# Faculty of Information Technology

## First Semester, 2022 – 23
## Course Handouts

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **EGL 111** | **English Language Skills – I** | **3** | **0** | **3** |

**Instructor-in-charge: Dr. SHUBHRA TIWARI**

| Scope and Objective of the course: |
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| The course aims at familiarizing students with basic English sound system to enhance their power of articulation. It provides intensive practice and extensive exposure to listening, speaking, reading and writing Skills. It would enhance not only their comprehensive knowledge of vocabulary but also strengthens their all four skills. The design and content of the course are aimed at making students gain language proficiency and also improve their communication skills. |

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| **Textbook(s)T1** | English Language Skills- I, Dr. K Aruna, ICFAI Press, 2007 |
| **Work Book W1** | Words are Your Friends-I, Dr. K. Aruna, ICFAI Press, 2007 |
| **Reference Book(s)** | Dictionary - Latest Publication, A.S. Hornby. |
| **R2** | Cambridge English Pronouncing Dictionary, Daniel Jones, Cambridge University Press |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (Ch./Sec./ Page No. ofText Book) |
|---|---|---|---|
| 1 | To know the distinction between lettersand sounds, to know consonant and vowel sounds and to learn someprinciples for pronunciation. | English Sound System<br>Classification of English Sounds | Ch.1 Pg.1-27<br>Ref. book: Dictionary |
| 2-3 | To acquire correct pronunciation of English Sounds.<br>To practice pronunciation of words.<br>To make one's speech nationally and internationally intelligible to the listener.<br>To develop confidence in articulationof sounds. | Description of sounds.<br>Different spellings for the same sound.Syllabus structure.<br>Suggestions of pronunciation. | Chap.1 Ref. book, Dictionary |

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|---|---|---|---|
| 4 | To be aware of silent letters in English Language | Silent Letters | Ch.2 Pg.28 - 34<br>Ref. book:, Dictionary |
| 5-6 | To acquire effective pronunciationTo avoid semantic confusions.<br>To give practice in Vocabulary Expansion | Lessons 1 to 3 and Review - 1 | Work- Book<br>"Words are Your Friends" |
| 7 | To understand the various uses of Dictionary.<br>To learn various methods for clarifyingthe meaning of a word. | Dictionary: Its use | Ch.3 Pg.35-47<br>Ref. book , Dictionary |
| 8-9 | To know various English words.To identify specific uses. | Vocabulary Extension synonyms,antonyms, one world substitutes | Ch.4 Pg.48-64<br>Annexure - B |
| 10 | To be aware of various shades of meaning with accuracy and precision. To acquire competence in analyzing the word and guess the meaning.<br>To do practice in vocabulary expansion. | Vocabulary Extension, Word Formationmethods, world analysis<br>Lessons: 4,5 and 6, Review:2 | Ch.4 Pg.48 - 64<br>Words are your Friends |
| 11-12 | To do practice in using words invarious contexts.<br>To reduce possible errors in usage.To be aware of commonly confused words.<br>To enrich Vocabulary. | Annexure-G Annexure-E Annexure-C, Annexure-D | Work - Book:<br>"Words are your Friends"<br>Pg.251 - 258<br>Pg.241 - 247<br>Pg.226 - 240 |
| 13 | To be aware of relationship expressedby prepositions | Prepositional Phrases | Ch. 5 Pg.65-75 |
| 14-15 | To develop competence in usingidiomatic combinations<br>To know specific uses of Prepositions. | Prepositional Phrases | Ch. 5 Pg.65 - 75 |
| 16 | To learn the use of Phrasal Verbs To know several verb combinationswith distinct meanings. | Phrasal Verbs, separable and inseparablephrasal verbs<br>Phrasal Verbs : Cleanings | Ch.6 Pg.76 - 95 |

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| 17-18 | To know the difference in meaningbetween phrasal Verbs with suitable examples.<br>To do practice in vocabulary Expansion. | Phrasal verbs in oral CommunicationLessons 7,8 and 9 Review - 3 | Ch. 6 PG 76-95 Work - Book "Words axe your Friends" |
| 19 | To know the skill of reading fast. | Reading Skill | Ch.7 Pg.96 -121 |
| 20-21 | To read with specific purpose.<br>To develop the ability to infer andinterpret the text. | Reading Skill | Ch.7 Pg. 96 -121 |
| 22 | To improve listening skill with the helpof phonetic features of listening.<br>To identify the purpose of Listening | Listening Skill | CH.8 Pg.122-131 |
| 23-24 | To learn how to overcome thelistening barriers.<br>To learn techniques to select relevantinformation while listening<br>To acquire guidelines for improvinglistening skill. | Listening Skill | Ch. 8 Pg.122-131 |
| 25 | To express ideas clearly by effective useof words with focus on using simple and plain words. | Effective use of Words, Use of simple and plain words.Avoid clichés | Ch. 9 Pg.132-145 |
| 26-27 | To identify vague words and replacethem with specific words.<br>To eliminate redundancy to make theexpression clear.<br>To identify the device of trimming andpadding to write clearly.<br>To use words effectively. | Use of concrete and specific words.Lessons 10,11 and 12 Review 4 | Ch. 9 Pg.132-145 Words are your Friends |
| 28 | To Learn unity and coherence of sentences. | Effective sentences | Ch.10 |

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| 29-30 | To learn how to reorganize and rewriteeffective sentences by discarding unnecessary details. To eliminate the dangling modifiers anddangling infinitives and make Sentences effectively. To do practice in vocabulary expansion. | Effective sentences | Pg.146-162 Work -Book: "Words are Your Friends" |
| 31 | To know various elements of businessletters with focus on various styles of presentation. | Structure of Business Letters | Ch.11Pg.163-178 |
| 32-33 | To identify compulsory elements ofbusiness letter. To know the structure compulsoryelements of business letter. | Structure of Business Letters Lessons 13,14 and 15 Review - 5 | Ch.11 Pg.163-178 Words are your Friends |
| 34 | To write concisely, correctly usingclear expression. | Effective style of Business Correspondence. | Ch-12 |
| 35-36 | To practice how to write naturally,courteously, concisely, precisely and positively. To write business correspondenceeffectively. To do practice in vocabulary expansion | Effective style of Business Correspondence. Lessons 13- 15 and Review-5 | Pg.179 -194 |
| 37 | To understand various types ofbusiness letters. | Business Correspondence | Ch.13 Pg. 195-203 |
| 38-39 | To identify the essential featuresin each type of letter. To learn some useful expressions forwriting business letters. | Business Correspondence | Ch.13 Pg. 195-203 |
| 40 | To be aware of principles ofgood conversation. | The art of Conversation. | CH.14 Pg. 204-212 |
| 41 | Too aware of fundamentals of how tostart the conversation and how to continue it. To do practice in vocabulary expansion.To know different types of words. | Lessons 16-18 and Review -6 | Work - Book: "Words are Your Friends" |

**Classroom Practical**

| S. No | Name of the Practical |
|---|---|
| 1 | Preparation of phonetic chart, identification of sounds and syllable in words. |
| 2 | Preparation of business letter |
| 3 | Use of dictionary and activities based on its use. |

**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 | 19.09.2022 | 1-9 | CB |
| Test 2 | 60 Minutes | 17 | 17.10.2022 | 10- 24 | CB |
| Test 3 | 60 Minutes | 17 | 17.11.2022 | 25- 41 | OB |
| Practical | Throughout the Semester | 10 | ** | --- | CB |
| Comprehensive Exam | 3 Hours | 40 | 12.12.2022 | 1- 41 | CB |

** To be announced in the class

**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: 02/08/2022**

**Dr. SHUBHRA TIWARI**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology

First Semester, 2022 – 2023

Course Handout

| Course Code | Course Name | L | P | U |
|---|---|---|---|---|
| **CA 112** | **Information Technology Trends** | **3** | **2** | **4** |

**Instructor-in-charge: Ms. SNEHA THAKUR**

**Learning Outcome:**

After successful completion of the course student will be able to:
Understand the basics of Information technology trends, Digital System, Basics of computer Network and the new trends in Computer Science Field.
The fundamentals of how computer works and performs operations, a basic understanding of advanced devices. Expose to the basic tools and publications used in Latest information technology trends.

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|---|---|
| **Textbook** | P.K. SINHA, PRITI SINHA "Computer fundamentals", BPB Publication |
| **Reference Book** | M. N. DOJA " Fundamentals Of Computers And Information Technology" Deep & Deep publication , 2005 |
| **NPTEL** | https://nptel.ac.in/courses/106/106/106106092/ |
| **SWAYAM** | https://onlinecourses.swayam2.ac.in/cec19_cs06/preview |

**Lecture Wise Plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec/Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-3 | Introduction to Computers | Characteristics of Computers, Generations of Computer | T1: Pg 1-12 |
| 4-6 | Basic Computer Organization | Input, Output, Storage Units. CPU | T1: Pg 19-21 |
| 7-10 | Processor and Memory | CU, ALU, Main Memory, Cache Memory | T1: Pg 104-118 |
| 11-16 | Secondary Storage Devices | Sequential and Direct Access devices, Data Storage Devices, Data Backup | T1: Pg 123-149 |
| 17-19 | Input Output Devices | Input devices, Output Devices | T1: Pg 155-174 |
| 20-23 | Computer Software | Software, Types of Software, Software Engineering | T1: Pg 180-192 |

| | | | |
|---|---|---|---|
| 22-25 | Computer Program | Algorithms, Flowcharts, Pseudo code | T1: Pg 196- 216 |
| 26-30 | System Implementation and Operation | Software Testing, Debugging, Types of Program Errors | T1: Pg 256-259 |
| 31-33 | Data Communication | Data Communication, Transmission modes | T1: Pg 346-347 |
| 34-36 | Computer Network | Network Topologies | T1: Pg 364-366 |
| 37-40 | Network Types | Network Types, OSI Model | T1: pg 366-372 |

**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 (Lecture No) | Remarks |
|---|---|---|---|---|---|
| Test 1 | 60 Minutes | 16 | 19.09.2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 17.10.2022 | 11- 20 | CB |
| Test 3 | 60 Minutes | 17 | 17.11.2022 | 21 - 30 | CB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 14.12.2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Ms. SNEHA THAKUR**
**Instructor-in-charge**

# Experiment list

1. Dismantling the system unit, recognize all major components inside a PC, describe function of each component and define the relationship of internal components.
2. Perform various DOS command, like create, copy, move, delete and rename files and folders.
3. Create an office writer document and using tables distinguish between different types of memories.
4. Create a Publication and prepare neat and clean curriculum vitae for applying a job in a company. Apply Page format and Paragraph format to the above document and take the hard copy.
5. Create a template and draw a basic block diagram of computer & using graphs compare the performance of different laptop/notebook PC.
6. Prepare a mark list and find out Grade of each subject using functions.
7. Prepare a presentation with five slides including animation, insertion of scanned images.
8. Create an email id and send, receive and forward mails with attachments.
9. Prepare resume with a covering letter and send via Email.

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MATH113** | **Mathematics-I** | **3** | **0** | **3** |

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

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

1. Rank of matrices, test for consistency.
2. Basic concept of eigen values and eigen vectors
3. Expansion of series. Maclaurins and Taylors series.
4. Homogeneous function and Euler's theorem.

