



Shri Sangameshwar Education Society's  
**Sangameshwar College, Solapur [Autonomous]**  
(Affiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur)  
Kannada Linguistic Minority Institute  
**NAAC Accredited with 'A' Grade (III Cycle CGPA 3.39)**

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## **CERTIFICATE COURSE IN SOPKEN ENGLISH**

### **COURSE OUTCOME:**

- Speak English effectively in day to day communication.
- Face interviews confidently.

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **A: Basics of English phonology:**

1. Organs of speech
2. Sounds
3. Syllables
4. Weak forms & strong forms
5. Accent
6. Intonation

#### **B: Basic Grammar:**

1. Parts of speech
2. Prepositions
3. Subject verb agreement
4. Tenses
5. Types of sentences
6. Transformation of sentences

#### **C: Effective Public Speaking:**

1. Self-Introduction and introduction of others
2. Greeting people
3. Invitation; Accepting – Declining
4. Making Request
5. Expressing Gratitude
6. Complimenting and Congratulating
7. Expressing Sympathy
8. Apologizing
9. Asking for Information
10. Seeking Permission
11. Complaining and Expressing Regret

#### **D: Practical: with software in the language lab**

### **TEACHING-LEARNING METHODOLOGY:**

Lectures, Competitions, Application of software for practical and activities



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## **CERTIFICATE COURSE IN TOURISM**

### **COURSE OUTCOME:**

- Understand the concepts, types and consequences in tourism
- New consents can be develop in tourism
- Understand the Problems in Tourism
- Start own start - up in Tourism

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **Introduction**

1. Definition of Tourism
2. Nature of Tourism
3. Scope of Tourism, Regional, Religious and Cultural.

#### **Historical Monuments and Tourist Places in Maharashtra**

1. Forts – Raigadh, Janjira.
2. Caves – Ajanta, Ellora.
3. Hill Station – Mahabaleshwar, Matheran.
4. Religious Places – Pandharpur, Kolhapur.
5. Fairs and Festival- Solapur (SiddheshwarGadda)

#### **Tourist Guide & Travel Formalities**

1. Qualification & Qualities
2. Passport (Types and Procedures)
3. Visa and customs
4. Health Insurance & Travel Insurance

#### **Transportation and Accommodation**

1. Transportation – Bus, Railway and Airway.
2. Lodging and Boarding.

#### **Tour Arrangement and Tourist Agencies**

1. Tour Arrangement – i) Map Reading ii) Climate
2. Tourist Agencies- Private, Government, organizational structure, Registration & Documentation
- 3.

#### **FIELD WORK / PROJECT REPORT**

Dissertation / Project Report on any State / National Tourist place in 5000 words or more is compulsory



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## **CERTIFICATE COURSE IN LIFE SKILL DEVELOPMENT**

### **PREAMBLE**

Today competitive world any subject knowledge enrichment has given high priority than life skills. Life skills are our abilities for adaptive and positive behavior which enable everybody with demand challenges of everyday life. It play important role children and Participant promote physical mental and social health. There for it is an ability to develop specific strategies with stressor pressure of life

### **OBJECTIVES**

1. To inform Participant various basic life skills in everyday life.
2. To learn and enhance component of life skills related Daily life activities.
3. To trend the Participant build new network strategies enhancing life skills.

### **COURSE OUTCOME:**

1. Learn to the basic life skills everyday life.
2. Able to enhance component of life skills related Daily life activities.
3. Participant Utilize to new network strategies enhancing life skills,
4. Utilize Participant their potential to the fullest expectation

### **ELIGIBILITY:**

XII passed any stream.

### **COURSE CONTENTS:**

#### **Module 1: Self Understanding Skills**

- A) Self-Esteem: Understanding Self, Concept of Self, Negative or Positive Self esteem  
Developing Positive self esteem.
- B) Motivation- Nature, Type, Factors Affecting on motivation Enhancing Intrinsic Motivation.
- C) Self-Management Skills, Social Competency.
- D) Values & Ethics: Values, Ethics, Work Ethics, Character building, Sexual harassment  
Developing Good Manners & Etiquettes.

#### **Module 2:Cognitive Skills**

- A) Communication: Nature, Importance, Definition, Models, Determinants. Types, Styles.
- B) Thinking: Proactive Thinking-Being Proactive, Effecting Thought Pattern. Put First Think First, Think Win/Win. Positive Thinking: Nature & Significance Correlates of Positive Thinking, Effects of Positive Thinking Enhancing the power of Positive Thoughts

C) Assertiveness: Types of Behavior, Nature of assertiveness, types of assertiveness, assumptions & Rights, Interpersonal communication, skill in assertiveness, Characteristics in assertiveness Strategies to become assertive.

### Module3: Coping Skills

A) Emotion: Nature of Emotions, Biology & Emotions, Functions of Emotional Expression, Gender & Emotion, Emotional abuse, Strategies to Control Emotions. Emotional competence. Strategies to Enhance Control Emotional Intelligence.

B) Love, Happiness, Fear & Anger: Nature & Type of attachment, Nature, Types & Models of Love. Nature, Correlates, consequences of Happiness. Nature, causes Types, consequence of Anger, Expression of Anger. Nature, causes & consequences of Fear Anger Management.

C) Stress: Nature, GAS .Types& causes of Stressor, Effects & Indicator, Correlates of Stress Management of Stress.

### Module 4: Social (Relational) Skills

A) Empathy: Nature, Types of Empathy, correlates & other relevant concepts of empathy Enhancing Empathy.

B) Friendship: Nature, Developments, Types, Correlates & Benefits of Friendship.

C) Interpersonal Relationship: Transactional Analysis, Basic Concept, Types, Related Issues, Scripts, Stroke & Injections, Games. Nature, Types (Formal & Informal) Factors Affecting, Barriers, Conflict Management of Interpersonal Relationship. Strategies for maintaining good Interpersonal Relations.

### REFERENCE BOOKS:

- Debra McGregor, (2007) Developing Thinking: Developing Learning - A guide to thinking skills in education, Open University Press, New York, USA
- Nair V. Rajasenan, (2010). Life Skills, Personality and Leadership, Rajiv Gandhi National Institute of Youth Development, Tamil Nadu.
- Nair. A. Radhakrishnan et al. (2010). Life Skills Assessment Scale, Rajiv Gandhi National Institute of Youth Development, Tamil Nadu.
- Prakash B. (Ed). (2003). Adolescence and life skills Common Wealth Youth Program, Asian Center, Common wealth Secretariat. New Delhi: Tata McGraw Hill.
- Nair. A. Radhakrishnan, (2010). Life Skills Training for Positive Behaviour, Rajiv Gandhi National Institute of Youth Development, Tamil Nadu. RGNIYD. (2008). Facilitators Manual on Enhancing Life Skills. Tamil Nadu.
- Shekharan Psycho Social perspective of Life Skills
- National Psychological Corporation 2019-2020. Catalogue,UG-1 Nirmall Heights, Agra.
- APRC 2019-2020, Catalogue, Tiwarikothi, Belanganj, Agra.



