(CH-15001) Applied Chemistry

Syllabus for FYBTECH

Teaching Scheme: Evaluation Scheme:

Lectures: 3hrs / week T1-20M, T2-20M

Practical: 2hrs/week End-SemExam:60M

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Objectives of the course

- To emphasize the relevance of fundamentals and applications of chemical sciences in the field of engineering.
- To get introduce with the advanced materials used in high technology
- To understand attractive & feasible energy conversion technology that is non polluting
- To know various parameters needed to select, investigate & design the engineering materials

Giving hands on experience of various analytical techniques and associated calculations.

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Unit 1: Water Technology (6 Hrs)

Structure and Properties of water, Water quality parameters- heavy metal, microbial impurities, dissolved salts and their consequences (BIS and WHO standards), Determination of hardness by EDTA method, chloride content, Alkalinity of water and its significance, Water treatment for civic applications, Problems associated with use of hard water in Boiler and its treatment

Unit 2: Corrosion and corrosion control (6Hrs)

Corrosion- Atmospheric corrosion-mechanism, Wet corrosion-mechanism, Electrochemical and galvanic Series, Typical Electrochemical corrosion like (Galvanic, Pitting, Inter-granular, Waterline) Factors affecting corrosion-nature of metal, nature of environment, Methods of prevention of Corrosion-cathodic and anodic protection ,Metallic coatings, hard coatings.

Unit 3: Absorption spectroscopy (7 hrs)

An overview of Electromagnetic spectrum, various regions, energies and interactions with matter . Fundamentals of Spectroscopy, Principles and applications of UV-visible, IR and microwave spectroscopy. Atomic Absorption Spectroscopy

Unit4: Fuels and combustion (8 Hrs)

Fuels: Definition, classification of conventional fuels, calorific value and its units, Determination of calorific value of solid and liquid fuels -Bomb calorimeter – working. Solid fuels : Coal, proximate and ultimate analysis of coal. Liquid fuels: refining of petroleum, Knocking, Octane number of petrol, cetane number of diesel. Air to fuel ratio, Vehicular emission, catalytic converter significance of PUC certification,

Combustion: Chemical reactions, Calculation on air requirement for combustion – numerical

Unit 5: Polymers (7Hrs)

Basic terminology, Characteristics and Properties of polymers like molecular wt., crystallinity, phase transformation, dissolution. Classes of polymers- commodity plastics, resin, elastomer, fiber, adhesive, foam etc. (any 5 examples with synthesis, properties and applications) . Specialty polymers conducting polymer, silicon base polymer, biodegradable polymers.

Unit 6: Nanomaterials (7Hrs)

Introduction, classes of nano materials- Carbon base nano materials (graphene, graphene oxide, CNT), semiconducting nanoparticles (ZnO,SnO2), metal nano clusters(Ag, Pt, Pd, Rh), quantum nano structures, Synthesis by physical and chemical processes: 2 each. Applications of nanomaterials in Catalysis, Electronics, Communication, Medicines, Composites, Energy sciences

List of Recommended Books

1. A textbook of Engineering Chemistry: Jain and Jain, Dhanpatrai Publication.

2. Instrumental Methods of Chemical analysis, Willard Dean, Merrittee, Tata MacGrow Hill Limited.
3. A textbook of Engineering Chemistry: S. S. Dara, S. Chand Publication 2010 edn.
4. A textbook of Engineering Chemistry: Shashi Chawla, Dhanpatrai Publication.
5. Polymer Science: V.R.Gowariker, New Age International Publication
6. Introduction to Nanotechnology: Charles P. Poole, Frank J. Owens.

LIST OF EXPERIMENTS

Teaching Scheme: **Evaluation Scheme:**

Practical: 2hrs/week **Total Marks: 100 M**

CCE: 70M, ESE: 30M

1. **Preparation and Standardization of Analytical Reagents**
2. **Determination of temporary and permanent hardness of water sample by EDTA method.**
3. **Determination of total alkalinity of water sample.**
4. **Available chlorine in bleaching powder**
5. **pH-metric titration of Acid/Base**
6. **Colorimetric determination of concentration of given inorganic sample.**
7. **Demonstration of UV_VIS spectrophotometer**
8. **Determination of calorific value of a fuel using Bomb's calorimeter**
9. **Proximate Analysis of coal**
10. **Determination of molecular weight of a polymer using Ostwald's viscometer.**
11. **Determination of chloride content of water by Mohr's method**

Lecture wise break up: Chemistry Nanomaterials

Unit 6	Introduction to nanotechnology	Page nos.
Nanomaterials	Introduction to nano materials ,scale, historical account on development of nano materials, size dependence of properties, bulk to nano transition	8
	Classes of nano materials , carbon base- clusters CNTs, graphene, graphene oxide	103
	Metal nano clusters - e.g. silver, Pt, Pd, Rh, nano particles as suspension	
	Methods of synthesis- RF plazma, Chemical method, Thermolysis, Pulsed laser	97
	Quantum nano structures - dots, wires, surfaces - size and dimensionality effects-	226
	Application - catalyst, electronics, communication, medicines, energy devices	

CH15002 Applied Chemistry Laboratory

LIST OF EXPERIMENTS

Teaching Scheme: **Evaluation Scheme:**

Practical: 2hrs/week **Total Marks: 100 M**

CCE: 70M, ESE: 30M

1. **Preparation and Standardization of Analytical Reagents**
2. **Determination of temporary and permanent hardness of water sample by EDTA method.**
3. **Determination of total alkalinity of water sample.**
4. **Available chlorine in bleaching powder**
5. **pH-metric titration of Acid/Base**
6. **Colorimetric determination of concentration of given inorganic sample.**
7. **Demonstration of UV_VIS spectrophotometer**
8. **Determination of calorific value of a fuel using Bomb's calorimeter**
9. **Proximate Analysis of coal**
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11. **Determination of chloride content of water by Mohr's method**

College of Engineering Pune (COEP)

Department of Applied Sciences

Syllabus for Professional Communication (HSMC-15001)

Introduction:

With the rapidly growing importance of communication, one needs to be competent enough to express himself/herself effectively. It is often said that hard skills will get you an interview but you need soft skills to get (and keep) the job. One of the important elements of soft skills include the ability to communicate effectively. Communication skills are essential for engineers who aspire to carry out their professional practice in the global arena. Engineering communication skills constitute several core elements such as the fluency in the English language with command over the four basic skills viz. listenig, speaking, reading and writing.

Course Objectives:

1. To help students boost their confidence and learn the language and show awareness of the appropriate format and present their ideas in rational and logical manner.
2. To enhance their linguistic competence and grasp intricacies involved in the development of basic language skills namely listening, speaking, reading and writing
3. To help students understand the basic concept of communication, its process, stages, channels, and its value/usage in business/technical field.
3. To apply language principles/skills for effective communication in an accent widely understood across the globe.
4. To make them aware of industry requirements and to equip them with employability skills

Course Outcomes:

a. Students will be able to attempt tasks by using functional grammar and vocabulary effectively.
b. Students will be able to reflect on basic language skills – listening, speaking, reading and writing and use them in the most appropriate manner.
c. Students will be able to understand the importance and usage of effective communication and apply effectively in various fields.
d. Students will be able to reproduce their understanding of concepts / principles of communication skills as per global requirements.
e. Students will be able to present themselves well in front of large audience on a variety of situations related to group communication and presentation in a relevant scenario. Moreover, they will get the knack for structured conversation to make their point of views clear to the listeners.