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| **Text Book (T)** | Engineering Mathematics, Dr. Hari Arora, S K Kataria & Sons |
| **Reference book(s) R1** | Higher Engineering Mathematics, Jain & Iyanger, Narosa Pub. |

**Lecture wise plan**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-4 | Definition of Matrix | Types of Matrix, Systems of linear equations, Row reduction and echelon forms, Linear independence, The rank of a matrix and application's. | T l Ch-12 441-560 |
| 5-7 | Introduction to linear transformations, | Introduction to linear transformations, The matrix of a linear transformation, Matrix operations, Determinants. | T l Ch-12 441-560 |
| 8-9 | Inverse of a matrix | The inverse of a matrix, Characterizations of invertible matrices | T l Ch-12 441-560 |
| 10-12 | Eigen values and Eigen vectors | Eigen vectors and Eigen values of a linear transformation, Characteristic polynomial and Cayley–Hamilton theorem, Minimal polynomial. | T l Ch-12 441-560 |
| 13-14 | Orthogonal transformation | Reduction of a matrix to diagonal form. Orthogonal transformation of symmetric matrix to diagonal form | T l Ch-12 441-560 |
| 15-16 | Sequence and series | Definition of Sequence and series | T1 Ch-8 237-276 |

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|---|---|---|---|
| 19-20 | Test for convergence | Comparison test, D'Alembert ratio test, Cauchy's root test | T1 Ch-237-276 |
| 21-25 | Differential Calculus | Successive differentiations, Leibnitz's theorem, Maclaurin's and Taylor's theorem. | T l Ch-6 155-201 |
| 26-31 | Indeterminate forms | Indeterminate forms, Cauchy's rules for Indeterminate form, L' Hospital rules | T l Ch-7 202-236 |
| 32-41 | Multivariable Calculus | Partial differentiation, Homogeneous function, Euler's Theorem, Total derivative of composite function. Minima and Maxima, Jacobians. | T l Ch-11 351-440 |

**Evaluation Scheme:**

Student evaluation is based on the series of Tests (Any one will be open book Test) 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 | 17 | 20.09.2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 18.10.2022 | 11- 20 | CB |
| Test 3 | 60 Minutes | 16 | 18.11.2022 | 21- 30 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 19.12.2022 | 1- 41 | CB |

** To be announced in the class

**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: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MATH113** | **Probability and Statistics** | **3** | **0** | **3** |

**Instructor-in-charge: Dr. SHANTI SWARUP DUBEY**

**Scope & Objective of the course:**

This course introduces the concept of probability and enables the student to become familiar with probabilistic concepts, a selected study of discrete & continuous distribution the student to become familiar with probabilistic concepts, a selected study of discrete and continuous distributions. Finally probability theory is related with statistical inference.

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| **Textbook** | Miller and freund's Probability and Statistics for Engineers: Johnsons Richard, Eastern Economy Edition, PHI, 7th Edition, 2006. |
| **Reference (R1)** | Mathematical Statistics: Ferund, J. F. PRENTIE Hall, 6th Edition,20023 |
| **R2** | Modern Probability Theory and Applications: PARZEN.E. John Wiley, Brothers, 5th Edition, 2000 |
| **R3** | Introductory Probability and Statistic Application Meyer. P. L, Oxford and IBH, 1970 |
| **R4** | Applied Statistics and Probability for Engineers: Douglas C. Montgomery and GEORGY.C. RUNGER, john Wiley and Sons, Lnc. 3rd Edition 2004. |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1 | Introduction | Self-Study | Ch-01-02 |
| 2-3 | Understand and describe sample spaces and events for random experiments with graphs, lists, tree, etc. | **Probability**<br>Sample space, Events and Counting | Ch:3, 3.1-3.2 |

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|---|---|---|---|
| 4-5 | Use probabilities of outcomes to calculate probabilities of events calculate the probabilities of joint events such as unions and intersections from the probabilities of individual events | Probability<br>Axioms of probability Extension of Theorem 3.6 to events. | Chapter: 3,3.3-3.5 |
| 6-8 | Calculate conditional probabilities of events: Determine the independence of events and use independence of events and use independence to calculate probabilities use Bayes' theorem to calculate conditional probabilities. | Conditional Probability: Independent events Bayes theorem Mathematical expectation. | Chapter 3,3.6-3.8 |
| 9-10 | Determine probabilities from probability mass functions and cumulative distribution functions. | Random variables Binomial distribution Hyper geometric distribution | Chapter 4, 4.1-4.3 |
| 11-12 | Means and variances for the discrete random variables | Mean & Variance of a probability distribution Chebychev's theorem | Chapter-4,4.6-4.9 |
| 13-16 | Select an appropriate discrete probability distribution to calculate probabilities in specific applications | Poisson approximation to Binomial distribution Poisson process Geometric distribution Multinomial distribution | Chapter:4,4.6-4.9 |
| 17-19 | Determine probabilities from probability density functions and cumulative distribution functions | Probability Densities<br>Continuous random variables Normal distribution The Normal approximation to binomial distribution | Chapter: 5,5.1-5.3 |
| 20-22 | Select an appropriate continuous probability distribution to calculate probabilities in specific application | Uniform distribution Long normal distribution Gamma distribution Beta distribution | Chapter;5 5.5-5.8 |
| 23-26 | Use joint probability mass functions and joint probability density functions to calculate marginal and conditional distributions from joint probability distribution | Joint distribution and densities: marginal and conditional distributions and densities: Properties of expectations | Chapter:5,5.10 |
| 27-30 | Understand the role of the central limit theorem and the role of t, $X^2$ and F as sampling distributions | Sampling Distributions<br>Population and random samples<br>Sampling distribution of mean (~Known)<br>Sampling distribution of mean(~Unknown)<br>T-distribution Sampling distribution of variance<br>$X^2$ and F distributions | Chapter:6, 6.1-6.2 |

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|---|---|---|---|
| 30-33 | Understand the general concepts of estimating the parameters of a population, properties of point estimation, and Construct confidence intervals on the mean of a probability distribution. | Point estimation Interval estimation<br><br>Estimation of proportions | Chapter:7,7.1-7.2<br><br>Chapter: 9,9.1 |
| 34-37 | Formulate the decision making problems as hypothesis tests and test hypotheses on the mean of a population | Tests of hypotheses:<br>Null hypotheses<br>Hypotheses concerning one mean | Chapter :7,7.3-7.5 |
| 38-40 | Understand how the method of least squares is used to estimate the parameters in a linear regression model | Curve fitting method of least Squares<br>Inferences based on Least Squares<br>Estimators Correlation | Chapter:11,11.1-11.2-11.6 |

**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 | 20.09.2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 18.10.2022 | 11- 24 | OB |
| Test 3 | 60 Minutes | 17 | 18.11.2022 | 25- 40 | CB |
| Assignments | Continuous | 10 | | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 16.12.2022 | 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 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-02/08/2022**

**Dr. SHANTI SWARUP DUBEY**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology

First Semester 2022 - 2023

Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MGT115** | **Principles of Management** | **3** | **0** | **3** |

**Instructor-in-charge: Dr. RUCHI GUPTA**

**Learning Outcomes:**

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

1. About the Knowledge in Concepts and Theory of Principles of Management.
2. Exercise the strategies and policies of planning
3. Will learn about the different theories of planning.
4. Will learn about the different techniques of controlling.
5. Get knowledge about the types of control.

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|---|---|
| **Text Book** | Management Concepts & Practices(Himalaya Publishing house) |
| **Reference book(s) R1** | Introduction to management IUP |
| **Reference book(s) R2** | Management Principles and Practices |
| **Website** | /www.investopedia.com/terms/s/swot.asp, /www.businessnewsdaily.com/4245-swot-analysis.html |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (Chapter/Sec./Page Nos. of Text/Ref. Books) |
|---|---|---|---|
| 1-2 | General introduction of management | Concept of management- Definition, Functions and Responsibilities of Management | T1-Pg no 3-11, R1-Pg no 3-10 |
| 3-4 | Concept of managers | Levels of Management, Management Thought and Thinkers | T1-175-186 R1-11-23 |
| 5-7 | Principles of management | Robert Owen, F.W.TAYLOR, HENRY FAYOL etc. Neo Classical Theories | T1-63-105 |
| 8-9 | Planning | Planning: Objective, types and level of planning | T1-297-314,315-344 R1-37-49 |
| 9-10 | How to implement planning | Strategies and Policies | R1-50-61 |
| 11-12 | Analysis of self | SWOT analysis | Notes, https://www.investopedia.com/terms/s/swot.asp, https://www.businessnewsdaily.com/4245-swot-analysis.html |

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|---|---|---|---|
| 13-14 | Decision making | Decision Making-Meaning, Importance | R1-62-70 |
| 15-16 | Organizing process | Organizing: Nature and purpose of organizing, | T1-361-380<br>R1-74 |
| 17-18 | Manpower planning | Nature& Scope of Staffing, Manpower Planning Organization structure | T1-727-754<br>R1-113-114, |
| 19-20 | Staff authority | organization -Line and Staff authority | T1-423-458<br>R1-88-92 |
| 21-23 | Direction for employee | Delegation of authority Directing: Creativity | T1-411-422<br>R1-93-94 |
| 24-26 | Motivation theories | Innovation Motivation-Motivation Theories | T1-615-651<br>R1-123-129 |
| 27-29 | Leadership authority | Leadership, Leadership theories | T1-652-673<br>R1-131-139 |
| 30-32 | Organization culture | Communication, Organization Culture- Managing cultural diversity | T1-693-726<br>R1-141-147,75-78 |
| 33-36 | Controlling power | Controlling: Meaning, Process and Control Techniques | T1-573-591<br>R1152-172 |
| 37-40 | Quality control | Types of control- Maintenance Control, Quality Control, Managing Productivity, Cost Control. | T1-824-849<br>R1-167-172 |

**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 | 21/09/2022 | 1 to 7 | CB |
| Test 2 | 60 Minutes | 17 | 19/10/2022 | 8 to 18 | CB |
| Test 3 | 60 Minutes | 17 | 19/11/2022 | 19-40 | OB |
| Quiz | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 21/12/2022 | 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. The student is required to refer the books and journals in the library and attend all presentation sessions and submit assignments to enhance the subject knowledge.

**Date: 02/08/2022**

**Dr. RUCHI GUPTA**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Science and Technology
First Semester, 2022 - 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **TA116** | **Computer Programming- I** | **3** | **2** | **4** |

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

**Learning Outcomes:**

1. The course covers the basics of programming and demonstrates fundamental programming techniques, customs and terms including the most common library functions and the usage of the processor.
2. This course helps the students in gaining the knowledge to write simple C language application's, mathematical and engineering problems.
3. This course helps to undertake future courses that assume this programming language as a background in computer programming. Topics include variables, data types, functions, control structures, pointers, strings, arrays, pointer and structure.

| | |
|---|---|
| **Textbook(s) T1** | Programming in ANSI C by E BALAGURUSAMY, Tata McGraw Hill. |
| **T2** | The C Programming Language by Brian Kernighan and Dennis Ritchie 2nd edition |
| **Reference book(s) R1** | Let Us C YASHAVANT KANETKAR BPB. |
| **R2** | Object Oriented Programming With C++ By BALA GURUSAMY, Tata McGraw Hill. |
| **NPTEL Link** | **https://nptel.ac.in/courses/106/104/106104128/** |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference(Ch. /Sec./Page Nos. of Text Book) |
|---|---|---|---|
| 1 | To learn Introduction to Programming | Introduction to Programming | T1 CH-1 1.1,1.2 |
| 2 | To learn background of programming | Programming Languages: Machine Level Languages, Assembly Level Languages, High Level Languages, and Programming Design Methodologies: Top Down and Bottom UP Program | T1 CH-1 1.3,1.4,1.5 |
| 3-4 | To learn Elements of programming | Program Execution and Translation Process, Problem solving using Algorithms and Flowcharts. | T1 CH-1 1.6,1.7 |

| | | | |
|---|---|---|---|
| 6 | To learn Introduction to C Programming | Features of C and its Basic Structure, Simple C programs | T1 CH-1 1.8,1.9 |
| 7-8 | To learn Constant, variable in C Programming | Constants, Concept of an Integer and Variable, Rules for naming Variables and assigning values to variables | T1 CH-2 2.3,2.4, 2.5,2.6 |
| 9-10 | To learn operators in C Programming | Arithmetic Operators, Unary Operators, Relational and Logical Operators, The Conditional Operator, Library Functions, Bitwise Operators, The Increment and Decrement Operators, The Size of Operator, Precedence of operators. | T1 CH-3 3.1,3.2,3.3,3.4,3.5, 3.6,3.7 |
| 11-12 | To learn Data types in C Programming | Data Types and Input /Output Operators | T1 CH-2 2.7,2.8 |
| 13-16 | To learn Control Statements and Decision Making Statement | The if statement, The if-else statement, Nesting of if statements, The conditional expression, The switch statement, | T1 CH-5 5.1,5.2,5.3,5.4,5.5, 5.6,5.7 |
| 17-20 | To learn looping statement | The while loop, The do…while loop, The for loop, The nesting of for loops, The break statement and continue statement. | T1 CH-6 6.1,6.2,6.3,6.4,6.5 |
| 21 | To learn concept of function | Function Philosophy, Function Basics, Function Prototypes | T1 CH-9 9.1,9.2 |
| 22-23 | To learn function parameters concept | Passing Parameters: Passing Parameter by value and Passing Parameter by reference | T1 CH-9 9.3,9.4,9.5,9.6 |
| 24-25 | To learn parameter passing | Passing string to function, Passing array to function, Structures and Functions Recursion | T1 CH-9 9.9,9.10,9.11,9.12, 9.13,9.16 |
| 26-28 | To learn Concept of array | One Dimensional Arrays, Multidimensional Arrays, Strings | T1 CH-7 7.1,7.2.7.3,7.7,7.8, 7.9 |
| 29-30 | To learn basics of pointers | Basics of Pointers, Pointers and One-dimensional Arrays | T1 CH-11 11.1,11.2,11.3 |
| 31 | To learn Pointer Arithmetic | Pointer Arithmetic, Pointer Subtraction and Comparison | T1 CH-11 11.4,11.5,11.6 |
| 32-33 | To compare pointer and array | Similarities between Pointers and One-dimensional Arrays. | T1 CH-11 11.7,11.8,11.9 |
| 34-35 | To learn Basics of Structures | Basics of Structures, Arrays of Structures, | T1 CH-10 10.1,10.2 |
| 36 | To learn structure operations | Pointers to Structures, Self-referential Structures, | T1 CH-10 10.8,10.9 |
| 37 | To learn Introduction to Object oriented Programming | Introduction to Object oriented Programming, Difference between POP and OOP | R2 CH-1 1.2,1.3,1.4 |
| 38-40 | To learn Features of Object oriented Programming | Features of OOP, Class, object, Encapsulation, Inheritance, Polymorphism | R2 CH-1 1.5,1.6 |