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## **CERTIFICATE COURSE IN MARATHI ANCHORING AND ELOCUTION**

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS :**

Theory-1 Title: <b>वक्तृत्व आणि सूत्रसंचालन</b>		Hours
Module 1	<b>वक्तृत्व कौशल्य</b> १.१. वक्तृत्व म्हणजे काय ? १.२. वक्तृत्व तंत्र की कला ? १.३. वक्ता आणि व्यक्तिमत्व विकास वाचन, श्रवण, निरीक्षण, चिंतन, अनुभव १.४. वक्तृत्वासाठीचा पूर्वाभ्यास - पूर्वतयारी १.५. वक्तृत्वाचा हेतू / उद्देश १.६. वक्तृत्व आदि - मध्य - अंत १.७. सभाधीटपणा १.८. वक्त्याचा आवाज, उच्चार, भाषा आणि शैली १.९. श्रोतृसंवाद १.१०. प्रसंगावधान १.११. वक्त्याची भूमिका अध्यक्ष, निमंत्रित वक्ता, चर्चेत सहभाग १.१२. भाषण, परिसंवाद, चर्चासत्र, वादविवादाचे	15

	<b>स्वरूप</b> १.१३. वक्तृत्व कलेचा वापर करण्याचे प्रसंग व प्रकार १.१४. वक्तृत्व कलेचा उपयोग अन्य क्षेत्रे १.१५. वक्तृत्वाचा प्रभाव व परिणाम १.१६. प्रात्यक्षिके	
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Module 2	<b>सूत्रसंचालन</b> २.१. सूत्रसंचालन म्हणजे काय ? २.२. 'सूत्र' या पदाचा अर्थ २.३. कार्यक्रमाचे आशयसूत्र २.४. सूत्रसंचालनासाठी पूर्वतयारी २.५. व्यासपीठाचे व्यवस्थापन २.६. पाहुण्यांची बैठक व्यवस्था २.७. ऐनवेळी होणारे बदल २.८. सूत्रसंचालकाची भूमिका २.९. सूत्रसंचालकाने किती, काय आणि कसे बोलावे ? २.१०. श्रोत्यांचे अवधान, श्रोतृवर्गाचे ज्ञान आणि भान २.११. सादरीकरणाचे कौशल्य २.१२. विविध माध्यमांसाठीचे सूत्रसंचालन २.१३. प्रात्यक्षिके	15
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**Reference Books:**

१. कथा वक्तृत्वाची. प्राचार्य शिवाजीराव भोसले, अक्षरब्रह्म प्रकाशन, पुणे
२. वाचिक अभिनय, डॉ. श्रीराम लागू, राजहंस प्रकाशन, पुणे
३. प्रभावी भाषणकला, रवींद्र देसाई, प्रफुल्लता प्रकाशन, पुणे
४. प्रभावी सूत्रसंचालन, शिवाजी जवरे, कीलों प्रकाशन, औरंगाबाद
५. सूत्रसंचालन, सुनीता तारापुरे
६. सूत्रसंचालन एक प्रभावी कला, मेघना वसंत ग्राहोकार, विजय

प्रकाशन, नागपूर

७. सूत्रसंचालन एक प्रयत्नसाध्य कला, श्यामसुंदर मिरजकर, नाग-नालंदा  
प्रकाशन, इस्लापूर,

८. रेडिओ जॉकिविंग, सुनीता तारापुरे

9. The Art of Public Speaking- Dale Carnegie



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## **CERTIFICATE COURSE IN GERMAN LANGUAGE**

### **LEARNING OBJECTIVES:**

Students should be able to express themselves in German language in daily activities.  
Enable students to read and write easy Texts in this language.  
They should be able to have a conversation in German in day to day situations.

### **COURSE OUTCOME:**

On completion of this course the students will be able to :  
Students will learn from alphabets to form the texts on various topics.  
Various videos and audios will help them to develop their accents and to get familiar with German culture.  
The textbook will cover topics mainly required to get along with day to day operations.  
Awareness towards globalisation and its demands  
Awareness towards Germany as an educational destination

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

Chapter I  
Vocab - Alphabets, numbers, weekdays, months, greetings, introduction  
Grammar – personal pronouns, congratulations  
Other information – various countries and their languages  
Chapter II  
Vocab – Hobby, Profession, Seasons, Work culture  
Grammar – sentence formation, article  
Other information – seasons in European countries and their typical Hobbies  
Chapter III  
Vocab – different places and cities, means of transportation  
Grammar – negation and imperative  
Other information – sightseeing places in Hamburg  
Chapter IV  
Vocab – eatables and drinks, shopping, grocery, eating time  
Grammar – Cases such as Nominativ, Akkusativ



Other information – professions related to food industry

Chapter V

Vocab – Timings , family, telephonic conversation, routine day

Grammar – possessive pronouns, Modal Verb

Other information – Disciplines and punctuality in European countries

Chapter VI

Vocab – Birthday celebration, visit to restaurant, different events

Grammar – separable verbs, prepositions

Other information – celebration of different events in European countries

TEACHING-LEARNING METHODOLOGY:

Theory as well as activity based

Learning process through theatre activities

### **EVALUATION:**

Objective pattern

MCQ Tests

Listening skills

Oral examination

### **Reference Books:**

Netzwerk A1

By Stefanie Dengler, Paul Rutsch, Helen Schmitz und Tanja Sieber  
Planet

By Gabriele Kopp, Siegfried Büttner



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## **CERTIFICATE COURSE IN GST**

### **LEARNING OBJECTIVES:**

To give the students a general understanding of the GST law in the country and provide an insight into practical aspects of GST and equip them to become tax practitioners.

### **COURSE OUTCOME:**

After completion of this course the students would be able:

- Understand the concept of Indirect-taxes, define and explain the important features of GST and its need
- Explain the framework, benefits and challenges in implementing GST
- Realize the importance of indirect taxes (GST) in the Indian and global economy and its contribution to economic development.
- Understand the implications of GST on the taxable capacity consumers, dealers and of the society at large and its changes.
- Plan to be a GST Tax Consultant

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

**TEACHING-LEARNING METHODOLOGY:**    **plz mention the No. of lectures it should be 30 hours / lectures**

Chapter 1	:	Overview of Goods & Services Tax
Chapter 2	:	Levy of and Exemption from Tax
Chapter 3	:	Registration
Chapter 4	:	Meaning and Scope of Supply
Chapter 5	:	Time of Supply
Chapter 6	:	Place of Supply of Goods & Services
Chapter 7	:	Valuation in GST
Chapter 8	:	Input Tax Credit
Chapter 9	:	Composition Scheme
Chapter 10	:	RCM - Reverse charge Mechanism
Chapter 11	:	E- Commerce operator and Job Work
Chapter 12	:	Input Service Distributors
Chapter 13	:	Returns in GST
Chapter 14	:	Accounting Entries and Maintenance of Records

**EVALUATION:**

SEE : 80 Marks      CIE: 10 Marks    2 Case Studies & MCQ

**Reference Books:**

- 1.
- 2.



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## **CERTIFICATE COURSE IN TALLY WITH ERP 9.0**

### **LEARNING OBJECTIVES:**

- ✓ To make students aware about the practical accounting in industry and business.
- ✓ To gain confidence in accounting package Tally.
- ✓ To make students technically strong.
- ✓ To equip the students with the ability of doing accounting electronically.
- ✓ To provide better carrier opportunities in accounting field for commerce students like Accountant, Finance Manager, Management accounting clerk etc.

### **COURSE OUTCOME:**

- Confidently able to independently handle Tally.ERP-9 software which contain Accounting, Inventory, Taxation and Payroll system.
- Tally.ERP-9 for better career opportunities in accounting field for commerce students like Accountant, Finance Manager, Management accounting clerk etc.

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **➤ Module 1: Introduction to Computer and Financial Accounting**

##### **Computer –**

- Operating System
- Hardware
- Software
- Packages

### **Accounting Concepts -**

- Definition
- Rules of Accountancy
- Journal Entries

### **➤ Module 2: Tally Basics**

#### **Tally.ERP-9 Prime -**

- Introduction to Tally
- Features of Tally
- Versions of Tally

#### **Company Creation -**

- Accounts Master Creations
- Voucher Types and Classes
- Accounts Configuration
- Accounts Vouchers
- Journal Entry Related Assignments -3 Based on Non Trading / Trading and manufacturing business.

