

**6<sup>th</sup>Sem BCA**  
**Paper: BCACsP6.12: PROJECT LAB**  
**PRACTICAL**

**3Hrs /Week**

**50 Marks**

**GUIDELINES FOR FINAL PROJECT WORK**

- The aim of the Project work is to acquire practical knowledge on the implementation of the programming concepts studied.
- Project should be carried out in batch with minimum of three and maximum of five students, and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea.
- The Project work should be compulsorily done in the college only under the supervision of the concerned department staff.

**University Exam will be conducted as follows.**

- Viva-voce will be conducted at the end of VI semester for 50 marks.
- Both the Examiners (50%+50%) should conduct the Viva-Voce Examination during practical session. Out of 50 marks, 25 for Project Evaluation and 25 for Viva. For awarding a pass, a candidate should have obtained 40% of the Total 100 marks.
- Report should be in A4 size paper and book binding with the following table of contents

- 1) Certificate
- 2) Acknowledgement
- 3) Synopsis
- 4) Contents
- 5) About the project
- 6) Analysis
- 7) Design
- 8) Coding
- 9) Testing
- 10) Reports/output
- 11) Conclusion
- 12) Bibliography

## **Open Electives in Computer Science:**

(For BA, BSc, BCom, BSW, BBA, BBM students studying Core Courses other than ComputerScience/ComputerApplications)

- Office Automation
- C Programming Concepts
- Multimedia Processing
- Python Programming Concepts
- R Programming
- E-Content Development
- E-Commerce
- Web Designing
- Computer Animation
- Accounting Package

### **Selected List of Open Electives in Computer Science:**

<b>Sem</b>	<b>Subjects</b>	<b>Hr/week</b>
I	CSOEC01: Tally and GST	3
I	CSOEC02: Office Automation	3
II	CSOEC03: C - Programming Concepts	3
II	CSOEC04: Web Designing	3



OPEN ELECTIVE IN COMPUTER SCIENCE

**TALLY AND GST**

**I SEMESTER**

Course Code: CSOEC01	Course Title: <b>TALLY AND GST</b>
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

**3 Hrs/week**

**Total : 42 Hours**

**UNIT 1: Basics of Accounting and Tally**

**10 Hrs**

Type of Accounts, Golden Rules of Accounting, Accounting Principles, Concepts and Conventions, Double Entry System of Book Keeping mode of accounting, Financial Statements, Transactions, Recording Transaction. Introduction to Tally, Versions of Tally. Accounting Groups-Primary groups are Capital Account, Current Assets, Current Liabilities, Fixed Assets, Investments, Loans (Liability), Suspense Account, Misc. Expenses, Sales Account, Purchase Account, Direct Income, Indirect Income, Direct Expenses, Indirect Expenses, Branch/Divisions. Secondary Groups are , Reserves & Surplus, Bank Account, Cash-in-hand, Deposits (Asset), Loans and Advances, Stock-in- hand, Sundry Debtors, Duties and Taxes, Provisions, Sundry Creditors, Bank OD Account, Secured Loans, Unsecured Loans.

**UNIT 2: Company Info Menu**

**10 Hrs**

Select Company, Shut Company, Create Company, Alter Company, Security control, Backup, Restore. Accounting Information- Accounting Configuration & Features, Group Creation, Multiple Group Creation, Ledger Creation, Multiple Ledger Creation, Advance Ledger Creation. Inventory Information-Inventory configuration &features, Inventory info. Menu, Stock groupsStock categories, Stock item, Unit of measurement, Bills of materials, Locations / Godowns

**UNIT 3: Voucher Entry and Invoicing**

**09 Hrs**

Introduction Voucher Type, Creating a Voucher Type, Displaying a Voucher Type, Altering a Voucher Type Accounting Vouchers, Receipt Voucher, Payment Voucher,



Contra Voucher, Journal Voucher, Purchase Invoice, Purchase Voucher, Sales Invoice, Sales Voucher, Debit Note, Credit Note Inventory Vouchers, Purchase Order, Sales Order, Delivery Note Voucher, Physical Stock Voucher.

