KALINGA UNIVERSITY

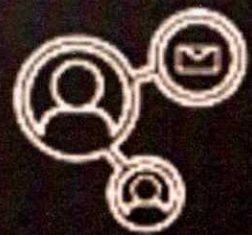# VALUE ADDED COURSES

Syllabus

Session 2019-20

VALUE ADDED COURSES

FACULTY OF ARTS & HUMANITIES

1. Soft Skills

Course Objectives:

Soft skills include good work ethics, sound and positive attitude, eagerness/curiosity to learn, cultural sensitivity, fine business manners and values including effective communication skills. After completing the course students will be able to present themselves in effective and attractive manner.

Course Outcome:

• Deal with nerves and think more positively about public speaking
• Consider ways of grabbing the listener's attention, holding their interest, and concluding strongly
• Use body language and tone of voice to enhance their presentations
• Use slides and visual aids effectively

MODULE I:

Introduction to Soft Skills

Oral/spoken communication skill & testing - voice and accent, voice clarity, voice modulation &intonation, word stress, etc.

• 5Ws & 1H & 7Cs for effective Communication
• Development Etiquette and manners
• Oral/spoken communication skill & testing - voice and accent, voice clarity, voice modulation& intonation, word stress, etc.
• Components of Effective Communication - Conviction, confidence & enthusiasm, Listening
• Communication Process & Handling them
• Listening-It's Importance, Good & Bad Listening
• Body Language
• Attitude (Positive and Negative Attitude)
• Good Personality

MODULE II:

Self-Management

• Self Evaluation
• Self Discipline
• Self Criticism
• Recognition of one's own limits and deficiencies
• Independency
• Thoughtful & Responsible
• Identifying one's strengths and weakness
• Planning & Goal setting
• Managing self – emotions, ego, pride

MODULE III:

Time Management Concept and Technique ·
• Success Mind set
• 7thHabits of highly effective people
• Interpersonal skills.

MODULE IV:

Interpersonal Skill Development
• Positive Relationship
• Positive Attitudes
• Empathise: Comprehend other opinions points of views, and face them with understanding
• Mutuality
• Trust
• Emotional Bonding,
• SWOT Analysis

MODULE V :

• Presentation Skill
• Interview Skill Problem Solving
• Critical and Creative Thinking
• Discussion Corporate Etiquette

Reference:

1. Effective Presentation Skills – Robert Dilts, Meta Publication
2. Presentation Skills 2011

2. COMMUNICATION SKILLS

Total Duration: 31hrs

Course Objectives:

- Impart the fundamentals of English as a language.
- Deal systematically with the four aspects of language i.e. reading, writing, listening and speaking.
- Facilitate an improved academic performance.
- Remove fear which is a stumbling block for many in their quest for speaking better.

Course Outcome:

- Increased ability of kids to overcome anxiety and nervousness when preparing for public speaking
- Increased confidence in public speaking
- Ability to make quality speeches/presentations
- Improved English grammar, tenses and vocabulary and fluency in speaking

MODULE I:

Effective Communication: Concept of Effective Communication, Components of Effective Communication- Conviction, confidence & enthusiasm, Type of communication, verbal, Non-Verbal Communication – its importance and Nuances :- Facial Expression, Posture, Gesture, eye contact, Appearance barriers in communication feedback

MODULE II:

Listening: It's importance, Good and Bad listening, Listening Communication Process, Advantage of listening, How to become a good listener

MODULE III:

Language for Communication: Language and Communication; General Principles of Writing; Improving Writing Skills, Essentials of good style, Expressions and words to be avoided; Grammar and Usage

MODULE IV:

Reading Skills: Reading Skill; Purpose of Reading; Types of Reading; Techniques for Effective Reading.

MODULE V :

Employment Communication- Resume: Contents of Good Resume; Guidelines for Writing Resume; Different Types of Resumes; Reason for a Cover Letter to Apply for a Job-Format of Cover Letter;

Different Types of Cover Letters, Job Interview: Importance and Factors Involving Job Interview; Characteristics of Job Interview; Job Interview Process; Job Interview Techniques- Manners and etiquettes to be maintained during an interview; Sample Questions Commonly asked During Interview.

Reference:

1. Effective Presentation Skills – Robert Dilts, Meta Publication
2. Business Communication Today - Bovee and Thill:Tata McGraw Hill,
3. Presentation Skills 2011

3. Interpersonal Skill

Total Duration: 34hrs

Course Objectives:
- To understand the nature of interpersonal communication
- To appreciate the importance of assertion in interpersonal communication and be introduced to some key assertion strategies
- To understand the interpersonal nature of giving feedback, receiving criticism and resolving conflicts
- To establish attentive listening as an assertion strategy
- To understand meeting skills as interpersonal skill

Course Outcome:
Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:
- Discuss learning goals
- Contribute to safe learning environment
- Have given thoughtful and diligent assessment of the learner's assets and needs prior to the exchange
- Recognize that effective feedback is usually uncomfortable
- Assess recipient's level of readiness for feedback
- Identify and address barriers to receiving feedback
- Develop a safe space for discussion and critical appraisal of the feedback given
- Mutually arrive at a meaningful assessment and plan of action towards learning objective

MODULE I:
- Alive to facts and developments
- Commitment to democratic values
- Commitment to Pluralism
- Secular outlook
- Pride in Indian nation, culture, history and heritage
- Analytical approach
- Clearheaded
- Good communication skills

MODULE II:
- Depth of knowledge
- Determination
- Command over language
- Discipline
- Hardwork
- Initiative/enterprising
- Integrity
- Dress pattern/code

MODULE III:
- Logical approach
- Methodical and systematic approach
- Proper mobilization and utilization of resources
- Strong moral values
- No jealousy
- No persecution complex
- No unreasonable fear
- Optimistic

MODULE IV:
- Perseverance
- Planning
- Practical approach
- Practical knowledge
- Promptness to take decisions

- Sense of right and wrong
- Sincerity
- Willingness to take calculated risks
- Smile
- Appreciation
- Paying attention to others
- Active listening
- Team man
- Empathy

MODULE V :
- Free from prejudice
- Flexible approach
- Sensible
- Supportive
- Understanding the expectations of others
- Politeness
- Emotional intelligence
- Fortitude
- Effective communication
- Impartiality
- And many more similar attributes

Text Book:
Adler, R., & Elmhorst, J. (2002). Communicating at work (7th ed.). New York: McGraw-Hill.

Reference Books:
1. Dwyer, J. (1993).The Business Communication handbook (3rd ed.). New York: Prentice Hall.
2. Krizan, A., Merrier, P., & Jones, C. (2002). Business Communication (5th ed.). Ohio: South-Western College Publishing.
3. O'hair, D., Friedrich, G., & Shaver, L. (1998). Strategic communication (3rd ed.). Boston: Houghton Mifflin Co.
4. Paterson, R. (2001).The assertive book. Mumbai: Magna Publishing Co
5. Timm, P., & DeTienne, K. (1980). Managerial communication (3rd ed.). New Jersey: Prentice-Hall

4. Anchoring and TV Journalism

Total Duration: 30hrs

Course Objective

1. To understand the basics of TV journalism
2. To imbibe the concepts of anchoring
3. To understand the functioning of TV channels

Course Outcome

1. Students will be able to anchor shows
2. Students will be able to implement the techniques of voice grooming and styling

MODULE I:

Introduction

Anchoring Basics, tips and techniques

MODULE II:

Building a foundation

Functioning of a TV news channel, Types and formats of news stories

MODULE III:

What to expect in a studio

Tips and techniques, microphones, EP, studio lights

MODULE IV:

• Voice Grooming and anchor styling

• Understanding your voice, tips and techniques for voice grooming, TV dress code for men and women,

• what to wear, make up

MODULE V :

Getting ready for the interview

Ace your interview/screen test, how to better your anchoring skills, The who's who of TV anchoring share their secret mantras

Reference Books

1. SOUND REPORTING1.BYJONATHAN KERN
2. EDWARD R. MURROWANDTHE BIRTH OF BROADCASTJOURNALISM2.BYBOB EDWARDS
3. THE NEW JOURNALISM3.BYROBERTS. BOYNTON

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5. Film Making

Total Duration: 36hrs

Course Objectives
To understand the nature and process of film production.
To learn how to read and analyze film as you would a novel, a poem or a short story
To familiarize ourselves with certain theoretical ideas presented by major film theorists.
To learn how to develop, write and revise workable screenplays

Course Outcomes
1.The students acquire the skills of film production
2.The students are acquainted with major theories of film

MODULE I:
What is Cinema: What is Cinema? Why do we watch films? What are the technical processes that go into the production of films? How do films get made? Who are the people who make films? Who are the people who watch films? Why do people watch films? Why do people make films?

MODULE II:
Introduction to Film Form: Next, we will move from film production to film form. In this section of the course, we will earn the elements of film language, focusing mostly on the four most important elements: mise-en-scene, cinematography, montage, and sound. Some important questions are: What is the language in which cinema speaks? How do films create meaning? How does form reflect content? How can we read films more effectively? How does cinema create and use metaphors and symbolism?

MODULE III:
Screenwriting as Art: Next, we will turn our attention to the process of developing and writing our own original screenplays and prepare them for submission to the Heinztelmann writing competition. We will spend two to three weeks coming up with ideas, figuring out characters and arcs, writing drafts, and revising. At the end of the unit, I will choose between four and six of the class's screen plays to "green light" for production .

MODULE IV:
Hitchcock: Form and Theory: In our third unit, we will transit from a general study of Film Form to something much more specific. Alfred Hitchcock is, arguably, the most revered formal master and innovator in the history of cinema, and his film Vertigo (1958) stands at the top of his canon.

MODULE V :
Film (as) History: Finally, in this unit, we will concentrate chronologically on the most prominent moments in film history, highlighting formal innovations or aesthetic movements. We will examine, in turn: Early Cinema, German Expressionism, Italian Neorealism, French New Wave, Europe an Art Cinema, New Hollywood, and Postmodernist Film.

Reference Books:
-Bordwell, David and Thompson, Kristin, Film Art: an Introduction, 7th ed. New York: McGraw-Hill Co., 2004.
-Kawin, Bruce, How Movies Work. Berkeley and Los Angeles: University of California Press, 1992.-Cook, David A., A History of Narrative Film, 4th ed. New York: W.W. Norton & Co., 2004

6. YOGA AND MEDITATION

Introduction

Yoga and Meditation are considered as art and science of healthy living by our ancient gurus. It is a method to bring harmony of body and mind for general well being. Yoga and Meditation is considered as one of the greatest gifts to the world by Indians for healthy living. Students in particular are benefitted by learning yoga.

Aim: At the end of successful completion of the course, the student will be able to understand the scientific basis of Yoga and meditation while practicing various yogasanas effectively and correctly for the personal benefit.

General Objectives of the Course:

1. To provide the necessary knowledge of the theory and practice of yoga so that the students learn to practice and also to teach yoga to all age groups for promoting their health and effectiveness
2. To give them a basic understanding of Yoga and its nature, scope, development of yoga through the ages, Different types of yoga , Meditation and its nature and scope, Different types of meditation, relevance to the modern life.
3. To provide the necessary knowledge of nature, characteristics and development of Indian philosophy, Indian Philosophical systems like Vedic thought, Nyaya Philosophy, Vaisesika Philosophy, Samkya Philosophy and Sankara philosophy.
4. To provide the necessary knowledge of Kriyas, Asanas, Mudras, Bandhas, Pranayama and meditative postures.

Duration of the Course:

The duration of the course will be for eight weeks (40 hours). Each working day shall consist of one hour of teaching (practical/theory).

Syllabus

The course consists of theory and practical training.

Theory Syllabus

Unit-I
Introduction

- Meaning and Definition of Yoga
- Aims and Objectives of Yoga

Unit-II

Foundation of Yoga

- The Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi
- Yoga in the Bhagavadgita - Karma Yoga, Raja Yoga, Jnana Yoga and Bhakti Yoga

Unit -III
Asanas

- Classification of asanas and meditative posture
- Types of Bandhas ,mudras and kriyas

Unit –IV
Meditation

- Meditation : Meaning , Nature and relationship with mind
- Role of meditation in stress management

Practical Training

| S.No	Content
1	Loosening practices (Sithila vyama) i.Neck rotation ii. Shoulder rotation iii. Wrist rotation iv. Trunk rotation v. Forward and backward bending vi. Side bending vii. Twisting viii. Stretching
2	Suryanamaskar 12 Step of Suryanamaskara or sun salutation Asanas are trained in a sequence in synchronization with breath control
3	Standing Asanas i.Tadasana ii.Padhastasana iii.Ardhachakrasana iv.Trikonasana v.Parvritt trikonasana vi.Vriksasana vii.Garudasana viii.Katrichakrasana
4	Sitting asanas i.Vajrasana ii.Shashankasana iii.Suptavajrasana iv.Ustrasana v.Paschimottansana vi.Janusirsana vii.Ardha matsendriyasana
5	Prone asanas i. Makrasana ii. Bhujangasana iii. Shalabhasana iv.Dhanurasana
6	Supine asanas i.Sarvangasana ii.Matysasana iii.Halasana iv. Chakrasana v. Ardha chakrasana vi. Ardha halasana vii. Naukasana viii. Markatasana ix. Setubandhasana x. Shavasana

S.No	Content
7	Kriyas i. Jala Neti ii. Sutra Neti iii. Dhauti (Vamana) iv. Kapalabhati v. Nauli vi. Trataka
8	Pranayama i. Anuloma-viloma ii. Ujjayi iii. Shitali iv. Sitkari v. Bhastrika vi. Bhramari vii. Suryabhedana viii. Chandrabhedana
9	Meditation i. Om meditation ii. Nadanusandhana iii. Cyclic Meditation
10	Bandhas & Mudras i. Jalandhara Bandha ii. Uddiyana Bandha iii. Jicha Bandha iv. Mula Bandha
11	Relaxation techniques
	Total

Reference books:

1. Light on yoga by B.K.S Iyengar
2. The yoga sutras of Patanjali by B.K.S Iyengar
3. Integrated approach of yoga therapy for positive health by H.R.Nagendra
4. Pranayama: The art and science by H.R.Nagendra
5. A monograph on Pranayama by Ishwar Baswaraddi, Morarji Desai National Institute of Yoga
6. A monograph of yogasanas by Ishwar Basawaraddi, Morarji Desai National Institute of Yoga
7. Understanding basic physiology by R.L.Bijlani
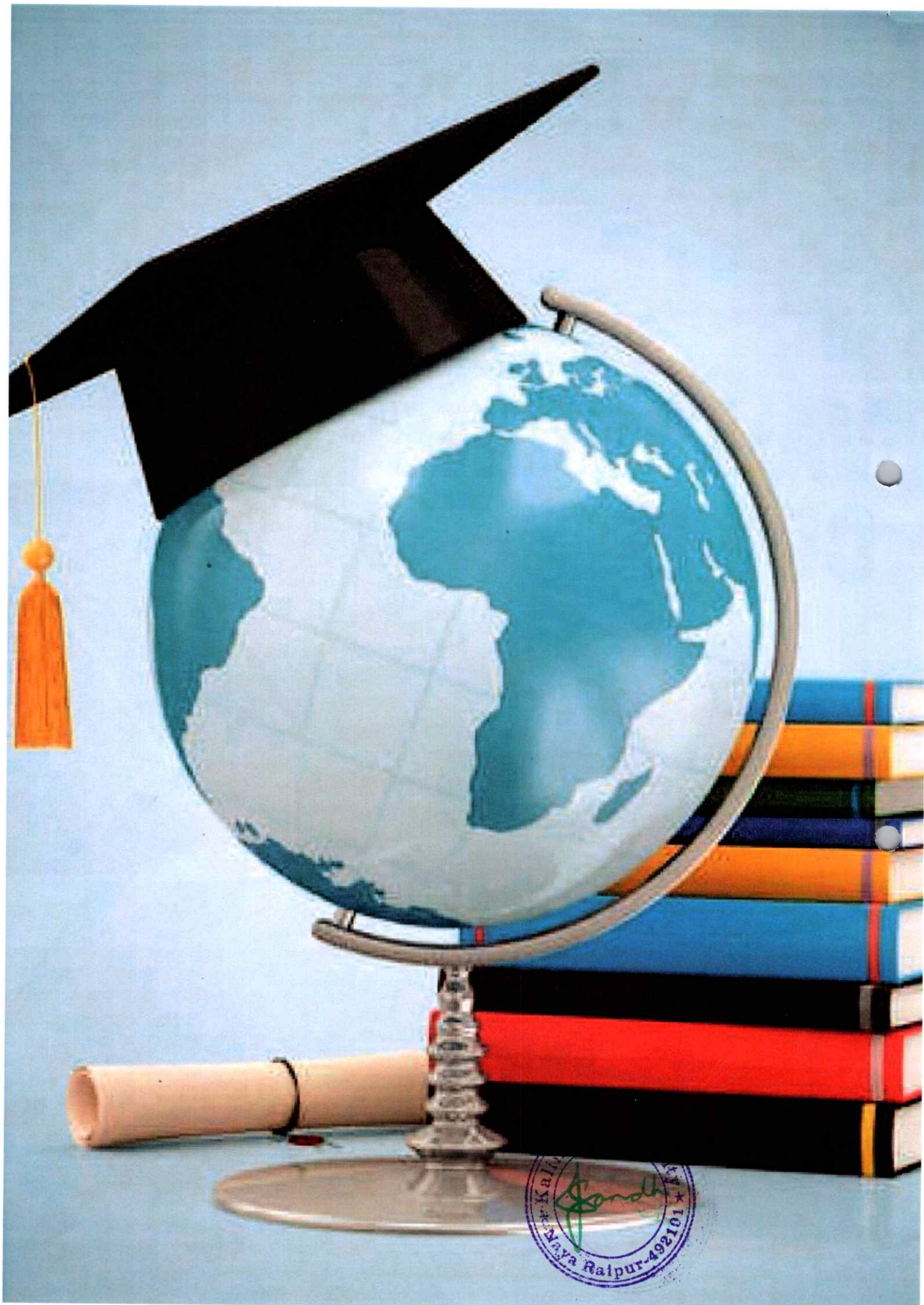
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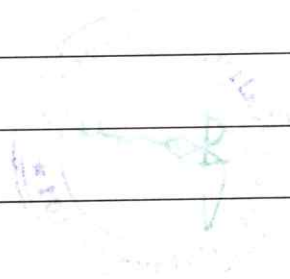
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VALUE ADDED COURSES

