary Cornel, 7th Edition, Pearson Education, 2004.

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.of Text Book)
1	Introduction to OOPs	Classes, Objects, Messages, Methods, Data values, Inheritance, software engineering life cycle	Chapter1 of T1
2-3	Getting Started with Java	First Java program, program components, Edit-Compile-Run cycle	Chapter2 of T1

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.of Text Book)
4-5	Handling Numerical Data	Variables, Expressions, Constants, Math class	Chapter3 of T1
6-8	Defining your own class	Defining & using a class, arguments¶meters, Passing objectsto a method, Constructors, Information hiding	Chapter4 of T1
9-10	Concept of Constructors	Returning an Object from a Method, Overloaded Methods & Constructors, Class variables and Methods	Chapter7 of T1
11-14	Exceptions and Assertions	Catching exceptions, Propagating exceptions, Assertions	Chapter 8 of T1
15-18	Multithreading	Java thread model, creating a thread, synchronization.	Chapter 11 of R1
19-20	Characters and Strings	Characters, Strings, Pattern Matching & Regular Expression, Comparing Strings	Chapter 9 of T1
21-24	Arrays	Basics, Arrays of objects, Passing Arrays to Methods	Chapter 10 of T1
25-28	Sorting & Searching	Searching, Sorting, Heapsort	Chapter 11 of T1
29-30	File I/O	Low-level File I/O, High-level File I/O, Object I/O	Chapter 12 of T1
31-35	Inheritance and Polymorphism	Classes with Inheritance, Polymorphism, Inheritance & Member Accessibility, Inheritance & Constructors	Chapter 13 of T1
36-40	Event Driven Programming, Applet Programming	Delegation-based event model, AWT classes, applet programming	Chapter 14 of T1 & Chapter 14 of R2

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	13-02-2024	1-15	CB
Test 2	60 Minutes	17	12-03-2024	16- 23	OB
Test 3	60 Minutes	17	16-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	22-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 06/01/2024

Dr.PALAK KESHWANI
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA225	Computer Graphics	3	0	3

Instructor-in-charge: Ms.DIVYA SONI

Learning Objective:

After successful completion of the course student will be able to:

1. Understand the concepts of computer graphics through theoretical, algorithmic and advanced modelling aspects along with, applications in 3D graphics and visualization in 3D.
2. To apply the concepts and techniques to various problem domain and visualization of data-sets and processes.

Textbook(s) TI	Computer Graphics, James D. Foley, A. Van Dam, S.K. Ferrier, and J.F. Hughes, Principles and Practice, 2nd Edition in C, Addison-Wesley , 1996.
Reference Book(s) R1	Mathematical Elements of Computer Graphics, Rogers B. McGraw Hill, 1989.
Reference Book R2	Computer Graphics, D.Hearn and M.P Baker, PHI, 1994
Reference Book R3	Introduction to Computer Graphics, N Krishnamurthy, 1st Edition, TMH, 2002.

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
01-02	What, Why & Where about Graphics,	Overview of graphics systems — What, Why & Where about Graphics, Hardware & Software, Input & Output Technology, Mathematical complexity involved -	Ch 1 Ch 4

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
		Demonstration through some examples	
03-05	Algorithms for Drawing 2D objects Line, Circle & Ellipse.	Raster Graphics Algorithms for Drawing 2D objects: Line, Circle & Ellipse.	Ch 3
06-10	Manipulation of objects	Introduction to 2D & 3D Geometry, Scaling, Translation, Rotation, Shear, Reflection, Projection and Composite Transformations	Ch 5
11-13	Mapping of 2D from world to screen	Viewing & Clipping in 2D (Cohen's and Parametric Line Methods)	Ch 5 Ch 3
14-17	Mapping of 3D from world to screen	Viewing & Clipping in 3D (Perspective & Parallel projection, Clipping against a Canonical View Volume, Clipping in Homogeneous Coordinates, and Mapping into a Viewport	Ch 6
18-22	Drawing Smooth Curves & Surfaces	Hermit ,Bezier, Continuities, B-spline Curves, Parametric Bi Cubic Surfaces, Quadric Surfaces	Ch 11
23-27	Representation of Solid objects	Solid Modeling (Representations, Operations, Geometry, and Interface)	Ch 12
28-31	Detection of hidden portions	Visible Surface Detection (Need & Algorithms, Ray Tracing) and Hidden Line elimination	Ch 15
32-35	How to shade surfaces and solids	Rendering (Models, Physics, Shading Polygons & Surface, & Shadows)	Ch 16

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
36-40	How to show graphics in motion	Animation (Languages, Techniques, Control, Basic Rules & Problems)	Ch 21

List of Programs

1. Write a program to draw a line using DDA algorithm.
2. Write a program to draw a line using Bresenham's algorithm.
3. Write a program to draw a circle using midpoint algorithm.
4. Write a program to draw a circle by normal formula.
5. Write a program to draw a circle using Bresenham's algorithm.
6. Write a program to perform 2D Transformations on a line.
7. Write a program for performing the basic 2D transformations such as translation, Scaling, Rotation, shearing and reflection for a given 2D object.
8. Write a program for performing the basic transformations such as translation, Scaling, Rotation for a given 3D object?
9. Write a program to draw a cube using in build library function and perform 3D transformations
i) Translations in x, y, z directions
ii) Rotation by angle 450 about z axis, rotation by 600

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	14-02-2024	1-15	CB
Test 2	60 Minutes	17	13-03-2024	16- 23	OB
Test 3	60 Minutes	17	18-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	24-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 06/01/2024

**Ms.DIVYA SONI
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
EGL226	Technical Report Writing	3	0	3

Instructor-in-charge: Dr.SHUBHRA TIWARI

Learning Outcomes:

After successful completion of the course student will be able to

1. Understand the concept, importance and types of technical written communication.
2. Learn the usage of effective technical report writing and draw benefit from it.
3. Explore skills and ability to develop career in technical writing.
4. Understanding the application of various technical reports writing.
5. Nuances, legal aspects and ethics in technical writing.