#### **UNIT 4: Taxation**

**05 Hrs**

What is GST,CGST SGST,GST on Purchase invoice, GST on Sales invoice, IGST on Sales, other States, GST on Expenses, GST on Fixed Assets, GST on Buying or Servicing, Debit Note : Purchase Returns, Credit Note : Sales Returns, Day Book Report print

#### **UNIT 5: Payroll Systems**

**08 Hrs**

Industries or organization Payroll Management, Employee Groups Creations, Department wise Groups, Employees Creations with Name or Designations, Account Department, Admin Department, Purchase Department, Sales Department, Worker Department, Employees payment Units Types, Attendance / Production Types, Attendance leave with pay, leave without pay, Production Hrs.Pay Heads creations, Basic salary, HRA, DA, TA, PF,Employee allowances or Deductions, Maintain employees salary Details or Rate, Creating payroll vouchers, employee attendance sheet, present or leave, overtime manage, print all employee Salary, print Salary Slip.

#### **Reference Books:**

1. Tally Technology-"The Complete Reference"
2. Official guide to financial accounting using Tally ERP 9 with GST, Tally Education P.Ltd.





OPEN ELECTIVE IN COMPUTER SCIENCE  
**OFFICE AUTOMATION**  
**I SEMESTER**

Course Code: CSOEC02	Course Title: <b>OFFICE AUTOMATION</b>
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

**3 Hrs / Week**  
**:42**

**Total Hrs**

**UNIT 1: Introduction to Computer and Windows**

**08 Hrs**

Introduction, History of computer, Block diagram of a computer, Generation of computer, Classification of computers, Characteristics of computer, Applications of computer.

Windows concepts, general features of windows, different parts of windows screen, Setting the date and time, Icon explanation, paint, notepad, calculator, control panel, mouse properties, multitasking, my computer, folder creation, use of recycle bin and task bar.

**UNIT 2: Word Processing - MS-Word**

**08 Hrs**

Introduction to MS Word, parts of MS- word, Parts of MS-Word screen, Backstage view, editing the text, formatting the text, Text effects, Bullets add numbering, Paragraph formatting, Borders & Shadings, Text styles, Table formatting, Picture, clipart and shapes adding, SmartArt representing, Screenshot explanation, Header & Footer, Word art, Drop cap, Page setup, Watermark, Mail merge, Auto correct, Word count, Spell check & grammar check, Commenting, Restrict editing, Document views, Zoom options, Arranging & Splitting word screen, Printing document, Exit from MS Word.



**UNIT 3: Spread Sheet****12 Hrs**

Introduction to MS-excel screen, Parts of MS-excel screen, Worksheet basic, creating worksheet, entering text, Dates, alphanumeric and values, conditional formatting, table formatting, Cell styles, Auto sum, Sorting & Filtering, Editing the table, explaining / types of charts, Page setup, print area, Sheet options, statistical, mathematical formulae, insert functions, protecting sheet & workbook, workbook views, exiting excel.

**UNIT 4: Presentation Graphics - MS-Power Point****o6 Hrs**

Introduction to MS-Power point screen, Parts of MS-Power point screen, New slide & Layout options, editing text, Images & Illustrations, Photo album, Page setup, Slide Themes, Background styles & Graphics, Slide Transition effects, Sound effects for text and images, new animation effects, Order & Reordering animation.

**UNIT 5: Internet and ICT Tools****o8 Hrs**

Definition, Internet, Intranet, Search engine, video conference, web browsers, online forms, drive, spread sheet, presentation slides, docs and classroom platform, Visualization tools.

**Reference Books:**

1. Microsoft Office 2020 -: Belton, Claire, John Walkenbach, Herb Tyson, Michael R Groh, Faithe Wempen.
2. Microsoft Office 2010 for windows : Joe Habraken.