### **➤ Module 3: GST (Goods and Service Tax)**

#### **GST -**

- Introduction to GST / GST Masters
- Vouchers & Transactions GST on MRP
- GST Computation

### **➤ Module 4: Accounting Inventory**

#### **Inventory -**

- Introduction to Inventory
- Stock Groups
- Stock Categories
- Stock Item
- Units

#### **Reorder Levels -**

- Locations/Godwns
- Measure Price  
List

➤ **Module 5: Financial Accounting Advanced**

**Final Accounts -**

- Trial Balance
- Profit & Loss Account
- Balance Sheet
- **Bank Reconciliation Statement**
- **Displaying and Printing all reports.**

➤ **Module 6 : Backup and Restore / Document Printing**

- Backup
- Restore
- Printing
- Data Maintenance
- Import & Export of Data Security

**TEACHING-LEARNING METHODOLOGY:**

- Accounting Theory and Practical Assignments on Trading / Service / Manufacturing Industrial Oriented Accounting on Black board and computer.

**EVALUATION:**

- ✓ 30 Marks SEMESTER Exam
- ✓ 15 Marks CLASS ASSIGNMENT

**Reference Books:**

1. [Official Guide To Financial Accounting Using Tally.Erp 9 With Gst](#)  
by Tally Education Pvt. Ltd. | 1 January 2018
2. Tally ERP 9 (Power Of Simplicity) Kindle Edition  
by [Shraddha Singh](#) (Author) Format: Kindle Edition
3. Tally Education Pvt. Ltd. Publisher : Sahaj Enterprise
4. Tally Professional ERP9 with GST CCA India *Developed*  
by [Maverick Software \(I\) Pvt. Ltd.](#)



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## **CERTIFICATE COURSE IN STOCK MARKET**

### **LEARNING OBJECTIVES:**

- To learn about various investment options.
- To get the knowledge about investment/trading on stock exchanges.
- To make aware about the fundamental and technical analysis of stock market.

### **COURSE OUTCOME:**

- To learn about the basic concepts in Capital Market
- To understand working of Stock Exchange
- To gain knowledge on basics of share investment
- To get practical knowledge related to share trading
- To understand the risk and return in share investment
- To develop the confidence among the participants for share investment

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

**Module I** - Introduction to Capital market, Long term investment options - Bank fixed deposit, Post Office Saving Schemes, Gold, Real Estate, Bonds, Shares, Mutual Fund. Why to invest in shares? Basic concepts- Share, FV, BV, MV; Capital Market – Primary Market- Public Issue, Right Issue and Private Placement, Equity and Preference Capital.

How to start investing in shares? DEMAT Account- Concept of DEMAT Account, Procedure of opening of DEMAT Account, Advantages of DEMAT Account. Depositories-Concept of Depositories, function of Depositories, Depository Participant (DP), NSDL –National Securities Depositories Ltd and CDSL-Central Securities Depositories Ltd. (08 Hours)

**Module II** Concept of IPO, FPO - Price Band, Book Building, Lot size, Investor reservations. Stock Exchanges in India- BSE and NSE- brief introduction, Opening trading account with Broker– Concept of Broker and Sub-broker, Services offered by brokers, Cost

of Trading. Market capitalization- Large cap, Medium cap and Small cap. Stock Market Index – Free float market capitalization, BSE SENSEX, NIFTY and other important indexes, International stock market indices, Role of SEBI in Stock Market.

Types of trading – Derivatives Markets - Participants in Derivative market, Legal framework of derivatives market in India with respect to equity, Currency and Commodity derivatives, Forwards and Futures contract, Options: Call & Put options, Swaps. Cash trading and Margin trading. Types of order- Price condition and Time condition, Trading, clearing and settlement, Rolling settlement, Role of Clearing house, Custodian (10 Hrs)

**Module III** - Important concept - Corporate action, Risk and Reward Trade off, Circuit breakers, Types of risks, Measurement of risk.

Fundamental Analysis - Economic analysis, Industry analysis and Company analysis; Annual Reports, EPS, P/E Ratio, Price to Book Value Ratio, Financial Leverage, Return on Asset (RoA); Technical Analysis- Daily Fluctuations, Price and Volume trends, Support and resistance level, Japanese Candlestick Method.

Portfolio Management - Portfolio construction - approaches – Selection of Portfolio Simple diversification, Tax implications and share investment. (12 Hours)

#### **TEACHING-LEARNING METHODOLOGY:**

- Blended Teaching Learning Method
- Practical Sessions on APPS and Websites
- Practical assignments to test understanding of participants

#### **EVALUATION:**

- Total 50 Marks
- SEE: 35 Marks
- CIE: 15 Marks (Assignments/Case Study/MCQ)

#### **REFERENCE BOOKS:**

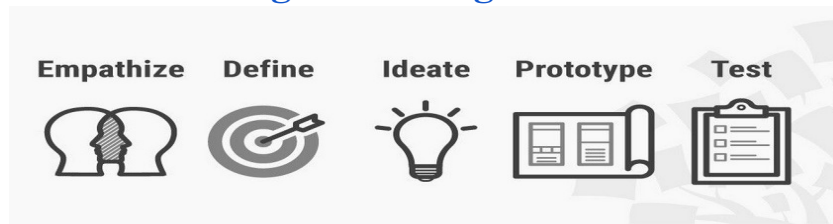
1. Punithavathy Pandian, “Security Analysis and Portfolio Management”, Vikas Publishing House Pvt. Ltd.
2. P.S. Balaram and Smt. T. Sri Lakshmi, “Stock Market Operations:, Himalaya Publishing House Pvt. Ltd.
3. Bharati V. Pathak, “The Indian Financial System: Markets, Institutions and Services”, Pearson education, 3rd edn.
4. Sanjeev Agarwal, *A Guide to Indian Capital Market*, Bharat Publishers
5. “Stock Market Book” Dalal Street Investment Journal.



# COURSE DEVELOPMENT

on

## Design Thinking for Innovations & Start-Ups



**Host Institute:** Sangameshwar College, Solapur

**Participants:** Students (Various Disciplines), Industry Persons

**Target Group:** Min/Max Limit- 40/60 participants from the HEIs from the same city/within 100 km of host institute

**Mode:** Blended/Hybrid. Online for theory and offline for practical/labs/ experiential learning.

**Language of Instruction:** English

**Duration:** August 2022 to Oct 2022 -15 Sessions.

**What is Design Thinking?**

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An empathy-driven approach towards problem-solving through experimentation and innovation makes design thinking a solution-oriented methodology, rather than that of problem identification.

### **Design Thinking is not a process, it's a mindset**

Design Thinking believes (and has been proven) that the people who face problems are the ones who hold the key to their problem's answer. Design Thinking is Human-centered problem solving tool which emphasize on Empathy, Collaboration, Concretion and Stakeholder feedback to unlock Creativity and Innovation, which devises feasible and viable Big Idea/solutions.

### **Objectives of the Course:**

- a) To immerse participants into the world of innovation as a systematic process of tackling relevant business and/or social problems.
- b) To provide a social and thinking space for the recognition of innovation challenges and the design of creative solutions
- c) To Understand the importance of design thinking mindset and the road map to build it as an element of organisational culture
- d) To Understand the philosophy of the process of Design Thinking
- e) To Be able to derive relevant insights for unstructured problem

### **Design Thinking Course Structure:**

The curriculum of Course covers the entire framework of the Design Thinking process. Participants build an understanding of the user's need by engaging in empathetic interactions, creating and testing rapid prototypes, and structuring important building blocks of a business case.