**Evaluation Scheme:**

Student evaluation is based on the series of Tests (Any one will be open book Test) 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 | 21.09.2022 | 1-16 | CB |
| Test 2 | 60 Minutes | 17 | 19.10.2022 | 17- 28 | CB |
| Test 3 | 60 Minutes | 17 | 19.11.2022 | 29- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 23.12.2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022–2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA-202** | **System Analysis and Design** | **3** | **0** | **3** |

**Instructor-in-charge: Dr. RAMESH YADAV**

**Learning Outcomes:**

The learning objectives of this course are to: This course aims to as to introduce variety of new software used by analysts, designers to manage projects, analyze and document systems, design new systems and implement their plans. It introduces also a recent coverage of UML, wireless technologies and ERP; web based systems for e-commerce and expanded coverage on RAD and GUI design.

| | |
|---|---|
| **Text Book** | Title: Systems Analysis and Design Author(s): Kenneth E. Kendall and Julie E. Kendall Publisher: Prentice Hall PTR, 5th Edition, 2001 |
| **Reference book** | Essentials of Systems Analysis and Design. Author: valacich, Edition: 6th; ISBN: 9780133546231 |

**Lecture wise plan**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-7 | To understand the basics of SAD | Introduction to SAD and Data and Information, Systems Analysis, Properties of a System, Elements of a System, Types of Systems, Categories of Information | T l Ch-l 1.1,1.3 |
| 8-15 | To learn the concepts of SDLC | Systems Analysis and Design Life Cycle Phases of SDLC<br>Life Cycle of System Analysis and Design<br><br>Role of System Analyst, Attributes of a Systems Analyst | T1 Ch-2 2.1,2.4,2.7,2.9 |
| 16-20 | To learn the concepts of FA | Information gathering – strategies – methods, Feasibility analysis, Steps Involved in Feasibility Analysis<br>Types of Feasibilities | T1 Ch-3 3.2,3.5 5.5,3.8 |

| | | | |
|---|---|---|---|
| 21-23 | To learn the concepts of System Tool | Structured Analysis<br>Tools for systems analysts<br>Data Flow Diagrams (DFD) or Bubble Chart<br>Data Dictionary<br>Decision Trees, | T1 Ch-4<br>4.2, 4.6<br>4.5,4.10 |
| 24-25 | To understand concept of procedure specifications in structured | Structured systems analysis and design,<br>Types of DFD, Decision Tables<br>Pseudo code | T1 Ch-5<br>5.4,5.8 |
| 26-30 | To understand concept of ER-diagram | Data oriented systems design, ER Diagram<br>Use of ER-Diagram, Concept | T1 Ch-5<br>5.3,5.5 |
| 31-40 | To learn the concepts of Input Data Design and output Report | Data input and output methods<br>Inputs to System Design<br>Outputs for System Design<br>File Organization | T1 Ch-5,Ch6<br>5.9, 6.4,7.1<br>T1 Ch6<br>6.8,7.4,7.9 |

**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 | 17 | 06/09/2022 | 1-15 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 16- 25 | CB |
| Test 3 | 60 Minutes | 16 | 17/11/2022 | 26- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 12/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Dr. RAMESH YADAV**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| CA 211 | Database Management Systems | 2 | 2 | 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. To understand basic concept sand implementation issues of Database System.
2. To learn ER-modeling, Data models, Normalization and Functional dependencies, Relational Algebra, Implementation and Advanced Concepts.
3. To learn the hands-on database operations in SQL interface.

| | |
|---|---|
| **Textbook** | Database System Concepts, Silberschatz A, Korth HF, and SudarshanS,TMH,2002 |
| **Reference Book(s)** | Database Management Systems, Ramakrishna R.& Gehrke J, 3rd Edition, Mc GrawHill,2002 |
| **R2** | Database Systems-The Complete book, Hector G Molina, Jeffrey D.Ullmanand Jennifer Widom, Pearson Education, 2002 |
| **NPTEL** | https://nptel.ac.in/courses/106/105/106105175/ |
| **SWAYAM** | https://onlinecourses.swayam2.ac.in/cec19_cs05/preview |

**Lecture wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page No. S of Text/Ref. Books) |
|---|---|---|---|
| 1-3 | Introduction to Database Systems | Course overview, Overview of modern DBMS | T1: 1.1-1.13 |
| 4-7 | About Database | Data Views, Data Dictionary, DB Administrator | T1: 2.1-2.13 |
| 7-10 | Data modeling | Basic elements of ER model, Database Design through ER-model | T1: 7.1-7.10 |
| 11-13 | Understanding Relational model | Relation as a mathematical model, ER to Relational model | T1: 2.1- 2.6 |
| 14-16 | Introduction to SQL constructs | Select from where Group by having order | T1: 3.1-3.9 |
| 17-19 | Understanding additional SQL structures | INSERT, DELETE, UPDATE, VIEW definition and use, Temporary tables, Nested queries | T1: 4.1-4.5 |

| | | | |
|---|---|---|---|
| 20-25 | Database design through Functional Dependencies & Normalization | Functional dependencies, Normal Forms: 1NF,2NF, 3NF, BCNF, Multi-valued dependencies:4NF,5NF | T1: 8.1-8.9 |
| 26-28 | Formal Query Languages | Relational algebra operators, Relational algebra queries | T1: 61.-6.4 |
| 29-32 | Integrity constraints | Integrity constraints: Not null, unique, check, primary key, foreign key, references, Triggers. | T1: 4.4-4.5 |
| 32-36 | Query processing | Query execution | T1: 12.1-12.8 |
| 37 - 40 | Transaction Management | Concurrency control, Deadlock Issues | T1: 14.1-14.10 |

**Evaluation Scheme:**

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

| Component | Duration | Weightage (%) | Date | Syllabus (Lecture No) | Remarks |
|---|---|---|---|---|---|
| Test 1 | 60 Minutes | 17 | 06/09/2022 | 1-14 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 15- 25 | CB |
| Test 3 | 60 Minutes | 16 | 17/11/2022 | 26-40 | OB |
| Lab | 3 Hour | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 14/12/2022 | 1- 40 | CB |

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

**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: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 - 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA 221** | **Data Structures and Algorithms** | **2** | **2** | **3** |

**Instructor-in-charge: Mr. ASHISH KUMBHARE**

**Learning Outcomes:**
This course introduces the core principles and techniques for Data structures. Students will gain experience in how to keep a data in an ordered fashion in the computer. Students can improve their programming skills using Data Structures Concepts. After successful completion of the course student will be able to
1. Explore basic data structures such as stacks and queues.
2. Introduce a variety of data structures such as Linked list, Trees, search trees, Graphs
3. Introduce sorting and searching algorithms.

| | |
|---|---|
| **Textbook(s)** | Fundamentals of Data Structures by Ellis Horowitz & Satraj Sahni, Computer Science press. |
| **Reference Book(s)** | Data Structures using C by A. K. Sharma, Pearson Education |
| **R2** | Data structures and Algorithm Analysis in C, 2nd edition, M.A.Weiss, Pearson. |
| **R3** | Data structures and Program Design in C, 2nd edition, R. Kruse, C. L. Tondo and B. Leung Pearson |
| **NPTEL Link** | https://nptel.ac.in/courses/106/102/106102064/ |
| **SWAYAM Link** | https://onlinecourses.swayam2.ac.in/cec19_cs04/preview |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (Ch./Sec./Page Nos. of Text Book) |
|---|---|---|---|
| 1-3 | To learn Introduction of Data structure and its types | Introduction of Data structure, Data types: primitive, non-primitive data types, Linear and nonlinear data structure. | T1 CH-1 1.1, 1.3, 1.4 |
| 4-6 | To learn a Publication of array and various searching techniques | Array concept (one dimension, two dimension), Linear and Binary Search Algorithms, | T1 CH-2 2.4 |

| | | | |
|---|---|---|---|
| 6-7 | To learn various sorting techniques | Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort | T1 CH-7<br>7.1, 7.2 |
| 8-10 | To learn various sorting techniques using Divide and Conquer strategy. | Quick Sort, Merge Sort & Radix sort | T1 CH-7<br>7.3, 7.4, 7.5 |
| 11 | To learn introduction to linear data structure stack. | Stack concept | T1 CH-3<br>3.1 |
| 12-13 | To learn various stack operations. | Operations PUSH, POP, TRAVERSE, Is full, Is empty. | T1 CH-3<br>3.1, 3.2 |
| 14-17 | To learn a publications of stack | Infix, Prefix, Postfix representation, Conversion using stack | T1 CH-3<br>3.3 |
| 18-19 | To learn introduction to linear data structure Queue and its types. | Introduction, and Types of Queues, Priority Queue, Circular queue, Double Ended Queue, | T1 CH-3<br>3.1 |
| 20 | To learn various Queue operations. | Operations (INSERT, DELETE, TRAVERSE) | T1 CH-3<br>3.1, 3.2 |
| 21-22 | To learn introduction to linear data structure Linked list and its types. | Linked List, Singly and Doubly Linear link lists, Singly and doubly circular linked list | T1 CH-4<br>4.1 |
| 23-24 | To learn various linked List operations | Operations on linked lists insert, delete, APglications of linked lists. | T1 CH-4<br>4.8,4.9 |
| 25-26 | To learn introduction to Nonlinear data structure Tree and its types. | Definition of trees and their types, Binary trees, Properties of Binary trees,. | T1 CH-5<br>5.1, 5.2 |
| 27-30 | To learn various operations and traversal technique. | Insertion, deletion, Searching and traversal algorithm, Preorder, post order, in-order traversal) , BFS, DFS | T1 CH-5<br>5.3, 5.4, 5.5 |
| 31-32 | To learn various applications of tree | Binary Search Trees, Implementations, AVL Trees, B tree, | T1 CH-5<br>5.6, 5.7 |
| 33 | To learn introduction to Nonlinear data structure Graph and its types. | Definition of Graph and their types | T1 CH-6<br>6.1 |
| 34-35 | To learn various applications of Graph | Adjacency and incident (matrix & linked list) representation of graphs, Weighted Graphs, | T1 CH-6<br>6.2 |
| 36-38 | To learn various operations and traversal technique. | Shortest path Algorithm, Spanning tree, Minimum Spanning tree, | T1 CH-6<br>6.3, 6.4 |
| 39-40 | To learn various operations and traversal technique. | Kruskal and prims algorithms. | T1 CH-6<br>6.3, 6.4 |

**Evaluation Scheme:**

Student evaluation is based on the series of Tests (Any one will be open book Test) 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 | 07.09.2022 | 1-12 | CB |
| Test 2 | 60 Minutes | 17 | 18.10.2022 | 13- 26 | CB |
| Test 3 | 60 Minutes | 17 | 18.11.2022 | 27- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 19.12.2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Mr. ASHISH KUMBHARE**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 - 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA 231** | **Object Oriented Programming** | **2** | **2** | **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/ deal location 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 BookT1** | E. Balagurusamy – Object Oriented Programming with C++, Fifth edition, Tata McGraw Education Hill, 2011. |
| **T2** | Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India |
| **Reference book** | Herbert Schildt, The complete reference C++Fourth Edition Tata Mc Graw- 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 |
| 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 Specifies Derived classes | 426-430 |
| 26-28 | To learn about Polymorphism and need and importance of Virtual Functions | Virtual Function, function call binding, late binding | 444-447 |
| 29-30 | To learn about Polymorphism and need and importance of Virtual Functions | Friend and static function, this operator | 332, 310-315, 297-302 |
| 31-33 | To learn about handling the file Object | Creating and Manipulating File and Streams | 488 |
| 34-35 | To learn about handling the file Object | Mechanism, try, throw and catch | 494 |
| 36-37 | To learn about handling the file Object | Catching all Exceptions, Multiple catches | 495 |
| 38-40 | To learn about handling the file Object | Programs related to exception handling | 506 |