Teaching Scheme	Lecture	Tutorial	Practical	Total
Credit	**1**	**0**	**1**	**2**
Hours/week	**1**	**0**	**4**	**5**
Marks	**T1: 30**	**T2: 30**	**ESE: 40**	**100**

Unit No.	Details
Unit 1	Communication as a skill: types of communication, barriers to communication, effective communication
Unit 2	Foundation of language: grammaticality and acceptability, word power, accuracy and appropriateness
Unit 3	Listening: nature of listening, stages of listening (pre, while and post)
Unit 4	Speaking: pronunciation, stress, intonation and pauses, formal and informal expressions, conversation skills, general discussions, presentation skills, business etiquette
Unit 5	Reading: silent reading, reading aloud, reading for details, reading for gist, reading for pleasure, reading for study, reading between and beyond the lines
Unit 6	Writing: nature of writing, stages of writing (pre, while and post), qualities of effective writing, what makes writing poor, the what, how and why of writing, drafting, summarizing, letter writing, writing reports

Teaching Methodology:

- A proficiency test will be conducted to determine the levels of the candidates.
- The course will be conducted through an activity-based learning approach.
- Lectures will be taken in the classroom and practicals in the language lab.
- Cumulative Continuous Assessment (CCA) will be conducted during the course.
- An end-test will be conducted to assess their communicative competence.

Reference Books:

Communication Skills for Engineers by S. Mishra & C. Muralikrishna (Pearson)

Communication Skills for Technical Students by T.M. Farhathullah (Orient Longman)

Written Communication in English by Saran Freeman (Orient Longman)

Essential English Grammar (Elementary & Intermediate) Raymond Murphy (CUP)

Communication for Business: A Practical Approach by Shirley Tailor (Longman)

Developing Communication Skills by Krishna Mohan & Meera Banerji (Macmillan)

Business Correspondence and Report Writing, R. C. Sharma & Krishna Mohan (Tata McGraw Hill)

Websites:

http://www.englishpage.com

http://www.english-4u.de/

http://www.nonstopenglish.com/

http://www.business-english.com

http://www.breakingnewsenglish.com/

http://www.elllo.org/

http://www.fonetiks.org

Applied Psychology
T.Y. B. Tech Course Structure and Syllabus

Teaching Scheme:
Lecture : 1 hrs/week
Practical : 2hrs/week

Examination Scheme:
100 marks
Assignments/Practical (T1 and T2)-40
End- Sem Exam- 60

Objectives:

1. To enable self awareness in one's personality and learning essentials of everyday life skills
2. To strengthen the skills required in industrial/workplace settings
3. To overcome stressful situations effectively with the help of psychological approach

Unit 1	**Introduction to Psychology**	Definition, Nature and Aims Counseling, Industrial and Social Psychology Creativity and its application Mind Mapping and Problem Solving Self Awareness, Johari window	**(4 hrs)**	
Unit 2	**Personality**	Carl Jung's type theory, Bandura's Social learning, Big Five model Indian Perspective on Personality- Panchakosh Model SWOT analysis, life planning, emotional intelligence	**(6 hrs)**	
Unit 3	**Organizational Behaviour**	Behaviour at workplace (personality, attitude and perceptions), Motivation, Job satisfaction, Leadership and Group dynamics Engineering Psychology (Ergonomics), Man-machine relation Group dynamics, Transactional analysis	**(8 hrs)**	
Unit 4	**Stress Management**	Nature, types and causes of stress General Adaptation Syndrome (GAS) Coping with Stress- Cognitive, Emotional, and Behavioural techniques Type A and B theory	**(4 hrs)**	

Text Books:

1. Morgan, C.T., King, R.A., Weisz, J.R., & Schopler, J. (2001). *Introduction to Psychology*. 7th Edition. New Delhi: Tata McGraw Hill
2. Schultz, D. & Schultz, S. E. (2002). *Psychology and Work Today*. 8th Edition. Pearson Education

Reference Books:

1. Hilgard, E. R., Atkinson, R. C., Atkinson, R.L. (1975). *Introduction to Psychology*. 6th Edition. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.
2. Golman, Daniel. (1998). *Working with Emotional Intelligence*. Bloomsbury Publishing Plc.
3. Matthewman, L., Rose, A., & Hetherington, A. (2009). *Work Psychology*. Indian Edition. Oxford University Press.

Practical (50 Marks)

Practical 1: Self Awareness (20 Marks) *Estimated time: 4 Hrs*

- Personal Effectiveness Scale
- Johari Window
- Life planning
- SWOT analysis, Time matrix

Practical 2: Level of Adjustment (10 Marks) *Estimated time: 3 Hrs*

- Adjustment Inventory
- Family adjustment scale
- Interpretation and Explanation

Practical 3: Stress and Personality (10 Marks) *Estimated time: 4 Hrs*

- STAI scale
- Type A- B theory and test
- Interpretation and Explanation

Practical 4: Emotional Quotient (10 Marks) *Estimated time: 3 Hrs*

- EQ test
- Concept of EQ
- Interpretation and Explanation

ML-17001–CONSTITUTION OF INDIA

Teaching Scheme:-
Lectures: 1 hr/week

Evaluation Scheme-
Continuous evaluation-
Assignments/Presentations/
Test

Course Outcomes

Student will be able to understand

a. how India has come up with a Constitution which is the combination of the positive aspects of other Constitutions.
b. the interpretation of the Preamble.
c. the basics of governance of our nation.
d. the different aspects covered under the different important Articles.
e. the basic law and its interpretation. Understand the important amendments which took place and their effects.
f. our Union and State Executive better.
g. the basic that along with enjoying the rights one needs to fulfill one's duties.
h. and gain confidence on our Constitution by knowing it better.

Unit 1 **(02 hrs)**

Understanding the concept 'Rule of Law '
Meaning and history of Constitution.
Understanding the concept of Human Rights and Fundamental Rights.

Unit 2 **(03 hrs)**

Introduction to The Constitution of India, understanding its objects. Preamble to the constitution of India.

Unit 3 **(02hrs)**

Fundamental rights under Part – III, exercise of the Rights, limitations and important cases.

Unit 4 **(02hrs)**

Fundamental duties & their significance.
Relevance of Directive principles of State Policy.

Unit 5 **(02hrs)**

Legislative, Executive & Judiciary (Union and State Level)
Prerogative Writs.

Unit 6 **(02hrs)**

Constitutional Provisions for Scheduled Castes, Scheduled Tribes, & Backward classes.