- Human-Centered Design
- Needs Finding
- Interviewing and Empathy-building Techniques
- Making Sense of Observations And Insights
- Defining a Point of View
- Ideation
- Developing and Testing Prototypes
- Defining and Testing Business Models and Business Cases

### **Course Expected Outcome:**

1. Participants will be able to empathise with the problem/situation/user.
2. Participants will be able to use the DT tools effectively and able apply in real life.
3. Participants will be able to use the DT process for other problems that they might need to deal with in the future.
4. Participants will be able to understand ways to collaborate and co- create values.
5. Participants will be able to transform their thought process so as to come up with multiple solution using Ideation and creative tools.
6. Participants will be able to work on situation analysis.
7. Participants will be able to take an idea, develop that idea with POC, Validate Idea and Develop a Solution which have potential to convert in Start-up

### **List of 14 Sessions with Detailing**

1. Introduction to design thinking with real life applications  
Why What and How - Design Thinking?  
Difference between DT and Traditional Thinking  
Hands-on Exercise
2. Design thinking approaches
3. **Design thinking empathize with your users**
  - **Empathy**  
Observation & Challenge brief
  - Why Observation, Tools for Observations
  - Team building
  - Introduction of real-world challenge
  - Understanding User & their needs
  - Various tools & Techniques of Empathy Phase
  - Persona**
  - MIRO as a tool for Mind Map
4. **Design research strategies**
  - o **Define**
    - Problem definition with convergence of insights
    - Articulating Actionable Insights
    - Research mapping
    - Research findings and observation data mapping to make sense out of the data
5. **Ideation**
  - Idea Generation
  - Innovation Myth & Types of Innovation
6. **Tools & Techniques of Ideation: How Might We Statements (HMW), Lateral Thinking tools, Ideation Canvas, Concept Development S-C-A-M-P-E-R**

- Form, Feature, Function
  - TRIZ and Taguchi method
  - SWOT Analysis on solution Conceptualization
  - 7. **Design thinking and innovations through prototyping and testing experiences**
    - o **Prototype & Test**
      - Tool & Techniques of Prototyping & Testing
      - Ways for prototyping, build quick and Refinement, Iterate, Build
  - 8. Design Thinking leading to Innovation & Entrepreneur- ship
    - Entrepreneur-ship and Startup basics
    - Traits of an Entrepreneur
  - 9. Startup Journey and Process
  - 10. Value Proposition Canvas (VPC) & Creating USP
  - 11. Business Model Canvas
- 9 building blocks explained and preparation
- 12. **Road map ahead on How to integrate Design Thinking in Academia for Innovation & Startup**
  - 13. **Design thinking for innovative product development**
  - 14. **Design Thinking Recap and wrap-up Valedictory**

**Four mandatory sessions, one each on:**

- a. National Education Policy (NEP) 2020 Implementation
- b. Indian values & ethos, Classroom conduct & behaviour (teaching learning psychology)
- c. Life Skills such as time and stress management (more may be added)
- d. Research Methodology

**Course Coordinator:**

**Name:** Vaibhav Kulkarni

**Educational Qualification:** Master's Degree in Mechanical Engineering

**Experience:** 18+ Years



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## **CERTIFICATE COURSE IN FOOD ADULTERATION**

### **LEARNING OBJECTIVES:**

- To understand the chemistry of food components.
- To understand relationship between food, nutrition and health
- To learn about food safety and adulteration.

### **COURSE OUTCOME:**

- 1. Students are able to learn about various food components and their nutritional value.
- 2. Students will learn about various sources of food adulteration and its detection.
- 3. Students will be able to use laboratory techniques for detecting food adulteration.

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university .

### **COURSE CONTENTS:**

(Theory + Practical)

- **Unit-I: NUTRITION** (5 Periods)

Nutritional role of water, carbohydrates, proteins, fats, fibre, vitamins and minerals Concept of calorie and energy requirements of person of different age groups with reference to height, Weight, physical activity, job status etc. Anti-nutritional factors , Effect of food processing on major nutrients and vitamin content of food.

- **Unit-II: NATURAL PIGMENTS** (5 Periods)

Chlorophylls, anthocyanin, carotenoids and curcumin (structure, composition and application in food industry)

- **Unit-III: ADDITIVES** (5 Periods)

(i) Organic acids, propionate, benzoates, sorbets, acetates (ii) Ethylene and propylene oxide (iii) Sugar and salt (iv) Alcohol (v) Wood smoke (vi) Esters (vii) Legal aspects

- **Unit-IV: Food Adulterants & Food Safety** (5 Periods)

Methods of detection of common food adulterants in

- i. Spices
- ii. Grains
- iii. Coffee
- iv. Tea
- v. Oil fats
- vi. Food colours
- vii. Milk

## **Acts related to food adulteration -HACCP, GMP, role of FDA, Agmark , ISO**

- **PRACTICALS**

(10 Periods)

- 1) Demonstration of saponification value of groundnut oil
- 2) Demonstration of common food adulterants by simple tests
- 3) Qualitative analysis of tea and coffee extracts (Alkaloids from Datura leaves)
- 4) Separation of chlorophyll and carotenoids from spinach (by TLC)
- 5) Separation of carotenoids from carrot (by TLC)

### **TEACHING-LEARNING METHODOLOGY:**

Theory Lectures

Practicals /Laboratory techniques

E- Contents related to food adulteration

Seminars

**EVALUATION: 50marks (15+35) (internal +external)**

### **References:**

- 1) Biochemical Methods, S. Sadasivan and A. Manickam, 2nd edition, New age international (P) Ltd, Tamilnadu Agricultural University, Coimbatore
- 2) Fundamentals of Biochemistry, Dr.A.C.Deb, New central book agency (P) Ltd
- 3) Fundamentals of Analytical chemistry, Douglas A. skoog, Donald M. West, F. James Hollar, 6th Edition, Saunders College Publishing
- 4) Introductory Practical Biochemistry, S. K. Sawhney, Randhir Singh, Narosa Publishing House
- 5) Biochemistry, Satyanarayan U, Books and Allied Ltd
- 6) General Biochemistry, Weil J. H, New Age International (P) Ltd
- 7) Laboratory manual in Biochemistry, J. Jayaraman, New age international (P) Ltd



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## **CERTIFICATE COURSE IN HARDWARE AND NETWORKING**

### **LEARNING OBJECTIVES:**

- ✓ Understand basic concept & structure of Computer Hardware & Networking Components.
- ✓ Identify the existing configuration of the computers & peripherals.
- ✓ Apply their knowledge about computer peripherals to identify/rectify problems on board.
- ✓ Integrate the PC's into Local Area Network & re-install OS & various shipboard applications.
- ✓ Upgrading the computer software &H/W peripherals as & when required.

### **COURSE OUTCOME:**

- ☐ Perform routine maintenance, upgrades of virus definitions, set schedules etc.
- ☐ Manage data backup & restore operations.
- ☐ Analyze &/or troubleshoot communication problems related to Engine Room Automation & various Navigational Bridge Equipment.
- ☐ **Better career opportunities in field of Computer Hardware & Networking as a Hardware Engineer.**

### **ELIGIBILITY:**

- Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

- ✓ **Module 1: Computer Basics (Fundamental overview)**
  - ❖ Computer Fundamentals
  - ❖ Introduction to Computers

- ❖ Types of Computers
- ❖ Introduction to Input
- ❖ Introduction to Storage Devices Output Devices

➤ **Module 2 : Hardware Components and its parts**

- Mother Board
- Processor
- RAM
- Hard Disk Drive
- Keyboard / Mouse
- SMPS

➤ **Module 3 : Assembling and disassembling PC's**

- Assembling the system with all peripherals  
i.e M/B, Processor, RAM, Hard Disk Drive, SMPS with Cabinet

➤ **Module 4 : Introduction to BIOS /CMOS setup and  
Computer Management (Control Panel)**

- BIOS / CMOS sequences
- HDD/FDD/DVD/Flash Drive
- Date Time Management
- No. of H/W peripherals related settings

➤ **Module 5 : Installing of Operating System and Drivers**

- Hard Disk Formatting , Creation of partitions
- Installation - Win-XP operating System
- Installation - Win-7 operating System
- Installation Linux Operating System
- Driver installation
- Printer and scanner configuration

➤ **Module 6 : Networking Fundamentals &  
Network Installation & Configuration**

- Introduction to various types of cables and connectors used in networking
- Introduction to networking and networking concepts, networking topology and protocols

- Hubs vs Switches Structured Cabling o LAN Practical's
- IP Addressing and IP Classes
- TCP/IP Concepts and configuration of IP Address
- Joining computer to a AD Domain
- Basic network troubleshooting

➤ **TEACHING-LEARNING METHODOLOGY:**

- Theory and Practical Assignments.