**Evaluation Scheme:**
Student evaluation is based on the series of Tests (Any one will be open book Test) 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 | 08.09.2022 | 1-11 | CB |
| Test 2 | 60 Minutes | 17 | 19.10.2022 | 12- 25 | CB |
| Test 3 | 60 Minutes | 17 | 19.11.2022 | 26- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 23.12.2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Mr. ASHISH KUMBHARE**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA301** | **Operating Systems** | **3** | **0** | **3** |

**Learning Outcome –**

1. To understand the basic concepts and functions of operating systems.
2. To understand Processes 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.

| | |
|---|---|
| **Textbook(s)**<br>**T1** | Operating System Concepts, Silbverschatz, A and Galvin, P.B, 7th edition, Addison, Wesley, 1998. |
| **T2** | Operating Systems- A concept bases approach, Dhamdhere D.M., 2nd edition, TMH 2006. |
| **Reference book(s)**<br>**R1** | Operating Systems, Stallings W, 4th edition, PHI, 2001. |
| **R2** | The design of the Unix operating System, Bach, M.J, PHI, 1986. |
| **R3** | Modern Operating Systems, 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 what is operating system and its functions | Overview | T1 CH-1 |
| 2 | | Types of OS | T1 CH-1 |
| 3 | | Design Approaches | T1 CH-1 |

| | | | |
|---|---|---|---|
| 4 | | I/O Structures | T1 CH-2 |
| 5 | | System design and implementation | 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 Process Communication(IPC) | T1 CH-5 |
| 11 | To know what is scheduling and its importance | CPU Scheduling 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 andits handling | Dead Lock 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 |
| 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 the concept of files, its types, attributes and operations | File Operations | T1 CH-11 |
| 32 | | Directory Structure | T1 CH-11 |
| 33 | | File-System Structure | T1 CH-12 |
| 34 | | Allocation Methods | T1 CH-12 |
| 35-39 | | I/O Systems | T1 CH-12 |
| 40 | | Disk Scheduling | T1 CH-13 |

**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 | 08/09/2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 19/10/2022 | 11- 24 | CB |
| Test 3 | 60 Minutes | 17 | 19/11/2022 | 25- 40 | OB |
| Assignments | Continuous | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 21/12/2022 | 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 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: 02/08/2022**

**Ms. NISHA THAKUR**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 - 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **EGL 201** | **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 a Publication of various technical reports writing.
5. Nuances, legal aspects and ethics in technical writing.

| | |
|---|---|
| **Text books**<br>**T1** | |
| **Reference books**<br>**R1** | Technical Report Writing by Kieran Morgan |
| **R2** | Managing Your Documentation Projects by Johnn T Hackos |
| **R3** | The Insider's Guide to Technical Report Writing by Krista Van Laan |
| **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 (manifoldaPg.org) |
| 2,3 | Nature of technical comm | Characteristics of Technical report writing | https://alg.manifoldaPg.org/read/open-technical-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 (manifoldaPg.org) |
| 8,9 | Understand oral technical comm | Oral & Presentation | "2.12 - Oral Presentations" in "Open Technical Communication" on OpenALG (manifoldaPg.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 (manifoldaPg.org) |
| 16 | Know the types of tech documents | Types of Tech Documents | "2.2 - Types of Technical Documents" in "Open Technical Communication" on OpenALG (manifoldaPg.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 |
| 18,19,20 | Process orientation of technical comm | Technical Writing Process: Pre-writing, Writing and Re-writing | https://study.com/academy/lesson/the-technical-writing-process-prewriting-writing-rewriting.html |
| 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 reusable 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 (manifoldaPg.org) |
| 27,28,29 | 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 (manifoldaPg.org) |
| 32 | Tech writing-customer orientation | Technical Correspondence | "2.1 - Business Correspondence and Resumes" in "Open Technical Communication" on OpenALG (manifoldaPg.org) |
| 33,34 | Tech writing-resumes/ cover letters | Writing Resumes & Cover Letters | "2.1 - Business Correspondence and Resumes" in "Open Technical Communication" on OpenALG |

| | | | |
|---|---|---|---|
| 35,36,37,38 | Types of tech documents | Technical Instructions, Manual Writing, Proposal Writing | "2.6 - Instructions" in "Open Technical Communication" on OpenALG (manifoldaPg.org) |
| 39,40 | Practical presentation | Project Work & Presentation | Practical session |

**Classroom Practical**

| S.N. | Name of the Practical |
|---|---|
| 1 | A Publications and types of technical documents |
| 2 | Preparation and presentation of various technical documents |
| 3 | Projects and presentations on the basis of technical report writing structure |

**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 | 07.09.2022 | 1-15 | CB |
| Test 2 | 60 Minutes | 17 | 18.10.2022 | 16- 29 | OB |
| Test 3 | 60 Minutes | 17 | 18.11.2022 | 30- 40 | CB |
| Practical | Throughout the Semester | 10 | ** | --- | CB |
| Comprehensive Exam | 3 Hours | 40 | 14.12.2022 | 1- 40 | CB |

** To be announced in the class

**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- 02/08/2022**

**Dr. SHUBHRA TIWARI**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA 408** | **Advance Java Programming** | **2** | **2** | **3** |

**Instructor-in-charge: Ms. NISHA THAKUR**

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

1. To develop the student with the fundamentals of JDBC and using the different interfaces in the JDBC API.
2. To learn the concept how JSPs can help to separate Web logic and functionality from page layout. Explore how to make JSPs smaller and more powerful with JSTL, custom tags and expression language.
3. To understand the strategies in the exchange of data between Web pages (views) and business processing (model). Learn the meaning and importance of MVC.

| | |
|---|---|
| **Textbook(s)** | Naughton and H.Schildt, (2007), "Java 2-The complete reference", Fifth Edition McGraw Hill. |
| **Reference book(s) R1** | Jim Keogh, (2002), "The Complete Reference J2EE", Tata McGraw Hill Edition, New Delhi. |
| **R2** | Marty Hall, Larry Brown, (2004), "Core Servlets and Java Server Pages", 2nd Edition, Pearson Education |

**Lecture-wise plan**:

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (Ch./Sec./ Page Nos. of Text Book) |
|---|---|---|---|
| 1 | To learn Collection of Useful classes | Utility Methods for Arrays Observable and Observer Objects. | 441-502 |
| 2-3 | To learn Collection of Useful classes | Date & Times ,Using Scanner Regular Expression, Input/ Output Operation in Java(java.io Package) | 506-536 |
| 4-5 | To learn Collection of Useful classes | Streams and the new I/O Capabilities ,Understanding Streams, The Classes for Input and Output, | 538-561 |
| 6 | To learn Collection of Useful classes | The Standard Streams, Working with File Object, File I/O Basics, Reading and Writing to Files, Buffer and Buffer Management, Read/Write Operations with File Channel | 562-585 |

| | | | |
|---|---|---|---|
| 7-8 | To Learn GUI Programming | Designing Graphical User Interfaces in Java | 687-688 |
| 9-10 | To Learn GUI Programming | Components and Containers, Basics of Components, Using Containers. | 691-693 |
| 11 | To Learn GUI Programming | Layout Managers | 705 |
| 12-15 | To Learn AWT | AWT Components, Adding a Menu to Window, Extending GUI Features Using Swing Components | 790-798 |
| 16 | To Learn Java Util Packages | Java Utilities (Java util Package) | 441-447 |
| 17-20 | To Learn the Collection Framework | Collections of Objects, Collection Types, Sets, Sequence, Map, Understanding Hashing, Use of Array List & Vector. | 448-456 |
| 21-22 | To Learn Event Handling | Event-Driven Programming in Java, Event-Handling Process | 653 |
| 23-25 | To Learn Event Handling | Event Handling Mechanism, The Delegation Model of Event Handling, | 654-656 |
| 26-28 | To Learn Event Handling | Event Classes, Event Sources, Event Listeners | 654-656 |
| 29-31 | To Learn Event Handling | Event Listeners, Adapter Classes as Helper Classes in Event Handling. | 656-667 |
| 32-34 | To Learn Database Programming using JDBC | Introduction to JDBC, JDBC Drivers & Architecture. | NOTES |
| 35-36 | To Learn Database Programming using JDBC | CURD operation Using JDBC. | NOTES |
| 37-38 | To Learn Database Programming using JDBC | Connecting to non-conventional Databases. | NOTES |
| 39-42 | To Learn Java Server Technologies Servlet Web Application | Web A Publication Basics, Architecture and challenges of Web Application, Introduction to servlet, Servlet life cycle, Developing and Deploying Servlets, Exploring Deployment, Descriptor (web.xml), Handling Request and Response. | 950-960 |

**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 | 08/09/2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 11- 24 | CB |
| Test 3 | 60 Minutes | 17 | 17/11/2022 | 25- 42 | OB |
| Lab | Continuous | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 14/12/2022 | 1- 42 | 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 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: 02/08/2022**

**Ms. NISHA THAKUR**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022–2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA-414** | **Software Testing & Quality Management** | **3** | **0** | **3** |

**Instructor-in-charge: Dr. RAMESH YADAV**

**Learning Outcomes:**

**The learning objectives of this course are to:**

It provides a holistic view of managing software quality from the perspective of programmer to quality manager. While in Software Project Management, much of the attention is on planning, risk management, scheduling and tracking of project activities, in Software Quality Management greater emphasis is placed on planning of quality assurance activities like testing, reviews, audits and organizational Quality Management Systems (QMS) compliant with ISO 9000/CM MI models.

| | |
|---|---|
| Text Book T1 | Software Quality Engineering – Jeff Tian, Wiley India, 2015 |
| Text Book T2 | Software Testing – A Craftsman's Approach – Paul C. Jorgensen, 4th Edition, CRC Press, 2014 |
| Reference book(s) R1 | Software Engineering: A Practitioner's Approach – Roger S. Pressman, 7th Edition, McGraw Hill, 2010 |

**Lecture wise plan**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-5 | Software Quality Management – An Overview | Software Quality Management – An Overview This introductory module gives an overview of Software Quality by illustrating its role in Software Engineering. Quality - a technical definition Quality Concepts, Tools and Techniques | T l Ch-l 1.4,1.5, T2,Ch1.6,1.9 |
| 6-12 | Demystifying Quality Concepts | This module demystifies various terms associated with quality-QA, QC, QM, Quality Engineering-as well as the role of process frameworks, methodologies and tools adopted for Software Quality Engineering. Also highlights formal definitions of Quality by Standards groups of IEEE/ISO | T1 Ch-2 2.1,2.4,2.7,2.9 |

| | | | |
|---|---|---|---|
| 13-20 | SQA Activities | This module highlights the difference between defect prevention and defect detection activities. Presents the big picture of SQA encompassing Quality Planning and Continuous Improvement by giving formal definition of 'defect', 'error/bug' and the role of defect measurement. | T1 Ch-3<br>3.1,3.7<br>T2 Ch3 5.6,3.8 |
| 21-26 | Software Testing | This module highlights various Testing strategies-white-box and black-box testing-introducing Usage Based Testing and Coverage Based Testing. Also discussed is the issue of 'when to stop testing and start delivering'. | T2 Ch-4<br>4.7, 4.4<br>T2 Ch4<br>4.8,4.10 |
| 27-33 | Reviews & Inspections | "Prevention of defects is better than Testing for defects later" – is the spirit behind Reviews, Inspections and Walkthroughs. This modules highlight these important SQA activities-from formal reviews/inspections to little informal code-walkthroughs-adopted as part of most formal software development methodologies. | T1 Ch-5<br>5.5,5.9 |
| 34-40 | Quality Management Systems | Quality Metrics and Base lining, Software Product Metrics & Defect Propagation, Quality Management Systems | T2 Ch-5<br>5.3,5.7 |

**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 | 17 | 08/09/2022 | 1-12 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 13- 26 | CB |
| Test 3 | 60 Minutes | 16 | 18/11/2022 | 27- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 16/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Dr. RAMESH YADAV**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 - 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| CA311 | Data Communication & Computer Networks | 3 | 0 | 3 |