Constitutional Provisions for Women & Children

Unit 7 **(02hrs)**

Emergency Provisions.

Electoral procedure in India

Amendment procedure and few important Constitutional Amendments

Text Books

- Introduction to the Constitution of India by Durga Das Basu (Students Edn.) Prentice – Hall EEE, 19th/20th Edn..
- Engineering Ethics by Charles E.Haries, Michael. S.Pritchard and Michael J.Robins Thompson Asia,.

Reference Books

- An Introduction to Constitution of India by M.V. Pylee, Vikas Publishing.

College of Engineering, Pune
Science of Living Systems (ML 201)
Second Year B. Tech. Program

Teaching Scheme
Lectures : 3 lectures/week

Examination Scheme
T1-**20** (Classroom activity),T2-**20** (Assignment/s)
Semester End Examination-**60**

Objectives: To make students conversant with basic Biology regarding the life processes. To impart knowledge about the common corridors of biology and engineering as biologically inspired technologies like designs in nature, bioenergetics, bioprocesses, biomaterials, biomechanics, bioimaging, bioinformatics, bioinstrumentation etc. To introduce recent trends in biology viz. genetic & tissue engineering, stem cell engineering, bio and nanotechnology etc. with the objective of appreciating engineering principles in biological systems.

Course Education Objectives

1. To introduce an interdisciplinary approach of biology and engineering
2. To understand biologically inspired technologies
3. To pursue the studies in engineering having application in biological, medical, environmental & agricultural fields

Course Objectives:

a. Knowing basic concepts of biology with their application in more meaningful way
b. Understanding natural biological processes in view of increasing efficiency of engineering
c. Discussion on biological solutions resolving problems caused by technical revolution
d. Introduction of concept of designs and environmental engineering to Civil engineers
e. Introduction of biomaterials and nanomaterials to Metallurgy and Material Engineering.
f. Introduction of biomechanics to Mechanical Engineering.
g. Introduction of cell to cell communication and biosensors to Electronics and Telecommunication Engineering.
h. Introduction of bioinformatics and computational biology to Computer Science and Information Technology.
i. Introduction of biomedical instrumentation and bioimaging (ECG/EEG/CT Scan etc.) to Instrumentation & Control Technology and Electrical Engineering.
j. Introduction of interdisciplinary topics like energy transduction, cellular evolution, genetic, tissue and chemical engineering.

Unit 1: Understanding Basics (6L)

1. Engineering perspectives of biological sciences: Where engineering meets biology and where biology meets engineering. Biology as an integrated Science; Case studies on integrating biology with engineering.
2. Biopolymers and macromolecules – Structure and Function: Organic and inorganic molecules; Unique Properties of Carbon; Carbohydrates, Amino Acids and proteins, Lipids, Nucleic Acids, Vitamins and Minerals; The Rise of Living Systems.
3. Levels of organization of life : Cell as basic unit of life, prokaryotic and eukaryotic cells, microbes, plant and animal cells; Cell organelles – structure and function; Levels of organization of life - tissues, organs, systems and organism.

Unit 2: Biological Processes and Bioenergetics (6L)

1. **Energy Dynamics in Biology –**
    a) Photosynthesis and energy assimilation: aerobic and anaerobic systems. Applications
    b) Respiration and Electron Transport Chain: Mitochondria and respiration, ATP generation.
2. **Bioenergetics:** Thermodynamic principles applied to biology, negative entropy changes in biological systems, Free Energy, Chemical Equilibrium;
3. **Optimization of biological functions**: Metabolic networks; anabolism and catabolism; flux analysis (MATLAB).

Unit 3: Living Systems (6L)

1. **Transport Phenomena in Biological Systems:** Membrane channels and ion channels; Fluid flow and mass transfer
    a. In plants: Xylem and Phloem
    b. In animals: Blood and Lymph
    c. Transport of molecules and gases (Oxygen and Carbon dioxide); Heat Transport - Body temperature regulation.

2. **Communication:** Cell junctions, Cell-cell communications – cell signaling, Hormones, Pheromones; Chemotaxis. Communication in living systems by photo, bio, chemotactic methods.
3. **Defense mechanisms in plants and animals:**
    a. In plants: Herbivory, secondary metabolites.
    b. In animals: Innate and Adaptive immune systems.

Unit 4: Techniques and Devices (6L)

1. **Genetic Code** - Expression and Transmission of Genetic Information, The concept of DNA cloning; Mechanisms of Enzyme Action.
2. **Techniques for optimization:**
    a. At molecular level: Genetic Code and protein synthesis, DNA replication, RDT, DNA hybridization, Colony Hybrids, PCR, DNA microarray,
    b. At cell level: Hybridoma technology,
    c. At tissue level: Plant Tissue Culture, Animal Tissue Culture and Microbial Culture techniques; Tissue Engineering.

3. **Instrumental Methods of analysis** – A case study of protein purification and characterization: Principles and types of microscopy and spectroscopy, Chromatography, electrophoresis, diffusion, centrifugation, light scattering.

Unit 5: Discovery and Innovation (6L)

1. **Current trends and advances** in cell and molecular biology
2. **Landmark Discoveries**: Landmark discoveries in the field of Molecular Biology, Cell Biology and Genetics.
3. **Nanobiotechnology:** Micro-/Nanotechnologies for Interfacing Live Cells; Nanotechnology in Medicine – Diagnostics and Therapy; Biosensors; Nanotechnology in Agriculture; Biomemetics.
4. **Biomemetics:** Nature inspired processes applicable to the field of Engineering.

Unit 6: Branch-wise

Branch: Electronics and Telecommunication Engineering

Biosensors – Introduction to Biosensors, transducers, amplifiers; **Bioimaging**-Introduction to medical imaging and different medical Imaging modalities; Review of Signals and system; Electro Physiological Signal Analysis. Bio-telemetry Communication in living systems by photo, bio, chemo, tactic methods; **Diagnostic Devices**- Radiography, X-ray Computed Tomography Nuclear Medical Imaging, Ultrasound Imaging, Magnetic Resonance Imaging. **Therapeutic Devices**-Cardiac Pacemakers, Cardiac defibrillators, Surgical Diathermy, Diagnostic application of LASERs, High frequency heat therapy, Hemodialysis, Ventilators, Anesthesia machines, Automatic Drug delivery Systems, Electro Surgical units and safety.

Branch: Instrumentation and Control Engineering

Basic concepts of **Medical Instrumentation**: Generalized medical Instrumentation System, Medical Measurement constraints, Classification of Biomedical Instruments, Generalized static and dynamic characteristics, Design criteria, Commercial Medical Instrumentation Development process, Regulation of Medical Devices. **Biomedical transducers:** optical, photo- electric, electrochemical, electrical, mechanical, electromechanical and thermoelectric. **Specialty areas in Bioinstrumentation**—Confocal, Tunneling, Sequencing, FACS, PCR, MRI, CT,USG, Endoscopy, ECG; Introduction to biosensors and tissue engineering.