COMPUTER SCIENCE OPEN  
ELECTIVE

**C-PROGRAMMING CONCEPTS**  
**II SEMESTER**

Course Code: CSOEC03	<b>Course Title: C-Programming concepts</b>
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

**UNIT I : Introduction to Programming:** **9 Hrs**

**Importance of C:** Basic Structure of C Programs, Programming Style, Executing a C Program. Character Set ,C Tokens, Keywords and Identifiers ,Constants, Variables, Data Types ,Declaration of Variables, Assigning Values to Variables, Defining Symbolic Constants.

**Managing Input and Output Operations:** Reading a Character, Writing a Character, Formatted Input, Formatted Output.

**Operators and Expressions:** Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operator, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expressions, Operator Precedence and Associativity.

**UNIT II : Decision Making and Branching:** **9 Hrs**

Introduction, Decision Making with IF Statement, Simple IF Statement, the IF ..... ELSE Statement, Nesting of IF..... ELSE Statements, The ELSE IF Ladder, The Switch statement. Simple programs from program list.

**Decision Making and Looping:** The WHILE Statement, The DO-WHILE Statement, the FOR Statement, Jumps in LOOPS. Simple Programs from program list.

**UNIT III : Arrays:** **9 Hrs**

One-dimensional Arrays, Declaration of One-dimensional Arrays, Initialization of One-dimensional Arrays, Example programs- Linear search, Binary search, Bubble sort. Two-



dimensional Arrays, Declaration of Two-dimensional Arrays, Initialization of Two dimensional Arrays. Simple Programs from program list.

#### **UNIT IV : Character Arrays and Strings:**

**7 Hrs**

Declaring and Initializing String Variables ,Reading Strings from Terminal ,Writing Strings to Screen , String-handling Functions (strlen(), strcpy(), strcmp(), strcat(), strrev()), Example Programs (with and without using built-in string functions). Simple Programs from program list

#### **UNIT V : User-defined Functions:**

**8 Hrs**

Elements of User-defined Functions, Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return values, Arguments with Return Values, No Arguments but Returns a Value. Recursion - Factorial of an integer, Fibonacci series. Simple Programs from program list.

#### **TEXT BOOKS:**

1. E. Balagurusamy Programming in ANSI C, 5th Edition, Tata McGraw-Hill Publications
2. P B Kottur Computer Concepts and C Programming

#### **REFERENCE BOOKS:**

1. Kerningham Dennis Ritchie The C programming language (ANSI C version), 2 nd Edition, PHI India
2. Jeri R Hanly Elliot B Koffman Problem solving and program design in C Person Addison Wesley 2006
3. Yashwant Kanetkar Let us C, 6th Edition , BPB publication

### **C- Programs list for Practice**

#### **Programs List:**

1. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:  
Grade A: Percentage  $\geq 80$   
Grade B: Percentage  $\geq 70$  and  $\leq 60$   
Grade C: Percentage  $\geq 60$  and  $\leq 40$  and





Grade D: Percentage  $\geq 40$  and  $< 40$

Grade E: Percentage  $< 40$

2. Develop a C Program to implement a simple calculator to perform addition, subtraction, multiplication and division operations using switch construct. Display appropriate messages for invalid operator.
3. Develop a C Program to generate the Prime numbers between the ranges m & n using nested for loop construct.
4. Develop a C Program to find the GCD & LCM of two integers using Euclid's algorithm.
5. Develop a C program to read n elements into an integer array and sort the array using Bubble sort technique. Print the input array and the resultant array with suitable messages.
6. Develop a C Program to conduct Binary search for a key element over an array of n integer elements. Report success or failure with appropriate messages.
7. Develop a C program to print addition of two matrices.
8. Develop a C program to print product of two matrices.
9. Develop a C program to count the vowels & consonants in a given string.
10. Develop a recursive C function to find the factorial of a number.



COMPUTER SCIENCE OPEN  
ELECTIVE

**WEB DESIGNING**

**II SEMESTER**

Course Code: CSOEC04	<b>Course Title: Web Designing</b>
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

**UNIT 1 : Fundamentals of web**

**06 Hrs**

Internet, Intranet, WWW, web browsers, web servers, Search engines, DNS, URLs, MIME, HTTP, CGI, Internet Security.