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

**Learning Outcomes:**
After successful completion of the course student will be able to
1. Understand the fundamental of data communication and computer network.
2. Understand transmission media and switching techniques.
3. Understand Basics of Internet and Network addresses.
4. Understand network topologies and network devices
5. Understand basics of OSI Model, TCP/IP Model and various protocols.

| | |
|---|---|
| **Text Book** | Forouzan, " Data Communication and Networking ", Mc. Graw Hill, 5th Edition, 2013 |
| **T2** | Computer Networks, A. S. Tanenbau, Pearson Education / Prentice Hall of India, 4th Edition, 2004. |
| **Reference book(s) R1** | Data Communications, Computer Networks and Open Systems, Halsall Fred, Addition-Wesley, 4th Edition, 2004. |
| **Reference book(s) R2** | An Engineering APgroach to Computer Networks, S. Kesha, Pearson Education, (2004) |
| **SWAYAM** | https://onlinecourses.swayam2.ac.in/cec19_cs07/preview |
| **NPTEL** | https://nptel.ac.in/courses/106105082 |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (Chapter/Sec./Page Nos. of Text/Ref. Books) |
|---|---|---|---|
| 1-3 | To understand the fundamental of data communication | Process of data communication & its components, protocols | T1: Ch-1 |
| 4-6 | To understand the fundamental of network | Types of transmission modes, network criteria | T1: Ch-4, 4.3 |
| 7-9 | To understand the fundamental of network architecture | Types of topology, point to point and multipoint architecture | T1: Ch-1, 1.2 |
| 10-12 | To understand the transmission medium | Wired and wireless connection and their types | T1: Ch- 7 |
| 13-16 | To understand the Transmission media | Guided and Unguided media | T1: Ch-7, 7.1-7.3 |
| 17-20 | To understand Devices used in Network | Cables, repeaters, Hubs, bridges, switches, routers, Gateways | T1: Ch-17, 17.1.1 – 17.1.3 |

| | | | |
|---|---|---|---|
| 21-22 | To learn about Transmission Impairment | Attenuation, Distortion, Noise. | T1: Ch-3, 3.4 |
| 23-26 | To understand network architecture | Client, Server, Website, Web Browser | T1: Ch-1, 1.3 |
| 27-29 | To understand network addresses | IP Address, MAC Address, Network Classes | T1: Ch-18 |
| 30-34 | To understand Switching Techniques | Circuit Switching, Packet Switching, Message Switching | T1: Ch-1, 1.3, T1: Ch-8, 8.2-8.3 |
| 35- 40 | To understand Reference Models | OSI Model, TCP IP Model | T1: Ch-2,T2: Ch-1 |

**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 | 17 | 06/09/2022 | 1-20 | CB |
| Test 2 | 60 Minutes | 17 | 19/10/2022 | 21- 29 | CB |
| Test 3 | 60 Minutes | 16 | 19/11/2022 | 30- 40 | OB |
| Quizzes/Presentation | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 23/12/2022 | 1- 40 | CB |

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

**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: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA 212** | **Dot Net Technology** | **2** | **2** | **3** |

**Instructor-in-charge: Ms. PALAK KESHWANI**

**Learning Outcomes:**
The learning objectives of this course are to:

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

| | |
|---|---|
| **Text Book T1** | C# 6.0 and the .NET 4.6 Framework |
| **T2** | Andrew Troelsen and Philip Japikse |
| **Reference book(s) R1** | Programming Entity Framework by Julia Lerman |

**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 Feature | T l Ch-l 1.4,1.5, T2,Ch1.6,1.9 |
| 6-10 | To learn the concepts ofweb form architecture | **Web Forms Architecture** Page Class Web Forms Life Cycle Web Forms Event Mode | 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 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 APglications Using Visual Studio**<br>Using Visual Web Developer, Visual Studio Forms Designer, Using Components, Shadow Copying Using the Global, File Data Binding | T1 Ch-4<br>4.7, 4.4<br>T2 Ch4<br>4.8,4.10 |
| 24-25 | To understand concept of session state | **State Management and Web APglications**<br>Session State APublication State Multithreading Issues, Cookies | T1 Ch-5<br>5.5,5.9 |
| 26-30 | To understand concept of server controls | **Server Controls**<br>HTML Server Controls Web Forms Server Controls Rich Controls Validation Controls User Control | T2 Ch-5<br>5.3,5.7 |
| 31-40 | To learn the concepts of caching and its uses | **Caching in ASP.NET**<br>What Is Caching Page-Level Caching Page Fragment Caching Optimizing Your ASP.NET APglication APublication Caching | T1 Ch-5,Ch6<br>5.7, 6.4,7.2<br>T2 Ch6<br>6.9,7.4,7.9 |

**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 | 07/09/2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 11- 20 | CB |
| Test 3 | 60 Minutes | 17 | 18/11/2022 | 21- 30 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 19/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Ms. PALAK KESHWANI**
**Instructor-in-charge**

**Net (Lab)**

| S. No. | Name of Experiment |
|---|---|
| 1 | Program to display the addition, subtraction, multiplication and division of two number using console application |
| 2 | Program to display the first 10 natural numbers and their sum using console aPglication. |
| 3 | Write a program to manage the session. |
| 4 | Program to display the addition using the windows application. |
| 5 | Write a program to convert input string from lower to upper and upper to lower case. |
| 6 | Write a program to simple calculator using windows application. |
| 7 | Write a program working with Page using ASP.NET. |
| 8 | Write a program working with forms using ASP.NET. |
| 9 | Write a program to connectivity with database. |
| 10 | Write a program to access data source through ADO.NET. |

# The ICFAI University, Raipur

Faculty of Science and Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **CA 429** | **Image Processing** | **3** | **0** | **3** |

**Instructor-in charge : Dr. K NAGAIAH**

| **Scope and Objective** |
|---|
| This is a basic course in digital image processing and aims at providing an understanding of some of the fundamental concepts involved. It shall deal with the fundamentals of images. The various discrete transforms that are used extensively in image processing and their Publication to data compression are dwelt with. In addition, the course covers some basic enhancement and restoration techniques and coding. The course also briefly covers image understanding, image classification and recognition along with some neural networks. |

| | |
|---|---|
| **Textbook(s)**<br>**T1** | Digital Image Processing, Rafael C. Gonzalez & Richard E. Woods, Pearson Education Asia, Second Ed., 5th. Indian reprint 2003. |
| **T2** | Digital Image Processing Using MATLAB, Rafael C. Gonzalez & Richard E. Woods, Steven L. Eddies, Pearson Education Asia, Second Ed., 3rd . Indian reprint 2005. |
| **Reference Book(s)**<br>**R1** | Digital Image Processing, Anil K. Jain, PHI, 1998, Indian reprint 2003 |
| **R2** | Digital Image Processing and Analysis, Bhabatosh Chandra & Dwijesh Dutta Majumdar, PHI, 2002 |
| **R3** | Fundamentals of Electronic Image Processing, Arthur R. Weeks, PHI, 1999, Indian reprint 2003. |

**Lecture-wise plan**

| Lecture No. | Learning Objective | Topics to be covered | (Ch./Sec./Text Book) |
|---|---|---|---|
| 1 | Introduction | Introduction to digital image processing and systems | TB:2.2 |
| 2-3 | Digital Image Fundamentals | Image Sampling and Quantization | TB: 2.3.4- 2.4.5 |

| | | | |
|---|---|---|---|
| 4-6 | Image Enhancement in Frequency Domain | Fourier Transform, DFT and its properties | TB: 4.2.1-4.2.2 |
| 7-8 | Implementation | 2D convolution | TB: 4.6.3-4.6.4 |
| 9 | Implementation | Fast Fourier Transform | TB: 4.6.6 |
| 10 | Image enhancement in spatial domain | Introduction to Image Enhancement | TB: 3.1 |
| 11-12 | Basics of gray level transformations | Image enhancement-gray level transformations | TB: 3.21-3.2.4 |
| 13-14 | Histograms | Image enhancement- histogram processing | TB:3.3-3.3.3 |
| 15-16 | Basics of spatial filtering | Image enhancement by spatial filtering | TB: 3.5.-3.6.1 3.7.1-3.7.3 |
| 17-18 | Filtering of images | Image enhancement-filtering in frequency | TB: 4.2.3-4.4.3 |
| 19 | Image degradation models, noise models | Image restoration-image degradation models | I TB: 5.1-5.2.2; 5.5 |
| 20-21 | Estimation of degrading function | Image restoration-removal of linear motion blur | TB: 5.6.3 |
| 22-23 | Image restoration - filters | Image restoration-Inverse filtering, constrained least squares | TB: 5.7 - 5.9 |
| 24-25 | Fundamentals and models of image compression | Fundamentals of image compression | TB: 8.1-8.2 |
| 26-27 | Information theory for image compression | Elements of information theory for compression | TB: 8.3.1-8.3.2 |
| 28-30 | Coding theorems | Fundamentals of image coding | TB: 8.3.3-8.3.4 |
| 31-33 | Error-free image compression | Error-free image compression | TB: 8.4.1-8.4.4 |
| 34-36 | Loss image compression, compression standards | Loss image compression, compression standards | TB: 8.5.1-8.5.2 8.6.1-8.6.2 |
| 37-38 | Image segmentation | Image segmentation | TB:10.1-10.1.3 10.3.1-10.3.3 |
| 39-40 | Image representation | Representation | TB:11.1 |

**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 for each Test | Remarks |
|---|---|---|---|---|---|
| Test I | 60 minutes | 16 | 07-09-2022 | 1-10 | CB |
| Test II | 60 minutes | 17 | 19-10-2022 | 11-22 | CB |
| Test III | 60 minutes | 17 | 19-11-2022 | 23-35 | OB |
| Lab | 60 minutes | 10 | ** | ** | CB |
| Comprehensive Exam | 3 hours | 40 | 21-12-2022 | 1-40 | CB |

*To be announced in the class

**Make-up Policy**: Make-up will be given only under genuine circumstances. However prior and proper Intimation to the concerned instructor is a must.

**General:** All students are advised to attend classes regularly and strictly maintain a minimum attendance of 75%. Students failing to maintain the required percentage of theory/practical attendance will not be permitted to appear for the tests and examinations.

**Date: 02/08/2022**

**Dr. K NAGAIAH**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **PGDCA111** | **Introduction to software organization** | **3** | **0** | **3** |

**Instructor-in-charge: Ms. SNEHAL VAIRAGADE YADAV**

**Learning Outcomes:**
The learning objectives of this course :
The content of this course is basically selected to give the knowledge of Computer and software organization and their application's

| | |
|---|---|
| **Text Book T1** | Computer fundamentals, P.K. Sinha, BPB |
| **Reference book(s) R1** | Computer today by S.K. Basandra Galgotia Publications. |

**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 Computer | Introduction to Computer and Information Technology<br>Computer system characteristics.<br>Capabilities and limitations<br>block diagram of computer<br>Brief history of development of computer & generations of computer | T l Ch-l<br>1.2,1.3,1.6,1.9 |
| 6-12 | To learn the different types of computer concepts | Types of computer-Analog, Hybrid, digital, micro mini, mainframe, super computer Personal computer, types of PCs desktop, laptop, notebook, palmtop<br>INPUT devices: keyboard, mouse<br>monitor, trackball, joystick, digitizing table, scanners, digital cameras | T1 Ch-2<br>2.1,2.4,2.5,2.9 |
| 13-20 | To learn the concepts of output Devices | MICR, OCR, OMR, Bar-code reader<br>Printer Voice recognition, light pen, touches screen, devices, and plotter.<br>Storage device: Data storage, Memory Chart | T1 Ch-3<br>3.2,3.4<br>Ch3 3.7,3.8 |
| 21-23 | To learn the concepts and working of output devices | storage devices-magnetic tape, magnetic disks, hard disk drives floppy disks, optical disks-CD, VCD, CDR, CDRW, DVD | T1 Ch-4<br>4.1, 4.5<br>T1 Ch4<br>4.8,4.10 |
| 24-25 | To understand concept of software and its type | Computer software: types of software<br>utility program, assemblers, compilers and interpreter | T1 Ch-5<br>5.1,5.9 |

| | | | |
|---|---|---|---|
| 26-30 | To understand concept of OS and its type and aPglication | Operating system, functions, Types - batch, single user, multi user, multiprogramming, multiprocessing | T1 Ch-5 6.2,6.8 |
| 31-40 | To learn the concepts of computer languages and its type | Programming languages, machine, assembly, high level Computer virus types of virus Antivirus Types of network LAN, WAN, MAN | T1 Ch-7,Ch8 5.9, 6.4,7.1 |