Reference Books R1	Technical Report Writing by Kieran Morgan
Reference Books R2	Managing Your Documentation Projects by JoAnn T Hackos
Reference Books R3	The Insider's Guide to Technical Report Writing by Krista Van Laan
Reference Books R4	Technical Report Writing and Research Methodology (English, Paperback, Dr. Naushad Alam, Dr. Quadri Javeed Ahmad Peer, Dr. Banarsi Lal)

Lecture-wise-plan:

Lecture Nos	Learning Objective	Topics to be covered	Reference
1	Understanding technical comm	Technical report Writing - Definition & Purpose	“Chapter 1 - Introduction to Technical Writing” in “Open Technical Communication” on Open ALG (manifoldapp.org)
2-3	Nature of technical comm	Characteristics of Technical report writing	https://alg.manifoldapp.org/read/open-technical-

Lecture Nos	Learning Objective	Topics to be covered	Reference
			communication/section/0debb16b-f623-4033-a47b-973d65ab0961
4	Focused technical comm	Qualities of good technical report	Microsoft Word - The qualities of a good technical report..doc (tamu.edu)
5	Rhetorical awareness	Rhetorical Awareness in Tech Comm	1.3 Understanding the Rhetorical Situation – Technical Writing Essentials (bccampus.ca)
6-7	Correctness of technical comm	Legal & Ethical Communication	“Chapter 3 - Ethics in Technical Communication” in “Open Technical Communication” on OpenALG (manifoldapp.org)
8-9	Understand oral technical comm	Oral & Presentation	“2.12 - Oral Presentations” in “Open Technical Communication” on OpenALG (manifoldapp.org)
10-11	Technical documents- details	Parts/ Components of Tech Documents	Components of a Technical Document Technical Communication Center
12-13	Why is technical comm important?	Description & Importance of Tech Comm	What is the importance of technical report writing? – MVOrganizing
14-15	Detailed rules of technical comm	Implicit & Explicit Rules of Comm: Definition & Examples	“2.14 - Technical Definitions and Descriptions” in “Open Technical Communication” on OpenALG (manifoldapp.org)
16	Know the types of tech documents	Types of Tech Documents	“2.2 - Types of Technical Documents” in “Open Technical Communication” on OpenALG (manifoldapp.org)
17	Understand need of technical comm	Establishing Goals in Tech Writing	SMART Goals for Technical Writers by Kesi Parker Technical Writing is Easy Medium
18-20	Process orientation of	Technical Writing Process: Pre-writing,	https://study.com/academy/lesson/the-technical-writing-process-prewriting-writing-rewriting.html

Lecture Nos	Learning Objective	Topics to be covered	Reference
	technical comm	Writing and Re-writing	
21	Practical presentation	Project Work & Presentation	Practical session
22-23	Process orientation of technical comm	Technical re-writing & Editing	Ten Best Practices for Technical Writing and Editing PerfectIt™ Proofreading Software for Professionals. (intelligentediting.com)
24	Technical writing - user orientation	Usability Testing & Tech Writing	Usability Testing Usability.gov
25	Usage of reusables in tech writing	Prototypes & Wireframes	A Comprehensive Guide To Wire framing And Prototyping — Smashing Magazine
26	Understand types of tech reports	Formal & Informal Tech Reports	“2.2 - Types of Technical Documents” in “Open Technical Communication” on OpenALG (manifoldapp.org)
27-29	Practical presentation	Project Work & Presentation	Practical session
30-31	Understand business reports	Business Reports & Proposals	“2.3 - Business Plans” in “Open Technical Communication” on OpenALG (manifoldapp.org)
32	Tech writing- customer orientation	Technical Correspondence	“2.1 - Business Correspondence and Resumes” in “Open Technical Communication” on OpenALG (manifoldapp.org)
33-34	Tech writing- resumes/ cover letters	Writing Resumes & Cover Letters	“2.1 - Business Correspondence and Resumes” in “Open Technical Communication” on OpenALG (manifoldapp.org)

Lecture Nos	Learning Objective	Topics to be covered	Reference
35-38	Types of tech documents	Technical Instructions, Manual Writing, Proposal Writing	“2.6 - Instructions” in “Open Technical Communication” on OpenALG (manifoldapp.org)
39-40	Practical presentation	Project Work & Presentation	Practical session

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	14-02-2024	1-15	CB
Test 2	60 Minutes	17	13-03-2024	16- 23	OB
Test 3	60 Minutes	17	18-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	27-05-2024	1- 40	CB

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Date: 07/01/2024

Dr.SHUBHRA TIWARI
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
MATH222	Operations Research	3	0	3

Instructor-in-charge: Mr. HEMANT KUMAR DEWANGAN

Learning Outcomes:

After successful completion of the course student will be able to:

1. Identify and develop operational research models from the verbal description of the real system.
2. Understand the mathematical tools that are needed to solve optimization problems.
3. Use mathematical software to solve the proposed models.
4. Develop a report that describes the model and the solving technique, analyze the results and propose recommendations in language understandable to the decision-making processes in Management Engineering.
5. Learn the concepts, models, tools and techniques, to manage operations in manufacturing and service organizations.