**UNIT 2 : Introduction to HTML**

**07 Hrs**

Introduction, History and versions of HTML, Advantages & Disadvantages of HTML, Hypertext and Hypertext Markup Language, Why HTML, Prerequisites. Basic structure of HTML, HTML comments.

**UNIT 3 : Tags and Elements of HTML documents:**

**09 Hrs**

Definition of tag, HTML Element, different types of tags: container tag and empty tag, Basic text markup: title tag, head tag, body tag, Paragraphs <p>, Headings <h1>.....<h6>, preserving white space <pre>tag, Line break<br>, <hr>, Presentation elements:<i>,<b>,<u>,<sup>,<sub>,<s>,<tt>,<big>,<small>,Phrase elements:<em>,<strong>,<meta> tag, Character entities.

**UNIT 4 : Lists , Images and Hyper Linking in HTML:**

**08 Hrs**

Lists: Ordered lists, Unordered lists and Definition lists, adding images using <img> tags and setting an image as background, embedding a multimedia on to a web page: Inserting audio files and video <marquee> behaviour, types of Hyperlinks: Internal Links, Local links, External Links, anchor <a> tag, links with text and images.

**UNIT 5 : Tables, Forms and Frames in HTML:**

**12 Hrs**



Creating and managing tables: Defining border,<tr>,<th> and <td> tags, cellspacing and cell padding attributes, rowspan and colspan attributes,<Caption> tag and its attributes, Managing Forms: creating interactive forms, Different types of Form Controls:Text Input Controls, Checkboxes Controls, Radio Box Controls, Select Box Controls, File Select boxes, Hidden Controls, Clickable Buttons,Menus and buttons, action controls: submit and reset,Using Frames:<frameset> and <frame>, nested frames

**Reference Books:**

1. Robert W.Sebesta: Programming the World Wide Web, 4th Edition, Pearson Education, 2008
2. Thomas A. Powell, HTML & CSS: The Complete Reference, Fifth Edition



**SKILL ENHANCEMENT COURSE**  
**CSSECo1: Basics of Computers**

---

**1<sup>st</sup> Semester**

---

**2Hrs/week**

**Total: 28 hrs**

**Unit 1: COMPUTER BASICS**

**5 hrs**

Evolution of computers, characteristics of computer, computer generations: first generation, second generation, third generation, fourth generation and fifth generation computers. Classification of computers: based on working principle, size and capability, computer applications: data processing, commercial, office automation, industry and engineering, healthcare, education, graphics and multimedia applications.

**Unit 2: COMPUTER ORGNIZATION**

**5hrs**

Block diagram of computer, computer memory: primary memory: Read Only Memory and Random Access Memory. Secondary memories- hard disk, floppy disk, compact disk, blue ray disk, pen drive, memory cord. Input devices: key board, mouse, OMR, OCR, MICR, BCR and scanner. Output devices: monitor (CRT ,LCD, LED), printers: impact and non impact printers, plotters.

**Unit 3: NUMBER SYSTEM**

**3 hrs**

Introduction to number systems, positional and non positional number systems. Decimal, binary, octal and hexa decimal number systems and their conversation.

**Unit 4: COMPUTER HARDWARE AND SOFTWARE**

**5 hrs**

Computer hardware, computer software-types of software: system software, application software, programming languages, low level and high level languages. Program translators: assemblers, compilers, interpreters. Problem solving techniques: steps in problem solving techniques, algorithm: characteristics, examples, flowchart: flowchart symbols, examples.





**Unit 5: COMPUTER NETWORKS AND INTERNET APPLICATIONS****3 hrs**

Introduction, Types of Networks, Network Topology. LAN, WAN, MAN, Intranet and Internet, Internet applications, WWW, E-mail, browsing and searching. Search engines. Computer virus antivirus and surfing.

**Unit 6: OPERATING SYSTEM****2 hrs**

Introduction to OS, functions of OS, different views of OS, type of OS, DOS : internal and external commands.