**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 | 17 | 19/09/2022 | 1-12 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 13- 25 | CB |
| Test 3 | 60 Minutes | 16 | 17/11/2022 | 26- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 12/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Ms. SNEHAL VAIRAGADE YADAV**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course Code | Course Title | L | P | U |
|---|---|---|---|---|
| **PGDCA 112** | **Computer in Office – I** | **3** | **2** | **4** |

**Instructor-in-charge: Ms. SHRUTI**

**Learning Outcomes:**
This course trains students how to use MS Office application's use in office work such as creating professional-quality documents; store, organize and analyze information; arithmetic operations and functions; and create dynamic slide presentations with animation, narration, images, and much more, digitally and effectively.

| | |
|---|---|
| **Textbook(s)**<br>**T1** | Microsoft Office 2007 Bible - John Walkenbach, Herb Tyson, Faithe Wempen, Cary N. Prague, Michael R. Groh, Peter G. Aitken, and Lisa a, Bucky-Wiley India Pvt. ltd. |
| **Reference book(s)**<br>**R1** | Fundamentals of computers - V. Rajaraman - Prentice- Hall of India |
| **R2** | A Conceptual Guide to OpenOffice.org 3 - R. Gabriel Gurley- create Space Independent Publishing Platform, 2008 |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (Ch./Sec./ Page Nos. of Text Book) |
|---|---|---|---|
| 1-2 | To learn Editing in office | Creating, editing, saving and printing text documents | T1 CH-13 13.1,13.2 |
| 3-4 | To learn Formatting in office | Font and paragraph formatting | T1 CH-13 13.3,13.4 |
| 5-6 | To learn basics of Spreadsheet | Spreadsheet basics | T1 CH-13 13.5 |
| 7-8 | To learn create, edit spreadsheets | Creating, editing, saving and printing spreadsheets | T1 CH-14 14.1,14.2 |

| | | | |
|---|---|---|---|
| 9-10 | To learn functions & formulas | Working with functions & formulas | T1 CH-14 14.4, 14.5 |
| 11-12 | To learn Modifying worksheets | Modifying worksheets with color & auto formats | T1 CH-14 14.3 |
| 13-14 | To learn creating charts and graphs | Graphically representing data : Charts & Graphs | T1 CH-16 16.1,16.2 |
| 15-16 | To learn Speeding data entry | Speeding data entry : Using Data Forms | T1 CH-15 15.1,15.2 |
| 17-18 | To learn Analyzing data | Analyzing data : Data Menu, Subtotal, Filtering Data | T1 CH-15 15.3,15.4 |
| 19-20 | To learn Formatting worksheets | Formatting worksheets | T1 CH-15 15.6,15.7 |
| 21-22 | To learn Protecting spreadsheets | Securing & Protecting spreadsheets | T1 CH-16 16.5, 16.6 |
| 23-24 | To learn Creating presentation slide | Opening, viewing, creating, and printing slides | T1 CH-8 8.1, 8.2, 8.3 |
| 25-26 | To learn Applying auto layouts | Applying auto layouts | T1 CH-9 9.1 |
| 27-28 | To learn insert contents in slide | Add text, pictures, sounds, movies, and charts | T1 CH-10 10.1,10.2 |
| 29-30 | To learn Design slides | Design slides using themes, colors, and special effects | T1 CH-9 9.3,9.4 |
| 31-32 | To learn Animate objects | Animate objects on slides | T1 CH-10 10.5,10.6 |
| 33-34 | To learn Adding special effects | Add special effects to slide transitions | T1 CH-10 10.7,10.8 |
| 35-36 | To learn Setting up slide shows | Set up slide shows and rehearse timings | T1 CH-10 10.9,10.10 |
| 37-38 | To learn Charts & Graphs | Graphically representing data : Charts & Graphs | T1 CH-11 11.3,11.4 |
| 39-40 | To learn Creating Professional Slide for Presentation. | Creating Professional Slide for Presentation. | T1 CH- 12 12.1,12.2 |

**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 | 19.09.2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 17.10.2022 | 11- 24 | CB |
| Test 3 | 60 Minutes | 17 | 17.11.2022 | 25- 40 | OB |
| Assignments | Continuous | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 14.12.2022 | 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 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: 02/08/2022**

**Ms. SHRUTI**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **PGDCA113** | **Programming in 'C' language** | **3** | **2** | **4** |

**Instructor-in-charge: Dr. RAMESH YADAV**

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

1. Use and differentiate between basic concepts of computer hardware and software.
2. Use data representation for the fundamental data types in C and perform conversions between binary-hexadecimal decimal date representations.
3. Read, understand and trace the execution of programs written in C language
4. Analyze problems and design algorithms in pseudo code.
5. Write C program for a given algorithm using modular approach

| | |
|---|---|
| **Textbook(s) T1** | Programming in ANSI C, E. Balagurusamy , Sixth edition, MC Graw Hill |
| **Reference Book(s) R1** | "C Programming Laboratory Handbook For Beginners" by Signal, Wiley India. |
| **R2** | "Programming in C" by Stephen G. Kochan, 3/e Pearson, 2000 |

**Lecture wise plan**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-2 | To learn the concept of Introduction to Programming Language | Introduction, Computer System, Hardware & Software concepts. | T1 Ch 1, 1-10 |
| 3-4 | To learn the concept of Flowchart and algorithm | Problem Solving: Algorithm/Pseudo code, flowchart, program development Steps. | T1 Ch 1, 1-10 |
| 5-6 | To learn the concept of high Level and Low level Language | Computer language: Machine, Symbolic, and high – level language, creating and running programs. | T1 Ch 1, 1-10 |
| 7 | To learn the concept of Compiling and executing the code | Writing, editing, compiling, linking and executing. | T1 Ch 1, 14-17 |
| 8-10 | To learn the concept of C programs | Basics of C: Structure of a C program, identifiers, basic data types and sizes. | T1 Ch 1, 12 |
| 11-13 | To learn the concept of Data types and operators | Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, assignment operators. | T1 Ch 3, 52-63 |

| | | | |
|---|---|---|---|
| 14-17 | To learn the concept of expressions | Expressions, type conversions, conditional expressions, precedence and order of evaluation, Sample programs. | T1 Ch 3, 68-73 |
| 18-19 | To learn the concept of operators | Logical, shift, rotation, masks. | T1 Ch 3, 68-73 |
| 20-24 | To learn the concept of Decision Making | Selection: Making Decision: Two way selection: if- else | T1 Ch 5, 112-119 |
| 25-27 | To learn the concept of Decision Making | Nested if, null else | T1 Ch 5, 120-123 |
| 28-30 | To learn the concept of switch statement | Multi way selection: Switch, else if , examples | T1 Ch 5, 124-126 |
| 31-33 | To Learn the concept of Strings | String: Concepts, C strings | |
| 34-35 | To Learn the concept of Loops | Iterative Loops: while, do- while and for statement | T1 Ch 6, 151-158 |
| 36-37 | To Learn the concept of Break And Continue | Break, Continue, initialization and updating, event and counter controlled loops | T1 Ch 6, 151-158 |
| 38 | To Learn the concept of Looping with examples | Looping application's Summation, powers, smallest and largest | Revision Programs |
| 39 | To Learn the concept of Array | Array Concepts, declaration, defining, accessing elements, storing elements. | T1 Ch8, 237-239 |
| 40 | To Learn the concept of String manipulation | Strings and string manipulation, 1D arrays | T1 Ch8, 245-261 |

**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 | 17 | 20/09/2022 | 1-13 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 14- 24 | CB |
| Test 3 | 60 Minutes | 16 | 18/11/2022 | 25- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 16/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Dr. RAMESH YADAV**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **PGDCA114** | **Internet & Web Designing** | **3** | **2** | **4** |

**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 a Publications used in Web publishing.

| | |
|---|---|
| **Text Book T1** | 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. |
| **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) |
|---|---|---|---|
| 1-4 | Internet Concept: | Fundamental of Web, History of Web, Web development overview, Domain Name System (DNS) | T1: 1.5-1.6 |
| 5-8 | Functionality of Internet | DHCP and SMTP and other servers ,Internet service provider (ISP), Concept of IP Address, | T1: 1.8, 2.1 |
| 9-12 | Protocols and Components of internet | Internet Protocol, TCP/IP Architecture, Web Browser and Web Server. | T1: 2.1, 2.7 |
| 13-18 | HTML and DHTML | HTML Tag, Rules of HTML, Text Formatting and Style, List, Adding Graphics to Html Document, | T1: 4.1- 4.9 |
| 19-23 | HTML Teas & Frames | Tables and Layout , Linking Documents, Frame, Forms, Project in HTML | T1: 4.10 - 4.11 |
| 24-28 | DHTML & CSS | Introduction to DHTML, CSS, Class and DIV, External Style Sheet. | T1: 5.1 - 5.8 |
| 29-33 | Java Script | JavaScript(JS) in Web Page, Advantage of Java Script ,JS object model and hierarchy ,Handling event ,Operators and syntax of JS | T1: 6.1 – 6.5 |

| | | | |
|---|---|---|---|
| 34-36 | Java Script Functions | JS Function, Client side JS Vs. Server side JS, JS security, | T1: 9.1 – 9.11 |
| 37-38 | XML | Introduction to XML | T1: 14.1 |
| 39-40 | XML in Action | XML Namespace, DTD | T1: 14.4 |

**Practical list:**

| S. No | Name of the Experiment |
|---|---|
| 1 | HTML page to print Hello World. |
| 2 | Web page illustrating text formatting tags available in HTML. (i.e. <h1>, <b>, <u>, <i>). |
| 3 | Web page to illustrate three types of lists in HTML. |
| 4 | HTML page which displays 3 images at LEFT, RIGHT and CENTER respectively. |
| 5 | HTML Code for Table |
| 6 | CSS Colors Code |
| 7 | Student registration form using <form> tag |
| 8 | Web page using CSS Inline style. |
| 9 | Web page using CSS Internal style. |
| 10 | Web page using CSS External style. |
| 11 | Create CD Catalogue Table in XML and display it using XSL Style Sheet. |

**Evaluation Scheme:**

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

| Component | Duration | Weightage | Date | Syllabus (Lecture No) | Remarks |
|---|---|---|---|---|---|
| Test 1 | 60 Minutes | 17 | 20/09/2022 | 1-14 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 15- 25 | CB |
| Test 3 | 60 Minutes | 16 | 18/11/2022 | 26-40 | OB |
| Lab | 2 Hours | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 19/12/2022 | 1- 40 | CB |

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

**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: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course Code | Course Name | L | P | U |
|---|---|---|---|---|
| **DCA111** | **Essentials of Information Technology and OS** | **3** | **2** | **4** |

**Instructor-in-charge: Ms. SNEHA THAKUR**

**Learning Outcome:**

After successful completion of the course student will be able to:
Understand the basics of Information technology trends, Digital Systems, Basics of computer Network and the new trends in Computer Science Field.
The fundamentals of how computers works and performs operations, a basic understanding of advanced devices. Expose to the basic tools and applications used in Latest information technology trends.

| | |
|---|---|
| **Textbook(s)**<br>**T1** | P.K. Sinha, Priti Sinha "Computer fundamentals", BPB Publication |
| **Reference book(s)**<br>**R1** | M.N. Duja " Fundamentals Of Computers And Information Technology" Deep & Deep publication , 2005 |
| **NPTEL** | https://nptel.ac.in/courses/106/106/106106092/ |
| **SWAYAM** | https://onlinecourses.swayam2.ac.in/cec19_cs06/preview |

**Lecture Wise Plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-3 | Introduction to Computers | Characteristics of Computers, Generations of Computer | T1: Pg 1-12 |
| 4-6 | Basic Computer Organization | Input, Output, Storage Units. CPU | T1: Pg 19-21 |
| 7-10 | Processor and Memory | CU, ALU, Main Memory, Cache Memory | T1: Pg 104-118 |
| 11-16 | Secondary Storage Devices | Sequential and Direct Access devices, Data Storage Devices, Data Backup | T1: Pg 123-149 |
| 17-19 | Input Output Devices | Input devices, Output Devices | T1: Pg 155-174 |

| | | | |
|---|---|---|---|
| 20-23 | Computer Software | Software, Types of Software, Software Engineering | T1: Pg 180-192 |
| 22-25 | Computer Program | Algorithms, Flowcharts, Pseudo code | T1: Pg 196- 216 |
| 26-30 | System Implementation and Operation | Software Testing, Debugging, Types of Program Errors | T1: Pg 256-259 |
| 31-33 | Data Communication | Data Communication, Transmission modes | T1: Pg 346-347 |
| 34-36 | Computer Network | Network Topologies | T1: Pg 364-366 |
| 37-40 | Network Types | Network Types, OSI Model | T1: pg 366-372 |

**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 (Lecture No) | Remarks |
|---|---|---|---|---|---|
| Test 1 | 60 Minutes | 16 | 19/09/2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 11- 20 | CB |
| Test 3 | 60 Minutes | 17 | 17/11/2022 | 21 - 30 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 12/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Ms. SNEHA THAKUR**
**Instructor-in-charge**

**Experiment list**

1. Dismantling the system unit, recognize all major components inside a PC describe function of each component and define the relationship of internal components.
2. Perform various DOS command, like create, copy, move, delete and rename files and folders.
3. Create an office writer document and using tables distinguish between different types of memories.
4. Create an a Publication and prepare a neat curriculum Vitae for applying a job in a company apply Page format and Paragraph format to the above document and take the hard copy.
5. Create a template and draw a basic block diagram of computer & using graphs compare the performance of different laptop/notebook PC.
6. Prepare a mark list and find out Grade of each subject using functions.
7. Prepare a presentation with five slides including animation, insertion of scanned images.
8. Create an email id and send, receive and forward mails with attachments.
9. Prepare resume with a covering letter and send via Email.