Textbook T1	Sharma, SD Operations Research, Kedar Nath Ram Nath and Co (15 Edition), 2010
Reference Book R1	Taha H.A Operations Research An Introduction” Prentice Hall, (7 th Edition), 2002
Reference Book R2	Hiller, F.S Lieberman, G.J Nag, B.Basu, P. Introduction to Operations Research” McGraw Hill (10 th Edition), 2017
Reference Book R3	Operations Mangement, FED Unoi
Reference Book R4	Ravindran, a Philips, D.T and Solberg, J.J, Operation Research Principles and Practice John Willey and Sons, 2 nd Edition
Reference Book R5	Operation Mangaement, Lee J Krajweski and Larry P.Ritzman
Reference Book R6	Operation Management, Russel and Tyalor, 4 th Edition
Swayam Link	https://onlinecourses.swayam2.ac.in/cec20_ma10/preview

Lecture-wise-plan:

Lecture No.	Learning objectives	Topics to be covered	Refer to Chapter, See (Book)
1	Linear Programming Problem	Mathematical Formulation of LPP	T1, Unit-2, ch-3, pg.3-26
2		Graphical Method for Solving LPP	T1, Unit-2, ch-3, pg.26-53
3		Simplex Method for Solving LPP and Big-M Method	T1, Unit-2, ch-5, pg.67-95
4		Some Special Cases in LPP	T1, Unit-2, ch-5, pg.95-125
5		Duality, and Solving LPP using Duality in Simplex Method	T1, Unit-2, ch-7, pg.158-203
6	Transportation	Mathematical Formulation of LPP	T1, Unit-2, ch-11, pg.262-267
7		Initial BFS of Transportation Problem	T1, Unit-2, ch-11, pg.269-278
8		Optimality Test by Stepping Stone Method and, and	T1, Unit-2, ch-11, pg.278-351
9		MODI Method	T1, Unit-2, ch-11, pg.278-351
10		Some Special Cases of Transportation Problem	T1, Unit-2, ch-11, pg.278-351
11	Assignment	Initial BFS of Assignment Problem	T1, Unit-2, ch-12, pg.352-353
12		Johnson's job of sequencing rules	T1, Unit-2, ch-12, pg.353-403
13		Solution by Hungarian Method, and Travelling Salesman Problem	T1, Unit-2, ch-12, pg.353-403
14	Game Theory	Basic Concept and Terminologies	T1, Unit-4, ch-19, pg.3-5
15		Two-person Zero-sum Game, and Game with Pure and Mixed Strategies	T1, Unit-4, ch-19, pg.20-61

Lecture No.	Learning objectives	Topics to be covered	Refer to Chapter, See (Book)
16		Dominance Principle, Arithmetic Method, and Graphical Method for Solving $(2 \times n)$ Game	T1, Unit-4, ch-19, pg.20-61
17		Graphical Method for Solving $(m \times 2)$ Game and Solution of Game by Simplex Method	T1, Unit-4, ch-19, pg.20-61
18	Job Sequencing	Basic Terminologies and Assumptions of Job Sequencing	T1, Unit-4, ch-24, pg.299-300
19		Processing of n Jobs through 2 and 3 Machines	T1, Unit-4, ch-24, pg.300-315
20		Processing n Jobs through m Machines, and Processing 2 Jobs through m Machines - Graphical	T1, Unit-4, ch-24, pg.300-315
21	Inventory Theory	Economic Order Quantity and EOQ Models without Shortage	T1, Unit-4, ch-20, pg.62-71
22		EOQ models with Shortage and EPQ Models with/without Shortages	T1, Unit-4, ch-20, pg.72-100
23		Newsboy Problem and Probabilistic Inventory Model with Instantaneous Demand and No Set up Cost	T1, Unit-4, ch-21, pg.143-172
24		Probabilistic Inventory Model with Uniform Demand and No Set up Cost, and Buffer Stock in Probabilistic Inventory Model	T1, Unit-4, ch-21, pg.143-172
25		Problems regarding different models	T1, Unit-4, ch-21, pg.173-175
26	Queuing Theory	Basic Characteristics of Queuing System and Probability Distribution of Arrivals	T1, Unit-4, ch-23, pg.215-229
27		Probability Distribution of Departures and Model I $(M M 1):(\infty FCFS)$	T1, Unit-4, ch-23, pg.230-231
28		Model I. (General): $(M M 1):(\infty FCFS)$, and Model II. $(M M 1):(N FCFS)$	T1, Unit-4, ch-23, pg.232-257