Syllabus
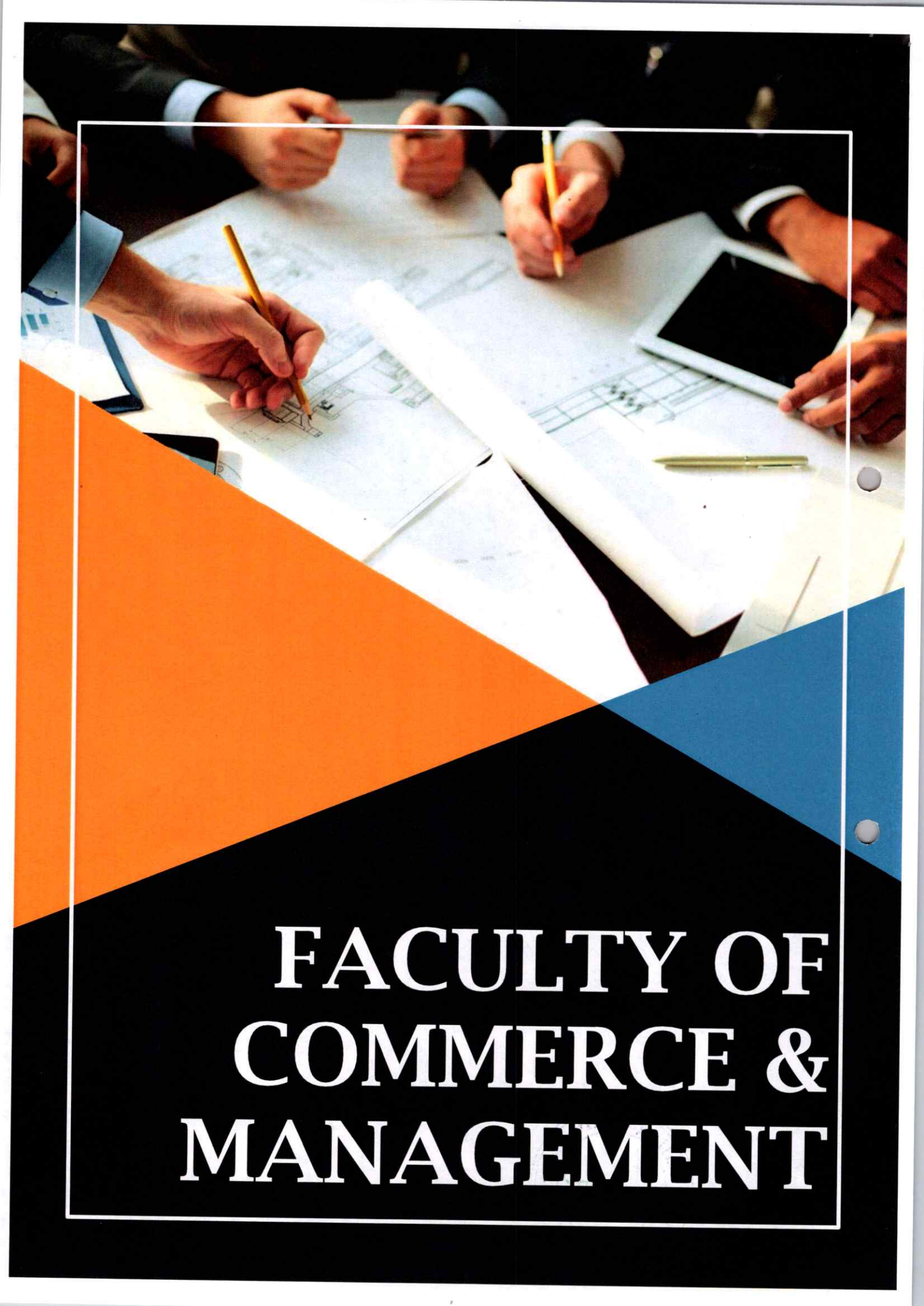
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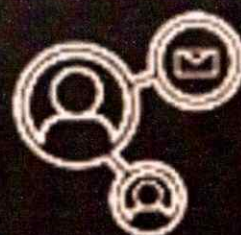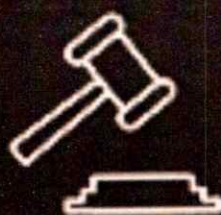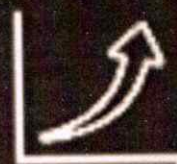
VALUE ADDED COURSES

FACULTY OF COMMERCE & MANAGEMENT

1. TALLY AND ACCOUNTING

Total Duration: 33hrs

Course Objective:
- To familiarize computer accounting practices as per Indian norms
- To introduce an Accounting software which indeed helps a small and medium business.

Course Outcome:
- Students will understand all functions of accounting taxation and payroll that a particularly midsized business needs.

Module 1

Accounting: Accounting is the most important feature of Tally ERP The main thought that comes in mind of a person when hearing about tally is accounting

Module 2

Billing: Billing is important part of business, this feature is included in Tally. Actually billing is included in accounting feature when ever you pass an accounting entry simultaneously a bill is generated which can be used for raising or sending invoice.

Module 3

Payroll: This feature is of use when you are having a good number of employees. For maintaining payroll in tally, there are functions like employee categories, employee groups, attendance, pay heads and course employees

Module 4

Inventory: Maintenance of stock is very important part of business as it gives better control on business sales hence movement of stock is integral part which can be kept under control .

Module 5

Banking: In this era of digitalization, without banking no business can survive. Banking functionality is very well covered by Tally. Though it was not present in earlier versions of Tally but it can be used in ERP-9 TAXATION: TDS GST both direct and indirect tax can be calculated automatically and its returns are also filed online with the help of Tally ERP

Reference Books:
1. Tally ERP 9 Training guide by Asok K. Nadhani, BPB Publications
2. Official Guide to Financial Accounting

2. INDUSTRIAL AUTOMATION

Total Duration: 34hrs

Course Objectives:
- The purpose of this course is to provide the student with basic skills useful in identifying the concepts of automated machines and
- describe the terms and phrases associated with industrial automation.
- The student will perform preventative maintenance, identify or solve problems in machines, and other technologies.
- Performance will be satisfactory when student can demonstrate competence in maintaining and troubleshooting technology includes identifying, understanding, and performing routine preventative maintenance and service on technology;
- detecting more serious problems; generating workable solutions to correct deviations; and recognizing when to get additional help.

Course outcomes:

Provides the student with basic knowledge of the
- industrial automation
- systems design,
- installation,
- modification,
- maintenance
- repair.

MODULE I:
Explain the General function of Industrial Automation List basic Devices in Automated Systems Distinguish Different Controllers Employed In Automated Systems Identify Safety in Industrial Automation Demonstrate Proper Lockout-Tag Out Procedures in Industrial Environments

MODULE II:
Identify Practical Programmable Logic Controller Applications Know the History of the PLC Demonstrate basic PLC Skills Recognize Fundamentals of Programming Including Programming Coils Contacts Timers and Counters Logical Program Development

MODULE III:
CategorizeInput/OutputModulesAndWiring.IdentifyInput&OutputModuledifferencesDemonstrate properWiringTechniquesUseArithmeticandAdvancedInstructionsinIndustrialAutomationIncluding Common Arithmetic Instructions Add, Subtract, Multiply, Divide, and Compare Function Logical Operators, Average, Standard Deviation, Trigonometric Numbering System Conversion Sequencers and Shift Register

MODULE III:
IdentifyTypesofIndustrialSensorsOpticalInductiveCapacitiveEncodersUltrasonicThermocouples Demonstrate proper Wiring Techniques and Practical Applications Explain Robotics Identify Types of Robot Distinguish Uses and Applications of Robot

MODULE IV:
Identify Types of Industrial Sensors Optical Inductive Capacitive Encoders Ultrasonic Thermocouples Demonstrate proper Wiring Techniques and Practical Applications Explain Robotics Identify Types of Robot

Distinguish Uses and Applications of Robot

Reference:
- Industrial Automation: Hands On By: Frank Lamb
- Industrial Automation and Process Control By: Jon Stenerson
- PLC Programming for Industrial Automation By: Kevin Collins

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3. Personality Development

Course Objectives:
The objective of the programme is to build self-confidence, enhance self-esteem and improve overall personality of the participants. The programme aims at grooming the participants through sensitizing them about proper behavior, socially and professionally, in formal and informal circumstances.

Course Outcome:
- Capable of performing better in their roles as leaders based on the situation.
- Create awareness in the participants with regard to the different aspects of interpersonal relations
- Improve participants to be better communicators by providing them with relevant inputs and also sharpening their skills

MODULE I:
Leadership: Introduction to Leadership, Leadership Power, Leadership Styles, Leadership in Administratio Relations: Introduction to Interpersonal Relations, Analysis Relations of different ego states, Analysis of Trans of Strokes, Analysis of Life position.

MODULE II:
Communication: Introduction to Communication, Flow of Communication, Listening, Barriers of Communication, How to overcome barriers of communication, Stress: Introduction to Stress, Causes of Stress, Impact Management Stress, Managing Stress.

MODULE III:
Group Dynamics: Importance of groups in organization, and Team Interactions in group, Group Building Decision Taking, Team Building, Interaction with the Team, How to build a good team ,Conflict: Introduction to Conflict, Causes of Conflict, Management Managing Conflict.

MODULE IV:
Performance: Introduction to Performance Appraisal, Appraisal Vertical Appraisal, HorizontalAppraisal,360° Performance Appraisal, Methods of improving Techniques of Performance Appraisal ,Time as
a Resource, Identify Important Time Management Wasters, Individual Time Management Styles, Techniques for better Time Management.

MODULE V :
Motivation: Introduction to Motivation, Relevance and types of Motivation, Motivating the subordinates, Analysis of Motivation

Reference Books:
1. "Personality Development and Soft Skills" by Barun Mitra
2. "Personality Development" by Swami Vivekananda
3. "The Power of your Subconscious Mind" by Joseph Murphy

4. Presentation Skill

Course Objectives:
• To let the students learn, Importance of good presentation skill.
• To make students to understand the different dimensions of skilled presentation.
• To inculcate the spirit of effective presentation in students and make them efficient enough.
• To develop the skills of communication that is a requirement for a good professional.

Course Outcome:
• Deal with nerves and think more positively about public speaking
• Consider ways of grabbing the listener's attention, holding their interest, and concluding strongly
• Use body language and tone of voice to enhance their presentations
• Use slides and visual aids effectively
• Deliver an enthusiastic and well-practiced presentation

MODULE I:

Preparation of presentation – 1st part – what, how, for whom, structure, principles and presentation techniqu business presentation specifications, Report Writing, Developing Effective Presentation Skills. Oral Presentation. Principles of oral presentation, factors affecting presentation, sales presentation, training presentation, conducting surveys.

MODULE II:

Speeches to motivate, effective presentation skills. Slide Presentation: Craft your message, Make visuals, Include proper content for your presentation. Verbal communication – jaw breakers, argumentation, usable and unsuitable phrases, Communication skills – listening, empathic reaction, how to question.15

MODULE III:

Stealing the show, opening door question, Conflict situation solving, attack from the audience. Communication skills as a work experience, vicious circle of attack and defence, Non verbal communication during presentation. How to manage stress? what to do with hands, legs?

MODULE IV:

Activating the audience with nonverbal communication, body language, Work with audience – ice-breaking, get them in the mood, work with emotions, visualization tools, nonstandard situations Improvisation and unprepared presentations, personal typology, professional typology, social aspect, man-woman view.

MODULE V :

Feedback – appreciation and critique, Paradigm of human cooperation – why there could be problems to start the communication and what to do with it – Defense against manipulation, how to say NO, stress management, Image and etiquette

Reference:
1. Effective Presentation Skills – Robert Dilts, Meta Publication
2. Business Communication Today - Bovee and Thill: Tata McGraw Hill,
3. Presentation skills 2011.

5. Strategic Management

Total Duration: 36hrs

Course Objectives:

1. To introduce the concepts of strategic management and understand its nature in competitive and institutional landscape

2. To provide an underpinning of a. Strategy formulation process and frameworks, tools and techniques of strategic analysis and its application. b. Key business issues/challenges/problems of business in light of dynamic business environment. c. Strategy execution process, framework and its criticality. d. Assessing strategic performance of a firm e. Appreciation of theoretical and empirical foundation of SM background

3. To develop a. A holistic approach to see business issues comprehensively and using other core and functional subject knowledge for decision-making. b. Conceptual, diagnostic and analytical and conceptual skills in strategy formulation and execution.

4. Identification, appreciation and interpretation of the critical challenges and opportunities before an organization.

Course Outcomes:

1. Students will be able to describe major theories, background work, concepts and research output in the field of strategic management.

2. Students will demonstrate a clear understanding of the concepts, tools & techniques used by executives in developing and executing strategies and will appreciate its integrative and interdisciplinary nature.

3. Students will be able to demonstrate effective application of concepts, tools & techniques to practical situations for diagnosing and solving organisational problems.

4. Students will be able to demonstrate capability of making their own decisions in dynamic business landscape.

5. Students will be able to develop their capacity to think and execute strategically.

Module One - Introduction to competition, Strategy & Strategist and Process of Strategy Formulation- 7.5 hours

Module Two- Market, Environment & Competitive analysis -4.5 hours

Module Three- Strategic Position and Dynamics: Competitive Advantage and Value Creation: Conceptual Foundations, Generic strategies, sustaining competitive advantage, business model & value chain-7.5 hours
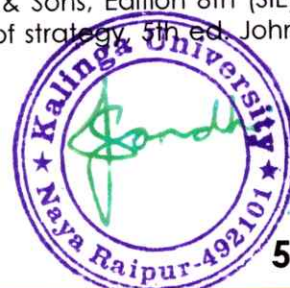
Module Four- Firm Boundaries/Scope of the firm (Corporate strategy) -4.5 hours

Module Five- Industry specific strategy- Managing solar company & Govt. Organisation -3 hours Module Six - Strategy execution and leading change -6 hours

Module Seven- corporate governance, New thinking in SM & Wrap up- 3 hours

Reference Book

Suggested Reading Grant, M.A. (2010), Contemporary strategic analysis, John Wiley & Sons, Edition 8th (SIE) Besanko, David, David Dranove, Mark Shanley and Scott Schaefer. 2009. Economics of strategy 5th ed. John Wiley & Sons: New York.

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Notes

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VALUE ADDED COURSES

Syllabus

Session 2019-20

VALUE ADDED COURSES

FACULTY OF EDUCATION

1.Human Values

Course Objectives:

1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings.
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

Course Outcome:

- The methodology of this course is exploration and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
- It is free from any dogma or value prescriptions
- It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation
- This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs

MODULE I:

**Course Introduction -** Need, Basic Guidelines, Content and Process for Value Education
- Understanding the need, basic guidelines, content and process for Value Education
- Self Exploration—what is it? - its content and process; 'Natural Acceptance' and Experiential Validation-as the mechanism for self exploration
- Continuous Happiness and Prosperity-A look at basic Human Aspirations
- Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
- Understanding Happiness and Prosperity correctly-Acritical appraisal of the current scenario
- Method to fulfill the above human aspirations: understanding and living in harmony at various levels

MODULE II:

Understanding Harmony in the Human Being -Harmony in Myself! • Understanding human being as a co-existence of the sentient 'I' and the material 'Body' • Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha • Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer) • Understanding the characteristics and activities of 'I' and harmony in 'I' •Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail • Programs to ensure Sanyam and Swasthya - Practice Exercises and Case Studies will be taken up in Practice Sessions

MODULE III:

Understanding Harmony in the Family and Society-Harmony in Human Human Relationship • Understanding Harmony in the family – the basic unit of human interaction • Understanding values 'in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship • Understanding the meaning of Vishwas; Difference between intention and competence • Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship
- Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals • Visualizing a universal harmonious order in society- Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha)- from family to world family! - Practice Exercises and Case Studies will be taken up in Practice Sessions.
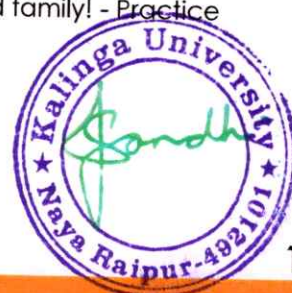
MODULE IV:

Understanding Harmony in the Nature and Existence - Whole existence as Co-existence •Understanding the harmony in the Nature • Interconnectedness and mutual fulfillment among the four orders of nature recyclability and self-regulation in nature • Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space • Holistic perception of harmony at all levels of existence - Practice Exercises and Case Studies will be taken up in Practice Sessions.

MODULE V :

ImplicationsoftheaboveHolisticUnderstandingofHarmonyonProfessionalEthics •Natural acceptance of human values •Definitiveness of Ethical Human Conduct •Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order• Competence in professional ethics: a) Ability to utilize the professional competence for augmenting universal human order b)Ability to identify the scope and characteristics of people-friendly and and eco-friendly production systems, c)Ability to identify an develop appropriate technologies and management patterns for above production systems. •Case studies of typicall holistic technologies, management models and production systems

• Strategy for transition from the present state to Universal Human Order:
a) At the level of individual: associally and ecologically responsible engineers, technologists and managers
b) At the level of society: as mutually enriching institutions and organizations.