Branch: Mechanical Engineering

Biomechanics, Human body motion, Prosthetics; Introduction to Ergonomics; Elements of Anthropometry; Physiology, Anatomy; Mechanical Properties of Bone and Soft Tissues Rehabilitation engineering, Biomimetics; Bio Material Handling; Hand Tool Design; Human Information Processing; Applications of Principles of Biomechanics in two and three dimensional kinematics; Fundamentals of Fluid Mechanics; Introduction to bio sensors and tissue engineering.

Branch: Metallurgy and Material Science

Classification of biomaterials –Comparison of properties of some common biomaterials; Effects of physiological fluid on the properties of biomaterials; Biological responses (extra and intra vascular system) to Metallic, Ceramic and Polymeric implant materials; Introduction to bio sensors and tissue engineering. Metals & alloys, composites and their advantages used in bio-industries; Materials in bio-printing. **Tissue Engineering and cloning:**

Engineering cells, tissues and organs; Stem cells and translational medicine; Introduction to Gene Therapy; Bioengineering at molecular, cell and systems level; 3D bio-printing; Engineering Materials for Biomedical Applications.

Branch: Production Engineering and Industrial Management

Bio chemical engineering; Fermentation Technology, Bioreactors; Bio process Engineering; Use of living organisms (mostly microbes) to produce useful products. Biomechanics and ergonomics–production innovations.

Branch: Electrical Engineering

Alternative energy sources; Electrical signaling in biological system; Bioluminescence, bioelectricity, ECG.

Branch: Civil Engineering

Environmental engineering, Understanding ancient engineering. Designs in Nature; Bio radars.

Branch: Computer and Information Technology –

Principles of Bioinformatics, Computational Biology: Role of Computational Biology in Bioengineering; Genomics, Proteomics, Bioinformatics. Computational solutions to Biological Problems, Virtual systems Artificial Intelligence in Biomedical Engineering: Basics of Artificial Neural Networks.

Selected References:

1. Lodish H, Berk A, Zipursky SL, et al. (2000) Molecular Cell Biology. W. H. Freeman.
2. Lehninger, A. L., Nelson, D. L., & Cox, M. M. (2000). *Lehninger principles of biochemistry*. New York: Worth Publishers.
3. Lewin B. (2000) Genes VII. Oxford University Press..
4. Rao CNR, et.al. Chemistry of Nanomaterials: Synthesis, Properties and Applications.
5. Eggins BR. (1006) Biosensors: An Introduction. John Wiley & Sons Publishers.
6. Palsson B.O. and Bhatia S.N. (2009) Tissue Engineering. Pearson.

ASILE 16001 Critical Thinking and Reasoning Ability

Course Objectives:

1. This course is designed for improving communication skills, self-confidence, assertiveness, and effectiveness in spoken and written English.
2. Critical thinking is the active and systematic attempt to understand, evaluate, and find flaws in arguments.
3. Students learn how very often they tend to debate / discuss / argue on, or support incorrect or improper conclusions.
4. Critical Thinking makes them more effective and precise in presentations, discussions, and dialogue through a better understanding of arguments.

Course Outcomes:

1. This course introduces the concepts of critical thinking, introductory logic, and rhetoric, highlights the importance of clarity and precision in everyday life, and effectively improves students' reasoning skills.
2. It equips them to tackle interviews, discussions, and competitive exams much more confidently and in a relaxed manner.
3. For those that wish to pursue higher studies, it helps them improve their academic writing and presentation skills.

Unit 1: The Basic Tools of Reasoning [5L]

The most basic concepts in good reasoning are claims and arguments. We define "claim," explain how claims can be used to support beliefs, and then explain how various types of evidence can be organized into arguments so we can evaluate the strength of this support for the claims that we make.

Unit 2: Evaluating Arguments [5L]

Arguments are usually found embedded in books and articles that are intended to convey information in addition to the argument. We explain how to extract an argument from extraneous material, clarify ambiguous or vague words and phrases, and organize the argument, so that it is clear and precise. In addition, we explain two broad categories of argument (deductive and inductive), identify the distinctive features of these arguments, and then explain what makes a deductive or inductive "good" or "bad".

Unit 3: Deductive [8 L]

Categorical Logic

An intuitive way of understanding reality is to categorize it (big, red, species, dog, alligator, etc.). We can then use these categories to compare and contrast objects. We can also use them to reason about objects. We explain the basic concepts used in categorical logic, including members, categories, the quantifiers "all," "some," and "none," Venn diagrams, the Venn Diagram Method of testing for validity, and the limitations of categorical logic.

Basic Propositional Logic

A more powerful logical system than categorical logic is called “propositional logic.” We explain basic logical operators “and,” “or,” “not,” “if . . ., then . . .,” and “if and only if,” how to translate English claims into the language of propositional logic and vice versa, and explain how propositional logic helps us evaluate arguments.

Truth Tables

Logical operators have specific implications for interpreting claims and evaluating arguments. The clearest way to understand these implications is to construct truth tables for them. We explain how to construct a truth table, the truth tables for each logical operator, and how to evaluate the validity of an argument using two different truth table methods.

Rules of Inference

With a firm grasp of the truth tables of the operators in propositional logic, we can begin to see how to draw inferences from claims of propositional logic. Some of these inferences are so clear and precise that they can be used as rules for all inferences in propositional logic. We explain nine rules of inference, how to use them to derive conclusions from complicated arguments, and three common mistakes associated with these rules.

Unit 4: Inductive Reasoning [7 L]

Probability and Induction

In arguments where conclusions do not follow with certainty from premises, we must turn to a different set of rules to evaluate them. In these inductive arguments, the conclusions follow with some degree of probability. We distinguish probability from statistics, explain three common types of probability, explain how statistics and probability are used in inductive reasoning, and explain the most difficult obstacle to inductive reasoning, “the problem of induction.”

Inductive Arguments

Inductive arguments take a variety of forms and each of these forms must meet a specific set of conditions in order to be considered a “good” argument. We explain four types of inductive argument: inductive enumeration, inductive generalization, argument from analogy, and causal argument, and their strengths and weaknesses. We highlight some specific worries about evaluating causal arguments.

Experiment and Inference to the Best Explanation

Though there are numerous ways that a causal inference can be drawn inappropriately, philosophers and scientists have devised clever ways of mitigating these worries through various types of experiments. We explain the most common formal and informal experiments, their strengths and limitations, and a method of choosing among theories for which there is conflicting evidence, called “inference to the best explanation.”

Unit 5:Informal Fallacies [5 L]

There are probably innumerable ways that inductive inferences can go wrong, but some are so common they have been given names. We explain eleven of the most common informal fallacies, including: Argumentum ad Hominem, Abusive (appeal to the man/person); Argumentum ad Hominem, Circumstantial; Tu Quoque (you, too; “hypocrite” fallacy); Argumentum ad Populum (appeal to the people); Appeal to Snobbery/Vanity; Argumentum ad Verecundiam (appeal to [inappropriate] authority); Argumentum ad Baculum (appeal to force);

Argumentum ad Misericordiam (appeal to pity); Argumentum ad Ignorantiam (appeal to ignorance); Petitio Principii (begging the question); and Straw Man.