Lecture No.	Learning objectives	Topics to be covered	Refer to Chapter, See (Book)
29		Model III - (M M s): (∞ FCFS), and Model IV - (M Ek 1): (∞ FCFS)	T1, Unit-4, ch-23, pg.258-268
30	Network Analysis	Networking Model	T1, Unit-4, ch-25, pg.316-322
31		Critical Path Method (CPM)	T1, Unit-4, ch-25, pg.323-349
32		Program Evaluation & Retention Technique (PERT)	T1, Unit-4, ch-25, pg.349-382
33		Project Crashing	T1, Unit-4, ch-25, pg.349-382
34		LP and Dual LP Solutions to Network Problem	T1, Unit-4, ch-25, pg.349-382
35		Dynamic Programming	Basic Concept and Terminology, and Dynamic Programming Models I and II
36	DP Model III, Solution of Discrete DP Problem and Solution of LPP by DP		T1, Unit-5, ch-33, pg.82
37-38	Supply Chain Management	Introduction, Business Drivers in Supply Chain performance	R3, ch-16, pg.217-232
39-40	Just-In-Time (JIT) Manufacturing System	Introduction, The Concept of the JIT System	R3, ch-18, pg.253-261

Evaluation Scheme:

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Evaluation Component	Duration	Weightage	Date	Syllabus (Lec. No.)	Remarks
Test 1	60 Minutes	16	12-02-2024	1-10	CB
Test 2	60 Minutes	17	11-03-2024	11- 24	OB
Test 3	60 Minutes	17	15-04-2024	25- 40	CB
Presentations/Assignments/	Continuous	10	**	**	**
Comprehensive Exam	3 Hours	40	18-05-2024	1- 40	CB

** To be announced in the class OB* = Open Book Exam CB = Closed Book Exam

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only However prior and proper intimation to the competent authority is required.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc.

Date: 10/01/2024

**Mr.HEMANT KUMAR DEWANGAN
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA321	ASP. Net	3	0	3

Instructor-in-charge: Dr.PINKEY CHAUHAN

The learning objectives of this course are to:

1. Gain a thorough understanding of the philosophy and architecture of Web applications using ASP.NET
2. Acquire a working knowledge of Web application development using Web Forms and Visual Studio 2008
3. Optimize an ASP.NET Web application using configuration, security, and caching
4. Access databases using ADO.NET and LINQ
5. More recent ASP .NET features
6. Implement rich client applications using ASP.NET AJAX
7. Customize Web applications through the use of HTTP handlers and modules

Text Book T1	C# 6.0 and the .NET 4.6 Framework by Andrew Troelsen and Philip Japikse
Text Book T2	Programming Entity Framework by Julia Lerman
Reference Book(s) R1	Pro ASP.Net MVC 5 (Expert's Voice in ASP.Net)by Adam Freeman

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
1-5	To understand the basics of .NET	Introduction to ASP.NET From ASP to ASP.NET Web Forms Web Services ASP.NET Features	T 1 Ch-1 1.4,1.5, T2,Ch1.6,1.9

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
6-10	To learn the concepts of web form architecture	Web Forms Architecture Page Class Web Forms Life Cycle Web Forms Event Model	T2 Ch-2 2.1,2.4,2.7,2.9
16-20	To learn the concepts of HTTP Class	ASP.NET and HTTP Request/Response Programming Http Request Class HTTP Collections Http Response Class Redirection ,Http Utility Class	T1 Ch-3 3.1,3.7 T2 Ch3 5.6,3.8
21-23	To learn the concepts of web application	Web Applications Using Visual Studio Using Visual Web Developer Visual Studio Forms Designer Using Components Shadow Copying Using the Global.ajax File Data Binding	T1 Ch-4 4.7, 4.4 T2 Ch4 4.8,4.10
24-25	To understand concept of session state	State Management and Web Applications Session State Application State Multithreading Issues, Cookies	T1 Ch-5 5.5,5.9
26-30	To understand concept of server controls	Server Controls HTML Server Controls Web Forms Server Controls Rich Controls Validation Controls User Controls Caching in ASP.NET	T2 Ch-5 5.3,5.7
31-40	To learn the concepts of caching and its uses	What Is Caching Page-Level Caching Page Fragment Caching Optimizing Your ASP.NET Application Caching	T1 Ch-5,Ch6 5.7, 6.4,7.2 T2 Ch6,9,7,4,7,9

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	13-02-2024	1-15	CB
Test 2	60 Minutes	17	12-03-2024	16- 23	OB
Test 3	60 Minutes	17	16-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	20-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 07/01/2024

Dr.PINKEY CHAUHAN
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA402	Ecommerce	3	0	3

Instructor-in-charge: Dr. RAVI KIRAN PATNAIK

Learning Outcome:

After the successful completion of the course, the student shall be able to - :

1. To provide an analytical framework to understand the emerging world of e-commerce
2. To make the learners familiar with current challenges and issues in e-commerce
3. To develop the understanding of the learners towards various business models
4. To enable to understand the Web- based Commerce and equip the learners to assess e-commerce requirements of a business
5. To develop understanding of learners relating to Legal and Regulatory Environment and Security issues of E-commerce

Textbook (s) T1	<ol style="list-style-type: none"> 1. Laudon, Kenneth C. and Carol Guercio Traver (2002) E-commerce: business, technology, society. (New Delhi : Pearson Educatin). 2. Awad, Elias M. (2007), Electronic Commerce: From Vision to Fulfillment (NewDelhi : Pearson Education).
Reference book (s) R1	<ol style="list-style-type: none"> 1. Kamlesh K.Bajaj and Debjani Nag, Ecommerce- the cutting edge of Business, Tata McGrawHill Publications, 2008 2. Kalakota et al, Frontiers of Electronic Commerce, Addison Wesley, 2004 3. E- Commerce Strategies, Technology and applications (David) Tata McGrawHill 4. Introduction to E-commerce (jeffrey) Tata- Mcgrawhill 5. E-Business and Commerce- Strategic Thinking and Practice (Brahm) biztantra