**Unit 7: MS-OFFICE****5hrs**

MS Word: Introduction to MS-Word, Editing a document, Formatting a document, Preview document, Printing a document, Find and Replace, Checking the grammar and Spelling , Word count, Header and footer, Auto correct and auto text, Drawing and insert objects, Table generation. MS Excel: Worksheet basic, Creating worksheet, Entering text, Dates, alphanumeric and values, Tool bars and menus, Applying different formulas, Creating charts, Formatting of work sheet. MS Power Point: Need of power point, Creating slides, Entering text, graphics, pictures and other objects, Tool bars and menus, Custom animation, Creating charts, Formatting of presentation.

**Reference Books:**

1. Introduction to computer concepts: Pearson publication.
2. Computer Fundamentals : Anita Goel, Pearson publication.
3. Fundamentals of Computers, - V. Rajaraman.: PHI (EEE)
4. Microsoft office 2010: John Walkenbach, Herb Tyson, Michael R Groh, FaitheWempen. 6. Microsoft office 2010 for windows : Steve Schwartz.



## CSSECo2: Hardware Maintenance

Course Code: CSSECo2	Course Title: Hardware Maintenance
Course Credits: 02	Hour of Teaching/Week: 02
Total Contact Hours: 28	

### UNIT I

#### 1. Basics of Computer and Hardware : 5Hrs

Introduction and Functional block diagram of pc with its internal Working, Introduction to computer parts: SMPS, Motherboard, Processor, Ram, Hard disk, Optical drive, Cabinet, Keyboard, Mouse, Monitor, Add-On Cards.

### UNIT II

#### 1. Assembling and Setting BIOS of computer 5Hrs

Assembling of Personal Computer components, Cable Connection and power Connections. CMOS Setup, formatting of Hard Disk, Disk Management Procedure, Bios Password Setting and Recovery in PC and Laptops. Perform repairs to personal computers

### UNIT III

#### 1. Installation of Operating System and Application Software 8Hrs

Operating System Installations and Booting Procedures of Windows, Linux, Ubuntu and Drivers, office automation software, compression software, media players, Page Maker, Corel Draw, Kannada Nudi software and Typing.

### UNIT IV

#### 1. Installation of Peripherals devices and Antivirus 8Hrs

Installation of peripheral Parts of computer like Printer, Scanner, Web Camera.

Installation of Antivirus software and Activation like NPAV, Updating, Scanning. Configure Internet and Email

### Reference Book

1. R. K. Sharma- Computer Hardware, Himalaya Publishing House, Mumbai.



## CSSECo3: Networking

Course Code: CSSECo3	<b>Course Title: Networking</b>
Course Credits: 02	Hour of Teaching/Week: 02
Total Contact Hours: 26	

### UNIT I

#### Basics of Computer Networks

5Hrs

Introduction and classification of Network, Functional block diagram of Network. Introduction and Identification of Network Parts: Cable, Switch, Router, Connector, Network Tools, Wall Rack, Modem, Wi-Fi Dongle, Add-On Cards.

### UNIT II

#### Installation of computer Network

10Hrs

Building your own Network with all parts, Network Topology, Cable Crimping, Connections, IP Address Setting, Domain Creation, LAN Creation, Connecting to Internet, Testing of connectivity, Sharing Device and Data, Remote Access, Uses of sharing Software with internet, Remote installation

### UNIT III

#### Information of CCTV Network

8Hrs

Introduction and classification of CCTV Network, Functional block diagram of CCTV Network Identification of CCTV Network Parts, Types of Cable, DVR, NVR, Mouse, Monitor, HDD, Power and Video Connectors and other. Installation CCTV Setup, Installation of Online and offline setup, Security of CCTV Network.