Reference Books:

1. B L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted2008.
2. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Purblishers.
3. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991
4. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
5. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, limits to Growth, Club of Rome's Report, Universe Books.
6. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen(Vaidik) Krishi Tantra Shodh, Amravati.
7. ANagraj, 1998, Jeevan Vidya ek Parichay, Divya Path Sansthan, Amarkantak
8. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
9. A.N.Tripathy, 2003, Human Values, NewAge International Publishers.

2. Women in Literature and Culture

Total Duration: 35hrs

Course Objective
- It introduces students to literature and to literary expressions by men/women writers.
- Focus throughout will be on writings on/by women

Course Outcome:
- The students will understand various feminist movements
- It will give an insight to the thought process of a woman

MODULE I:
Approaches to literature, Defining literature. Women and literary history. Women and production, circulation and consumption of literature Feminist critique/gynocritique.

MODULE II:
Androgyny Mahadevi Varma : Links in the Chain, Krishna Sobti : Hum Hashmat, Ishmat Chugtai: Lihaf Kamal Das: Hijra

MODULE III:
Questioning Stereotypes Muddupalani 'Radhika Santvanamu' Bhishma Sahani :
Madhavi (Hindi) Rabindranath Tagore's 'Stri Patra'

MODULE IV:
Women as victim Urvashi Butalia: The Other Side of Silence Manjula Padmanabhan: Lights Out (English) Mahasweta Devi: Draupadi

MODULE V :
Recasting women: Post colonial scene, Women as political leaders Women as agencies of new enlightenment: Issues related to environment, education, democracy and justice.

Reference Books
1. Omvedt, Gail.1990. Violence against Women: New Movements and New theories in India, New Delhi: Kali For women.
2. Brownmiller, S. (1993)Against Our Will: Men, Women, and Rape. New York: Random House.
3. Datar, Chhaya, ed.The Struggle against violence. Calcutta: Stree, 1993
4. Kishwar, Mandu and Ruth Vanita. In search of answers: Indian women's voices from Manushi. London: Zed, 198

3. Mural Art

Course Objectives: -
• Mural for a community or public space.
• Student learn how to paint, how to make a proposal for a public space and meet with the community that will house and help in making the mural.
• Self-portraits and portraits of co-students as well as understanding architectural spaces will be emphasized.
• Student learn about mural paintings history, its social, local and international roots.

Course Outcome: -
• At the end of this course student should be able to demonstrate proficiency in the following:
• issues and implementation of public art.
• Develop a finance and process strategy to conduct public art in a foreign or local community.
• Explore a personal driving force and apply that stimulus visually to the public realm.
• Find the balance between personal, group and the community vision.

MODULE I:
Introduction to Murals & types of Murals., Different types of Murals used in Residential Buildings. Different types of Murals used in Commercial Buildings.

MODULE II:
A Brief Study of Mural Paintings. Creative Paintings-Student has to develop his own idea in mural designing

MODULE III:
Developing Murals in Canvas. Mural Paintings Composition, Details of Materials used in Mural Paintings

MODULE IV:
Fresco paintings details, Carving in Stone & Wood, Designing Murals in Stone, Tools used for Designing in stone

MODULE V :
Use of different materials (i.e, P.O.P, China Clay, Copper, Glass) in Murals, Designing technical murals with sand surface, new sheetrock, glass, etc., Finishing in Mural Design (Remove greases , dirt, painting murals), Student will display his/her work in Exhibition.

Text Book:
1. The Mural Book: A Practical Guide for Educators by Janet Braun-Reinitzand Rochelle Shicoff. Crystal Production

Reference Book:
• Mural Painting Secrets For Success: Expert Advice for Hobbyists and Pros by Gary Lord .Publisher North Light Books
• Painting Murals step by step by Charles Graud. F & W Media Inc.
• The Mural Book: A Practical Guide for Educators Paperback – November 7, 2001by Janet Braun-Reinitz (Author),Rochelle Shicoff (Author)artistic goals.
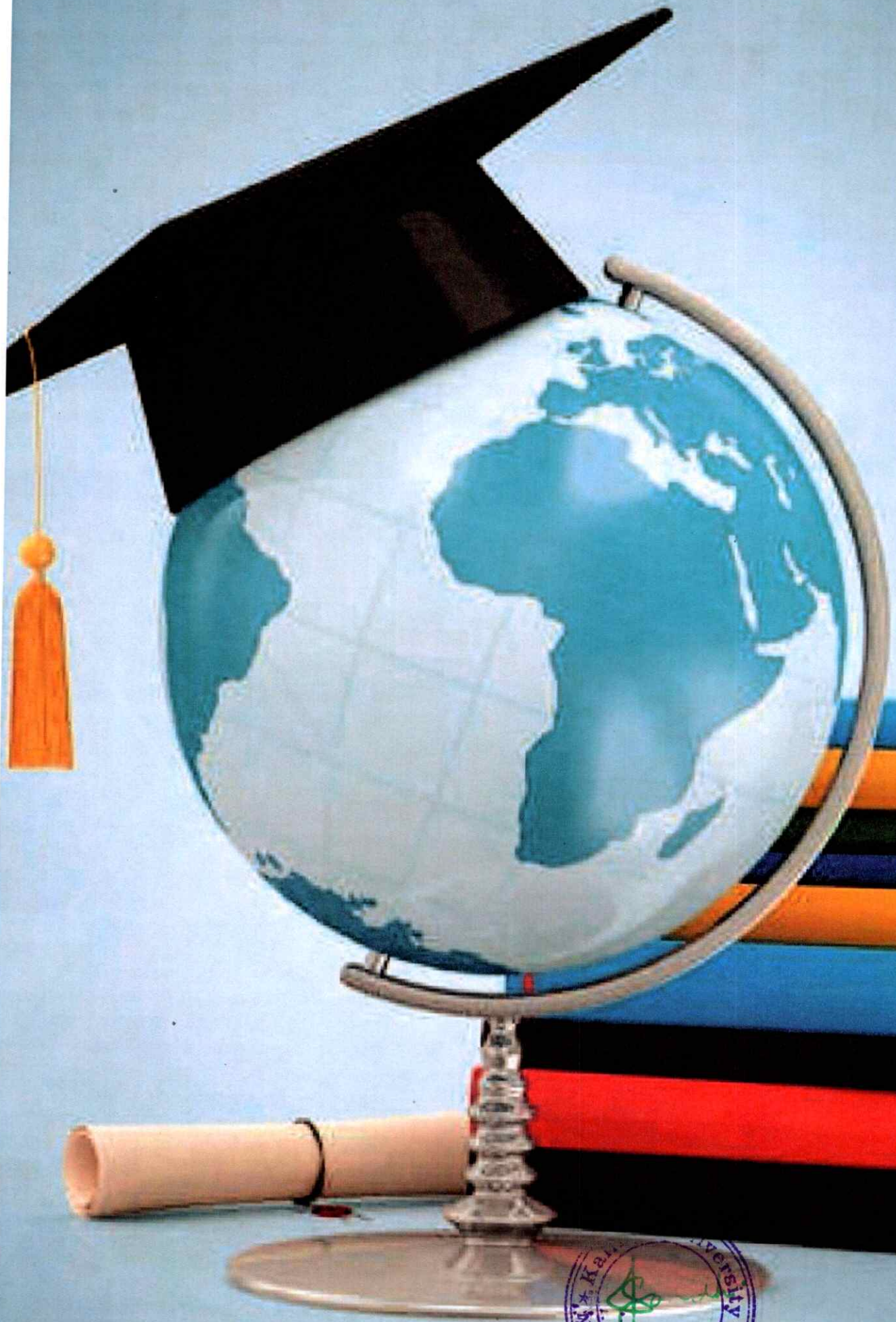
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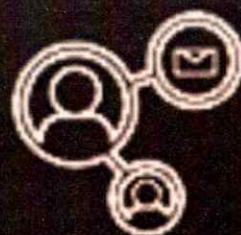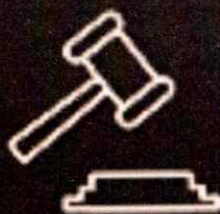
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VALUE ADDED COURSES

Syllabus

VALUE ADDED COURSES

FACULTY OF ENGINEERING

1. Matlab For Engineers

Total Duration: 32hrs

Course Objectives:
- MATLAB introduces students to basic MATLAB programming concepts.
- MATLAB is a software package for carrying out numerical computations and analyses.
- It uses blocks of data called matrices (MATLAB stands for matrix laboratory).

MATLAB is probably the most commonly used scientific and engineering numerical software

Course Outcomes:
- Become familiar with fundamental operations in Matlab
- Perform statistical data analysis, data interpolation by Matlab, solve differentiation equation with Matlab
- Acquire a reasonable level of competence in designing optimization algorithms, solve linear programming, constrained and unconstrained optimization problems by Matlab
- Apply Matlab to solve practical engineering problems Master used skills in Matlab programming, code debugging.

Topic 1: Introduction to MATLAB, Creating Variables, Some Useful MATLAB Functions, Data Types,
Topic 2: Script Files
Topic 3: Introduction to Arrays, Graphing
Topic 4: Good Programming Practices
Topic 5: Input and Output Statements
Topic 6: Conditional Statements
Topic 7: Loops
Topic 8: Nested Loops
Topic 9: Arrays
Topic 10: Array Functions

Textbooks
- MATLAB: A Practical Introduction to Programming and Problem Solving, 3rd edition, Stormy Attaway, Elsevier

Reference Books:
- Bansal/Goel/Sharma-MATLAB and its Applications in Engineering-Pearson Education India; Second edition (1 March 2016) Peter I. Kattan
- MATLAB For Beginners: A Gentle Approach
- Gander, Walter-Learning MATLAB A Problem Solving Approach
- Lipsman, R.L. (et al.) -Multivariable Calculus with MATLAB®
- Quarteroni, Alfio, Saleri, Fausto, Gervasio, Paola-Scientific Computing with MATLAB and Octave- Springer
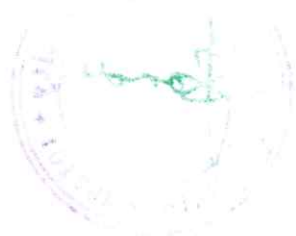
2. Quality Control

Course Objectives:
- Quality objectives are goals for the value of products, services and processes. It is a basic quality management process to establish a set of quality objectives. Unlike a quality policy, that is set at the top level of an organization,
- quality objectives can be specific to a department, team, process
- To understand the concept of Quality
- To understand the Implication of Quality on Business
- To Implement Quality Implementation Programs
- To have exposure to challenges in Quality Improvement Programs

Course outcomes:
- To realize the importance of significance of quality
- Manage quality improvement teams
- Identify requirements of quality improvement programs

MODULE I:

Introduction - Quality, Total Quality Management, Quality Cost, Leadership.
Significance of quantitative analysis in quality control, Different techniques of analysis, Preliminaries and definitions, Significant figures, Rules for retaining significant digits, Types of errors.

MODULE II:

TQM Principles- Customer Satisfaction, Employee Involvement, Continuous Process Improvement, Supplier Partnership, Performance Measures.

MODULE III:

Statistical Process Control (SPC)- Seven tools of Quality, Statistical Fundamentals, Six Sigma. Impurity Profiling. TQM Tools- Benchmarking, Quality Function Deployment (QFD), Taguchi's Quality Engineering, Total Productive Maintenance (TPM).

MODULE IV:

Chromatography technique, HPLC, TLC, Paper, coloumn, liquid and gas chromatography, uses, application.

MODULE V:

Thermal Analysis: Theory, instrumentation & applications of Thermo-gravimetric analysis, differential thermal analysis, differential scanning calorimeter. Quality System- ISO 9000, ISO 14000

Reference:

1. Dale, B. (2015). Total quality management. John Wiley & Sons, Ltd. 1. Mitra, A. (2016).
2. Fundamentals of quality control and improvement. John Wiley & Sons.

3. KOREAN LANGUAGE

Course Objectives: **Total Duration: 35hrs**

→ To achieve fluency in the language as well as a basic understanding of culture and nation as a whole.

→ To be able to Converse, Comprehend, Read and Write with comfort. This course is designed to develop the four language skills, speaking, listening, reading and writing in Korean. It covers the basic grammatical structures and vocabulary necessary for basic conversation, reading comprehension, and writing sentences to help the students build a solid foundation for further study in Korean language. The course also provides useful information concerning culture (whereculture touches on language and communication) and everyday life in Korea. Speaking: Ability to maintain simple face-to face conversation by asking and answering simple questions entirely in Korean Listening: Ability to comprehend the learned materials Writing: Ability to write simple sentences and expression Reading: Ability to comprehension simple texts

Syllabus and Lesson Plan:

Beginner

Class	Syllabus
Class 1	Consonants & Compound Consonants
Class 2	Vowels & Compound Vowels
Class 3	Simple Words Reading and Writing
Class 4	Revision Test & Homework Assessment
Class 5	Basic Vocabulary 1
Class 6	Grammar and sentence formation
Class 7	Grammar and sentence formation
Class 8	Revision Test and Homework Assessment
Class 9	Self Introduction
Class 10	Basic Questions and Answers(Where/When/Who)
Class 11	Basic Questions and Answers(How/ Why)
Class 12	Revision Test and Homework Assessment
Class 13	Basic Vocabulary 2
Class 14	Necessary Basic Conversation(Greeting)
Class 15	Necessary Basic Conversation (in public places)
Class 16	Revision Test and Homework Assessment
Class 17	Basic Grammar and Sentence Formation.(Tenses)
Class 18	Basic Conversation (using known vocabulary)
Class 19	Basic Vocabulary 3
Class 20	Revision Test & Homework Assessment
Class 21	Basic Comprehensive Reading Practice
Class 22	Basic Listening Practice
Class 23	Basic Vocabulary 4
Class 24	Final Revision Test & Evaluation

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Class	Syllabus
Class 25	Review of Basics
Class 26	Basic Conversation in Social Situations
Class 27	Vocabulary 1
Class 28	Revision Test and Homework Assessment
Class 29	Basic Conversation in Social Situations
Class 30	Grammar and Sentence Formation(Banmal, Chundaenmal)
Class 31	Grammar and Sentence Formation (Banmal,Chundaenmal)
Class 32	Revision Test and Homework Assessment
Class 33	Vocabulary 2
Class 34	Expressing Emotion and Listening Comprehension
Class 35	Expressing Emotion and Listening Comprehension
Class 36	Revision Test and Homework Assessment
Class 37	Conversation in SocialSituations
Class 38	Grammar and Sentence Composition(Tenses and usage in formal and informal speech)
Class 39	Vocabulary 3
Class 40	Revision Test and Homework Assessment

Course outcomes:

A student who successfully completes this course will have the opportunity to:

• understand and carry out a conversation on simple topics of daily-life and

• comprehend simple Korean texts and to write about their own everyday life at a basic level.

Reference Books:

Textbook: Seoul National University Korean: Beginner 1A, Young-Mee Cho, Hyo Sang Lee, Choi EunKyu, Ho-Min Sohn, Sung-Ock Sohn, KLEAR-KF

Textbooks in Korean Language, Seoul National University Press, 2013

Workbook: Seoul National University Korean: Beginner 1A, Choi EunKyu, Seoul National University Korean Press, 2013

Listening and Writing Exercise: Courseworks

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4. Revit Architecture

Total Duration: 31hrs

Course description:-

This course covers the feature of Revit Architecture 2013, from schematic design through construction documents. You will be introduced to the concept of Building information modelling (BIM) and the tools for parametric building design and documentation.

Learning objective:-

The objective of this course is to enable the students to create full 3D architectural projects and set them up in working drawings.

MODULE I:

Introduction to Revit Building model information About Revit Architecture - Parametric Relationships - Understanding Revit Terms - Element behaviour in parametric modeller - Element Properties - User interface

MODULE II:

Preliminary Design & Architectural Modelling Site Settings – Top surfaces - Property Lines - Building Pads - Parking Components - Site Components - Contour Line labels - Conceptual design environment Walls - Doors and Windows - Components - Architectural Columns - Roofs - Ceilings - Floors - Openings - Model text - Model Lines - Compound structure - Sloped Surfaces - Circulation - Stairs - Ramps - Railings - Curtain elements - Rooms and areas - Revit families - Design options

MODULE III:

Structural Modelling Beam system - Braces - Trusses - Openings in structural Beam - Brace or Structural columns - Structural walls - Wall foundations - Isolated foundation - Structural floors - Foundation slabs - Shape editing for structural floors, and Floors - Concrete modelling concepts

MODULE IV:

Documenting the Project 2D views - 3D Views - Legend Views - Schedules - Visibility and graphic display in project views - Use and mange views - Project phasing - Annotating - Detailing - Preparing - construction documents

MODULE V:

Rendering Rendering – Walkthrough - Share the design

Reference Books:

1. Autodesk Revit for Architecture By Daniel John Stine AIA, IES, CSI, CDT
2. Autodesk Revit 2021 Architectural Command Reference By Jeff Hanson, Daniel John Stine AIA, IES, CSI, CDT
3. Revit Architecture By Elise Moss
4. Autodesk Revit 2021 Architecture Fundamentals By ASCENT

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5. STADD Pro

Objectives: The course objective is to train the students in structural Modeling, Designing and Analysis, Integrated Design and Finite Element Analysis. This course will help the students to familiarize on the analysis and design of different kinds of structures.