Lecture-wise-plan:

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
1-10	Introduction to Electronic Commerce and Models	<p>Evolution of E-Commerce- Introduction, History/ Evolution of Electronic Commerce, Roadmap of E-Commerce in India, Main activities, Functions and Scope of E-Commerce. Benefits and Challenges of E-Commerce, E-Commerce Business Strategies for Marketing, Sales and Promotions. Business Models of E-Commerce- Characteristics of Business to Business(B2B), Business to Consumers (B2C), Business to Government (B2G) Business to Consumer E-Commerce process, Business to Business E-Commerce- Need and Importance, alternative models of B2B E-Commerce. E-Commerce Sales Product Life Cycle (ESLC) Model</p>	T1
11-20	World Wide Web and E-enterprise	<p>World Wide Web-Reasons for building own website, Benefits of Website, Registering a Domain Name, Role of web site in B2C E-commerce; push and pull approaches; Web site design principles. EDI and paperless trading; Pros & Cons of EDI; Related new technologies use in E-commerce. Applications of E-commerce and E-enterprise - Applications to Customer</p>	T2

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
		<p>Relationship Management- Types of E-CRM, Functional Components of E-CRM.</p> <p>Managing the E-enterprise- Introduction, Managing the E-enterprise, Comparison between Conventional and E-organisation, Organisation of Business in an E-enterprise, Benefits and Limitations of E- enterprise</p>	
21-30	E-marketing and Electronic Payment System	<p>E-Marketing- Scope and Techniques of E-Marketing, Traditional web promotion; Web counters; Web advertisements, Role of Social media.</p> <p>E-Commerce Customer Strategies for Purchasing and support activities, Planning for Electronic Commerce and its initiatives, The pros and cons of online shopping, Justify an Internet business.</p> <p>Electronic Payment System- Characteristics of E-payment system, SET Protocol for credit card payment, prepaid e-payment service, post-paid E-payment system, Types of payment systems.</p> <p>Operational, credit and legal risks of E-payment system, Risk management options for E-payment systems, Set standards / principles for E-payment Marketing, social media Analytical Tools.</p>	T1

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
31-40	Legal and Regulatory Environment and Security issues of E-commerce	Introduction to Cyber Laws- World Scenario, Cyber-crime & Laws in India and their limitations, Hacking, Web Vandals, E-mail Abuse, Software Piracy and Patents. Taxation Issues, Protection of Cyber Consumers in India and CPA 1986, Importance of Electronic Records as Evidence. Security Issues in E-Commerce- Risk management approach to Ecommerce Security - Types and sources of threats, Protecting electronic commerce assets and intellectual property. Security Tools, Clientserver network security, Electronic signature, Encryption and concepts of public and private key infrastructure	T1

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	12-02-2024	1-15	CB
Test 2	60 Minutes	17	11-03-2024	16- 23	OB
Test 3	60 Minutes	17	15-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	16-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 07/01/2024

**Dr.RAVI KIRAN PATNAIK
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA417	Artificial intelligence	3	0	3

Instructor-in-charge: Dr.BHARATI PATEL

Learning Outcomes:

1. Introduce the basic principles of AI towards problem solving, inference, perception, knowledge representation and learning.
2. Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
3. Explore the current scope, potential, limitations, and implications of intelligent systems.
4. To have a basic proficiency in a traditional AI language includes an ability to write simple to intermediate programs and an ability to understand code written in that language.

Textbook (s) T1	Artificial Intelligence by Elaine Rich and Kevin Knight, Tata McGraw Hill.
Reference book (s) R1	Principles of Artificial Intelligence by Nils J.Nilsson, Narosa Publishing house.

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
1-3	Overview & Search Techniques:	Introduction to AI, Problem Solving, State space search,	15-32
4-5	Overview & Search Techniques:	Blind search: Depth first search, Breadth first search,	48-60
6	Overview & Search Techniques:	Informed search: Heuristic function, Hill climbing search.	71-77

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
7-9	Overview & Search Techniques:	Best first search, A* & AO* Search.	81-87
10	Overview & Search Techniques:	Constraint satisfaction, Game tree	88- 95
11-12	Overview & Search Techniques:	Evaluation function, Mini-Max search, Alpha-beta pruning, Games of chance.	135-148
13-15	How to do Knowledge Representation	Introduction to KR, Knowledge agent, Predicate logic	155-159
16-17	How to do Knowledge Representation	WFF, Inference rule & theorem proving forward chaining, backward chaining, resolution	160-190
18	How to do Knowledge Representation	Propositional knowledge, Boolean circuit agents.	200-221
19-20	How to do Knowledge Representation	Rule Based Systems, Forward reasoning	230-241
21-22	How to do Knowledge Representation	Conflict resolution, backward reasoning: Use of Back tracking, Structured KR	317-329
23-24	How to do Knowledge Representation	Semantic Net - slots, inheritance, Frames-exceptions and defaults attached predicates	330-354
25-26	How to do Knowledge Representation	Conceptual Dependency formalism and other knowledge representations.	360-371
27	How to Handling uncertainty & Learning:	Source of uncertainty, Probabilistic inference	373-375