**EVALUATION:**

- ✓ 30 Marks SEMESTERExam
- ✓ 15 Marks CLASS ASSAGINMENT

**Reference Books:**

1. **PC Hardware: The Complete Reference**  
[Craig Zacker](#), [John Rourke](#), Osborne/McGraw-Hill, 2001
2. **THE COMPLETE REFERENCE PC HARDWARE |**  
**CRAIG ZACKER, JOHN ROURKE | McGraw Hill**
3. **The Principles of Computer Hardware**  
[Alan Clements](#) (Author)





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## CERTIFICATE COURSE IN R PROGRAMMING

**LEARNING OBJECTIVES:** To give students a job-oriented learning environment by exposing them to basic R software.

**COURSE OUTCOME:** After the completion of paper student will able to

1. Use R as a calculator and as a helping tool to study the real life data sets.
2. Apply R software for effective visualization.
3. Perform basic statistical analysis using R Software.

**ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

**COURSE CONTENTS:**

CERTIFICATE COURSE	CERTIFICATE COURSE IN R PROGRAMMING
CREDIT	2
	<ol style="list-style-type: none"><li>1. <b>Installation and Basic data types in R software:</b> Installation of R. Introduction to R Interface. Basic data types, import and export of data. Learn how to load data. Different Packages and libraries in R. (3)</li><li>2. <b>The R Language:</b> Getting R – Using R as a calculating environment -Arithmetic - Variables - Functions - Vectors - Missing data - Expressions and assignments - Logical expressions - Matrices - The workspace. Basic programming - Branching with if- Looping with for- Looping with while – Vector based programming - Program flow - Basic debugging - Good programming habits - Input and outputs: Text - Input from a file - Input from the keyboard - Output to a file –Plotting. (5)</li></ol>

	<p>3. <b>Programming with functions: Functions:</b> Scope and its consequences - Optional arguments and default values - Vector-based programming using functions - Recursive programming - Debugging functions -Sophisticated data structures - Factors –Data frames - Lists - The apply family.</p> <p>(5)</p> <p>4. <b>Descriptive Statistics using R software:</b> Generate automated reports giving detailed descriptive statistics, scatter plot, plot a graph: bar-plot, pie-chart, and box plot, stem-leaf, histograms (equal class intervals and unequal class intervals), frequency polygon, ogives with graphical summaries of data. Correlation and lines of regression.</p> <p>(10)</p> <p>5. <b>Inferential Statistics using R software:</b> Basics of statistical inference in order to understand hypothesis testing, compute p-values and confidence intervals. Simple analysis and create and manage statistical analysis projects, importdata, code editing.</p> <p>(7)</p>
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#### TEACHING-LEARNING METHODOLOGY:

#### EVALUATION:

#### Reference Books:

1. Kundu, D. and Basu, A. (2004) Statistical computing – existing methods and recent developments, Narosa publishing house, New Delhi
2. Monahan, J.F. (2001) Numerical methods of statistics, Cambridge University Press.
3. Tattar Prabhanjan and Ramaiah, S. and Manjunath, B.G. A Course in Statistics with R, 1st Edition, Wiley
4. Lander J. P. (2014). R for Everyone: Advanced Analytics and Graphics, Pearson
5. Braun, W. J., and Murdoch, D. J. (2007). A First Course in Statistical Programming with R. Cambridge University Press. New York.



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## **CERTIFICATE COURSE IN ADVANCED EXCEL**

### **LEARNING OBJECTIVES:**

A major goal is to develop better computation skills. Improved critical thinking, decision-making, and problem-solving skills will also be emphasized

### **COURSE OUTCOME:**

- Upon completion of the course students will be able to:
- 
- Use Microsoft Excel to create personal and/or business spreadsheets following current professional and/or industry standards.
- Use critical thinking skills to design and create spreadsheets.
- Communicate in a business setting using spreadsheet vocabulary.

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **Complete MS-EXCEL 2016**

**10 lecture**

- Introduction To MS-Excel
- Creating a new workbook in MS-Excel
- Worksheet Fundamentals
- Selecting Cells and ranges
- Find And replace option
- Formatting cell and worksheet
- conditional formatting
- Creating Table in Excel
- Sorting Data in excel
- Filter in Excel
- Creating chart and graphics
- Data validation in Excel
- Graphic and designing in excel
- Printing your work in excel

#### **Formulas and Functions**

**5Lecture**

- Working with formulas and functions
- Logical Functions
- Text Functions
- Date and time functions

- Mathematical and Trigonometry Functions
- Lookup and reference functions
- Working With Formula Auditing
- Pivot Table and pivot chart option

### **Dashboards and Data Analysis**

**5Lecture**

- Advance Chart in Excel
- Advance Pivot Table
- Advanced Filter
- Advanced Conditional Formatting
- Scenario Management
- Goal Seek
- Data Table
- Advanced Function

### **Macros & VBA Programming in Excel**

**10 Lecture**

- Creating a Macro
- Running a Macro
- Editing a Macro
- Adding a menu to the Menu Bar
- Adding a Commands to a Menu
- Adding Buttons to a Toolbar
- Data Handling, MIS, EXCEL and Access
- Macro Generation and Application Design
- VBA in Excel 2016
- VBA Programming

### **TEACHING-LEARNING METHODOLOGY:**

Online and Hand on Training

### **EVALUATION:**

Online MCQ Examination

### **Reference Books:**

1. Web sources



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## **CERTIFICATE COURSE IN ESSENTIAL COMPUTER SKILLS**

### **LEARNING OBJECTIVES:**

- Students should be able to explain the basics of computers and the basic skills to use computers in their daily work.
- Enable students to create professional Word documents and Excel. Spreadsheets, PowerPoint presentations using Microsoft Office Tools Suite.

### **COURSE OUTCOME:**

On completion of this course, the students will be able to:

- Students will learn computer applications from basics to advance
- Office Automation will help the students in documenting the reports.
- With the help of Office automation students can perform accounting operations
- It will help to learn presentation skills
- Awareness of Internet and Search Engines

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **Unit 1 Introduction to Computer**

**03**

Computer Architecture, Introduction to Hardware and Software, Input and Output Devices, Computer Memory, Physical unit's demo of computer machine.

#### **Unit 2 Microsoft Word**

**08**

**Word Processing Basic:** An Introduction to Word Processing, Opening Word Processing Package, The Menu Bar, Using the Help, Using the Icons below menu bar.

**Opening Documents and Closing documents:** Opening Documents, Save and Save AS, Page Setup, Printing of Documents, Display/Hiding of Paragraph Marks and Inter Word Space Moving Around in a Document, Scrolling the Document, Scrolling by line/paragraph, Fast Scrolling and Moving Pages.

**Table Manipulation:** Concept of table: Rows Columns and Cells, Draw Table, Changing cell Width and Height, Alignment of Text in Cell, Copying of cell, Delete/insertion of row and columns, Borders for Table.

**Printing:** Printing, Print Preview, Print a selected page, Page setting

### **Unit 3 Microsoft PowerPoint**

**07**

**Basics:** Difference between presentation and Document, Using PowerPoint, Opening a PowerPoint Presentation, Using Wizard for creating a presentation

**Creation of Presentation:** Title, Text Creation, Fonts and Sizes, Bullets and indenting, Moving to Next Slide

**Preparation of Slides:** Selection of type of Slides, Importing text from word documents, moving to next Slide, The Slide manager

**Preparation of Slides:** Selection of type of Slides, Importing text from word documents, moving to next Slide, The Slide manager

Providing aesthetics Slide Designs, Background and Text colors, making your own slide format, Footnotes and slide numbering

**Presentation of the Slides:** Using the Slide Show, Printing the Slides and Handouts, Slide sorter, Title sorter

### **Unit 4 Microsoft Excel**

**07**

Elements of Electronics Spreadsheet Application/usage of Electronic

Spreadsheet, Opening of Spread Sheet, The menu bar, Creation of cells and addressing of cells, Cell inputting Manipulation of cells Enter texts numbers and dates, Creation of tables, Cell Height and Widths, Copying of cells.