### UNIT IV

#### Troubleshooting

Fault Finding and Troubleshooting of Network and CCTV Network

3Hrs

#### Reference Book

1. R. K. Sharma- Computer Hardware, Himalaya Publishing House, Mumbai.





## CSSECo3: DIGITAL MARKETING

Course Code: CSSEC04	Course Title: <b>DIGITAL MARKETING</b>
Course Credits: 02	Hour of Teaching/Week: 02
Total Contact Hours: 28	

### **DIGITAL MARKETING INTRODUCTION**

**8 Hrs**

What is marketing, What is Digital Marketing, Understanding Marketing Process Understanding Digital Marketing Process, Increasing Visibility, What is visibility, Types of visibility, Examples of visibility, Visitors Engagement, What is engagement?, Why it is important Examples of engagement, Bringing Targeted Traffic, Inbound and outbound marketing, Converting Traffic into Leads, Types of Conversion , Understanding Conversion Process, Tools Needed.

### **DIGITAL MARKETING VS. TRADITIONAL MARKETING**

**6 Hrs**

What's the difference between digital marketing and traditional marketing, and why does it matter? Benefits of Traditional Marketing, The Downside to Traditional Marketing Benefits of Digital Marketing Why Digital Marketing Wins Over Traditional Marketing? Tools of Digital Marketing How We Use Both Digital & Traditional Marketing.

### **WEBSITE PLANNING PROCESS**

**6 Hrs**

What is Internet?, Understanding domain names & domain extensions, Different types of websites Based on functionality, Based on purpose Planning & Conceptualising a Website, Booking a domain name & web hosting, Adding domain name to web Server, Adding webpages & content, Adding Plugins, Building website using CMS in Class, Identifying objective of website, Deciding on number of pages required, Planning for engagement options Landing Pages & Optimization, Creating blueprint of every webpage, Best & Worst Examples.

### **SOCIAL MEDIA MARKETING**

**8 Hrs**

What is social media? (Face book, LinkedIn and Google) Understanding the existing Social Media paradigms & psychology, how social media marketing is different than, others Forms of Internet marketing, Social Media marketing & Understanding Social Media marketing, Creating Social Media page Uploading contacts for invitation Exercise on fan page wall posting Increasing fans on fan page How to do marketing on fan page (with examples). Fan engagement Important apps to do fan page marketing Social Media advertising, Types of Social Media advertising, best practices for Social Media advertising, Digital Marketing Tool Demo.





## Skill Enhancement Course: SEC for B.Sc. & other Subject Students

### Semester: III/IV

Course Title: <b>Artificial Intelligence</b>	Course Credits: 2
Total Contact Hours: 13 hours of theory and 26 hours of practical	Duration of ESA: 01 Hour
Formative Assessment Marks: <b>20 marks</b>	Summative Assessment Marks: 30 marks

#### Course Outcomes (COs):

At the end of the course, students will be able to:

- Appraise the theory of Artificial intelligence and list the significance of AI.
- Discuss the various components that are involved in solving an AI problem.
- Illustrate the working of AI Algorithms in the given contrast.
- Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.
- Apply the AI concepts to build an expert system to solve the real-world problems.

#### Course Content (Artificial Intelligence)

	Details of topic	Duration
<b>Course – 1 - Azure AI Fundamentals (AI-900)</b>	AI-900 pathway consists of 5 courses and 2 reading material: <ul style="list-style-type: none"> <li>i. Introduction to AI on Azure</li> <li>ii. Use visual tools to create machine learning models with Azure Machine Learning</li> <li>iii. Explore computer vision in Microsoft Azure</li> <li>iv. Explore natural language processing</li> <li>v. Explore conversational AI</li> <li>vi. Tune Model Hyperparameters - Azure Machine Learning (Reading)</li> <li>vii. Neural Network Regression: Module Reference - Azure Machine Learning (Reading)</li> </ul>	05 hours
<b>Practical</b>	<ol style="list-style-type: none"> <li>1. Prepare the data</li> <li>2. Model the data</li> <li>3. Visualize the data</li> <li>4. Analyse the data</li> <li>5. Deploy and maintain deliverables</li> </ol>	13 hours