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **DCA112** | **Computer in Office – I** | **3** | **2** | **4** |

**Instructor-in-charge: Ms. SHRUTI**

**Learning Outcomes:**
This course trains students how to use MS Office applications use in office work such as creating professional-quality documents; store, organize and analyze information; arithmetic operations and functions; and create dynamic slide presentations with animation, narration, images, and much more, digitally and effectively.

| | |
|---|---|
| **Textbook(s) T1** | Microsoft Office 2007 Bible - John Walkenbach, Herb Tyson, Faithe Wempen, Cary N. Prague, Michael R. Groh, Peter G. Aitken, and Lisa a. Bucki -Wiley India Pvt. ltd. |
| **Reference book(s) R1** | Fundamentals of computers - V. Rajaraman - Prentice- Hall of India |
| **R2** | A Conceptual Guide to OpenOffice.org 3 - R. Gabriel Gurley- create Space Independent Publishing Platform, 2008 |

**Lecture-wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference( Ch./Sec./Page Nos. of Text Book) |
|---|---|---|---|
| 1-2 | To learn Editing in office | Creating, editing, saving and printing text documents | T1 CH-13 13.1,13.2 |
| 3-4 | To learn Formatting in office | Font and paragraph formatting | T1 CH-13 13.3,13.4 |
| 5-6 | To learn basics of Spreadsheet | Spreadsheet basics | T1 CH-13 13.5 |
| 7-8 | To learn create, edit spreadsheets | Creating, editing, saving and printing spreadsheets | T1 CH-14 14.1,14.2 |
| 9-10 | To learn functions & formulas | Working with functions & formulas | T1 CH-14 14.4, 14.5 |

| | | | |
|---|---|---|---|
| 11-12 | To learn Modifying worksheets | Modifying worksheets with color & auto formats | T1 CH-14 14.3 |
| 13-14 | To learn creating charts and graphs | Graphically representing data : Charts & Graphs | T1 CH-16 16.1,16.2 |
| 15-16 | To learn Speeding data entry | Speeding data entry : Using Data Forms | T1 CH-15 15.1,15.2 |
| 17-18 | To learn Analyzing data | Analyzing data : Data Menu, Subtotal, Filtering Data | T1 CH-15 15.3,15.4 |
| 19-20 | To learn Formatting worksheets | Formatting worksheets | T1 CH-15 15.6,15.7 |
| 21-22 | To learn Protecting spreadsheets | Securing & Protecting spreadsheets | T1 CH-16 16.5, 16.6 |
| 23-24 | To learn Creating presentation slide | Opening, viewing, creating, and printing slides | T1 CH-8 8.1, 8.2, 8.3 |
| 25-26 | To learn applying auto layouts | Applying auto layouts | T1 CH-9 9.1 |
| 27-28 | To learn insert contents in slide | Add text, pictures, sounds, movies, and charts | T1 CH-10 10.1,10.2 |
| 29-30 | To learn Design slides | Design slides using themes, colors, and special effects | T1 CH-9 9.3,9.4 |
| 31-32 | To learn Animate objects | Animate objects on slides | T1 CH-10 10.5,10.6 |
| 33-34 | To learn Adding special effects | Add special effects to slide transitions | T1 CH-10 10.7,10.8 |
| 35-36 | To learn Setting up slide shows | Set up slide shows and rehearse timings | T1 CH-10 10.9,10.10 |
| 37-38 | To learn Charts & Graphs | Graphically representing data : Charts & Graphs | T1 CH-11 11.3,11.4 |
| 39-40 | To learn Creating Professional Slide for Presentation. | Creating Professional Slide for Presentation. | T1 CH- 12 12.1,12.2 |

**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 | 19/09/2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 11- 24 | CB |
| Test 3 | 60 Minutes | 17 | 17/11/2022 | 25- 40 | OB |
| Assignments | Continuous | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 14/12/2022 | 1- 40 | CB |

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

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**Date: 02/08/2022**

**Ms. SHRUTI**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **DCA113** | **Programming in 'C' language** | **3** | **2** | **4** |

**Instructor-in-charge: Dr. RAMESH YADAV**

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

1. Use and differentiate between basic concepts of computer hardware and software.
2. Use data representation for the fundamental data types in C and perform conversions between binary-hexadecimal decimal date representations.
3. Read, understand and trace the execution of programs written in C language
4. Analyze problems and design algorithms in pseudo code.
5. Write C program for a given algorithm using modular approach

| | |
|---|---|
| **Textbook(s) T1** | Programming in ANSI C, E. Balagurusamy , Sixth edition, MC Graw Hill |
| **Reference book(s) R1** | "C Programming Laboratory Handbook For Beginners" by Sidnal, Wiley India. |
| **R2** | "Programming in C" by Stephen G. Kochan, 3/e Pearson, 2000 |

**Lecture wise plan**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-2 | To learn the concept of Introduction to Programming Language | Introduction, Computer System, Hardware & Software concepts. | T1 Ch 1, 1-10 |
| 3-4 | To learn the concept of Flowchart and algorithm | Problem Solving: Algorithm/Pseudo code, flowchart, program development Steps. | T1 Ch 1, 1-10 |
| 5-6 | To learn the concept of high Level and Low level Language | Computer language: Machine, Symbolic, and high – level language, creating and running programs. | T1 Ch 1, 1-10 |
| 7 | To learn the concept of Compiling and executing the code | Writing, editing, compiling, linking and executing. | T1 Ch 1, 14-17 |
| 8-10 | To learn the concept of C programs | Basics of C: Structure of a C program, identifiers, basic data types and sizes. | T1 Ch 1, 12 |
| 11-13 | To learn the concept of Data types and operators | Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, assignment operators. | T1 Ch 3, 52-63 |
| 14-17 | To learn the concept of expressions | Expressions, type conversions, conditional expressions, precedence and order of evaluation, Sample programs. | T1 Ch 3, 68-73 |

| | | | |
|---|---|---|---|
| 18-19 | To learn the concept of operators | Logical, shift, rotation, masks. | T1 Ch 3, 68-73 |
| 20-24 | To learn the concept of Decision Making | Selection: Making Decision: Two way selection: if- else | T1 Ch 5, 112-119 |
| 25-27 | To learn the concept of Decision Making | Nested if, null else | T1 Ch 5, 120-123 |
| 28-30 | To learn the concept of switch statement | Multi way selection: Switch, else if , examples | T1 Ch 5, 124-126 |
| 31-33 | To Learn the concept of Strings | String: Concepts, C strings | |
| 34-35 | To Learn the concept of Loops | Iterative Loops: while, do- while and for statement | T1 Ch 6, 151-158 |
| 36-37 | To Learn the concept of Break And Continue | Break, Continue, initialization and updating, event and counter controlled loops | T1 Ch 6, 151-158 |
| 38 | To Learn the concept of Looping with examples | Looping applications: Summation, powers, smallest and largest | Revision Programs |
| 39 | To Learn the concept of Array | Array Concepts, declaration, defining, accessing elements, storing elements. | T1 Ch8, 237-239 |
| 40 | To Learn the concept of String manipulation | Strings and string manipulation, 1D arrays | T1 Ch8, 245-261 |

**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 | 17 | 20/09/2022 | 1-13 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 14- 24 | CB |
| Test 3 | 60 Minutes | 16 | 18/11/2022 | 25- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 16/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Dr. RAMESH YADAV**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **DCA114** | **Internet & Web Designing** | **3** | **2** | **4** |

**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.

| | |
|---|---|
| **Text Book 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) |
|---|---|---|---|
| 1-4 | Internet Concept: | Fundamental of Web, History of Web, Web development overview, Domain Name System (DNS) | T1: 1.5-1.6 |
| 5-8 | Functionality of Internet | DHCP and SMTP and other servers ,Internet service provider (ISP), Concept of IP Address, | T1: 1.8-2.1 |
| 9-12 | Protocols and Components of internet | Internet Protocol, TCP/IP Architecture, Web Browser and Web Server. | T1: 1.8, 2.1 |
| 13-18 | HTML and DHTML:- | HTML Tag, Rules of HTML, Text Formatting and Style, List, Adding Graphics to Html Document, | T1: 2.1, 2.7 |
| 19-23 | HTML Tables & Frames | Tables and Layout , Linking Documents, Frame, Forms, Project in HTML | T1: 4.1- 4.9 |
| 24-28 | DHTML & CSS | Introduction to DHTML, CSS, Class and DIV, External Style Sheet. | T1: 4.10 - 4.11 |

| | | | |
|---|---|---|---|
| 29-33 | Java Script | JavaScript(JS) in Web Page, Advantage of Java Script ,JS object model and hierarchy ,Handling event ,Operators and syntax of JS | T1: 5.1 - 5.8 |
| 34-36 | Java Script Functions | JS Function, Client side JS Vs. Server side JS, JS security, | T1: 9.1 – 9.11 |
| 37-38 | XML | Introduction to XML | T1: 14.1 |
| 39-40 | XML in Action | XML Namespace, DTD | T1: 14.4 |

**Practical list:**

| S. No | Name of the Experiment |
|---|---|
| 1 | HTML page to print Hello World. |
| 2 | Web page illustrating text formatting tags available in HTML. (i.e. <h1>, <b>, <u>, <i>). |
| 3 | Web page to illustrate three types of lists in HTML. |
| 4 | HTML page which displays 3 images at LEFT, RIGHT and CENTER respectively. |
| 5 | HTML Code for Table |
| 6 | CSS Colors Code |
| 7 | Student registration form using <form> tag |
| 8 | Web page using CSS Inline style. |
| 9 | Web page using CSS Internal style. |
| 10 | Web page using CSS External style. |
| 11 | Create CD Catalogue Table in XML and display it using XSL Style Sheet. |

**Evaluation Scheme:**

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

| Component | Duration | Weightage | Date | Syllabus (Lecture No) | Remarks |
|---|---|---|---|---|---|
| Test 1 | 60 Minutes | 17 | 20/09/2022 | 1-14 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 15- 25 | CB |
| Test 3 | 60 Minutes | 16 | 18/11/2022 | 26-40 | OB |
| Lab | 2 Hours | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 19/12/2022 | 1- 40 | CB |

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

**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,

**Date: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 - 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MCA 111** | **Object Oriented Programming** | **3** | **2** | **4** |

**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/deal location 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 BookT1** | E. Balagurusamy – Object Oriented Programming with C++, Fifth edition, Tata McGraw Education Hill, 2011. |
| **T2** | Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India |
| **Reference Book(s)** | 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 |
| 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 Specifies Derived classes | 426-430 |
| 26-28 | To learn about Polymorphism and need and importance of Virtual Functions | Virtual Function, function call binding, late binding | 444-447 |
| 29-30 | To learn about Polymorphism and need and importance of Virtual Functions | Friend and static function, this operator | 332, 310-315, 297-302 |
| 31-33 | To learn about handling the file Object | Creating and Manipulating File and Streams | 488 |
| 34-35 | To learn about handling the file Object | Mechanism, try, throw and catch | 494 |
| 36-37 | To learn about handling the file Object | Catching all Exceptions, Multiple catches | 495 |
| 38-40 | To learn about handling the file Object | Programs related to exception handling | 506 |