### **Unit 5 Introduction to Internet and Operating System**

**05**

Basic of Computer networks: LAN,. WAN

Internet: Client Server Architecture, Mobile Technology, Server Side and client side languages, Html,URL Introduction, Email access and Creation of account, Internet Banking with security certification ,Browser types ,Data Downloading

Different Software Tools: Audio and Video, Word to PDF and PDF to Word, Image Reader and Converter, Scanner handling, Control Panels (System setting).

### **TEACHING-LEARNING METHODOLOGY:**

Lectures and Practical's

### **EVALUATION:**

Written examinations

### **Reference Books:**

1. Computer Fundamental MS-Office by Anupama Jain,Avneet Mehra Vitasta Publishing Pvt.Ltd
2. MS-OFFICE Training Guide by Satish Jain M. Geetha, Kratika BPB pub.



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## **CERTIFICATE COURSE IN DIGITAL MARKETING**

**LEARNING OBJECTIVES: To become financial independent along with Practical Skills which can get the job and freelancing through Digital Marketing.**

### **COURSE OUTCOME:**

1. Become Successful in the Career with new Digital Marketing Skills.
2. Learn Practical Social media Management and website development so that they can work as freelancers and get the job.
3. They can get a job, even work from home.
4. They can get the job in MNC companies without having the experience.
5. Practical Live Projects handling experience
6. Google, Youtube and Hubspot Certificate which can add values to their resume.
7. They can start earning 5-10 thousand while learning the 30 days session.

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **Overview of Digital Marketing**

Digital Marketing Fundamentals, Search Engines Process, Traditional and Digital Marketing Process, Funnel Explanation of Online Marketing

02

#### **Website Development & SEO.**

Wordpress basics to advance, theme installations, theme editing, plugins, on page seo, technical seo, off page seo, Local Seo. 06

### **Social Media Marketing (Facebook, Instagram & LinkedIn)**

Social Media Marketing Fundamental, Benefits of Social Media Marketing for Business, Social Media Marketing for Freelancing, Social Media Marketing Career.

#### **Facebook Marketing -**

Facebook Marketing Fundamental, Facebook Page Creation, Paid promotion, Organic promotion, Viral Marketing. 04

#### **Instagram Marketing -**

Instagram Page Creation, High quality content creation, Viral Marketing Strategy for Instagram, How you can become Influencer in your city and earn from it. 04

#### **LinkedIn Marketing -**

LinkedIn Account Creation, Account optimization, LinkedIn Strategy for get the job in 30 days, LinkedIn Lead Generation for Business. 05

### **Copywriting for The Web and Social Media -**

Content Creation on Social Media, Amazing Headline Generating tools which can help them to create headlines, Article Writing, Storytelling 04

### **Local SEO (Search Engine Optimization) -**

Creating a Business Account on Google, Free website creation from Google, Local SEO ranking strategy for students, How to get clients and projects for Local SEO. 02

### **YouTube Fundamentals & Copywriting -**

YouTube Channel Creation, Fundamentals of channel creation, how to grow the channel and process, copywriting issues process and terms and conditions of YouTube. 04

### **Affiliate Marketing -**

How to generate passive income through Affiliate marketing, Fundamental and Advance process of Affiliate Marketing, Amazon, Flipkart, Finance, Education Affiliate Marketing with account creation, how to generate at least 5-10k per month strategy. 03

### **Media Planning -**

How to channelise the media so that pitch the customers, Funnel Creation 01



**Personality Development -**

How to improve confidence while giving the presentation, Communication Skills, 1-1 interview mock test, Breathing techniques, Mind Management techniques and Secrets. 03

**Resume Writing -**

How to write resume effective way and resume creation, examples of resumes of high paying jobs. 01

**TEACHING-LEARNING METHODOLOGY:****EVALUATION:**

Exams from Google, YouTube, Digital Mantra Academy.

**Reference Books:**

- 1.
- 2.



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## **Certificate Course in Circuit Design & Simulation with PCB Design & Fabrication**

### **LEARNING OBJECTIVES:**

Upon the completion of the course students will be able to;

- Develops the prototype circuit on various CAD platform
- Acquires the knowledge of Circuit Design with Simulation
- Design and analyze various circuits for specific application
- Identify scopes of electronic components for PCB layouts using CAD
- Hands-on experience of Circuit Design, Simulation and PCB layout with fabrication
- Develop innovative electronic project as crucial development

### **COURSE OUTCOME:**

The course is focused on practical skill development for students so that with these skill-sets they are able to enter working professionals. If You want to learn the art of Electronics fundamentals to design Industrial Applications, the course offers in-depth learning of Electronics Circuit Design and Simulation using NI Multisim & Proteous software with PCB designing & Fabrication (Single & Double side).

The students will understand circuit designing, simulation and performing analysis on the circuits with various CAD software (Multisim, Proteus). Also various CAD software for PCB designing also. They can draw PCB Layout and fabricate their own project with single/double side and use them practically.

Our main objective is to impart knowledge to the passionate students about;

#### Circuit Design and Simulation Basics

To familiar with NI Multisim and Proteus - a tool widely used in the industry

Hands-on experience of Circuit Design, Simulation & Analysis

Understand various dimensions of PCB layouts & design

Realize the fabrication process of PCB

Hands-on experience of working with PCB Layout Design & Fabrication

Acquire skills to do better Minor/Major electronic Projects

The module helps to enhance the career in PCB Design technology.

**Duration: 30 Hours**

#### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

B.Sc I & II. Appearing

#### **COURSE CONTENTS:**

<b>Sr. No.</b>	<b>Modules to be Covered</b>	<b>Theory</b>	<b>Practical</b>
<b>1.</b>	<b>Circuit Simulation Techniques with NI Multisim</b>	<b>3 hrs.</b>	<b>2 hrs.</b>
<b>2.</b>	<b>Circuit Simulation Techniques with PROTEUS</b>	<b>3 hrs.</b>	<b>2 hrs.</b>
<b>3.</b>	<b>Basics of PCB</b>	<b>2 hrs.</b>	<b>1 hrs.</b>
<b>4.</b>	<b>PCB Design using Proteus</b>	<b>2 hrs.</b>	<b>4 hrs.</b>
<b>5.</b>	<b>PCB design &amp; fabrication Project Case Studies</b>	<b>2 hrs.</b>	<b>4 hrs.</b>
<b>6.</b>	<b>Case Studies of PCB design &amp; fabrication</b>	<b>2 hrs.</b>	<b>4 hrs.</b>

**TEACHING-LEARNING METHODOLOGY:**

The complete course is practical oriented, various analog and digital circuits and PCB will be carried out using various CAD software

**EVALUATION:**

Theory paper (MCQ's) = 20 Marks

Practical Paper = 80 Marks

(Simulation of circuits one analog one digital circuit and 2 PCB layout)

**Reference Books:**

1. Electronic Devices and Circuit Theory by Robert L. Boylestad , Louis Nashelsky Pearson
2. Fundamentals of Digital Circuits by Kumar A. Anand PHI
3. Printed Circuit Boards: Design and Technology by Walter Bosshart CEDT series



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## **CERTIFICATE COURSE IN PYTHON PROGRAMMING**

### **LEARNING OBJECTIVES:**

To understand the basics of python programming.  
To enable the students to gain the knowledge of python programming OOPs concepts.  
To acquire the knowledge of file handling .