<b>Course – 2 - Data Analyst Associate (DA-100)</b>	DA-100 pathway consists of 5 courses and 2 reading material: 1. Get started with Microsoft data analytics 2. Prepare data for analysis 3. Model data in Power BI 4. Visualize data in Power BI 5. Data analysis in Power BI 6. Manage workspaces and datasets in Power BI 7. Key Influencers Visualizations Tutorial - Power BI 8. Smart Narratives Tutorial - Power BI   Microsoft Docs	08 hours
<b>Practical</b>	1. Describe Artificial Intelligence workloads and considerations 2. Describe fundamental principles of machine learning on Azure 3. Describe features of computer vision workloads on Azure 4. Describe features of Natural Language Processing (NLP) workloads on Azure	13 hours

#### References to learning resources:

1. The learning resources made available for the course titled “Azure AI Fundamentals (AI-900) and Data Analyst Associate (DA-100).” on Future Skills Prime Platform of NASSCOM.

#### Pedagogy

Flipped classroom pedagogy is recommended for the delivery of this course.

For every class:

1. All the faculty who takes this class should go for a Faculty Development Program on these before starting the session.
2. Faculty needs to introduce this course to the students then students need to start learning from Future Skills PRIME platform.
3. Faculty also needs to explain the course outcomes and needs of the course and why it is needed for the students.
4. Then students need to start learning online after registering on the platform.
5. Classroom activities are designed around the topic of the session towards developing better understanding, clearing doubts and discussions of high order thinking skills like application, analysis, evaluation, and design.
6. Every theory class ends with announcement of exercise for practical activity of the week.

#### Exercises:

Practical Exercises	Weightage in marks
After each chapter students’ needs to complete exercises based on the learning in Azure environment.	No Weightage (But students need to complete it to move to next chapter) .



**Assessment:**

<b>Formative Assessment</b>	
<b>Assessment Occasion</b>	<b>Weightage in Marks</b>
1. Summative Assessment: After completion of both the courses, the student can optionally give Assessment for each of the courses on Future Skills Prime platform. Students will have two attempts and those who score at least 50% marks per course will get certificate from NASSCOM-MeitY.	This assessment may be given 50% weight in computing the final grade of the students.

## Open Source Tools (Skill Enhancement Course: SEC for BCA Course)

### Semester: III

Course Title: <b>Open Source Tools</b>	Course Credits: 2 (1L+0T+2P)
Semester: III	Duration of SEE: 01 Hour
Total Contact Hours: 13 hours of theory and 26-28 hours of practicals	SEE: 30 Marks IA: 20 Marks

### Course Outcomes (COs):

- Recognize the benefits and features of Open Source Technology and to interpret, contrast and compare open source products among themselves
- Use appropriate open source tools based on the nature of the problem
- Write code and compile different open-source software.

### Course Content (Open Source Tools)

Module	Details of topic	Duration
<b>Module 1: Open Source Softwares</b>	i. Introduction to Open sources, Need of Open Sources, Open Source –Principles, Standard Requirements, Advantages of Open Sources – ii. Free Software – FOSS iii. Licenses – GPL, LGPL, Copyrights, Patents, Contracts & Licenses and Related Issues iv. Application of Open Sources. Open Source Operating Systems : FEDORA, UBUNTU	05 hours
<b>Module 2: Programming Tools And Techniques</b>	i. Usage of design Tools like Argo UML or equivalent ii. Version Control Systems like Git or equivalent iii. Bug Tracking Systems (Trac, BugZilla) iv. BootStrap	04 hours
<b>Module 3: Case Studies</b>	i. Apache ii. Berkeley Software Distribution iii. Mozilla (Firefox) iv. Wikipedia v. Joomla vi. GNU Compiler Collection vii. Libre Office	04 hours

### Text Book:

1. KailashVadera, Bhavyesh Gandhi, “Open Source Technology”, Laxmi Publications Pvt. Ltd 2012, 1<sup>st</sup> Edition.

### Reference Book:

1. Fadi P. Deek and James A. M. McHugh, “Open Source: Technology and Policy”, Cambridge Universities Press 2007.