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
28-29	How to Handling uncertainty Learning:	system, Bayesian Belief Network (BBN)	380-386
30	How to Handling uncertainty & Learning	Inference with BBN, Dempster-Shafer Theory	389-405
31-32	How to Handling uncertainty & Learning	Fuzzy Logic, Fuzzy function, Fuzzy measure, Non monotonic reasoning:	410-419
33-34	How to Handling uncertainty & Learning	Dependency directed backtracking, Truth maintenance systems.	420-434
35-36	How to Handling uncertainty & Learning	Learning: Concept of learning, Learning model, learning decision tree, Paradigms of machine learning,	435-447
37-40	How to Handling uncertainty & Learning	Supervised & Unsupervised learning, Example of learning, Learning by induction, Learning using Neural Networks.	448-460

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	12-02-2024	1-15	CB
Test 2	60 Minutes	17	11-03-2024	16- 23	OB
Test 3	60 Minutes	17	15-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	18-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 08/01/2024

Dr.BHARATI PATEL
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA423	Theory of Computation	3	0	3

Instructor-in-charge: Dr.PALAK KESHWANI

Learning Outcomes:

The learning objectives of this course are to:

1. Introduce students to the mathematical foundations of computation including automata theory; the theory of formal languages and grammars; the notions of algorithm, decidability, complexity, and computability.
2. Enhance/develop students' ability to understand and conduct mathematical proofs for computation and algorithms.

Text Book T1	Introduction to Automata Theory Languages, and Computation, by J.E.Hopcroft, R.Motwani & J.D.Ullman (3rd Edition) – Pearson Education
Text Book T2	Theory of Computer Science (Automata Language & Computations), by K.L.Mishra& N. Chandrashekhar, PHI
Reference Book(s) R1	Sipser, M. (2006). <i>Introduction to the Theory of Computation</i> (2 nd ed.). Boston, MA: Thompson Course Technology.

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
1-5	To understand the basics of Automata	Introduction to Automata(Introduction and motivation, infinite sets, proofs, Closures, Alphabets, languages, and representations)	T 1 Ch-1 1.4,1.5,1.6,1.9

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
6-10	To learn the concept of Finite Automata	Finite Automata (Deterministic finite automata, Non-deterministic finite automata, Closure properties and equivalences, Regularity)	T2 Ch-2 2.1,2.2,2.3,2.9
11-15	To learn the concepts of Regular-Expression & DFA	Regular Expressions and Languages,	T1 Ch-3 3.2,3.4 T2 Ch3 3.6,3.8
16-20	To learn the concepts of Regular-Languages	Properties of Regular Languages	T1 Ch-4, 4.5, 4.6 T2 Ch4, 4.8,4.10
21-25	To understand concept of CFG	Context-Free Grammars and Languages	T1 Ch-5 5.7,5.8
26-30	To understand concept of CFG	Applications of Context-Free Grammars	T2 Ch-5 5.4,5.8
31-40	To learn the concepts of PDA and its uses, NP concept	Pushdown Automata Languages of PDA Deterministic Pushdown Automata Properties of Context-Free Languages The complexity class P, The complexity class NP	T1 Ch-5,Ch6 5.9, 6.4,7.1 T2 Ch6 6.8,7.4,7.9

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	13-02-2024	1-15	CB
Test 2	60 Minutes	17	12-03-2024	16- 23	OB
Test 3	60 Minutes	17	16-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	22-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 07/01/2024

Dr.PALAK KESHWANI
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
CA428	Digital Marketing	3	0	3

Instructor-in-charge: Dr.RAVI KIRAN PATNAIK

Learning Outcomes:

After the successful completion of the course, the student shall be able to:

1. Understand digital marketing, importance there of, meaning of web site and levels of website, difference between blog, portal and website.
2. Understand the working of SEO (Search engine optimization) on page optimization, off page optimization, and will learn to prepare reports
3. Learn about SMO (Social media optimization) like Face book, twitter, LinkedIn, Tumblr, Printerest and other social media services optimization.
4. Understand paid tools like google ad words, display advertising techniques
5. Learn and apply hands on experience on tools useful to SEO for analysis on website traffic, keyword analysis and learn email marketing and ad designing.

Textbook (s) T1	Ahuja Vandana Digital Marketing, Oxford University press (2016) ISBN:9780199455447 Sainy Romi, Nargundkar Rajendra Digital Marketing: cases from India, Notion Press (2018) ISBN 9781644291931, 1644291932
Reference book (s) R1	Stephanie Daimond, Author of Facebook Marketing for Dummies, a Wiley brand
Suggested equivalent online courses:	https://onlinecourses.swayam2.ac.in

Lecture-wise-plan:

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
1-10	Learn about the Basics digital marketing	Meaning of Digital Marketing, Differences from	T1

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
		Traditional Marketing, Returns of Investments on Digital Marketing vs. Traditional Marketing, E Commerce, tools used for successful marketing, SWOT Analysis of Business for Digital Marketing, Meaning of Blogs, Websites, Portal and their differences, Visibility, Visitor, Engagement, conversion process, Retention, Performance Evaluation.	
11-20	Learn about the SEO	Search Engine Optimization (SEO): On page optimization techniques, off page optimization Techniques, Preparing Reports, Creating search Campaigns, Creating Display Campaigns.	T2
21-30	Learn about the SMO, SEM and Traffic Analysis	Social Media Optimization (SMO): Introduction to Social Media Marketing, Advanced Facebook Marketing, Word press Blog Creation, Twitter Marketing, LinkedIn Marketing, Instagram Marketing, social media Analytical Tools.	T1
31-35		Search engine Marketing: Meaning and Use of Search Engine Marketing, Tools	T1