Reasoning on the exams such as Civil Services and CAT for the IIM's

Many students who take a course in critical thinking do so in preparation for the Civil Services or CAT exams. We explain the seven most common types of reasoning questions on these and similar exams.

TEXTBOOKS::

1. Alec Fisher: Critical Thinking - an Introduction, Cambridge
2. Jamie Carlin Watson, Robert Arp: Critical Thinking – An Introduction to Reasoning Well, Bloomsbury
3. Brooke Noel Moore, Richard Parker: Critical Thinking, McGraw – Hill
4. Tracy Bowell, Gary Kemp: Critical Thinking – A Concise Guide, Routledge, (and also) Taylor & Francis e-Library
5. Roy Van Den Brink-Budgeon: Critical Thinking For Students, howtobooks
6. Colin Swatridge: Oxford Guide to Effective Argument & Critical Thinking, Oxford

*REFERENCE BOOKS::

1. Roy Van Den Brink-Budgeon: Advanced Critical Thinking Skills, howtobooks
2. Marilyn Anderson, Pramod K Nayar, Madhuchhanda Sen: Critical Thinking, Academic Writing and Presentation Skills, Pearson
3. http://www.criticalthinkingbyexample.com/Websites/websites.html

Entrepreneurship Development
(T.Y.B.Tech.)

Teaching Scheme
Lectures: 1 hr/week

Examination Scheme
Total Marks: 100
Continuous Evaluation
Field Work/Assignment: 40
End Semester Exam: 60

Course Education Objectives (CEO)

1. To introduce and understand Entrepreneurship and its types
2. To understand how to evaluate risk in entrepreneurial ventures
3. To understand different type of finances available and financing methods
4. To understand marketing, digital marketing and their analytics
5. To understand detailed information about the principles, practices and tools involved in all aspects of the sales processes
6. To understand basics of operations management
7. To understand the nuances of Start-up
8. To understand how to use proven tools for transforming an idea into a product / service that creates value for others

Course Outcomes (CO)

a) Students would understand different types of Entrepreneurial ventures and would be able to discover, develop, and assess opportunities
b) Students would learn about opportunity and risk analysis
c) Students would understand the strategies for valuing your own company, and how venture capitalist and angel investors use valuations in negotiating milestones, influence and control
d) Students would understand to pick correct marketing mix and how to position the company in the market by using analytical tools
e) Students would learn how to sale themselves and the product/service and to handle objections
f) Students would get to know how organizations operates and their process matrices
g) Students will learn how start new ventures
h) Students will learn how to write winning business plans

Unit I: Market Research **(2 hrs)**

Introduction to Entrepreneurship, Profile of the Entrepreneur, Market Gap / Opportunity Analysis, Market Research Methods, Defining the Focal Market: Market Segmentation, Industry analyzing – Research / Competitive Analysis

Unit II: Types of Companies and Organizations **(2 hr)**

Company/ Organization Types, Legal Aspects, Taxation, Government Liaison, Building the Team, Mergers and Acquisitions

Unit III: Business Finance **(2 hrs)**

Shares and Stakes, Valuation, Finance Creation (Investors / Financers), Revenue Plans and Projections, Financial Ratios, Business Lifecycle, Break Even

Unit IV: Marketing **(2 hrs)**

Marketing Basics, Marketing Strategy and Brand Positioning, Plans and Execution Techniques, Marketing Analytics, Online Marketing

Unit V: Sales **(3 hrs)**

Understanding Sales, Pitching Techniques, Sales strategies, Inside Sales v/s Outside Sales, RFP

Unit VI: Operations Management **(1 hr)**

Operational Basics, Process Analysis, Productivity, Quality

Unit VII: Start-ups **(2 hrs)**

Start-up Basics, Terms, Start-up Financing, Start-up Incubation, Start-up Incubation, Getting Listed

Text Books:

1. The Startup Playbook: Secrets of the Fastest-Growing Startups From Their Founding Entrepreneurs by David Kidder
2. Creativity, Inc.: Overcoming the Unseen Forces That Stand in the Way of True Inspiration by Ed Catmull
3. True North by Bill George and Peter Sims
4. Bhargava, S. (2003). Transformational leadership: Value based management for Indian Organizations (Ed.). New Delhi: Response-Sage.
5. Cardullo, M. W. P. E. (1999). Technological entrepreneurism: Enterprise formation, financing, and growyh. England: Research Studies press Ltd.
6. Hisrich, R. D. & Peters, M. P. (2001). Entrepreneurship: Starting, developing, and managing a new enterprise (5th Ed.). New York: McGraw-Hill.

References:

1. Kanungo, R. N. (1998). Entrepreneurship and innovation: Models for development (Ed., Vol.2). New Delhi: Sage.
2. McClelland, D. C. (1961). Achieving society. Princeton
3. Van Nostrand. Verma, J. C., & Singh, G. (2002). Small business and industry: A handbook for entrepreneurs. New Delhi: Response-Sage.
4. Richard A Brealy & Steward C Myres. Principles of Corporate Finance, McGraw Hills, 7th Edn,2004
5. Prasanna Chandra, Financial Management: Theory and Practice, Tata McGraw Hills, 6th Edn, 2004
6. I M Pandey, Financial Management, Vikas Publishing, 9th Edn, 2004
7. Aswath Damodaran, Corporate Finance-Theory and Practice , John Wiley & Sons, 1997

8. I.M. Pandey & Ramesh Bhat, "Cases in Financial Management", Tata McGraw-Hill, New Delhi.
9. Horowitch (ED), Technology in the modern Corporation: A Strategic perspective, Pergamon Press, 1986.
10. M. Dodgson (ED), Technology and the firm: Strategies, management 7 Public Policy, Longman, Harlow, 1989

Created by Amit Janorikar

[ML-21002] Environmental Studies

(Adopted from the 'Ability Enhancement of Compulsory Courses: Environmental Studies' as prescribed by the Expert Committee of University Grants Commission as per directives of Hon'ble Supreme Court)

Teaching scheme
Lectures: 1 Session/week
Assignments: 2 hours/week

Evaluation scheme
Periodic Assignments & Tests

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

- Comprehend Sustainable Development Goals for present generation
- Appreciate environmental resources, functioning of an ecosystem, significance of biodiversity and environmental challenges
- Analyze the current status of environment with respect to precautionary mechanisms and control measures
- Appreciate the role of an engineer for better tomorrow

Unit 1 **[2 Hrs]**

Multidisciplinary nature of environmental studies
Definition, scope and importance
Need for public awareness.