Modelling

Introduction to STAAD - Starting a project - Modeling a structure Creating Nodes & Members Geometry wizard - Property definition - Material definition - Support definition - Specifications

Loading

Nodal load - Member loads - Uniform Force and Moment - Concentrated Force and Moment - Linear Varying Load - Trapezoidal Load - Hydrostatic Load - Area load - Floor load

Load definitions

Wind load - Creating Load Combination - Automatic Load Combination - Edit Auto Load Rules - Moving load - Seismic load

Analysis and Design

Frame Analysis – Truss Analysis – Concrete Design – Steel Design

Project report

Importing CAD Models - Report Setup – Plotting from STAAD.Pro – Final Project

Reference Books:
1. Staad Pro V8i for Beginners by T.S.Sarma
2. Design of R.C.C. Buildings Using Staad Pro V8i by T.S.Sarma
3. STAAD. Pro 2005 Tutorial (with U.S. Design Codes) by Munir M. Ahmad

6. Ethical Hacking

Total Duration: 35hrs

COURSE OBJECTIVES:
- To impart knowledge on the Ethical hacking terminology.
- To examine the different phases involved in ethical hacking.
- To learn technologies for footprinting and scanning.
- To illustrate the steps involved in performing enumeration.
- To construct the password cracking techniques.

COURSE OUTCOMES:

Upon completion of the course students will be able to
- Identify the risk factors in hacking.
- Work with footprinting and scanning.
- Hack the system.
- Work with Trojan and Backdoor tools
- Prevent Systems from attacks

PREREQUISITES: Knowledge of Networks, Operating Systems, Programming is preferred

UNIT I INTRODUCTION

Introduction to Ethical Hacking: Problem Definition – Need for Security – Essential Terminology – Elements of Security – Phases – Hacktivism – Modes of Ethical Hacking – Security Testing – Computer Crimes and Implications – Legal Perspective (US Federal Law).

UNIT II FOOTPRINTING AND SCANNING

Defining Footprinting: Information Gathering Methodology – Unearthing Initial Information -Tool: Sam spade – Locate the Network Range – Tool: NeoTrace , Visual Route –Scanning: Detecting 'Live' Systems On Target Network –Tools: War Dialers, Ping Utilities – Port Scanning – Tool: ipEye, IPSecScan, NetScan Tools Pro 2003,SuperScan 3.0,NMap(Network Mapper) – Active Stack Fingerprinting – Passive Fingerprinting - Proxy Servers – Anonymizers.

UNIT III ENUMERATION AND SYSTEM HACKING

Introduction to Enumeration – Net Bios Null Sessions – NetBIOS Enumeration – Hacking Tool: DumpSec, NAT, - SNMP Enumeration- Hacking Tool: GetAcct - Active Directory Enumeration - AD Enumeration countermeasures – System Hacking: Administrator Password Guessing – Performing automated password guessing – Tool: Legion, NTInfoScan – Password Sniffing-Privilege Escalation Manual Password Cracking Algorithm - Automatic Password Cracking Algorithm - Password Types - Types of Password Attacks.

UNIT IV TROJANS AND BACKDOORS

Trojans and Backdoors: Working of Trojans - Various Trojan Genre – Modes of Transmission – Tools: Donald Dick, SubSeven, Back Oriffice 2000, NetBus, Beast.

UNIT V SNIFFER AND DOS ATTACKS

Introduction to sniffers - Security Concern- Tool: Ethereal, Snort, Windump, Etherpeek – Passive Sniffing - Active Sniffing - EtherFlood dsniff - ARP Spoofing – Sniffing HTTPS and SSH – Man in the Middle Attack - Macof, MailSnarf, URLSnarf, WebSpy - Mac Changer- Iris – NetIntercept – DNS Sniffing and Spoofing – Denial Of Service Attack - Types of denial of service attacks - Distributed Denial of Service Attacks – Ping of Death – Hacking Tool: SSPing, Land Exploit, Smurf – DDOS Attack Sequence- Preventing DoS Attacks.

REFERENCE BOOKS:

1. Kimberly Graves, Certified Ethical Hacker STUDY GUIDE, Wiley publication, 2010.

2. Michael Gregg, Certified Ethical Hacker, Pearson publication, 2014.

7. Surveying Using Total Station

Course Description

This course covers the different features of total station, from basic operations till a layout preparation and setting out operations. The students will be introduced to the concept of Electronic distance measurements (EDM) and processing of the data.

Learning objective

The objective of this course is to enable the students to prepare layout of buildings, roads and carry setting out operations.

Unit I - INTRODUCTION TO TOTAL STATION

About Total station - components– functions – difference from conventional instruments – Electronic display and data reading - Tripod setting – Bubble setting and Tilt setting – Focussing - optical prism handling.

Unit II – PRELIMINARY OPERATIONS

Creating New Job/File, Station setting, orientation – angle, coordinates - Back Sight, Fore Sight – change point - measuring and storing points

Unit III - APPLICATIONS

Data collect – Missing line measurements - Resection – Set out – Area & Volume – Remote elevation – Road Stake out.

Unit IV – DATA MANAGEMENT

Data manager – Data transfer – Exporting and Importing data – Working with GEOMAX office - File Conversions 4

Unit V – PROJECT REPORT

Preparation of Layout sketches – Buildings and sample road projects.

REFERENCE BOOKS

1. Advanced Surveying: Total Station, GIS and Remote Sensing by Satish Gopi
2. Surveying & Levelling, 2/E—Subramanian—Oxford University Press
3. Surveying and Levelling Vol. II by T. P. Kanetkar and S. V. Kulkarni Pune Vidyarthi Publication

8. Ruby on Rails

COURSE OBJECTIVES:

• To learn the basic Concepts of the Ruby Language

• To use Ruby in developing Web based applications

• To apply the MVC architecture with Rails

• To Develop Applications using Ruby on Rails

COURSE OUTCOMES:

Upon completion of the course students will be able to

• Realize the impact of Ruby on Web applications

• Work with MVC architecture.

• Follow Agile Development Principles

• Develop fully functional Web Applications using Ruby on Rails

PREREQUISITES: Knowledge of Object Oriented Programming, Web Programming is preferred

UNIT I INTRODUCTION TO RUBY

Introduction to Ruby: Data types - Simple input and output - Control statements - Fundamentals of arrays – Hashes – Methods – Classes - Code blocks and Iterators – Date and Time – File I/O

UNIT II RUBY ADVANCED

Class – Objects – Inheritance – Polymorphism – Regular Expressions – Database Access – Web Applications – CGI – Form Processing – Session Management

UNIT III INTRODUCTION TO RAILS

Introduction – MVC Architecture - Environmental Setup – Creating Rails Application – Database Setup – Active Records

UNIT IV MODULES

Migrations - Creating – Editing – Running Migrations – Controllers - Implementing the methods – Additional Methods– Routes - Views – Layouts

UNIT V APPLICATION DEVELOPMENT

Validation - Scaffolding – Working with AJAX – File Uploading – Sending E-mails – Creating a Sample Application TOTAL: 45 PERIODS

REFERENCE BOOKS:

1. Sam Ruby, Dave Thomas, David Heinemeier Hansson, "Agile Web Development with Rails", The Pragmatic Programmers, Fourth Edition, 2011

2. P.J. Deitel, H.M. Deitel, "Internet and World Wide Web – How to program", Pearson Education Publishers, Fifth Edition, 2009.

3. Robert. W. Sebesta, "Programming the World Wide Web", Pearson Education, Fourth Edition, 2007
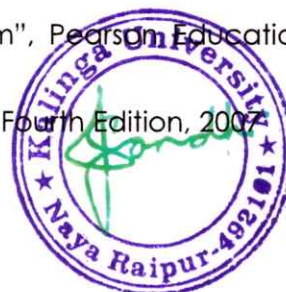
9. Creo for Design Engineer

COURSE OBJECTIVES:

To impart knowledge on

- Handling 2D drafting and 3D modeling of product.
- Applying CAD in real life applications.
- Design, Optimization, Manufacturing and Product Development to bring new technologies.

COURSE OUTCOMES:

Upon completion of this course the students would be able to

- Apply the concepts and commands of a computer-aided design system.
- Understand the basic concepts of 2D drafting and 3D modeling of product.
- Providing theoretical and practical knowledge of computer tools necessary to transform the product ideas of Entrepreneurs into a marketable.
- Develop commercially viable product which satisfies most of the customer's requirements.

UNIT I Part Modeling (Basics-I)

Selecting & Editing of Geometry, Features, Models – Sketcher Geometry & Sketcher Tools- Sketches & Datum Features – Extrudes-solid, Revolves-solid and Ribs.

UNIT II Part Modeling (Basics-II)

Creating Holes-Coaxial, Linear, Radial and Diameter holes, Shells, Draft-Split draft & Patterns-Axis pattern – Creating rounds-by selecting a surface and edge, selecting two surfaces, full rounds, Chamfers & Layers.

UNIT III Part Assembly

Assembling with constraints-Assembly theory, default constraints, Coincident constraints, Distance constraints, Parallel, normal & angle constraints Exploding, Replacing components, Cross -Sections in Assemblies.

UNIT IV Part Modeling (Advanced)

Creating Sweeps and Blend- sweeps with variable sections- helical sweeps and swept blends-groups, copy, mirror & UDF's- Measuring, Inspecting Models.

UNIT V Flexible Modeling

Introduction to flexible modeling- Editing, Transformations & Recognition in Flexible Modeling.

PERIODS TEXTBOOK:

1. Sham Tickoo, "Pro/Engineer PTC Creo Parametric 3.0 for Engineers and Designers", Dreamtech, 2012.

REFERENCE BOOK:

1. Randy H. Shih, "Parametric Modeling with Creo Parametric 2.0", SDC Publications, 2013.

10. Environmental Management System

Total Duration: 30hrs

COURSE OBJECTIVES:

To impart knowledge on
- Basic concepts related to Environmental Management system.
- Elements of Legal and other requirements pertaining to the Environment.
- Requirements to become auditor of Environmental Management System.

COURSE OUTCOMES:

Upon completion of the course students will be able to
- Get familiarized with the fundamental concepts of Environmental Management Systems and Standards.
- Prepare documents needed for establishing Environmental Management System.
- Prepare work documents.
- Conduct EMS Audit and prepare audit report.

UNIT I INTRODUCTION TO ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS)

Introduction to Environment management system - Definitions and overview of EMS 14001 - Environmental policy - Planning, Structure and features of ISO14001.

UNIT II LEGAL REQUIREMENTS

Environmental aspects and impacts - Legal and other requirements –Environmental act- Biomedical waste (Management and handling Rules, 1989-Thenoise pollution (Regulation and control) Rules - Manufacture, Storage And Import Of Hazardous chemical rules 1989-Hazardous wastes (management and handling) rules - Air Act 1981 and Water Act 1974 .

UNIT III IMPLEMENTATION AND OPERATION

Objectives and programmes, Resources, roles, responsibility and authority-Competence, training and awareness-Communication-Documentation- Control of documents- Operational control- Emergency preparedness and response Evaluation of compliance - Nonconformity, corrective action and preventive action - Internal audit - Management review - Correspondence between ISO 14001:2004 and ISO 9001:2000 - Guidance on the use of standard ISO 14001, Preparation of EMS manual.

UNIT IV AUDITING

ISO 19011:2002, Guidelines for quality and/or environmental management systems auditing, Audit methodology- Initiating the audit- Conducting document review- Preparing for the on-site audit activities Conducting on-site audit activities- Preparing, approving and distributing the audit report- Completing the audit-audit follow-up-Role plays Competence and evaluation of auditors Steps to become Certified auditor

UNIT V AUDITING – PRACTICAL SESSIONS

Tips for role plays, Surviving as audit, Preparation of work documents, Rules for role play and tips. Role play sessions and Feedback by the instructor on each role play.

TEXTBOOK:

1. ISO 14001-2004 Second edition, Environmental Management Systems – Requirements with guidance for use.

REFERENCE BOOKS:

1. Dr. Arora K.C. "ISO 9000 to OHSAS 18001", S. K. Kataria & Sons, 2012.

2. Rao C S, "Environmental Pollution Control Engineering", New Age International, 2007.

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11. Advanced Materials: Processing & Characterization

Total Duration: 35hrs

COURSE OBJECTIVES:

To impart knowledge on
- Theoretical and practical knowledge on processing methods, microstructure and mechanical characterization techniques used in metallurgical research.
- Opportunities for the students to work in metallurgical based research laboratories and industries after completing their degrees.
- Advances on materials for diversified applications.

COURSE OUTCOMES:

Upon completion of the course, the students can be
- Able to fabricate the components by various manufacturing techniques.
- Do their research in the areas of materials science and metallurgical engineering.
- Have knowledge on various processing methods for preparing composites and alloys.

UNIT I ADVANCED MATERIALS

Advanced materials for automobile, space, defense etc. - Importance - case studies - in-situ composites - Functionally graded materials - SAP - ECAP process - ultrafine grained materials - composite preparation by stir casting – quality control.

UNIT II POWDER METALLURGY RESEARCH

Selection and characterization of powders - compacting and sintering - porous and dense composite components: Metal, polymer and ceramic based composites - advantages – applications – powder preform forming – relative density – aspect ratio – correlation with mechanical property.

UNIT III MODERN METALLIC MATERIALS

Dual phase steels - High strength low alloy steel - Transformation induced plasticity steel - maraging steel - nitrogen steel – intermetallics - Ni and Ti aluminides – smart materials - shape memory alloys – Metallic glass and nano crystalline materials.

UNIT IV NANO MATERIALS

Synthesis – PVD - electro deposition - CNT -Fullerenes - nano composites - porous materials - nanosensors - nanomedicines.

UNIT V CHARACTERIZATION

X-ray diffraction - scanning electron microscope - modes of operation - morphology and elemental composition analysis – Auger spectroscopy – SPM - Thermal analysis.

REFERENCE BOOKS:

1. Kenneth G.Budinski and Michael K.Budinski "Engineering Materials" Prentice-Hall of India Private Limited, 4th Indian Reprint 2002.

2. Selvakumar N, "Engineering Metallurgy and Nanotechnology", Scitech publishers, 2016.

3. Charles P. Poole Jr, Frank J. Owens, "Introduction to nanotechnology", Wiley - India (P) Ltd., 2006.
4. William D Callister, "Material Science and Engineering", John Wiley and Sons 2007 5. Sydney H.Avner, "Introduction to Physical Metallurgy" McGraw Hill Book Company, 2007.

12. Inustrial Hydraulics and Low Cost Automation

Total Duration: 36hrs

COURSE OBJECTIVES:

To impart knowledge on
- Mechatronics, Sensors and PLC's.
- Basics of Hydraulic and Pneumatic systems.
- Typical Hydraulic and Pneumatic circuits.
- Ladder Programming and automation.

COURSE OUTCOMES:

Upon completion of this course students would be able to
- Program a PLC using Ladder Programming.
- Design and simulate a simple automation system.

UNIT I INTRODUCTION TO MECHATRONIC SYSTEMS

Definition of mechatronics. Mechatronics in manufacturing, products and design. Review of fundamentals of electronics. Microprocessors, microcontrollers, PID controllers and PLCs. Data conversion devices, sensors, micro sensors, transducers, signal processing devices, relays, contactors and timers.

UNIT II BASICS OF HYDRAULICS AND PNEUMATICS

Introduction to oil hydraulics and pneumatics, their structure, advantages and limitations. Properties of fluids, Fluids for hydraulic systems, governing laws. Distribution of fluid power, ISO symbols, energy losses in hydraulic systems. Applications

UNIT III DESIGN OF HYDRAULIC SYSTEMS

Hydraulic actuators, types and constructional details, lever systems, control elements – direction, pressure and flow control valves. Design and analysis of typical hydraulic circuits. Regenerative circuits, high low circuits, Synchronization circuits. Accessories used in fluid power system, Filtration systems and maintenance of system.

UNIT IV DESIGN OF PNEUMATIC SYSTEMS

Components of pneumatic systems; Direction, flow and pressure control valves in pneumatic systems. Development of single and multiple actuator circuits. Valves for logic functions; Time delay valve; Exhaust and supply air throttling; Examples of typical circuits using Displacement – Time and Travel-Step diagrams. Ladder diagrams and Ladder Programming

UNIT V HANDS ON TRAINING

1) Design and testing of fluid power circuits to control.
   a) Velocity
   b) direction and
   c) force of single and double acting actuators
2) Design of circuits with logic sequence using Electro pneumatic trainer kits.
3) Simulation of basic Hydraulic, Pneumatic and Electric circuits using software.
4) Circuits with multiple cylinder sequences in Electro pneumatic using PLC.
5) Modelling and analysis of basic electrical, hydraulic and pneumatic systems using LABVIEW.
6) Computerized data logging system with control for process variables like pressure flow and temperature.

REFERENCE BOOKS:

1. Lawrence J. Kamm, "Understanding Electro – Mechanical Engineering an introduction to Mechatronics", PHI, 2000.
2. Rajput. R.K, "A textbook of mechatronics", S. Chand & Co, 2007.
3. Srinivasan.R, "Hydraulic and Pneumatic controls", Vijay Nicole, 2006.

13

13. Network Simulator – NS3

COURSE OBJECTIVES:

To impart knowledge on
* Basic concepts in Computer Networks
* NS3 Simulator to simulate Network topologies and protocols
* Python scripting and apply it to develop network topologies and protocols
* Modify and Optimize the internal modules in NS3

COURSE OUTCOMES:

Upon completion of the course students will be able to
* Explore the basic knowledge in networking concepts.
* Simulate various network topologies and protocols using NS3.
* Develop network topologies and protocols using Python Scripting in NS3.
* Develop/Modify the internal modules in NS3 to enhance various performance metrics.

PREREQUISITE:

1. Good programming knowledge in C++

2. Sound knowledge on the OOP Principles

3. Basic knowledge in Computer Networks

UNIT I OVERVIEW OF COMPUTER NETWORKS

Introduction to Networks, Networking Components: Bridge, Switch, Router, Layered Approach: Physical Layer, Data Link Layer, Network Layer, Transport Layer and Application Layer, Performance Metrics.

UNIT II OVERVIEW OF NS3

Introduction to NS3, Architecture, Installation of NS3 in Linux (Ubuntu), Simulation Objects in NS3: Node, NetDevice, Channel, Packet, Sockets, Applications, EventScheduling, Callbacks, Internet Node and its members; Introduction to NS3 Program, Existing Classes and Objects in NS3.