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
		used-Pay Per Click, Google Ad words, Display Advertising Techniques, Report Generation	
36-42		Website Traffic Analysis, Affiliate Marketing and Ad Designing: Google Analytics, Online Reputation Management, Email Marketing, Affiliate Marketing, Understanding Ad Words Algorithm, Advertisement Designing	T2

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	14-02-2024	1-15	CB
Test 2	60 Minutes	17	13-3-2024	16- 23	OB
Test 3	60 Minutes	17	18-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	24-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 08/01/2024

Dr.RAVI KIRAN PATNAIK
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
MCA123	Web Technology	3	0	3

Instructor-in-charge: Ms.DIVYA SONI

Learning Outcome:

After successful completion of the course student will be able to:

1. Understand the basics involved in publishing content on the World Wide Web. This includes the ‘language of the Web’ – HTML, the fundamentals of how the Internet and the Web function, a basic understanding of graphic production with a specific stress on creating graphics for the Web.
2. Understand a general grounding introduction to more advanced topics such as programming and scripting.
3. Expose to the basic tools and applications used in Web publishing.

Textbook(s) T1	Deitel, Deitel, Goldberg, "Internet & World Wide Web How to Program", Third Edition, Pearson Education, 2006.
Reference Book(s) R1	Achyut Godbole, Atul Kahate "Web Technologies: TCP/IP, Web/Java Programming, and Cloud Computing", Third Edition, McGraw Hill Education.
Reference Book R2	Raj Kamal, "Internet and Web Technologies", Tata McGraw-Hill. 4.
NPTEL	https://nptel.ac.in/courses/106/105/106105084/
SWAYAM	https://onlinecourses.swayam2.ac.in/nou20_cs05/preview

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
1-3	Internet Concept	Fundamental of Web, History of Web, Web development overview, Domain Name System (DNS),	T1: 1.5-1.6

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
4-6	Functionality of Internet	DHCP, and SMTP and other servers, Internet service provider (ISP), Client-Server Computing	T1: 1.8, 2.1
7-10	Protocols and Components of internet	Internet Protocol, TCP/IP Architecture, Web Browser and Web Server.	T1: 2.1, 2.7
11-14	HTML and DHTML:-	HTMLTag, Rules of HTML, Text Formatting and Style, List, Adding Graphics to Html Document,	T1: 4.1- 4.9
15-17	HTML Tables & Frames	Tables and Layout, Linking Documents, Frame, Forms, Project in HTML,	T1: 4.10 - 4.11
18-21	DHTML & CSS	Introduction to DHTML, CSS, Class and DIV, External Style Sheet.	T1: 5.1 - 5.8
22-25	Java Script	JavaScript(JS) in Webpage, Advantage of JavaScript, JS object model and hierarchy ,Handling event ,Operators and syntax of JS	T1: 6.1 – 6.5
26-27	JS Control statements	Switch, do while, break & continue	T1: 7.1 – 7.7
28-29	Java Script Functions	JS Function, Client side JS Vs Server side JS, Recursion	T1: 9.1 – 9.11
30-31	Document Object Model	Introduction, DOM Node & Tree, dynamic styles	T1: 12.1 – 12.6
32-34	Java Script Events	Event on load, Mouse load, More events	T1: 13.1 – 13.9
35-37	XML	Introduction to XML, XML Namespace, DTD	T1: 14.1 – 14.4

Lecture Nos.	Learning Objective	Topics to be covered	Reference (chapter/sec./Page Nos of Text/Ref. Books)
38-40	Ajax	Introduction, Traditional Web application vs Ajax, XML and DOM	T1: 15.1 – 15.6

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	13-02-2024	1-15	CB
Test 2	60 Minutes	17	12-03-2024	16- 23	OB
Test 3	60 Minutes	17	16-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	20-05-2024	1- 40	CB

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 08/01/2024

**Ms.DIVYA SONI
Instructor-in-charge**

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
MCA123	Software Engineering	3	0	3

Instructor-in-charge: Ms.SNEHAL YADAV

Scope and Objective of the Course:

1. Student will learn to apply fundamental software engineering concepts, design, analysis and testing methodologies while incorporating the software engineering quality metrics to produce high quality correct software in a scheduled amount of time
2. Students will learn object-oriented methodologies for proving programs are correct and methods of testing programs to demonstrate correctness.
3. Students will learn to use the Unified Modeling Language (UML) programming to achieve course goals.

Lecture-wise-plan:

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.ofText Book)
1-2	Key concepts, software characteristics	Introduction	Chapter 1 (T1)
3-4	Generic framework activities, agility	Generic View of Process	Chapter 2 (T1)
5-7	Perspective models, RAD, spiral model	Process models	Chapter 3 (T1)
8-9	Philosophy & a set of guidelines	An agile view of process	Chapter 4 (T1)

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos.ofText Book)
10-12	Practice encompasses the technical activities	Software Engineering Practice	Chapter 5 (T1)
13-15	It provides with a solid approach for addressing requirements challenges	Requirements Engineering	Chapter 7 (T1)
16-18	Diagrammatic forms, provides view of one or more model elements	Analysis Modeling	Chapter 8 (T1 & R1)
19-21	Design is the place where software quality is established	Design Engineering	Chapter 9 (T1 & R1)
22-25	The preliminary blue print from which software is constructed	Architectural Engineering	Chapter 10(T1 & R1)
26-28	Design guide lines for avoiding errors as procedural design evolves	Component level Design	Chapter 11(T1 & R1)
29-31	User scenarios will be created and screen layouts will be developed	User Interface Design	Chapter 12(T1 & R1)
32-34	Different strategies for testing software.	Testing Strategies	Chapter 13 (T1)
35-37	Software Maintenance	Characteristics of Software management, types of maintenance, Software reverse Engineering	
38-40	Estimation	Estimation of Maintenance Cost. Emerging trends and various tools.	