Unit 2 **[8 Hrs]**

Natural Resources
Renewable and non-renewable resources:
Natural resources and associated problems .
Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. Water resources : Use and over-utilization of surface and ground water,floods, drought, conflicts over water, dams-benefits and problems. Mineral resources: Use and exploitation, environmental effects of extractingand using mineral resources, case studies. Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, waterlogging, salinity, case studies. Energy resources : Growing energy needs, renewable and non renewableenergy sources, use of alternate energy sources. Case studies. Land resources : Land as a resource, land degradation, man inducedlandslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Unit 3 **[6 Hrs]**

Ecosystems
Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids, Introduction, types, characteristic features, structure and function of the following ecosystem :-Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 4 **[8 Hrs]**

Biodiversity and its conservation

Introduction – Definition : genetic, species and ecosystem diversity, Bio geographical classification of India, Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at global, National and local levels, India as a mega-diversity nation, Hot-sports of biodiversity, Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts, Endangered and endemic species of India, Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Unit 5 **[8 Hrs]**

Environmental Pollution

Definition, Cause, effects and control measures of :-Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste Management : Causes, effects and control measures of urban andindustrial wastes, Role of an individual in prevention of pollution, Pollution case studies, Disaster management : floods, earthquake, cyclone and landslides.

Unit 6 **[7 Hrs]**

Social Issues and the Environment

From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people; its problems and concerns. Case Studies, Environmental ethics : Issues and possible solutions, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies, Wasteland reclamation, Consumerism and waste products. Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation, Public awareness.

Unit 7

[6 Hrs]

Human Population and the Environment

Population growth, variation among nations, Population explosion – Family Welfare Programme, Environment and human health, Human Rights, Value Education, HIV/AIDS, Women and Child Welfare, Role of Information Technology in Environment and human health, Case Studies.

Unit 8 **[5 Hrs]**

Field work

Visit to a local area to document environmental assets river/forest/grassland/hill/mountain Visit to a local polluted site-Urban/Rural/Industrial/Agricultural, Study of common plants, insects, birds, Study of simple ecosystems-pond, river, hill slopes, etc.

Reference Books

- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd.,Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
- Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001,
- Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
- De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- Down to Earth, Centre for Science and Environment (R)
- Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society,

Bombay (R)
- Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- Mckinney, M.L. & School, R.M. 1996. Environmental Science systems &Solutions, Web enhanced edition. 639p.
- Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- Survey of the Environment, The Hindu (M)
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)

ML-17001–CONSTITUTION OF INDIA

Teaching Scheme:-
Lectures: 1 hr/week

Evaluation Scheme-
Continuous evaluation-
Assignments/Presentations/
Test

Course Outcomes

Student will be able to understand

a. how India has come up with a Constitution which is the combination of the positive aspects of other Constitutions.
b. the interpretation of the Preamble.
c. the basics of governance of our nation.
d. the different aspects covered under the different important Articles.
e. the basic law and its interpretation. Understand the important amendments which took place and their effects.
f. our Union and State Executive better.
g. the basic that along with enjoying the rights one needs to fulfill one's duties.
h. and gain confidence on our Constitution by knowing it better.

Unit 1 **(02 hrs)**

Understanding the concept 'Rule of Law '
Meaning and history of Constitution.
Understanding the concept of Human Rights and Fundamental Rights.

Unit 2 **(03 hrs)**

Introduction to The Constitution of India, understanding its objects. Preamble to the constitution of India.

Unit 3 **(02hrs)**

Fundamental rights under Part – III, exercise of the Rights, limitations and important cases.

Unit 4 **(02hrs)**

Fundamental duties & their significance.
Relevance of Directive principles of State Policy.

Unit 5 **(02hrs)**

Legislative, Executive & Judiciary (Union and State Level)
Prerogative Writs.

Unit 6 **(02hrs)**

Constitutional Provisions for Scheduled Castes, Scheduled Tribes, & Backward classes.

Constitutional Provisions for Women & Children

Unit 7 **(02hrs)**

Emergency Provisions.

Electoral procedure in India

Amendment procedure and few important Constitutional Amendments

Text Books

- Introduction to the Constitution of India by Durga Das Basu (Students Edn.) Prentice – Hall EEE, 19th/20th Edn..
- Engineering Ethics by Charles E.Haries, Michael. S.Pritchard and Michael J.Robins Thompson Asia,.

Reference Books

- An Introduction to Constitution of India by M.V. Pylee, Vikas Publishing.

(ML-18001) INTELLECTUAL PROPERTY RIGHTS

Teaching Scheme

Lectures : 1 hr/week

Examination Scheme

Internal Evaluation 50 marks
End-Sem Exam- 50 marks

Unit 1 **(02)**

Introduction: Nature of Intellectual Property: Patents, Designs, Trademarks and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development.

Unit 2 **(02)**

International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

Unit 3 **(03)**

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

Unit 4 **(03)**

New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.

Unit 5 **(03)**

Registered and unregistered trademarks, design, concept, idea patenting.

Reference Books

- Resisting Intellectual Property by Halbert ,Taylor & Francis Ltd ,2007
- Industrial Design by Mayall, Mc Graw Hill
- Product Design by Niebel, Mc Graw Hill
- Introduction to Design by Asimov, Prentice Hall
- Intellectual Property in New Technological Age by Robert P. Merges, Peter S. Menell, Mark A. Lemley
- Intellectual Property Rights Under WTO by T. Ramappa, S. Chand.

Organizational Excellence
B.Tech
ILOE (AS- ILE14002)

Teaching Scheme- 3 Lectures per week

Examination Scheme-
3 Assignments for 60 marks
End semester of 40 marks

Objectives:

1. To enable to understand organizational behavior.
2. To strengthen the skills required in industrial/workplace settings
3. To understand organizational culture and one's own commitment.
4. To overcome stressful situations at workplace effectively with the help of psychological approach.

Course Outcomes

a. Students will have better understanding of organizational behavior.
b. Students will understand the concept of job satisfaction and commitment towards organization, and finally become productive members.
c. Students learn different leadership styles and how to work in groups effectively
d. Students learn importance of performance appraisal
e. Students will enable to manage stress in their personal life and at workplace.

Unit 1	**Introduction**	Organizational behavior. Productive behavior, your personality and style	5hrs
Unit 2	**Organizational Behavior**	Job satisfaction and organizational commitment, motivational theories and its application in organizational set up, Social corporate responsibility	8 hrs
Unit 3	**Group behavior and leadership**	Group behavior, group effectiveness, intergroup behavior and effective leadership and management principles.	7 hrs
Unit 4	**Performance appraisal**	Approaches towards work, effective performance appraisal	3 hrs
Unit 5	**Stress management at work place**	Occupational stress, workplace stressors, conflict management emotional and spiritual intelligence and strategies for stress management.	5 hrs

***** Course includes various Psychometrics tests, Psychological activities and case studies**.**

Text Books:

1. Jex Steve: - (2006) Organizational Psychology- A scientist practitioner approach. John Wiley and sons, INC
2. Narendra Singh :- (2011) Industrial Psychology. Tata McGraw Hill Edu. Pvt. Ltd.