UNIT III SIMULATIONS USING NS3

Point-to-Point Communication, Bus Network Topology, Wireless Network Topology, WiMAX, AODV Routing, TCP Congestion Control, Trace output using ASCII and PCAP tracing, Plot Graph.

UNIT IV PYTHON SCRIPTING AND INTERNALS IN NS3

Python: Introduction to Python Scripting, Client Server Application Using Python, Working with Internals and Protocol modification in NS3: Ethernet, WiMAX, TCP, UDP, ICMP, AODV.

UNIT V PROJECT IMPLEMENTATION IN NS3

Project Demo, Modifying/Developing a module of existing network to enhance the Performance: Energy Efficient Wireless Sensor Network / Adhoc Network, Routing protocol optimization for Mobile network.

REFERENCE BOOKS:

1. Behrouz A. Foruzan, "Data communication and Networking", Tata McGraw-Hill, Fifth Edition, 2013.
2. Larry L. Peterson, Bruce S. Davie, "Computer Networks: A Systems Approach", Morgan Kauffmann Publishers Inc., Third Edition, 2003.

3. Jack L. Burbank, "An Introduction to Network Simulator 3", Wiley-Blackwell, First Edition, 2016.

14. JAVA Programming

Total Duration: 30hrs

COURSE OBJECTIVES:

To impart knowledge on
• The principles and practice of object oriented analysis and design in the construction of robust, maintainable programs which satisfy the requirements given
• Competence to design, write, compile, test and execute straightforward programs using a high level language;
• Have an awareness of the need for a professional approach to des ign and the importance of good documentation to the finished programs.
• To be able to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.

COURSE OUTCOMES:

Upon completion of the course students will be able to
• Demonstrate the ability to employ various types of selection constructs in a Java program.
• Use built-in classes found in the Java API
• Create Java programs that leverage the object-oriented features of the Java language, such as encapsulation, inheritance and polymorphism.
• Apply error-handling techniques using exception handling
• Provide solution to a given set of requirements using threads, multithreading and synchronisation.

MODULE 1: Java Fundamentals

Introduction to Java – Features of java – JVM – API document – Naming conventions and Data types - Data types in java – Operators

MODULE 2: Declarations, Initializations and Scoping

Accepting Input from the keyboard – Reading Input with Scanner class- Arrays – Single Dimensional Array – Two dimensional Array – Jagged arrays – Strings- StringBuffer and String Builder class- Access specifier

MODULE 3: Flow Control

If else statement- do while loop – for loop – Nested for loops – for each loops – switch statement – break statement- continue statement – return statement

MODULE 4: Object Oriented Concepts

Classes and objects – Methods in java – Relationship between objects – Inheritance – Polymorphism- Type casting – Abstract Classes – Interfaces – Packages

MODULE 5: API Contents

Java 3D- Java Advanced Imaging – Java Mail – Java Message Service – Java Media Framework – Java Naming and Directory Interface – Java OpenGL

MODULE 6: Exceptions, Generics and Collections

Errors in java Program – Exception handling mechanism – throw clause- Types of Exceptions – Generic classes – Collection objects – Sets – Lists – Queues – Maps – Stack class- HashSet class – ArrayList class – Vector class – StringTokenzier class – Calendar class- Date class MODULE 7: Threads Single tasking – Multi tasking – Uses of threads – Thread class methods – Deadlock of threads – Thread Communication – Thread priorities – Thread group – Daemon threads – Application of threads

WEB REFERENCES:
1.http://www3.ntu.edu.sg/home/ehchua/programming/java/j2_basics.html
2.http://beginnersbook.com/java-tutorial-for-beginners-with-examples/

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14. Data Science and Big Data Analytics

Total Duration: 30hrs

COURSE OBJECTIVES:

To impart knowledge on

- Basics of various mining data techniques needed for processing
- The utilization of carious tools based on the application
- Implement best practices for Hadoop development
- Analytics using Hive, Pig, Hbase etc..

COURSE OUTCOMES:

Upon completion of the course students will be able to

- Work with various tools and algorithms for big data analytics
- Apply appropriate machine learning techniques and tools to solve big data problems

MODULE I : Introduction to Big Data Analytics:

Big data overview – practice in analytics – data scientist – big data analytics in industry verticals

MODULE II : Data Analytics Lifecycle

Discovery – Data preparation – model planning – model building – communicating results – operationalize

MODULE III : Review of Data Analytics methods using R

Introduction to R – Analyze – Explore data – Statistics for model building and evaluation

MODULE IV : Advanced Analytics:

Theory and Methods [Clustering, Classification and Text Analysis] K means clustering – Association rules – Linear regression – Logistic regression – Naive Bayesian Classifier – Decision Trees – Time Series Analysis – Text Analysis

MODULE V : Advanced Analytics:

Technologies and Tools [Hadoop] Analytics for unstructured data – Mapreduce and Hadoop – Hadoop Ecosystem – database analytics – data visualisation

WEB REFERENCES:

1. http://www-01.ibm.com/software/data/infosphere/hadoop/what-is-big-data-analytics.html

2. https://education.emc.com/guest/campaign/data_science.aspx

3. https://www.thoughtworks.com/big-data-analytics 4. http://birtanalytics.actuate.com/what-is-big-data-analytics

16. Robotics Programming

Total Duration: 31hrs

COURSE OBJECTIVES:

To impart knowledge on
- Fundamentals of robot working, programming and integration in a manufacturing process
- Working of robot mechanical, power, measuring and control system, robot kinematics, dynamic, control and programming, Kinematics, path planning and control.
- Visualization on the view of the robotics impact in human future

COURSE OUTCOMES:

Upon completion of the course students will be able to
- Identify the importance of robotics in today and future goods production
- Explore knowledge on basics of robotics programming like VAL, AML
- Perform robot configuration and subsystems
- Analyze the principles of robot programming and handle with typical robot

MODULE I

Fundamentals of robot programming
- Robot – Definition
- Robot Anatomy
- Co-ordinate Systems,
- Pitch, Yaw, Roll, Joint Notations, Speed of Motion, Pay Load
- Robot Parts and Functions
- Need for Robots
- Different Applications

MODULE II
- Introduction to Robo DK
- 3D Mouse Navigation
- Keyboard Shortcuts
- Menu icons
- Robot controls and Simulation

MODULE III
- Robotics
- Computer Vision
- Microworld Simulation
- Introduction to dLife
- ControlCenter
- dLife Examples

MODULE IV
- Vision
- Introduction to Python and Pyro
- Control Paradigms
- Manipulation
- Learning
- Mapping
- Multi-robot communication

WEB REFERENCES:
1. http://www.robotc.net/
2. http://www.toptal.com/robotics/programming-a-robot-an-introductory-tutorial
3. http://www.robotmaster.com/en/why-robotmaster

17. Drone Programming

Total Duration: 30hrs

COURSE OBJECTIVES:

To impart knowledge on
- Introduction to the fundamentals of DRONE programming
- Developing a graphical application using DRONE SDK

COURSE OUTCOMES:

Upon completion of the course students will be able to
- Develop simple programs in AR.DRONE.
- Construct models using OpenCV with AR.DRONE
- Create animations with OpenCV and AR.DRONE

MODULE I INTRODUCTION TO THE AR.DRONE SDK
- What is the AR.Drone
- The SDK
- SDK structure
- Building the examples

MODULE II CREATING AN AR.DRONE GRAPHICAL APPLICATION
- The AR.Drone Tool
- Creating the user interface
- Creating the GUI thread
- Displaying the camera images

MODULE III SWITCHING CAMERA WITH THE AR.DRONE SDK
- Changing the camera
- The cb parameter
- Handling the different resolutions

MODULE IV USE OPENCV WITH THE AR.DRONE SDK
- Compiling the AR.Drone SDK with OpenCV
- Creating an OpenCV image from the drone's image
- Vertical camera handling
- Converting OpenCV images to GdkPixbuf

MODULE V CREATE A VIDEO WITH THE AR.DRONE AND CONTROL THE AR.DRONE LEDS
- OpenCV code
- Handling different frame rates
- The different animations
- Understanding the led_animation.h file

WEB REFERENCES:

1. http://gauth.fr/2011/09/introduction-to-the-ar-drone-sdk/

2.http://www.robotappstore.com/Knowledge-Base/Programming-ARDrone/101.html

3. http://flyver.co/guide-how-to-start-programming-your-drone/

18. ARDUINO Programming

COURSE OBJECTIVES:

To impart knowledge on

- Relation between python and ARDUINO programming for developing applications
- The working of python ARDUINO prototyping and networking

COURSE OUTCOMES:

Upon completion of the course students will be able to

- Develop simple programs using ARDUINO IDE
- Create programs and interfacing ARDUINO with FIRMATA protocol
- Design GUI for different applications
- Develop web application using python

UNIT I GETTING STARTED WITH PYTHON AND ARDUINO

Introduction to Python-Installing Python and Setup tools -The fundamentals of Python programming-Introduction to Arduino-Getting Started with the Arduino IDE-Introduction to Arduino programming

UNIT II WORKING WITH FIRMATA PROTOCOL AND THE PYSERIAL LIBRARY

Connecting the Arduino board- Introducing the Firmata protocol- Getting started with pySerial-Bridging pySerial and Firmata- Motion-triggered LEDs- Using a standalone Arduino sketch- Using Python and Firmata

UNIT III PYTHON-ARDUINO PROTOTYPING

Prototyping- Working with pyFirmata methods- Prototyping templates using Firmata- Prototyping with the I2C protocol

UNIT IV WORKING WITH THE PYTHON GUI

Learning Tkinter for GUI design- Your first Python GUI program- Widgets- Storing and plotting Arduino data - Working with files in Python- Getting started with matplotlib-Plotting real-time Arduino data

UNIT V INTRODUCTION TO ARDUINO NETWORKING

Arduino and the computer networking- Developing web applications using Python- RESTful web applications with Arduino and Python- MQTT – A lightweight messaging protocol

WEB REFERENCES:

1. http://www.forefront.io/a/beginners-guide-to-arduino

2. http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-2-basic-code-blink-led-2-3639

3. https://www.arduino.cc/en/Tutorial/Sketch 4. https://www.arduino.cc/en/Tutorial/HomePage

Notes

KALINGA
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VALUE ADDED COURSES

Syllabus

Session 2019-20

VALUE ADDED COURSES

FACULTY OF INFORMATION TECHNOLOGY

33. German Language

Course Objective:

1. To introduce an additional foreign language
2. To make the students aware of the manners of Germans
3. To make the students aware about the cultural and social understanding

Course Outcome

• German language certified candidate has plenty of options to choose from in terms of his/her career. One can choose from areas like Tourism, Foreign services translation, teaching, embassy level work and literary works.

MODULE I:

Introduction to German alphabets, phonetics and pronunciation, Introducing themselves and others using simple sentences and answer to some basic personal questions

MODULE II:

Understanding and responding to everyday queries like instruction, questions, short telephone messages, requests etc., if spoken slowly and clearly, Ability to fill basic information on forms while registering for courses / classes. Ask and giving directions using simple prepositions

MODULE III:

Understandsimpleexpressionsandphrasesontopicsthataredirectlyrelatedtothepersonin question and his/her habits, life, routine, likes/dislikes, Ability to speak clearly and concisely about situations that involves direct or indirect exchange of information on simple topics

MODULE IV:

Ability to describe about people, work, immediate environment, education and other topics related to personal needs in a concise manner, Understanding of matters that are familiar and are encountered regularly like instances at school, work, at public places, places of leisure etc., when spoken clearly in a standard way

Grammar: Detailed overview of articles, adjectives with/without articles, Prepositions – dative &accusative, Introduction to perfect tense and future, pronominal verbs

Reference Books

"The Everything Learning German Book: Speak, Write and Understand Basic German in No Time"
-by Ed Swick"
Living German"- by Ed Swick
"German Made Simple: Learn to Speak and Understand German Quickly and Easily" -by Eugene Jackson and Adolph
"Hammers German Grammar and Usage"- (Fifth Edition) by Professor Martin Durrell

34. Web Designing

Total Duration: 36hrs

COURSE OBJECTIVES

- To understand internet fundamentals.
- To familiarize major web design tools like HTML, CSS & JavaScript..
- To understand server side scripting using PHP

COURSE OUTCOMES

- Design a static website using HTML
- Create a dynamic website using HTML, CSS & JavaScript • Create a web application using PHP

MODULE – I Internet Fundamentals and HTML

Define Internet, Internet Protocol Address, Domain Names, Explain World Wide Web, Differentiate between World Wide Web and Internet, Define Web Browsers, Web Servers with examples, Explain HTML Explain the format of a HTML page, Describe Elements and Attributes, Explain Basic tags, heading tags, paragraph tags, formatting tags, Define HTML List, Describe Hyperlink and anchor tag, Describe how to use Table tags and its attributes, Describe how to use Frames tags, Describe Form tag with all of its attribute Differentiate between get and post methods, Design simple web pages containing using HTML tags

MODULE – II CSS & JAVASCRIPT

Explain the use of Cascading Style Sheets (CSS), Describe CSS syntax, Explain CSS selectors, Illustrate how to insert CSS in a web page, Explain basic CSS properties – font, color, background, list, link, text, Implement CSS in web pages, State the need for scripting languages, Define server-side scripting and client-side scripting, List client-side scripting languages, Illustrate how JavaScript is used in an HTML page, Describe Programming elements in JavaScript, Describe Document Object Model, Explain how Event Handling is done using JavaScript, Explain how input data validations are done using JavaScript, Describe Dynamic Documents with JavaScript, Design web pages implementing event handling and input validations

MODULE – III Server Side Scripting – PHP

Describe Server-Side Scripting, List Server-side scripting languages, State advantages of PHP, Describe how Apache, MySQL, and PHP,Describe how a PHP script is embedded in a webpage and executed, Describe PHP language elements, Describe Form Handling, Describe how Page Redirection and file uploading in PHP Implement File Uploading from a Webpage

MODULE – IV Course Project and Exam– PHP
- Live Website creation

Reference Books

1. Connor, Joshue. Pro HTML5 Accessibility, Apress, 2012.
2. Pickering, Heydon. Apps For All: Coding Accessible Web Applications, Smashing Magazine GmbH, 2014.
3. Thatcher, Jim et al. Web Accessibility: Web Standards and Regulatory Compliance, friends of ED, 2006.
4. Paciello, Michael G. Web Accessibility for People With Disabilities, CMP Books, 2000.

35. Webpreneurship

Course Objectives:
• Students will gain basic knowledge about web solutions.
•To Navigate Internet Market, including online advertising, search, social media, and online privacy.
• Students will learn to quantitatively and qualitatively evaluate an experiment to measure the effectiveness of business decisions and online advertising effectiveness in particular.
•Studentswillalsogainknowledgetodesignandimplementanexperiment.Studentswillbecome users of a social media management platform. Students will learn and apply best practices for social media marketing

Course Outcomes:
Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:
• Understanding the dynamic role of webpreneurship and small businesses
• Organizing and Managing a Small Business
• Financial Planning and Control
• Blogging and Micro blogging, Social networking Facebook
• Video sharing, social shopping and opinions
• Business idea Creation

MODULE I:
Digital Marketing
• Keyword Research and analysis.
• Search engine Optimization of the website
• Dynamic Optimization of the website

MODULE II:
Basics of SEO friendly website design
• Website architecture analysis
• Search Engine Submissions
• Google algorithms-Panda & Penguin
• Directory Submission on web
•Advanced link building and concept of link popularity, posting on Forums, Blogs.

MODULE III:
-Competitor Analysis
• LSI (Latent Semantic Indexing)
• Google Sandbox Effect, Search Engine Spam,
• Webmaster & Google analytics,
• Optimizing for Google, Yahoo and Bing,
• Google AdWords.

MODULE IV:
Social Media marketing
• Social Media, social networking
• Social media marketing defined
• Blogging and Micro blogging, Social networking Facebook
• Video sharing, social shopping and opinions
• Social events & wikis, Social media, social networking

MODULE V :

Facebook Video sharing social shopping
- Opinions Social events & Wikis Social news
- Social book and marking Social media strategy
- Facebook Marketing, Google+ Marketing
- Twitter Marketing, LinkedIn Marketing

Reference Books

"How to Think and Become a Successful Webpreneur : It's a Matter of Choice Not Talent" by Richard Essi

36. Desktop Publication (DTP)

Total Duration: 30hrs

Course Objectives:

This course provides an opportunity to produce a series of publications suitable for portfolio inclusion. Students will use industry-standard page-layout and graphics software. They will gain a thorough grounding in print production technology and procedures, including how to communicate with other print professionals, estimate costs, and deal with digital output

Course Outcome:

• Acquire and apply the skills to write works of fiction and non-fiction, edit professionally, create digital content, design print and web-based products, develop and manage writing and editing projects
• apply and creatively adapt theoretical and technical knowledge and skills to reflect the needs and expectations of varied readerships and markets

MODULE I:

Introduction to DTP, Introduction to Printing, Types of Printing, Offset Printing, Working of offset Printing, Transparent Printout, Negative & Positives for Plate ware making, Use of DeskTop Publishing in Publications, Importance of D. T. Pin Publication, Advantage of D. T. Pin Publication, Mixing of graphics & Image in a single page production, Laser printers - Use, Types, Advantage of laser printer in publication

MODULE II:

Introduction to adobe PageMaker/In-Design, PageMaker tool box, PageMaker palettes Menus, Icons and dialog box, the control palette, page layout, creating and saving documents, typography, Modifying character attributes, importing graphics, Editing and cropping images, Using the picture palette, The color palette.

MODULE III:

Introduction to Coral Draw graphics, Features of Corel Draw, Corel Draw Interface, Tool Box, Effects, Drawing and Coloring, Creating Basic Shapes, Working with Bitmaps, Applying effects on Bitmaps, Introduction to Text Tool, Artistic and paragraph text, Wrapping Text around Object.