**Evaluation Scheme:**
Student evaluation is based on the series of Tests (Any one will be open book Test) 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 | 09/09/2022 | 1-11 | CB |
| Test 2 | 60 Minutes | 17 | 19/10/2022 | 12- 25 | CB |
| Test 3 | 60 Minutes | 17 | 19/11/2022 | 26- 40 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 23/12/2022 | 1- 40 | CB |

** To be announced in the class

**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: 02/08/2022**

**Mr. ASHISH KUMBHARE**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MCA 115** | **Fundamental of Computer Science** | **3** | **0** | **3** |

**Instructor-in-charge: Ms. SHRUTI BENDALE**

**Course Educational Objectives (CEO's):**

1. To understand the basic concepts of computer and organization of a computer
2. To understand the basic concepts of computer programming languages.
3. To make the students aware about the data representation, digital components of the computer hardware.
4. To make the students aware about the Combinational Circuit.
5. To understand the basic concepts of Principles of Computer Design

| | |
|---|---|
| **Text Books**<br>**T1** | Computers Today, S.K. Basadra, Gialgotia Publication.2nd edition. |
| **T2** | Internet for Every One, Alexis Leon and Mathews Leon, Tech World.2008 print |
| **T3** | Computer System Architecture, Morris Mano ,PHI, 3rd Edition) |
| **T4** | Computer Organization and Architecture, William Stalling (PHI), 2000. |
| **Reference Books** | Introduction to computers, P.K Sinha, BPB Publication, 6th Edition |
| **R2** | Fundamentals of Computers, V. Rajaraman, Prentice Hall of India,4th edition |
| **R3** | Computer organization and Architecture, J.P. Hayes (TMH), 3rd Edition |
| **R4** | Computer System Architecture and organization, Dr. M. Usha, T. S. Shrikant, Wiley publication |

**Lecture Wise Plan :**

| Lecture No. | Learning Objective | Topics to be covered | Reference (Ch./Sec./ Page Nos. of Text Book) |
|---|---|---|---|
| 1 | Introduction to computer and hardware | Introduction to computers | T1 CH-1 |
| 2 | | Disks , Types of Disks | T1 CH-1 |
| 3 | | Memory , Types Of memory | T1 CH-1 |

| | | | |
|---|---|---|---|
| 4 | | Processor, operating system ,Compiler | T1 CH-1 |
| 5 | | Basic computer organization, Block diagram of computer | T1 CH-2 |
| 6 | | Input Devices, Output Devices | T1 CH-2 |
| 7 | | Storage Devices and File organization system | T1 CH-2 |
| 8 | | Storage device: Data storage, Memory Chart | T1 CH-2 |
| 9 | | Storage devices-magnetic tape, magnetic disks, hard disk drives, | T1 CH-3 |
| 10 | | Concept of Data processing and information. | T1 CH-3 |
| 11 | | History of Computers | T1 CH-3 |
| 12 | Data Representation and Digital Components | Number Systems and their conversions | T1 CH-4 |
| 13 | | Number Systems and their conversions | T1 CH-4 |
| 14 | | BCD, Octal, Hexadecimal, R & R-1's Complement | T1 CH-4 |
| 15 | | Fixed and floating point representation | T1 CH-4 |
| 16 | | Binary Codes: Excess-3, ASCII , EBCDIC, Error detection Codes | T1 CH-5 |
| 17 | | Binary Codes: Excess-3, ASCII , EBCDIC, Error detection Codes | T1 CH-5 |
| 18 | | Boolean Algebra, Map Simplification. | T1 CH-6 |
| 19 | | K- Map, Logic Gates. | T1 CH-6 |
| 20 | Programming Concepts | Programming Languages, Introduction to Programming | T1 CH-7 |
| 21 | | Idea of Algorithm : Steps to solve logical and numerical problems | T1 CH-7 |
| 22 | | Representation of Algorithm :flow chart, Pseudo code, source code with example | T1 CH-8 |
| 23 | | Representation of Algorithm :flow chart, Pseudo code, source code with example | T1 CH-8 |
| 24 | | Syntax and logical error in compilation | T1 CH-9 |
| 25 | | Object and Executable code | T1 CH-9 |
| 26 | Combinational Circuit | Combinational circuit : Half and full Adder | T1 CH-10 |
| 27 | | Decoder and Multiplexer | T1 CH-11 |

| | | | |
|---|---|---|---|
| 28 | | Sequential Circuit : Flip-Flop,(SR, D, JK, Master-Slave) | T1 CH-12 |
| 29 | | Registers, Computer Registers | T1 CH-12 |
| 30 | | Counter , Register Transfer Language (RTL) | T1 CH-12 |
| 31 | | Micro – operations : Arithmetic , Logic | T1 CH-13 |
| 32 | | Micro – operations: Shift Micro operation Instruction code | T1 CH-13 |
| 33 | Principles of computer Design | Principles of computer Design: computer instructions | T1 CH-14 |
| 34 | | Timing and control | T1 CH-14 |
| 35 | | Instruction Cycle and interrupt Cycle | T1 CH-15 |
| 36 | | Memory reference instructions | T1 CH-15 |
| 37 | | Input-output and Interrupt | T1 CH-15 |
| 38 | | Design of basic Computer | T1 CH-16 |
| 39 | | Instruction format | T1 CH-16 |
| 40 | | Addressing Modes | T1 CH-16 |

**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 | 2/09/2022 | 1-10 | CB |
| Test 2 | 60 Minutes | 17 | 19/10/2022 | 11- 24 | CB |
| Test 3 | 60 Minutes | 17 | 19/11/2022 | 25- 40 | OB |
| Assignments | Continuous | 10 | | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 21/12/2022 | 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 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: 02/08/2022**

**Ms. SHRUTI BENDALE**
**Instructor-in-charge**

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MCA112** | **Database Management Systems** | **3** | **2** | **4** |

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

**Scope & Objective of the Course:**

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

1. To understand basic concepts and implementation issues of Database System.
2. To learn ER-modeling, Data models, Normalization and Functional dependencies, Relational Algebra, Implementation and Advanced Concepts.
3. To learn the hands-on database operations in SQL interface.

| | |
|---|---|
| **Textbook T1** | Database System Concepts, Silberschatz A, Korth HF, and SudarshanS,TMH,2002 |
| **Reference Book(s) R1** | Database Management Systems, Ramakrishna R.& Gehrke J, 3rd Edition, Mc-GrawHill,2002 |
| **R2** | Database Systems-The Complete book, Hector G Molina, Jeffrey D. Ullmanand Jennifer Widom, Pearson Education, 2002 |
| **NPTEL** | https://nptel.ac.in/courses/106/105/106105175/ |
| **SWAYAM** | https://onlinecourses.swayam2.ac.in/cec19_cs05/preview |

**Lecture wise plan:**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page No.s of Text/Ref. Books) |
|---|---|---|---|
| 1-3 | Introduction to Database Systems | Course overview, Overview of modern DBMS | T1: 1.1-1.13 |
| 4-7 | About Database | Data Views, Data Dictionary, DB Administrator | T1: 2.1-2.13 |
| 7-10 | Data modeling | Basic elements of ER model, Database Design through ER-model | T1: 7.1-7.10 |
| 11-13 | Understanding Relational model | Relation as a mathematical model, ER to Relational modee | T1: 2.1- 2.6 |
| 14-16 | Introduction to SQL constructs | SELECT…FROM, WHERE… GROUP BY… HAVING… ORDERBY… | T1: 3.1-3.9 |
| 17-19 | Understanding additional SQL structures | INSERT, DELETE, UPDATE, VIEW definition and use, Temporary tables, Nested queries | T1: 4.1-4.5 |
| 20-25 | Database design through Functional Dependencies & Normalization | Functional dependencies, Normal Forms: 1NF,2NF, 3NF, BCNF, Multi-valued dependencies:4NF,5NF | T1: 8.1-8.9 |

| | | | |
|---|---|---|---|
| 26-28 | Formal Query Languages | Relational algebra operators, Relational algebra queries | T1: 61.-6.4 |
| 29-32 | Integrity constraints | Integrity constraints: Not null, unique, check, primary key, foreign key, references, Triggers. | T1: 4.4-4.5 |
| 32-36 | Query processing | Query execution | T1: 12.1-12.8 |
| 37 - 40 | Transaction Management | Concurrency control, Deadlock Issues | T1: 14.1-14.10 |

**Evaluation Scheme:**

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

| Component | Duration | Weightage (%) | Date | Syllabus (Lecture No) | Remarks |
|---|---|---|---|---|---|
| Test 1 | 60 Minutes | 17 | 19/09/2022 | 1-14 | CB |
| Test 2 | 60 Minutes | 17 | 17/10/2022 | 15- 25 | CB |
| Test 3 | 60 Minutes | 16 | 17/11/2022 | 26-40 | OB |
| Lab | 3 Hour | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 14/12/2022 | 1- 40 | CB |

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

**Chamber Consultation Hour:** Mon-Tue, 2:30 PM to 4:20 PM

**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: 02/08/2022**

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

# The ICFAI University, Raipur

Faculty of Information Technology
First Semester, 2022 – 2023
Course Handout

| Course No | Course Title | L | P | U |
|---|---|---|---|---|
| **MCA114** | **Mathematical Foundation of Computer Science** | **3** | **0** | **3** |

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

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

1. Logical structure of statement, Boolean Algebra and it's a Publications
2. Concepts of relations and functions
3. Cartesian product of sets and grammars
4. Concept of graph theory and its matrix representation

| | |
|---|---|
| **Text Book (T1)** | A Textbook of Discrete Mathematics, 9th Edition S. Chand Company Ltd.<br>Author : Dr. Swaipan Kumar Sarkar |
| **Reference book(s) R1** | Discrete Mathematics , Pearson publication ,Author Babu Ram 2012 Edition |
| **R2** | Advanced Discrete Mathematics by Dr. H.K. Pathak & J.P. Chauhan,<br>Shree Shiksha Sahitya Prakashan, Meerut, 2021 Edition |

**Lecture wise plan**

| Lecture Nos. | Learning Objective | Topics to be covered | Reference (chapter/sec./Page Nos of Text/Ref. Books) |
|---|---|---|---|
| 1-4 | Mathematical logic | Propositions statements, Compound propositions, propositions and truth tables, Algebra of propositions, Conditional propositions | T l Ch-2<br>6-25 |
| 5-8 | Boolean Algebra | Normal forms, Boolean algebra, Boolean functions, De-Morgan's Theorem, Simplification of Boolean expression by algebraic method, | T l Ch-3<br>70-90 |
| 9-11 | Switching Circuits and logical Circuits | Applications of Boolean algebra in switching circuits, logical circuits | T l Ch-3<br>91-101 |
| 12-14 | Relations | Relation on sets , Operations on Relations, Types of relations in a set , Properties of relations | T l Ch-7<br>260-277 |
| 15-17 | Functions | Classification of functions, Types of functions , Composition of functions, Partially Ordered Sets | T l Ch-8<br>302-315 |
| 18-21 | Language and Grammars | Strings, Languages, Regular Expressions, Grammars, Finite State Machine | T1 Ch-17<br>702-716 |

| | | | |
|---|---|---|---|
| 22-24 | Graph Theory-I | Basic Concept, Types, Simple and Multi Graph, Psuedograph, Subgraph and Isomorphic Graphs, | T1 Ch-14 523-540 |
| 25-27 | Graph Theory - II | Operations on Graphs, Paths, Cycles, Eulerian and Hamiltonian Graph, Shortest Path Problems | T1 Ch-15 541-554 |
| 28-31 | Group Theory | Binary operations, Group, Groupoid, Monoiid, Semi group, Sub-Group, Cyclic Group | T l Ch-12 444-466 |
| 32-36 | Group Theory | Permutation group, Homorphism of groups, Isomorphism of groups | T l Ch-12 468-478 |
| 37-41 | Group Theory | Cosets, Lagrange's Theorem, Elements of Coding theory | T l Ch-13 479-498 |

**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 | 17 | 20/09/2022 | 1-11 | CB |
| Test 2 | 60 Minutes | 17 | 18/10/2022 | 12- 21 | CB |
| Test 3 | 60 Minutes | 16 | 18/11/2022 | 22- 31 | OB |
| Quizzes (2) | 20 Minutes each | 10 | ** | ** | CB |
| Comprehensive Exam | 3 Hours | 40 | 19/12/2022 | 1- 41 | CB |

** To be announced in the class

**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: 02/08/2022**

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