Referece books:

1. Robbins S, JudgeA, Vohra N:- (2013)Organizational behavior.(15th ed) Pearson Education,Inc.
2. Singh Kavita:- (2010) Organizational behavior-Text and cases. Dorling Kindersley (India) pvt. Ltd.
3. Rae Andr'e :- (2008) organizational behavior. Dorling Kindersley(India) pvt. Ltd.

(ML-16005)CONSTITUTION OF INDIA

Teaching Scheme
Lectures: 1 hr/week

Examination Scheme
Internal Evaluation 50 marks
End-Sem Exam- 50 marks

Unit 1 **(02)**
Meaning and history of Constitution.
Understanding the concept of Human Rights and Fundamental Rights.

Unit 2 **(03)**
Introduction to The Constitution of India, understanding its objects. Preamble to the constitution of India. Fundamental rights under Part – III, details of Exercise of rights, prerogative writs, Limitations & Important cases.

Unit 3 **(02)**
Relevance of Directive principles of State Policy under Part – IV, Fundamental duties & their significance. Relationship between the Fundamental Rights, Directive Principles and Fundamental Duties

Unit 4 **(03)**
Union Executive – President, Prime Minister, Parliament & the Supreme Court of India.

Unit 5 **(02)**
State executive – Governors, Chief Minister, State Legislator and High Courts

Unit 6 **(02)**
Constitutional Provisions for Scheduled Castes & Tribes, Women & Children & Backward classes. Emergency Provisions.

Unit 7 **(02)**
Electoral process, Amendment procedure, 42nd, 44th, 74th, 76th, 86th and 91st Constitutional amendments.

Text Books

 Introduction to the Constitution of India by Durga Das Basu (Students Edn.) Prentice – Hall EEE, 19th/20th Edn., 2001.

 Engineering Ethics by Charles E.Haries, Michael. S.Pritchard and Michael J.Robins Thompson Asia, 2003-08-05.

Reference Books

 An Introduction to Constitution of India by M.V. Pylee, Vikas Publishing, 2002.

MLC-1503 INTELLECTUAL PROPERTY RIGHTS

Teaching Scheme

Lectures : 1 hr/week

Examination Scheme

Internal Evaluation 50 marks
End-Sem Exam- 50 marks

Unit 1 **(02)**

Introduction: Nature of Intellectual Property: Patents, Designs, Trademarks and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development.

Unit 2 **(02)**

International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

Unit 3 **(03)**

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

Unit 4 **(03)**

New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.

Unit 5 **(03)**

Registered and unregistered trademarks, design, concept, idea patenting.

Reference Books

- Resisting Intellectual Property by Halbert ,Taylor & Francis Ltd ,2007
- Industrial Design by Mayall, Mc Graw Hill
- Product Design by Niebel, Mc Graw Hill
- Introduction to Design by Asimov, Prentice Hall
- Intellectual Property in New Technological Age by Robert P. Merges, Peter S. Menell, Mark A. Lemley
- Intellectual Property Rights Under WTO by T. Ramappa, S. Chand.

Humanities Syllabus

F Y M Tech.

Teaching Scheme:

Lecture: 1.0 hour per week

Examination Scheme:

Assignment: 60 marks

Written test: 40 marks

Audit Course

Course Outcomes

a. Understand the need, basic guidelines, and content for humanities.
b. Understand the harmony in the personal and professional life.
c. Improving written communication
d. Effective oral communication

Unit 1 **(5)**

Humanities and Industrial Psychology

1. Humanities- Meaning, Scope, and impact
2. Organizational behavior- Motivation, Job satisfaction, ergonomics, CSR
3. Work-Life Balance- Stress, Work fatigue

Unit 2 **(5)**

Written Communication Skills

4. Introduction to basic Grammar-Structures
5. Email and Letter Writing
6. Report Writing and basic drafting

Unit 3 **(5)**

Oral Communication Skills

7. Communication basics
8. Presentation Skills
9. General and Group Discussion

Reference books:

10. Singh Narendar. (2011). Industrial Psychology. Tata McGraw-Hill: New Delhi.
11. Shirley Taylor. Communication for Business: A practical Approach. Longman.
12. Business Correspondence and Report Writing. R.C. Sharma & Krishna Mohan. Tata McGraw-Hill
13. Essential English Grammar- Intermediate. Raymond Murphy.

14. Communication Skills for Technical Students. T.M. Farhathullah. Orient Longman.

LIBERAL LEARNING COURSE (LLC)

LLC Music (Instrumental) LL- 18055

B. Tech. & M. Tech 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to name the parts of instruments, namely, accordion and synthesizer
2. Students will be able to understand theories of music and concept of Major Scale, Minor scale, cm Scale, and staff notation.
3. Students will be able to apply Appreggios and practice them hands-on
4. Students will be able to play some songs hands-on

Syllabus

Lecture No. 1-- Introduction of Piano Accordion. Information of key board, couplers, bellows, bass buttons, bass couplers of Accordion. Demonstration by playing few songs.

Lecture No.2-- Information of bass buttons and its applications. Arrangement of chords on bass board. Demonstration of use of bass chords while playing a song. Plying Rhythm using bass chords.Handling of Accordion by students to get the feel of the instrument.

Lecture No.3--Theory of Accoustic Piano and electronic key board. Concept of Major Scale. Major chord equation. Exercise of 12 Major chords.

Lecture No.4-- Application of Major scale. Song in CM Scale.Use of left hand chords while playing song. Simple song playing as Happy Birthday To You.

LIBERAL LEARNING COURSE (LLC)

LLC Music (Instrumental) LL- 18055

B. Tech. & M. Tech 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to name the parts of instruments, namely, accordion and synthesizer
2. Students will be able to understand theories of music and concept of Major Scale, Minor scale, cm Scale, and staff notation.
3. Students will be able to apply Appreggios and practice them hands-on
4. Students will be able to play some songs hands-on

Syllabus

Lecture No. 1-- Introduction of Piano Accordion. Information of key board, couplers, bellows, bass buttons, bass couplers of Accordion. Demonstration by playing few songs.

Lecture No.2-- Information of bass buttons and its applications. Arrangement of chords on bass board. Demonstration of use of bass chords while playing a song. Plying Rhythm using bass chords.Handling of Accordion by students to get the feel of the instrument.

Lecture No.3--Theory of Accoustic Piano and electronic key board. Concept of Major Scale. Major chord equation. Exercise of 12 Major chords.

Lecture No.4-- Application of Major scale. Song in CM Scale.Use of left hand chords while playing song. Simple song playing as Happy Birthday To You.

Lecture No.5-- Practice of playing another song as National Anthem using left hand chords.

Lecture No.6--Introduction of Rhythm playing by using left hand chords. Playing one more song in Major Scale.

Lecture No.7-- Theory of music.Various terms used in music, their definitions and applications. Demonstration of each term.

Lecture No.8--Use of Arpeggios in music playing. Demonstration of Arpeggios. Practice by students.

Lecture No.9-- Writing music.Concept of Staff Notation. Reading of staff notation.