MODULE IV:

Introduction to Basics of Quark express, navigating a QuarkXPress Document, Setting Up the Document, multi-page documents, formatting text, Manipulating Graphics

MODULE V :

Introduction to Photoshop, Understanding Tools & Workspace, Image/Photo Editing-Mixing-Enhancements, Converting Color to b/w and b/w to Color, Shortcuts to work efficiently, Creating Web Graphics.

TEXT & REFERENCE BOOKS:
1. Adobe PAGE MAKER .
2. Prakhar complete course for DTP

37. Cyber Security

Total Duration: 32hrs

Course Objective
1. To secure the information stored and conveyed which is an invaluable resource of any organization
2. 2.To update the knowledge of students in network security issues

Course Outcome
The students gain the most comprehensive knowledge and skills in the Network Security providing an opportunity to equip the Network System Administrators & Information Security Officers to understand the security concerns, vulnerabilities, attacks and to plan and implement the desired e-Security solutions.

MODULE I:
Networking Concepts Overview-Basics of Communication Systems, transmission Media, ISO/OSI and TCP/IP Protocol Stacks, Local Area Networks, Wide Area Networks, Internetworking, Packet Formats, Wireless Networks, The Internet

MODULE II:
Information Security Concepts-Information Security Overview, Information Security Services, Types of Attacks, Goals for Security, E-commerce Security, Computer Forensics, Steganography, Security Engineering

MODULE III:
Security Threats and vulnerabilities-Overview of Security threats, Hacking Techniques, Password Cracking, Insecure Network connections, Malicious Code, Programming Bugs, Cybercrime and Cyber terrorism, Information Warfare and Surveillance

MODULE IV:
Cryptography-Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication and Hash functions, Digital Signatures, Public Key infrastructure, Diffe-Hellman key exchange protocol, Applications of Cryptography

MODULE V :
Security Management Practices-Overview of Security Management, Information Classification Process, Security Policy, Risk Management , Security Procedures and Guidelines, Business Continuity and Disaster Recovery.

Reference Books
1. -Future Crimes: Inside the Digital Underground and the Battle for our Connected World by Marc Goodman.
2. -Spam Nation: The Inside Story of Organized Cybercrime- from Global Epidemic to Your Front Door by
3. Brian Krebs.
4. -Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World by Bruce Schneier.
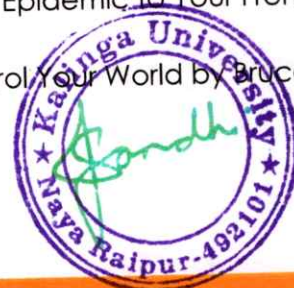
38. Big Data

Course Objectives:
- Students able to know about the concept and challenge of big data (3 V's: volume, velocity, and variety).
- Students able to applying skills and tools to manage and analyze the big data.

Course Outcomes:
Upon completion of the course learners will -
- understand the concept and challenge of big data and why existing technology is inadequate to analyze the big data
- collect, manage, store, query, and analyze various form of big data
- gain hands-on experience on large-scale analytics tools to solve some open big data problems

MODULE I:
Introduction to Big Data: Big Data introduction – -Big data: definition and taxonomy - Big data valuefor the enterprise - Setting up the demo environment - First steps with the Hadoop "ecosystem"The 3 V's, their challenges and application domains. The Hadoop ecosystem: - Introduction to Hadoop- Hadoop components: MapReduce/Pig/Hive/HBase - Loading data into Hadoop - Handling files in Hadoop - Getting data from Hadoop

MODULE II:
Collection of Big Data: -Eventual Consistency and No SQL systems MongoDB- Google BigTable Querying big data with Hive - Introduction to the SQL Language - From SQLto HiveQL

MODULE III:
Large-Scale DataAnalytics Systems:-Auto-Parallel Data Programming; -Map Reduce -Hive and Parallel Databases Basic StatisticalAnalysis: -Fruad and Benfords Law,-Bayesian Introduction,-Heteroskedasticity

MODULE IV:
Machine Learning Systems for Big Data -Big data & Machine learning - Quick into to Machine learning- Big Data & Machine Learning - Machine learning tools - Spark & SparkML- H2O-Azure MLGraph Analytics: Graph structures (diameter, connectivity, centrality), Page Rank, Triangle counting.

MODULE V :
Sentiment Analysis, Data Visualization: Data types and dimensions; Visual encoding and perception

Text Book:
1. DATA ANALYTICS-Anil Maheshwari - McGraw Hill

Reference Books:
1. Understanding Big Data: Analytics For Enterprise Class Hadoop And Streaming Data- Chris Eatonand Zikopoulos - McGraw Hill
2. Big Data for Dummies -by Judith Hurwitz and Alan Nugent. Paul C Zikopoulos,
3. Data Science and Big DataAnalytics: Discovering, Analyzing, Visualizing and Presenting Data EMC Education Services
4. Machine Learning for Big Data-by Jason Bell.5.Handbook of Big Data Technologies-Editors Albert Y. Zomaya, Sherif Sakr

39. Android Development

Course Objectives:
a. Students develop competence and confidence in android programming
b. Understand the entire Android Apps Development Cycle
c. As well as it would also enable the students to independently create new Android Applications.

Course Outcomes:
d. Upon completion of the course, the student will be able to write applications in Android.
e. Students will be able to appreciate the concept of virtual machine
f. Understand Emulators
g. Appreciating and understanding DDMSh. Writing small codes, indenting, Styles

MODULE I:
JAVA Concepts & OOPs Concepts
Inheritance in detail , Exception handling , Packages & interfaces , JVM & .jar file extension , Multi-threading (Thread class & Runnable Interface), SQL, DML& DDL Queries in brief

MODULE II:
Introduction to Android
What is Android? , Setting up development environment, Virtual Machine & .apk file extension, Fundamentals: a. Basic Building blocks, Activities, Services, Broadcast Receivers & Content providers b. UI Components Views & notifications c. Components for communication -Intents & Intent Filters ,Android API levels (versions & version names) ,Application Structure (in detail)AndroidManifest.xml ,uses-permission & uses-sdk, Resources & R.java ,Assets , Layouts & Drawable Resources ,Activities and Activity lifecycle , First sample Application

MODULE III:
Emulator-Android Virtual Device Launching emulator , Editing emulator settings , Emulator shortcuts , Logcat usage, Introduction to DDMS , Second App:- (switching between activities), Develop an app for demonstrating the communication between Intents, Basic UI design, Form widgets ,Text Fields , Layouts , [dip, dp, sip, sp] versus px, Examples

MODULE IV:
Preferences ,Shared Preferences
Preferences from xml , Examples , Menu , Option menu , Context menu , Sub menu , menu from xml , menu via code, Examples, Intents (in detail) , Explicit Intents , Implicit intents , Examples ,UI design ,Time and Date, Images and media, Composite ,Alert Dialogs & Toast, Popup, Examples

MODULE V :
Tabs and Tab Activity Examples, Styles &Themes, styles.xml, Drawable resources for shapes, gradients (selectors), Style attribute in layout file, Applying themes via code and manifest file, Examples, Content Providers, SQLite

Programming , SQLite Open Helper, SQLite Databse, Cursor, Reading and updating Contacts ,Reading bookmarks

Reference Books:
a. "Programming Android Java Programming for the New Generation of Mobile Devices" by Zigurd Mennieks
b. "Android Cookbook" by Ian F Darwin
c. "Android Programming: The Big Nerd Ranch Guide" by Bill Phillips and Chris Stewart

8

40. PHP

Course Objectives:
- To know about the basic concept of PHP
- To know about the Functions of PHP
- To know about the Working of PHP
- To understand the databases which support PHP

Course Outcomes:
- Students understand about the basic concept of PHP
- Students known about the Functions of PHP
- Students understand the Working of PHP
- Students known about the databases which support PHP

MODULE I:

Introduction: The origin of PHP, PHPis better than Its alternatives, Interfaces to external Systems, Hardware and Software requirements, What a PHP Script Looks Likes, Web designing basics and WYSIWYG, editors, Receiving User Input, Repeating Code

Basic PHP Development: How PHP scripts work, Basic PHP syntax, PHP data types, Dynamic variables, Static Vs. Dynamics Optimization

MODULE II:

String Manipulation: Formatting String for presentation, Formatting string for storage, Comparing String, Matching and replace Substring

Control Structures: If (), else if () condition statement, The switch statements, Using the? Operator, Using the while Loop, The do while statement, Using the for () Loop, Breaking out of Loops, Nesting loops

MODULE III:

Functions: What is a function, Creating a function, Returning value from function, User defined functions, Dynamic function calls, Variable scope, Accessing variable with the global statement, Function calls with the static statement, Setting default values for arguments.

Working with The File System: Creating and deleting a file, Reading and writing text files, Working with directories in PHP, Checking for existence of file.

MODULE IV:

Working with Forms: Forms, Super global variables, Super global array, Ascript to acquire user input, Accessing user input, Combine HTML and PHP code, Using hidden fields, Redirecting the user, File upload and script

Introduction to Database: What is RDBMS technology?, Introduction to SQL, Connecting to MYSQL, Selecting a database, Adding data to a table, Displaying returned data on web pages, Finding the number of rows, Inserting data, Deleting data, Entering and updating data

MODULE V :

Cookies, Session, Advanced option in pHp, application development

References:

1. The Joy of PHP Programming: A Beginner's Guide – by Alan Forbes
2. PHP& MySQL Novice to Ninja – by Kevin Yank
3. Head First PHP& MySQL– by Lynn Beighley & Michael Morrison
4. Learning PHP, MySQL, JavaScript, and CSS: AStep-by-Step Guide to Creating Dynamic Websites – by Robin Nixon
5. PHP& MySQL Web Development – by Luke Welling & Laura Thompson

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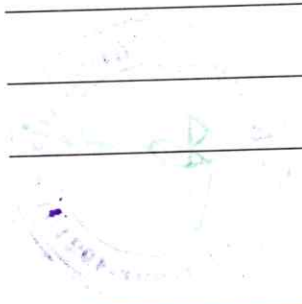
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VALUE ADDED COURSES

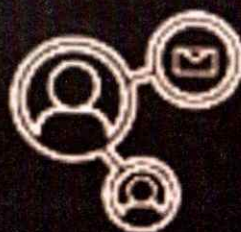## Syllabus

Session 2019-20

VALUE ADDED COURSES

FACULTY OF LAW

1. Computer Proficiency

Course Objectives: Total Duration: 36hrs
* Use the basic vocabulary and terminology related to computer and word processing
* Open, save and format a basic document
* Type a simple note or a letter using Microsoft Word
* Perform basic format and editing on a word document
* Create tables and calendars
* Use different basic computer language software and programs to practice English and typing skills

Course Outcome:
* Set up logical storage locations on your hard drive so that you can easily store and retrieve information.
* Manage your MS Outlook files by using tools such as archiving, storage folders and message rules.
* Create a word document and navigate your way around the basic applications.
* Create an excel workbook and navigate your way around the basic applications.
* Create a professional email signature and learn how to edit and update it with important and timely company information.
* Create and present a basic PowerPoint presentation complete with headings, bullet points and pictures.

MODULE I:

Managing Your PC and MS Outlook
Managing Your PC: This session will give you a basic overview of how the storage folders work ony our computer's hard drive. You will learn to create logical storage folders and also learn how to search for files using Windows Explorer. MS Outlook Management: Storage Folders, Creating New Folders, View Options, Archiving, Creating a Professional Email Image: Create an email signature that encompasses your corporate image, Learn to access and update your signature so that you can make timely changes such as seasonal company messages and offers.

MODULE II:

Navigating Word
Time Management Outlook Calendar Scheduling appointments Meeting requests Creating tasks Navigating your way around a word document Important Tools Navigating the applications Customization Creating a word document (from a template)Building the document Inserting a picture Inserting a table Editing a table Copy & paste text Printing the document

MODULE III:

Navigating Excel
Navigating your way around an Excel workbook, Important Tools Navigating the applications customization Creating a workbook, Using Quick Fill Auto Sum Basic Formula's General Formatting Sorting Data Filters Creating a chart Print Set Up Printing the document Sending a workbook through email

MODULE IV:

Creating a PowerPoint Presentation
Participants will learn to (and go through process of) Less is better, Important Tools, Navigating the applications, Customization, Creating slides (including a slide master), Creating bullet points, Inserting graphics, Inserting spread sheets, Edit options, Using layout to organise content Animation, Delivering the presentation – Running slide show Presentation View.

MODULE V :

Database Management with MS-Access
Introduction to Databases Starting Access 2007The Getting Started Page and Opening a Database What's New in Access 2007 Understanding the Access Program Screen Understanding the Ribbon Using the Office Button and Quick Access Toolbar Using Keyboard Commands Using Contextual Menus Using Help Database Basics Working with Database Objects Tour of a Table Adding, Editing and Deleting Records Tour of a Form Tour of a Query Tour of a Report Previewing and Printing a Database Object Selecting Data Cutting, Copying and Pasting Data Using Undo and Redo Checking Your Spelling Using the Zoom Box Exiting Access 2007

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Reference Books:
1. Gill, Nasib S.: Essentials of Computer and Network Technology, Khanna Book Publishing Co., New Delhi.
2. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
3. Chhillar, Rajender S.: Application of IT in Busines s, Ramesh Publishers, Jaipur.4.Donald Sanders: Computers Today, McGraw - Hill Publishers.
5. Davis: Introduction to Computers, McGraw -Hill Publishers.
6. V. Rajaraman : Fundamental of Computers, Prentice-Hall India Ltd., New Delhi.7.Learning MS-Office2000 by R Bangia (Khanna Book Pub)
8. Teach yourself MS -Office by Sandlers (BPB Pub).
9. Using MS Office by Bott(PHI). Note: Latest and additional good books may be suggested and added from time to time , covering the syllabus.

2. ENTREPRENEURSHIP & INNOVATION

Course Objectives: Total Duration: 36hrs

The purpose of the course is that the students acquire necessary knowledge and skills required for organizing and carrying out entrepreneurial activities, to develop the ability of analysing and understanding business situations in which entrepreneurs act and to master the knowledge necessary to plan entrepreneurial activities. The objective of the course is, further on, that the students develop the ability of analysing various aspects of entrepreneurship–especially of taking over the risk, and the specificities as well as the pattern of entrepreneurship development and, finally, to contribute to their entrepreneurial and managerial potentials.

Course outcomes:

• Entrepreneurship and Innovation minors will be able to sell themselves and their ideas. Students master oral andvisualpresentationskillsandestablishafoundationofconfidenceintheskillsnecessarytocauseothers to act.

• Entrepreneurship and Innovation minors will be able to find problems worth solving. Students advance their skills in customer development, customer validation, competitive analysis, and iteration while utilizing design thinking and process tools to evaluate in real-world problems and projects.

•EntrepreneurshipandInnovationminorswillbeabletomobilizepeopleandresources.Studentsidentifyand secure customers, stakeholders, and team members through networks, primary customer research, and competitive and industry analyses in order to prioritize and pursue an initial target market in real-world projects.

MODULE I:

Introduction to concept of entrepreneurship Scope of Entrepreneurship, Definitions of Entrepreneurship and entrepreneur, Characteristics of an Entrepreneur, Entrepreneurial Development models and Theories, Entrepreneurs Vs Managers Classification of Entrepreneurs Major types of Entrepreneurship–Techno Entrepreneurship, Women Entrepreneurship, Social Entrepreneurship, Entrepreneurship (Corporate entrepreneurship, Rural Entrepreneurship, Family Business etc. Problems for small scale enterprisesandIndustrialSicknessEntrepreneurialTestsEntrepreneurialEnvironment–Political, Legal, Technical, Natural, Economic, Socio–culturaletc.2 INFORMATION SUPPORT SYSTEM:-Government schemes, NGO, state/central motivation Policy, CED, IDI, EDI, MSME, etc

MODULE II:

Types of organization, Market Scenario, Customer Attitude, Change in technology, Media information system, product classification, Location Merit De-Merit, Govt. Policy flexibility, environment, Demand supply gap, etc 4 FUNCTIONAL MANAGEMENT AREA INENTREPRENEURSHIP: •Marketing Management: Core Concepts Of Marketing, Marketing Mix(4p), Segmentation–Targeting–Positioning, Marketing Research, Marketing Information System, Concept Of International Marketing, Difference Between Domestic Marketing & International Marketing, Buying Behavior Operations Management: Introduction To Operations Management,

MODULE III:

INNOVATION & MOTIVATION:- Concept of Idea, Motivation Factors, Brain Storming, Incentives, Product innovation, Value potential, R&D importance, customer choice, motivational theory,etc.6 BUSINESS PLAN:-Project Report, Information related to product, cost elements, product process ,plant & machinery, Finance sources, secured/unsecured loan, Logistics aspects, etc

MODULE IV:

SMALLBUSINESSMANAGEMENT:-Types of organization, policy, resources management, Job specification, job description, recruitment policy, welfare, MIS system, etc. STATUTORY REQUIREMENT: -Statutory laws of state & central Govt. for Registration, ESI, Factory Act 1948, etc.

MODULE V:

PATENT, COPY RIGHT & TRADE MARK LAWS:- Patent Acts for Design, IC circuit layout, Literacy, Art, copy right, Trademark, PCT, Patent definition, patentable & non-patentable, merits & demerits, Patent procedure, Monitoring system, Govt. agencies, patent norms, etc

Reference: -

• Entrepreneurship, 3rd Edition By William D. Bygrave & Andrew Zacharakis
• The Portable MBA in Entrepreneurship, 4th Edition By William D. Bygrave, Andrew Zacharakis
• The Portable MBA in Entrepreneurship Case Studies By William D. Bygrave (Editor), Dan D'Heilly (Editor)

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3. IPR & CYBER LAWS

Total Duration: 30hrs

Course description and learning outcomes:
This course is designed to give an insight into the meaning and significance of research methods for legal research to the law students in contemporary times. It aims to provide an understanding of the various types of research methods and the different techniques of legal research and legal writing with a view to equip the students for further research in law.