Evaluation Scheme:

Student evaluation is based on the series of Tests and Quizzes conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec. No.)	Remarks
Test 1	60 Minutes	16	12-02-2024	1-10	CB
Test 2	60 Minutes	17	11-03-2024	11- 24	OB
Test 3	60 Minutes	17	15-04-2024	25- 40	CB
Presentations/Assignments/	Continuous	10	**	**	**
Comprehensive Exam	3 Hours	40	16-05-2024	1- 40	CB

** To be announced in the class OB* = Open Book Exam CB = Closed Book Exam

Make-up Policy: Make –up will be given only under genuine circumstances for Tests Only However prior and proper intimation to the competent authority is required.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc.

Date: 07/01/2024

Mrs.SNEHAL YADAV
Instructor-in-charge

The ICFAI University, Raipur
Faculty of Information Technology
Second Semester, 2023-2024
Course Handouts

Course Code	Course Title	L	P	U
MCA125	Artificial Intelligence	3	0	3

Instructor-in-charge: Dr.BHARATI PATEL

Learning Outcomes:

1. Introduce the basic principles of AI towards problem solving, inference, perception, knowledge representation and learning.
2. Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural Networks and other machine learning models.
3. Explore the current scope, potential, limitations, and implications of intelligent systems.
4. To have a basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language.

Textbook (s) T1	Artificial Intelligence by Elaine Rich and Kevin Knight, Tata McGraw Hill.
Reference book (s) R1	Principles of Artificial Intelligence by Nils J.Nilsson, Narosa Publishing house.

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
1-3	Overview & Search Techniques:	Introduction to AI, Problem Solving, State space search,	15-32
4-5	Overview & Search Techniques:	Blind search: Depth first search, Breadth first search,	48-60
6	Overview & Search Techniques:	Informed search: Heuristic function, Hill climbing search.	71-77

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
7-9	Overview & Search Techniques:	Best first search, A* & AO* Search.	81-87
10	Overview & Search Techniques:	Constraint satisfaction, Game tree	88- 95
11-12	Overview & Search Techniques:	Evaluation function, Mini-Max search, Alpha-beta pruning, Games of chance.	135-148
13-15	How to do Knowledge Representation	Introduction to KR, Knowledge agent, Predicate logic	155-159
16-17	How to do Knowledge Representation	WFF, Inference rule & theorem proving forward chaining, backward chaining, resolution	160-190
18	How to do Knowledge Representation	Propositional knowledge, Boolean circuit agents.	200-221
19-20	How to do Knowledge Representation	Rule Based Systems, Forward reasoning	230-241
21-22	How to do Knowledge Representation	Conflict resolution, backward reasoning: Use of Back tracking, Structured KR	317-329
23-24	How to do Knowledge Representation	Semantic Net - slots, inheritance, Frames-exceptions and defaults attached predicates	330-354
25-26	How to do Knowledge Representation	Conceptual Dependency formalism and other knowledge representations.	360-371
27	How to Handling uncertainty Learning:	Source of uncertainty, Probabilistic inference	373-375
28-29	How to Handling uncertainty Learning:	Bayes' theorem Limitation of native Bayesian system, Bayesian Belief Network (BBN)	380-386

Lecture Nos.	Learning objectives	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
30	How to Handling uncertainty & Learning	Inference with BBN, Dumpster-Shafer Theory	389-405
31-32	How to Handling uncertainty & Learning	Fuzzy Logic, Fuzzy function, Fuzzy measure, Non monotonic reasoning:	410-419
33-34	How to Handling uncertainty & Learning	Dependency directed backtracking, Truth Maintenance systems.	420-434
35-36	How to Handling uncertainty & Learning	Learning: Concept of learning, Learning model, learning decision tree, Paradigms of machine learning,	435-447
37-40	How to Handling uncertainty & Learning	Supervised & Unsupervised learning, Example of learning, Learning by induction, Learning using Neural Networks.	448-460

Evaluation Scheme:

Student evaluation is based on the series of Tests and Lab Tests conducted during the course of semester followed by a comprehensive examination.

Evaluation Component	Duration	Weightage	Date	Syllabus (Lec.No.)	Remarks
Test 1	60 Minutes	16	12-02-2024	1-15	CB
Test 2	60 Minutes	17	11-03-2024	16- 23	OB
Test 3	60 Minutes	17	15-04-2024	25- 32	CB
Lab	Throughout the Semester	10	**	---	CB
Comprehensive Exam	3 Hours	40	18-05-2024	1- 40	CB

Make-up Policy: Make-up will be given only under genuine circumstances for Tests Only. However prior and proper intimation to the concerned instructor is must.

General: It shall be the responsibility of individual students to attend all sessions, to take prescribed Assessment Tests, Tests and Comprehensive Examinations, etc

Date: 07/01/2024

Dr.BHARATI PATEL
Instructor-in-charge