### **COURSE OUTCOME:**

**On successful completion of this course ,students should be able to**

- 1.Explain loops and conditional statements to solve the problems.
- 2.Implements programs using list ,dictionary ,tuple and file handling.
- 3.Describe the concepts of function and modules

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

### **COURSE CONTENTS:**

#### **Unit 1**

##### **Introduction to Python**

**Features/Characteristics of python, identifiers and keywords ,python variables ,data types , Type conversion ,I/O statements.**

**Operators :Arithmetic ,Relational ,Logical ,Boolean ,Assignment ,Membership, Identity**

#### **Unit II**

**Conditional statements :if , if-else , nested if –else.**

**Looping :for , while**

**break and continue statements.**

### **Unit III**

**String :Introduction to string,string manipulation.**

**List :Introduction to List , Manipulating list.**

**Dictionary :Introduction to dictionary, Techniques to create ,update and delete dictionary items.**

**Tuple :Introduction to tuple**

**Functions: Defining a function ,advantages of function,types of functions, Local and Global variables.**

**Modules :Importing module, creating module. Math module ,Random module and Matplotlib module.**

### **Unit IV**

**Object Oriented Programming**

**Features ,concepts of class, objects ,constructor , inheritance and its types, method overriding.**

**Python file Operation**

**File ,Opening and closing a file ,file opening modes ,reading and writing to files**

### **TEACHING-LEARNING METHODOLOGY:**

### **EVALUATION:**

### **Reference Books:**

1. Core Python Programming
2. Beginning Python



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## CERTIFICATE COURSE IN MATLAB

### LEARNING OBJECTIVES:

1. To learn features of MATLAB as a programming tool.
2. To promote new teaching model that will help to develop programming skills and technique to solve mathematical problems.
3. To understand MATLAB graphic feature and its applications.
4. To use MATLAB as a simulation tool.

### COURSE OUTCOME:

1. Able to use Matlab for interactive computations.
2. Familiar with memory and file management in MATLAB.
3. Able to generate plots and export this for use in reports and presentations.
4. Able to program scripts and functions using the MATLAB development environment.
5. Familiar with string and Matrices and their use.
6. Able to use MATLAB to solve computational problems

### ELIGIBILITY:

Minimum 12th pass or equivalent from a recognized board or university.

### COURSE CONTENTS:

#### Unit 1: Introduction to MATLAB:

1. Basics of MATLAB programming
2. Array operations in MATLAB
3. Loops and execution control
4. Working with files: Scripts and Functions
5. Plotting and program output
6. User defined Functions
7. Basic 2D, 3D plots
8. Defining errors and precision in numerical methods

#### Unit 2: Numerical Differentiation and Integration

1. Numerical Differentiation in single variable
2. Numerical differentiation: Higher derivatives

3. Differentiation in multiple variables
4. MATLAB functions for integration

### **Unit 3: Linear Equations and Nonlinear Equations**

1. Linear algebra in MATLAB
2. Nonlinear equations in single variable
3. Newton-Raphson in single variable

### **Unit 4: Mathematical Computing with MATLAB:**

1. Algebraic equations
2. Basic Symbolic Calculus and Differential equations
3. Numerical Techniques and Transforms

### **TEACHING-LEARNING METHODOLOGY:**

Lectures and Practicals

### **EVALUATION:**

Oral (through activities) and written examinations

**SEE 15 marks and CA 15 marks**

### **References:**

1. Getting Started with Matlab, Rudra Pratap, Oxford University Press.
2. MATLAB and Its Application in Engineering, Raj Kumar Bansal, PEARSON Education.
3. “A Guide to MATLAB - for Beginners and Experienced Users”, 2<sup>nd</sup> Ed., Brian R. Hunt, Ronald L. Lipsman, Jonathan M. Rosenberg, Cambridge University Press, (2006).
4. “Essentials of MATLAB Programming”, 2<sup>nd</sup> Ed., Stephen J. Chapman, Cengage Learning, (2009).
5. “MATLAB Demystified”, David McMahon, The McGraw-Hill Companies, (2007).
6. “MATLAB® for Engineers”, 3<sup>rd</sup> Ed., Holly Moore, Pearson Education, Inc., (2012).
7. “Engineering computation with MATLAB”, 2<sup>nd</sup> Ed., David M. Smith, Pearson Education, Inc., (2010).





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## **CERTIFICATE COURSE IN EMPLOYABILITY SKILLS**

### **LEARNING OBJECTIVES:**

Being job-ready when graduating out of a college is one of the most coveted aspects of anyone's career launch. There are various ways in which "job-readiness" can be defined, e.g. from Technical Know-how terms, Personality and Behavioral terms and so on. One of the most important angles to being job-ready, comes from being able to effectively communicate your ideas either with your peers, higher-ups or your juniors. In a professional setup, an employee who is effectively able to interface with the "client" of the company, is one of the most valuable assets. So being a good communicator not only raises chances of getting selected in an interview but also ensures one is able to rise up the ranks faster than he/she normally would.

Another important facet of a higher employability quotient is mastering the interview process. Interview is not merely a selection process of the brightest candidates of the available ones. It is actually a match-making process of the needs of the company and the aspirations of the candidates giving the interview. It is thus possible that even those with relatively lesser percentage/percentile scores getting selected over those with the higher scores. Though it often baffles the interviewees, it is always the case and the science behind the same is definitive and definitely worth looking at especially when one is in the interviewee's shoes. Though every interviewee (candidate giving the interview) assumes that the interviewer (the one taking the interview) is assessing his/her psychology and creating a perception about it, it has never harmed even an interviewee to get into the interviewer's mind and try to work the process to his benefit in order to raise his/her chances of getting selected.

In this course, candidates are taught how to approach any interview process in the most methodical manner and begin preparing oneself for an actual interview.

Thus, overall, in this module the focus is on two aspects of that ability, i.e. ability to effectively speak in English and being able to master the art of giving an interview.

### **COURSE OUTCOME:**

- Ability to speak and communicate in English effectively
- Understand the interview process in depth
- Understand job placement assessment methodology

- Learn about confidence boosting techniques
- Master the behavioral skills that help one to ace the interview

### ELIGIBILITY:

Minimum 12th pass or equivalent from a recognized board or university.

### COURSE CONTENTS:

Top ic	Teaching Duration (30 Hours)	
	Theor y	Practica l
<b>Communication in English</b>	<i>2 Hours</i>	
<i>Age of Globalization and the Need for Communicating in English</i>		
<b>Importance of Spoken English</b>	<i>2 Hours</i>	<i>4 Hours</i>
<i>Status of Spoken English in India</i>		
<i>Spelling and Pronunciation</i>		
<i>Asking for and giving information</i>		
<i>Offering and responding to offers</i>		
<i>Requesting and responding to requests</i>		
<i>Congratulating people on their success</i>		
<i>Expressing condolences</i>		
<i>Asking questions and responding politely</i>		
<i>Apologizing and forgiving</i>		
<i>Giving instructions</i>		
<i>Seeking and giving permission</i>		
<i>Expressing opinions (likes and dislikes)</i>		
<i>Agreeing and disagreeing</i>		
<i>Demanding explanations</i>		
<i>Asking for and giving advice and suggestions</i>		
<i>Expressing sympathy</i>		
<i>Reading Skills</i>		
<i>Purpose, Process, Methodologies</i>		
<i>Skimming and Scanning</i>		
<i>Levels of Reading</i>		
<i>Reading Comprehension</i>		
<i>Academic Reading Tips</i>		
<b>English Practice – Group Activity 1</b>	<i>2 Hours</i>	<i>2 Hours</i>

<i>Introduction to Roleplay</i>		
<i>Approaches for effective roleplay</i>		
<i>Practicing basic roles</i>		
<i>Topic choosing for roleplay</i>		
<i>Preparing a CV/Resume and Effective Profiling</i>		
<b>English Practice – Group Activity 2</b>	<i>2 Hours</i>	<i>2 Hours</i>
<i>Group Discussion Basics</i>		
<i>Group Discussion Etiquettes</i>		
<i>Group Discussion Practice</i>		
<b>Interview Psychology</b>	<i>4 Hours</i>	
<i>Candidate's approach</i>		
<i>Interviewer's psychology</i>		
<b>Raising the Employability Quotient</b>	<i>6 Hours</i>	<i>6 Hours</i>
<i>Preparing for the interview</i>		
<i>Facing the Personal (HR &amp; Technical)</i>		
<i>Mock Interview Sessions</i>		