Learning Objectives
- To understand importance of research in law
- To understand various legal research methods and legal research processes
- To acquaint with various legal writing techniques

MODULE I:
Introduction: Nature and Concept; Meaning; Types of Intellectual Property Rights; Nature Intellectual Property Rights: Monopolistic Perspective, Economic Perspective, Public welfare perspective; Concept and Theories of Intellectual Property – to cover perspective of Natural perspective, Liberalist perspective, Personhood perspective, Utilitarian Perspective, Welfare Economic Perspective and Other Perspectives.

MODULE II:
Origin & Development: Historical Background; Technological Development of IPRs; Intellectual Property Rights: From National to International Character; Sustainable Development; Challenges for IPR system; Role of Government in fostering the IPR

MODULE III:
IP Jurisprudence: Justification and Rationale for Protecting Intellectual Property; Basic elements of Property and Constitutional Aspects of Property and its Protection; Theories: Natural theory, Locke's Theory of property, Hegelian Philosophy, Utilitarian guidelines, Incentive theory, Prospect theory, Schumpeterian theory.

MODULE IV:
Economic Development & IPR Protection: Economic importance of Intellectual Property; Monetizing Intellectual Property Law – to cover the commercialization aspects of IPR; Development and IP; Alternate models of IP; Overview of Intellectual Property Law – to cover the various categories and its interplay in innovation and technology delivery mechanisms.

MODULE V:
International & National Regime: Introduction to the leading international instruments concerning intellectual property rights: the Berne Convention, Universal Copyright Convention, the Paris Convention, the Rome Convention, Trade Related Aspects of Intellectual Property Rights (TRIPS), the World Intellectual Property Rights Organization (WIPO) and the UNESCO; Specific reference to International treaties on Patents; International Treaties on Trademarks; International Treaties on Copyright; Background to the national regime; Evolution and development of IPR in India.
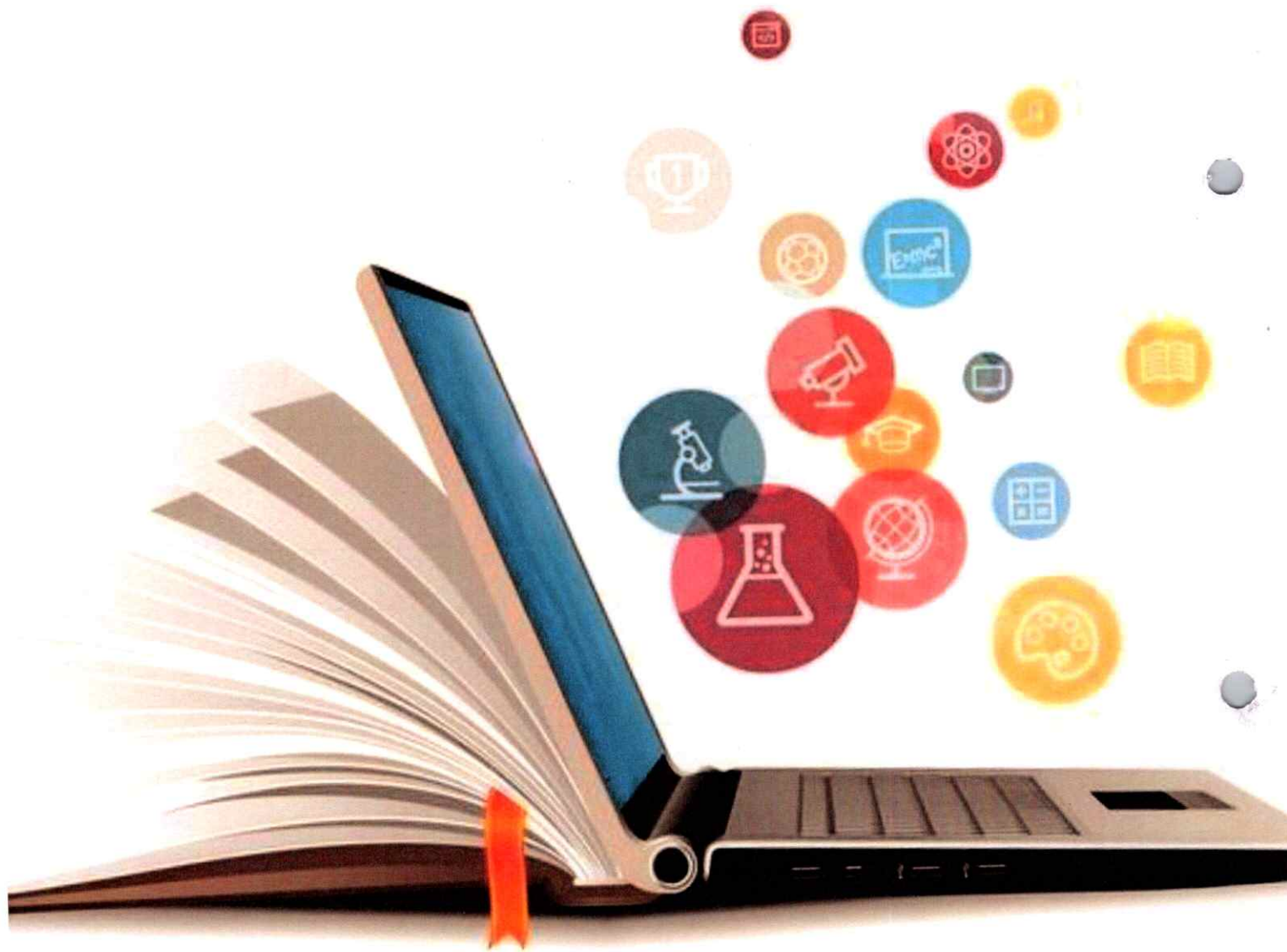
References:
1. Ananth Padmanabhan, Intellectual Property Rights: Infringement and Remedies, LexisNexis, Nagpur, 2012.
2. N.S. Gopala krishnan, Principles of Intellectual Property, EBC, Lucknow, 2014.
3. Bently and Sherman, Intellectual Property Law, Oxford University Press, U.K. 200
4. Paul Torremans, Holyoak & Torremans Intellectual Property Law, Oxford Univ. Press, 2010
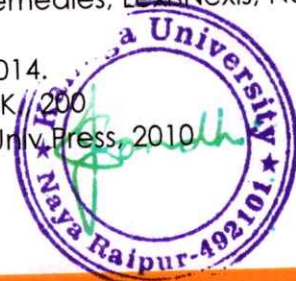
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VALUE ADDED COURSES

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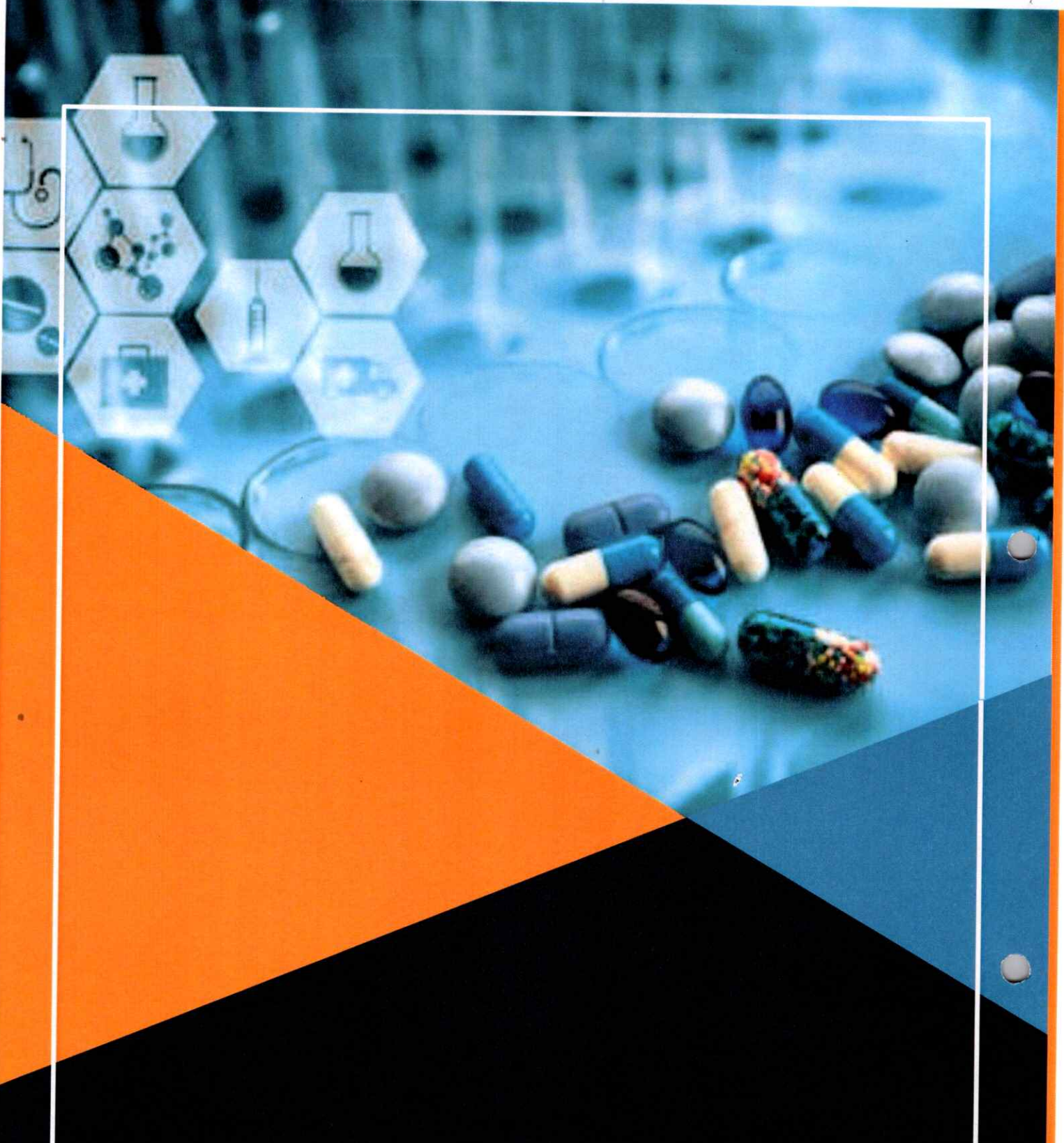
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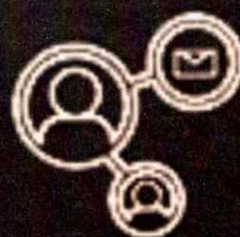
VALUE ADDED COURSES

FACULTY OF PHARMACY

Total Duration: 30hrs

Course Objective:
- To identify the medicinal plants species in local area
- To identify the medicinal property and its use
- Documentation and cataloguing of newly identified plant species

Course Outcome
- To understand the flora of local community
- Commercial potential of the newly identified species

MODULE I:
Medicinal Plants – Importance and Scope. Cultivation of medicinal plants – Processing and utilization. Chemical nature of crude drugs - Extraction, Preparation and preservation of crude drugs.

MODULE II:
Traditional herbal teas. Herbs for woman, Babies and children. Concepts of Herbal garden– Home, School Herbal gardens.

MODULE III:
Classification and Estimation of primary metabolites- Carbohydrates, fatty acids, aminoacids and Proteins. Secondary Metabolites - Classification, General characters, Chemical nature, Extraction and Estimation methods for Glycosides, Tannins, Volatile oils, Resinous substances, Terpenoids –Phenolic compounds and Alkaloids.

MODULE IV:
Antioxidants - Role of antioxidants - Estimation of antioxidants –Ascorbic acid,a–Tocopherol.

MODULE V:
Post-harvest technology in medicinal plants: scope and importance. Importance of herbal marketing - Future prospects and constraints of the herbal drug industry - Regulatory status of herbal medicine in India.

References:
1. Faroogi, A. A. and B. S. Sreeramu, 2004. Cultivation of medicinal and aromatic crops. Revised edition, Universities Press (India) Private Limited, Hyderabad
2. WHO, 2002. Quality control methods for medicinal plant materials, World Health Organization, Geneva, A.I.T.B.S., Publishers and Distributors, New Delhi.
3. Harbone, J.B. 1998. Phytochemical Methods; Aguide to modern techniques of plant analysis. 3rdEdn., Springer (India) Private Limited , New Delhi.
4. Halliwall, B. and J. M. Gutteridge. 1985. Free radicals in Biology and medicine. Oxford university press.
MODULE V :

1

2. CHEMISTRY FOR HEALTHCARE

Total Duration: 32hrs

Course Objectives:
Students will be provided with are view of anatomy and pathology in Computed Tomography (CT) imaging planes. The characteristic appearance of each anatomical structure as it appears on CT images with pathologic and trauma processes is also covered.

Course outcomes:
Students are introduced to principles, procedures, and patient care specific to Computed Tomography (CT).Pediatricpatientcareandroutineandemergencyproceduresaredescribed.CTimagesare reviewed for quality, positioning, and illustration of anatomy.

MODULE I:
Students are provided with the physics and instrumentation principles specific to Computed Tomography (CT).CTimageprocessinganddisplaymethodsaswellaspatientfactorsaffectingimagequalityare identified.Prerequisite:DiagnosticMedicalImagingNuclearMedicine2500withagradeofCorbetter, or equivalent and Diagnostic Medical Imaging.

MODULE II:
Students will be introduced to necessary principles of radiation safety and quality management specific to Computed Tomography (CT). Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies, and healthcare organizations are described. Prerequisite: Diagnostic Medical Imaging Nuclear Medicine 2500 with a grade of C or better, or equivalent.

MODULE III:
Basicaspectsinimagingandnon-imagingradiationdetectioninstrumentationincluding:scintillation detectors, planar, SPECT(single photon emission computerized tomography),PET(positron emission tomography), multichannel analyzers, quality assurance testing for Nuclear Medicine instrumentation incl-uding G-M detectors, ionization chambers and scintillation detectors.

MODULE IV:
Students will be introduced to necessary principles of radiation safety and quality management specific to Computed Tomography (CT).Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies, and health care organizations are described.

MODULE V:
Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences.

Reference:
"Organic Chemistry of Drug Design and Drug Action" by Silverman
"Organic Chemistry" by Bruice
"Biochemistry" by Voet and Voet
"Medicinal Chemistry" by Sriram/Yogeeswar
"Medicinal Chemistry" by Ashutosh Kar

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3. INDUSTRIAL CATALYSIS

Total Duration: 31hrs

Course Objectives:
After completed course the student shall: -be able to explain the importance of catalysis in chemical process and chemical industry today- eable to explain some basic concepts in catalysis, suchas: adsorption and desorption, adsorption isotherms, surface area, porosity, dispersion, reactions mechanism, kinetics and zeolites.

Course outcomes:
able to describe and explain the most common methods for characterization of a catalyst -be able to describeandexplainhowtoderiveareactionexpression-beabletodescribeandexplainsomeof themostimportantchemicalindustrialprocesseswithrespecttothecatalystusedandthereaction condition.

MODULE I:
Importance of catalysis, Catalysis materials, Catalyst preparation, Catalyst characterization, Adsorption, Desorption, Surface reaction ,Diffusion, Rates and kinetics of catalytic reactions, Deactivation; Laboratory work on catalyst preparation and characterization.

MODULE II:
Introduction, the importance of catalysis in industry and society and basic principles. Physical adsorption and chemisorption on surfaces. Adsorption isotherms. Bonding of reactants to catalyst surfaces. Specific surface areas and porosity.

MODULE III:
Kinetics for catalytic reactions. Adsorption – kinetics. Catalyst preparation. Structured catalysts and zeolite. Catalyst characterization by SEM, XRD, gas adsorption and other techniques Catalyst deactivation. Acid catalysis and zeolites.

MODULE IV:
Processing of petroleum and hydrocarbons. Catalytic oxidation. Synthesis gas and associated processes. Steam reforming. The water gas shift reaction. Methanation.

MODULE V:
Pore size distribution Ammonia production. Nitric acid. Methanol and formaldehyde. Fischer-Tropsch. Catalysis for environmental protection and energy production. Three way catalysts for automobiles.

Reference books:
1. "Industrial Catalysis: A Practical Approach" by Jens Hagen
2. "Introduction to Catalysis and Industrial Catalytic Processes" by Robert J Farrauto and Lucas Dorazio

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4. NUCLEAR MEDICINE

Total Duration: 36hrs

Course Objectives:

Prepares students for the Nuclear Medicine Technology Certification Board Examination (NMTCB).Test takingtip sand practice exams. Practical application of patient care, human anatomy and physiology, pathology, radiation biology, radiation protection, physics, instrumentation, radiopharmacy, in vivo and in vitro procedures.

Course outcomes:

Diagnostic and Therapeutic Nuclear Medicine procedures, Positron Emission Tomography. Students will complete a registry review project and a mock registry. Prerequisite: Admission to the Nuclear Medicine Technology program and Diagnostic Medical Imaging.

MODULE I:

HistoryandevolutionofNuclearMedicineasanimagingmodality.Radionuclideidentification, radionuclide energies and half-lives, and commonly used radiopharmaceuticals for Diagnostic Nuclear Medicine procedures Introduction to Diagnostic Nuclear Medicine procedures. Patient handling techniques and nursing and laboratory procedures relating to Nuclear Medicine. Introduction to professional medical ethics, legal issues and patient rights. Quality assurance procedures for the radiation protection of Nuclear Medicine personnel. Prerequisite: Admission to the Nuclear Medicine Technology program or consent of instructor.