### TEACHING-LEARNING METHODOLOGY:

Lectures and Activities

### EVALUATION:

written examinations

**SEE 15 marks and CA 15 marks**

### Reference Books:

1. Richard N. Bolles, 2022, What Color Is Your Parachute?, Ten Speed Press
2. Russell Tuckerton, Chris Abernathy, et al., 2013, What I Wish Every Job Candidate Knew: 15 Minutes to a Better Interview
3. Martin Yate, 2012, Knock 'em Dead Job Interview: How to Turn Job Interviews into Job Offers
4. Denise Eide, 2012, Uncovering the Logic of English: A Common-Sense Approach to Reading, Spelling, and Literacy
5. Wayne E. Wright, 2019, Foundations for Teaching English Language Learners: Research, Policy, and Practice





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## **CERTIFICATE COURSE IN LEADERSHIP DEVELOPMENT**

### **LEARNING OBJECTIVES:**

A well-rounded personality of a prospective employee or an effective entrepreneur is not only about physical appearance or the command of the person over the language. It is also a function of how one uses his/her surroundings to his maximum benefit. For a person, “being confident” and “appearing confident” could be two different things when he/she examines oneself in any situation. However, that need not always be the case for the people around them. One can project being confident in an adverse situation despite not feeling so within. Sometimes such ability can be a major differentiating factor between success or failure. Confident positive outlook is something that can come naturally or can be nurtured. In the “ThinkTrans Student++” program, it is ensured that the students are exposed to multiple scenarios which they can face in real world and possible reactions to the same. Picking from the same, student not only develop the ability to behave/react in those particular scenarios alone, but are able to extrapolate the strategy to different similar scenarios.

Typically, specific grooming of the students towards this brings out a remarkable change in the way they carry themselves around. Though subtle, these things matter a lot in the eyes of a prospective employer/investor. ThinkTrans believes that every student already has in him what it takes to click in the real world. What they need is slight nudge in the right direction and that is what forms the crux of the “Leadership Development” course.

Ability to make the right decisions at the right time is another quality that is of immense importance in the real world. In the student phase, one is often directed about their choices, thereby diminishing this ability. We ensure that they learn to own their decisions in an interactive way which is far more effective than theory class outlining the importance of the same.

Every individual is unique in his/her thinking. That uniqueness is often shaped by the individual’s social/family circumstances and experiences. This, many times, also means approaching a problem uniquely from a solution point of view. In the corporate/entrepreneurial world, newer approaches are often encouraged/rewarded. However, in the student phase, since the focus is solely on ensuring that the student does not divert from the given syllabus, this ability of students is also often diminished over time. It takes special efforts to bring this out. And once brought out, it aids tremendously in ensuring that the student begins to feel confident about his thoughts. Of course, this needs to be augmented with the ability of thinking right.

**COURSE OUTCOME:**

- Develop leadership ability
- Equip student with adaptability and transferable skills
- Enhance communication skills, workplace behavior and organization skills
- Develop Self-Awareness, Improved Focus & effectiveness
- Smarter and better thinking ,Greater spirit to face & Solve problems
- Fulfilling Relationships

**ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

**COURSE CONTENTS:**

Topic	Teaching Duration (30 Hours)	
	Theory	Practical
Introduction to Personality Development	2 Hours	2 Hours
<i>The concept of personality</i>		
<i>Dimensions of personality</i>		
<i>Significance development of personality</i>		
<i>The concept of success and failure</i>		
<i>What is success?</i>		
<i>Hurdles in achieving success</i>		
<i>Overcoming hurdles</i>		
<i>Factors responsible for success</i>		
<i>What is failure</i>		
<i>Causes of failure</i>		
<i>SWOT analysis</i>		
<b>Attitude &amp; Motivation</b>	1 Hours	2 Hours
<i>Attitude</i>		
<i>Concept</i>		
<i>Significance</i>		
<i>Factors affecting attitudes</i>		
<i>Positive attitude – Advantages</i>		
<i>Negative attitude - Disadvantages</i>		
<i>Ways to develop positive attitude</i>		
<i>Differences between personalities having positive and negative attitude</i>		
<i>Concept of motivation</i>		
<i>Internal and external motives</i>		
<i>Importance of self-motivation</i>		
<i>Factors leading to de-motivation</i>		

<b>Self-esteem</b>	<i>1 Hours</i>	1 Hours
<i>Term self-esteem</i>		
<i>Symptoms</i>		
<i>Advantages</i>		
<i>Do's and Don'ts to develop positive self- esteem</i>		
<i>Low self-esteem - Symptoms</i>		
<i>Personality having low self esteem</i>		
<i>Positive and negative self esteem</i>		
<i>Interpersonal Relationships –</i>		
<i>Defining the difference between aggressive, submissive and assertive behaviours</i>		
<i>Lateral thinking</i>		
<b>Other Aspects of Personality Development</b>	<i>1 Hours</i>	2 Hours
<i>Body language</i>		
<i>Problem solving</i>		
<i>Conflict and Stress Management</i>		
<i>Decision-making skills</i>		
<b>Leadership Fundamentals</b>	<i>2 Hours</i>	<i>2 Hours</i>
<i>The cognitive triangle</i>		
<i>Worry Exploration Questions</i>		
<i>Core Beliefs</i>		
<i>Thoughts, Feelings, Actions &amp; Behaviors</i>		
<b>Leadership and qualities of a successful leader</b>	<i>2 Hours</i>	<i>2 Hours</i>
<i>Character building</i>		
<i>Team-work</i>		
<i>Time management</i>		
<i>Work ethics –Good manners and etiquette</i>		
<b>Build your own Startup Exercise</b>	<i>1 Hour</i>	<i>9 Hours</i>
<i>Laying the ground</i>		
<i>Concept Building</i>		
<i>Presentation to the Jury</i>		
<i>Course-correction as per the feedback</i>		
<i>Presentation to the investor</i>		

**TEACHING-LEARNING METHODOLOGY:**

Lectures and Activities

**EVALUATION:**

Written examinations

**SEE 15 marks and CA 15 marks**

**Reference Books:**

1. Dan Senor and Saul Singer, 2011, Start-up Nation: The Story of Israel's Economic Miracle
2. Stephen R. Covey, 2004, The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change
3. Dale Carnegie, 1981, How to win friends and influence people





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## **CERTIFICATE COURSE IN DATA SCIENCE, ML and DL**

### **LEARNING OBJECTIVES:**

Main objective of the certification course is to impart knowledge to passionate students about:

- ✓ Artificial Intelligence and its Applications
- ✓ Machine Learning algorithms and its application
- ✓ Deep Learning algorithms and its application
- ✓ Data Science and data analytics

### **COURSE OUTCOME:**

Upon completion of the course students will be able to;

Differentiate between Neural networks, machine Learning and deep learning.

Deploy algorithms for Machine Learning

Use concepts of Data Science and deep learning

Develop an application based on ML

**Duration: 30 Hours**

### **ELIGIBILITY:**

Minimum 12th pass or equivalent from a recognized board or university.

B.Sc I & II. Appearing

**COURSE CONTENTS:**

<b>Sr. No.</b>	<b>Modules to be Covered</b>	<b>Theory</b>	<b>Practical</b>
1.	Data Analytics	2 hrs.	2 hrs.
2.	Machine Learning	5 hrs.	5 hrs.
3.	Introduction to Deep Learning	6 hrs.	5 hrs.
4.	Case Study / Project	2 hrs.	3 hrs.

**TEACHING-LEARNING METHODOLOGY:**

The complete course is practical oriented, various Data science, ML & DL project based learning approach is adopted.

**EVALUATION:**

Theory paper (MCQ's) = 20 Marks

Practical Paper = 80 Marks

(Build the one ML and one DL model with data analytics for given data set )

**Reference Books:**

1. Python for Data Analysis by Wes McKinney , O'reilly publication
2. Hands-On Machine Learning with Scikit-Learn and Tensor Flow by Geron Aurelien  
O'reilly publication