MODULE II:

Principles of atomic structure, nomenclature and radiation. Introduction to radionuclides, physics of radiation (particulate and non-particulate), natural and artificial radiation, calculations of radioactive decay, exponential equations, calculation of radiation dosimetry, half-life equations, radionuclide production, radio pharmaceutical dose determinations, radiation interactions with matter, radiation protection and safety methodology, radiation shielding formulation and counting statistics.

MODULE III:

Basic aspects in imaging and non-imaging radiation detection instrumentation including: scintillation detectors, planar, SPECT(single photon emission computerized tomography),PET(positron emission tomography), multichannel analyzers, quality assurance testing for Nuclear Medicine instrumentation including G-M detectors, ionization chambers and scintillation detectors.

MODULE IV:

Topics in radiation biology will include qualitative and quantitative effects on the human body following exposure to various types of ionizing radiation, and the potential harmful effects and the benefits of the medical uses of radiation. Procedures for personnel and environmental monitoring, emergency management, decontamination, and proper methods of receiving, storing and disposing of radioactive materials. Basic concepts of radiation exposure reduction. Concepts of radiation safety for personnel, patients and the environment.

MODULE V:

Applied anatomy and physiology of the central nervous, immune, lymphatic, hematopoietic, exocrine, gastrointestinal systems. Non-imaging tests including Schilling's, Helibacter pyloriand blood volume determination. Advanced topics in nuclear cardiology, tumor imaging, neurology, radio immunoimaging, radioimmunotherapy and miscellaneous procedures. Diagnostic imaging techniques, radio pharmaceutical agents, indications and limitations of nuclear medicine procedures, normal and abnormal pathology, dosimetry. Computer acquisition and processing techniques.

Reference books:

1. "Nuclear and Radiochemistry (Wse)" by Gerhart Friedlander and Joseph W Kennedy
2. "Nuclear and Radiochemistry: Fundamentals and Applications, 2 Volume Set" by Jens-Volker Kratz and Karl Heinrich Lieser
3. "Assuring a Future U.S.-Based Nuclear and Radiochemistry Expertise" by Committee on Assuring a Future
4. "Nuclear and Radiochemistry (Elsevier Insights)" by Jozsef Konya and Noemi M Nagy
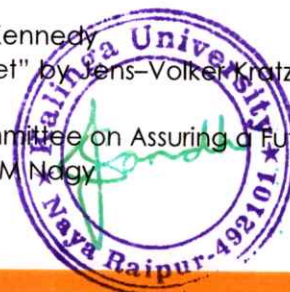
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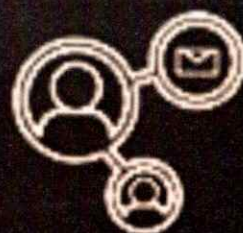
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VALUE ADDED COURSES

Syllabus

Session 2019-20

VALUE ADDED COURSES

FACULTY OF SCIENCE

1. SCIENTIFIC WRITING

Total Duration: 30hrs

Course Objectives:

- This course aims to demystify the writing process and teach the fundamentals of effective scientific writing.
- Instruction will focus primarily on the process of writing and publishing scientific manuscripts but grant writing will also be addressed.
- The course will be presented in two segments: Part (1) teaches students how to write effectively, concisely, and clearly and part (2) takes them through the preparation of an actual scientific manuscript or grant.

Course outcomes:

By the end of the Scientific Writing course, students will be able to:

- Structure a piece of scientific writing effectively
- Write more critically and identify the difference between description and analysis
- Understand some of the common features of scientific style
- Avoid plagiarism and be able to paraphrase scientific ideas
- Write a scientific report according to typical conventions, and know when to consult departmental guidelines.

MODULE I:

Lecture: What makes good writing? Are there "good writers" and "bad writers"? Words, word choice, the basic elements of sentences and sentence structure.

MODULE II:

The News Article

Dissecting the news article, News-writing is the art of maximizing information and minimizing words; it's the barest-bones form of writing. The fundamentals of good writing can be learned by dissecting news articles.

MODULE III:

Writing Basics I

Punctuation and Parallelism. Tricks for clarity, brevity, and finesse. Peer interviews and write-up mini-profiles

MODULE IV:

Writing Basics II

Paragraphs, logic, and organization. Organizational strategies. paragraph re-writing exercise. Article for a "Letter to the Editor" piece.

Writing Basics III

Good Writing Applied: The Scientific Manuscript, Putting it all together, group rewrites

MODULE V:

Methods and Results Sections, Discuss a variety of journal articles that present data in different ways. Wrap-up scientific manuscripts plus Overview of grant writing.

The Abstract, Introduction, and Discussion: Getting to the main point and summarizing effectively. How to conduct literature reviews. Writing an effective discussion.

2. FLORICULTURE AND LANDSCAPING

Total Duration: 33hrs

Course Objectives:
1. Understand economic importance of plant and plant product.
2. Know the methods of plant propagation.
3. Understand the fruit & vegetables production technology.
4. Understand the scope & importance of floriculture.
5. Understand the methods of cultivation of different flowering plants.

MODULE I:
Fundamentals of Floriculture. Method of identifying major types of ornamental plants

MODULE II:
Common garden operations using different implements. Identification & practice Bio fertilizer. Flowering (Trees, Shrubs, Climbers, Cacti, Succulents House plants etc

MODULE III:
Handling of soils, purpose of nursery bed, potting media, potting etc. Identification of weeds and their control.

MODULE IV:
Methods of planting, nutrition, irrigation & plant protection. . Culture of Pot plants.

MODULE V:
Identification of indoor and bonsai plants. Making of herbaceous and shrubbery borders.

References:
- "Objective Floriculture and Landscaping" by Desh Raj
- "Floriculture, Landscaping and Turf Management" by Alagarsamy Nithya Devi and Alagarsamy RameshKumar
- "Floriculture and Landscaping-Vol.1" by Naya Udyog and T K Bose
- "Landscaping Irrigation and Floriculture Terminology" by Neeraj Pratap Singh
- "Floriculture and Landscaping at a Glance" by Laxmi Lal Somani

3. Organic Farming

Total Duration: 32hrs

Course Objectives:
- Increase genetic diversity.
- Promote more usage of natural pesticides.
- Ensure the right soil cultivation at the right time.
- Keep and build good soil structure and fertility.
- Control pests, diseases and weeds.

Course outcomes:
- Complete a Farm Business Plan, describing the marketing, operations and financials for a farm business that fits your skills, interests and farm site. Alternate final project options include:
  - Grant proposal
  - Independent project approved by the OFTP instructor
- Understand what it takes to start and successfully operate a farm or educational garden projecternate final project options include:
- Use information from the course and other sources to make farm management decisions

MODULE I:

Introduction: Farming, organic farming, concept and development of organic farming. Principles of organic farming & Need for organic farming, Agencies and institutions related to organic agriculture

MODULE II:

Scope and Present state of organic farming; national and international status Requirements for organic farming,FarmcomponentsforanorganicfarmWatermanagement,Greenmanuring,Composting-principles,stages,types and factors, Composting methods, Earth moon Vermicomposting

MODULE III:

Types of organic farming, Biodynamic farming, Benefits of organic farming.
Bulky organic manures, Concentrated organic manures, Organic, Preparations, Organic amendments and sludges, biogas.

MODULE IV:

Conventional farming v/s organic farming, Bio-fertilizers-methods of application, advantages and disadvantages Unit.6 Standards for organic inputs- fertilizers, Bio-fertilizers-types, Pheromones.

MODULE V:

Plant protection-cultural, Plant protection-mechanical. Plant protection-botanical pesticides I, Plant protection- botanical pesticides II, Plant protection- botanical pesticides III. Plant protection-biopesticide, Plant protection-biocontrol agents, Plant protection-biocontrol agents. Weed management. National and international monny, Standards for organic inputs- plant protection.

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4. MUSHROOM CULTIVATION

Total Duration: 32hrs

Course Objectives:
- To understand the basics of mycology.
- To enhance student's knowledge and skills, which allow them to establish a mushroom cultivation enterprise, or to cultivate mushrooms in a form of extra-earnings, or simply as a hobby.
- Appropriate knowledge belongs principally to a new applied science and practice of using the world of mushrooms - in the economic purposes.
- Obtained skills allow to make research work about plant resources, gives knowledge how to manage mushroom production or establish a small wild plantation in home garden for own family needs.
- Tells the way how to make common projects with growing farms.

Course Outcomes (COs):
1. Appreciate the importance of embarking on self-employment and has developed the confidence and personal skills for the same.
2. Indentify business opportunities in chosen sector / sub-sector and plan and market and sell products / services
3. Start a small business enterprise by liaising with different stake holders
4. Effectively manage small business enterprise
5. Take up Mushroom Cultivation and run it profitably
6. Selection of important types of Mushroom and their cultivation
7. Maintain Mushroom farm in a hygienic and scientific way
8. Work out the economics of Mushroom Cultivation
9. Take up value added products of Mushroom i.e. preparation of Mushroom Pickle, Powder, Papad and different items of Food

Module 1

Mushroom cultivation: Introduction, history and biology of mushrooms
Nutritional value of mushrooms: (Proteins, amino acids, mineral elements, carbohydrates, fibers, vitami;
Medicinal value of mushrooms
Poisonous mushrooms and mushroom poisoning, edible mushrooms

Module 2

Mushroom cultivation in India and world
Mycorrhizal mushrooms and their role in plant growth
Cultivation Technology: Infrastructure, equipments and substrates in mushroom cultivation:
Polythene bags, vessels, inoculation hook, inoculation loop, love cost stove, sieves, culture racks, mushroom unit or mushroom house, water sprayer, tray, boilers, driers, pure culture.

Module 3

Spawn: types of spawn, preparation of spawn, mushroom bed preparation
factors affecting mushroom bed preparation.
Compost: materials used for compost preparation, compost technology in mushroom production
Casing; raw material used for casing, preparation of casing material;
important sanitation during various stages of mushroom cultivation.

4

Module 4

Cultivation of important mushrooms: General process for the cultivation of Agaricus bisporus, Pleurotus ostreatus and Volvariella volvaceae.
Pests and Pathogens of mushrooms and their management with reference to Agaricus bisporus.
Advantages and applications of mushroom cultivation
Problems with mushroom cultivation

Module 5

Storage and food preparation from mushrooms

Methods of storage of mushroom cultivation, Long term and short term storage of mushrooms.

Foods/recipes from mushrooms

Mushroom research centers/farms: National level and regional level.

Marketing of mushrooms in India and world.

LIST OF PRACTICAL FOR MUSHROOM CULTIVATION

Practical outcome:

1. Students/ farmers by using mushroom cultivation in their field can create the source of income.
2. Students residing in cities can produce mushroom in small scale in house for own family uses.
3. They can get the jobs in educational institutes as mushroom cultivation technician.
4. The candidate can generate income by supplying edible mushroom.

List of Practical (Optional)

1. Morphology and identification of local mushroom Flora and preserved specimen of mushroom
2. Sterilization of glassware, equipments,and culture media used in mushroom cultivation
3. Preparation of culture media: Potato Dextrose medium, Richards medium
4. Preparation of spawn: Grainspawn, Strawspawn, Sawdustspawn
5. Preparation of compost and known compost formulations
6. Cultivation procedure for Agaricusbisporus and Pleorotusostreatus
7. Criss-cross bed and out-door method for cultivation of Volvariella volvaceae

Reference Books:

1. Kannaiyan, S. Ramasamy, K. (1980). A hand book of edible mushroom, Today & Tomorrows Printers & Publishers, New Delhi.
2. Pandey B P 1996. A textbook of fungi. Chand and Company New Delhi.
3. Pathak, V. N. and Yadav, N. (1998). Mushroom Production and Processing Technology. Agrobios, Jodhpur.
4. Mushroom Cultivation, Tripathi, D.P.(2005) Oxford &IBH Publishing Co. PVT.LTD, New Delhi.
5. Mushroom Production and Processing Technology, Pathak Yadav Gour (2010) Published by Agrobios (India).
6. Harander Singh 1991. Mushrooms-The art of cultivation- Sterling Publishers.

4. STATISTICAL METHODS

Total Duration: 34hrs

Course Objectives:
Here the students study the probability and statistical methods in statistics This is a course on the study of applied statistics. Here the students are introduced to survey samples; an important part of statistical data.

Course outcomes:
Here the study is on the different design experiments in statistical studies This course deals with the proper interpretation of scientific data generated in the biological studies.

MODULE I:
Statistical Methods Measures of location (or central tendency) and dispersion Probability Theory Random Variable Expectation of random variable and its properties Standard discrete probability distributions.
Standard continuous probability distribution Bivariate and multivariate Distributions Bivariate Transformations Correlation and regression Limit Laws Order Statistics Sampling Distribution Tests of sig-nificance.

MODULE II:
Index Numbers Demand Analysis Utility and Production Functions Mathematical Finance Time Series Statistical Quality Control Sampling Inspection Plans Indian official Statistics Vital Statistics Demography Educational and Psychological Statistics.

MODULE III:
Sample Surveys Basic sampling methods Stratified random sampling Non sampling errors.

MODULE IV:
Testing of Hypothesis Basic designs Incomplete Block Designs Factorial experiments Fractional factorial experiments

MODULE V:
Functions of survival time Type I, Type II and progressive or random censoring with biological examples Competing risk theory Stochastic epidemic models Planning and design of clinical trials.

Reference book:
1. "Statistical Methods (Combined Volume)" by Das N
2. "Statistical Methods: An Introductory Text" by J Medhi
3. "Statistical Methods" by S P Gupta
4. "Statistical Methods: Concepts, Application and Computation" by Y P Agarwal
5. "Statistical Methods for Engineering and Sciences" by Asad U Khan

5. Paramedical Science

Course Objectives:
- Perform all the diagnostic techniques
- Use discretely the essential laboratory services
- Manage all types of clinical diagnostic methods
- Demonstrate skills in handling the modern equipments in medical imaging
- Develop leadership qualities to function effectively as a leader in the laboratory environment
- Render services to the laboratory set up and to communicate effectively with the doctors and the hospital management.
- To develop skill and competency in data processing, reporting and maintenance of records& Laboratory investigations.

Course outcomes:
- Students will be able to define and explain major concepts in the biological sciences.
- They are able to correctly use biological instrumentation and proper laboratory techniques.
- Students will be able to communicate biological knowledge in oral and written form
- Students will be able to recognize the relationship between structure and function at all levels: molecular, cellular, and organismal.

MODULE I:
Communityhealthcare:DefinitionofHealth,DeterminantsofHealth,HealthIndicatorsofIndia,Health Team Concept. a. National Health Policy b. National Health Programmers (Briefly Objectives and Scope) Population of India and Family welfare programme in India.

MODULE II:
IntroductionHumanbodyasawhole:Definitionofanatomyanditsdivisions,Termsoflocation,Glands-classification, describe serous & mucous glands with examples, Basic tissues classification with examples.CellDefinition,StructureandfunctionofCytoplasmicOrganelles,ReproductionMeosis,Mitosis. Microscopic technique. ELISA, RIA, Widal test, Bone – Classification, Diffusion, Osmosis

MODULE III:
Redbloodcells-rythropoiesis,stagesofdifferentiationfunction,countphysiologicalVariation.Haemoglobin-Structure,function,concentrationphysiologicalvariation.BloodVolume–Normalvalue,determinationofbloodvolumeandregulationofbloodvolumebodyfluid-pH,normalvalue,regulation andvariation.Qualitycontrol:Accuracy,Precision,Specificity,Sensitivity.Limitsoferrorallowablein laboratory, Percentage error, Normal values and Interpretations, pH Regulation, Disturbance in acid Base Balance,

MODULE IV:
IntroductiontoLaboratoryApparatusPipettes-differenttypes(Graduated,volumetric,Pasteur,Automatic etc.),Calibrationofglasspipettes,Burettes,Beakers,Petridishes,depressionplates.Flasks-differenttypes)Water bath: Use, care and maintenance, Oven & Incubators: Use, care and maintenance. Water Distillation plant and water deionizers. Use, care and maintenance, Refrigerators, coldbox, deep freezers–use, care and maintenance.

MODULE V:
Bascic:Introductionofcomputer,types,uses,MSOffice,Internet,DOS,Operatingsystem,E-MAIl, Concepts,POPandWEBbasedE-mail,merits,address,BasicsofSending&Receiving,E-mailProtocols,Mailing List,Free E-mail services. Html – Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Color Controls
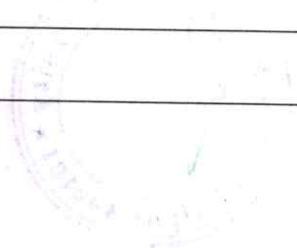
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Reference:

1. William Davis, Understanding Human Anatomy and Physiology, McGraw Hill
2. Chaurasia, A Text Book of Anatomy
3. Ranganathan, T.S., A Text Book of Human Anatomy
4. Fattana, Human Anatomy, (Description and Applied), Saunder's & C P Prism Publishers, Bangalore
5. Ester. M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia 6.Guyton, Arthur, Text Book of Physiology, Prism Publishers
7. Chatterjee, C C, Human Physiology, Medical Allied Agency
8. A.K Jain, Human Physiology
9. Varley, Clinical Chemistry
10. Teitz, Clinical Chemistry
11. Kaplan, Clinical Chemistry
12. Ramakrishna S, Prasanna KG, Rajna, Text Book of Medical Biochemistry, Orient Longman
13.Vasudevan DM & Sreekumari S, Text Book of Biochemistry for Medical Students.
14. Das, Debajyothi, Biochemistry, Academic, Publishers, Calcutta.
15. Chatterjee, A Text book of Medical Biochemistry 8. U. Satyanarayan, Medical Biochemistry.16.Sanders, D.H., Computers Today, McGraw Hill.
17. Trainer, T.N., Computers, McGraw Hill.
18. William Davis, Understanding Human Anatomy and Physiology, McGraw Hill
19. Chaursia's, Practical of Human Anatomy

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