Lecture No.10-- Introduction to Cm Scale. Equation for Minor chords. Exercise of 12 minor chords.

Lecture No.11-- Playing song in Cm Scale. Selection of a song in Cm for playing, using left hand chords. Practice for betterment.

Lecture No.12-- Practice of songs learned so far using left hand chords. Practice of their own songs by students who already know to play songs by applying left hand cords. Preparation for final exam.

LLC Music Instrumental Advanced Syllabus- by Prof. K.R. Mahajan

1. Study of 12 Major chords. Right hand and Left hand fingering while playing the chords.
2. Study of 12 minor chords. Right hand and Left hand fingering while playing the chords.
3. Chords representation in CM scale. Left hand chord representation to the Right hand note.
4. Application of Rhythm in chord playing. Study of march rhythm and waltz rhythm.
5. Song in CM Scale in march rhythm, 4/4 timing.
6. Song in Cm Scale in march rhythm, 4/4 timing.
7. Song in CM Scale in waltz rhythm, 3/4 timing.
8. Song in Cm Scale in waltz rhythm, 3/4 timing.
9. Study of Tango, Mambo, Rumba rhythms with Demonstration.
10. Application of various Piano Techniques as Double Grip,Arpeggios, Right hand chords, Clutch etc. in song playing.
11. Study of Broken Chords and its application in song. Study of 6th chords, 7th chords, suspended chords, and Diminished chords.
12. Practice and preparation of songs for final examination.

LIBERAL LEARNING COURSE (LLC)

LLC Photography LL- 18058

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/WrittenExams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. The students will be able to make use of a DLSR camera confidently.
2. The students will be able analyze and adapt to the changes in lighting conditions.
3. The students will become better in selecting the correct camera parameters while taking photographs.

Course outline:
Total 12 lectures.

Breakdown:
1. General introduction and information about course
2. History of Photography
3. Introduction to camera
4. Understanding Aperture
5. Practical on Aperture
6. Understanding Shutter-Speed
7. Practical on Shutter-Speed
8. Understanding Focal Length
9. Practical on Focal Length
10. Understanding other aspects of the camera
11. Practice
12. Addressing queries and doing some practice

LIBERAL LEARNING COURSE (LLC)

LL- 18045 (Corporate Culture)

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to define a structure of Corporate Culture to distinguish the calculations of their rights of fringe benefits along with their in-job roles.
2. Students will be able to formulate the tips to cope up the Corporate Stress and relate to the world of opportunities.
3. Students will be able to design the modern technologies offered by Google for data Management.
4. Students will be able to utilize all the hierarchies to contact to in various situations.

Syllabus

Sr. No.	Topic
Session 1	Introduction to Corporate Culture:- IJP, OJT, Planning, Execution, Innovation
Session 2	Introduction to Corporate culture continues:- Effective Management, Attritio
Session 3	Rights and Responsibilities:- Various Allowances, PF, Gratuity, Incentives, Bo

Session 4	Rights and Responsibilities continue:- Term Insurance, Accidental Insurance, Safety for females, Right to Information, Salary Account and other benefits
Session 5	Management of Corporate Stress and Effective Management of Time:- Ident Techniques of Time Management as a leader.
Session 6	Life Cycle Opportunities and Effective Leadership
Session 7	Taxation and its impact on salary calculations:- Understanding various sectio
Session 8	Corporate MIS Management:- Usage for advanced formulas of MS-Excel to investing minimal time.
Session 9	Google Utilities:- Google Forms for data collection, survey, online exams, fee
Session 10	Google Utilities continues:- Google Calendar for corporate Management of options.
Session 11	Moral Ethics and Values along with HR Policies
Session 12	Revision and session as per the requirements of participants and corporate
Exam	Online Examination of 100 marks

LIBERAL LEARNING COURSE (LLC)

LLC French LL- 18048

B. Tech. & M. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. Introducing oneself and others in French
2. Talking about oneself, one's likes and dislikes and one's hobbies
3. Introducing one's family and describing them (physical traits and personality)
4. Understanding time and numbers
5. Basic understanding of France: geography, francophone countries, heritage and icons
6. Talking about the weather

Course Outcomes (CO)

1. Students will be able to read simple French texts
2. Students will be able to introduce themselves and others
3. Students will be able to talk about their likes and dislikes and their hobbies
4. Students will be able to use affirmative, negative, and interrogative sentences
5. Students will be able to provide directions to move around in the city
6. Students will be able to talk about the basic components of French culture and society
7. Students will be able to describe the weather in French

The unit-wise lesson plan has been given in the following pages. Each unit will be completed in 1 lesson. The last lesson (lesson number 11) will be kept for revision, clearing of doubts and a sample test to be solved in class.

In addition to this, homework will be given at the end of each lesson. The students shall be required to submit the completed homework during the next lesson and marks will be reserved for attendance and homework completion.

UNIT-WISE LESSON PLAN

	Communication	Grammar	Vocabulary	Writing	Culture
Unit 1 **Se présenter, Présenter quelqu'un**	➢ Introduce oneself ; ask someone to introduce themselves	➢ Present tense of the verb ***s'appeler***	➢ Surname, name, nationality, address, town etc.	➢ The alphabet ➢ Basic sentence	➢ What is France for you? ➢ When does one use 'tu' and 'vous' ➢ Saying hello and good bye in French and using the correct gestures/actions with them.
Unit 2 **Tools for use in class**	➢ Communicating with the teacher and one's classmates	➢ Subject pronouns ➢ Simple sentences (structure)	➢ Asking the teacher to repeat ➢ Explaining that one hasn't understood etc.	➢ Writing appropriate descriptions for situations in class	➢ Etiquettes in class – dos and don'ts
Unit 3 **Parler de safamille**	➢ Talking of one's family	➢ Introduction of the verbs 'être', 'avoir', 'aimer', 'détester' and 1st category verbs	➢ Family relations ➢ Elder/ younger etc.	➢ Making one's own family tree	➢ Different relations in French families ➢ Types of families

		➢ Possessive adjectives			

<u>Unit 4</u> **Nombres :0 à 100**	➢ Using numbers for various purposes	➢ Interrogation ➢ Est-ce que vs. Qu'est-ce que ➢ Combien de ➢ Il y a	➢ STD codes, area codes, pin code, vehicle registration number, landline and mobile numbers	➢ Preparing one's visiting card	➢ Distance: Paris and other French cities ➢ Multifaceted France and its heritage
<u>Unit 5</u> **L'Heure**	➢ Time : formal and informal structures	➢ Negative sentence structures	➢ Talking about one'sschedule	➢ Writing an informal letter describing one's schedule	➢ Punctuality and its importance in French society ➢ Breaks in schedule: for chatting, going out, shopping etc.
<u>Unit 6</u> **S'orienter**	➢ Moving around in a city: asking for directions	➢ Prepositions	➢ Directions ➢ Landmarks	➢ Preparing a dialogue in pairs giving the direction to a certain place	➢ France and its neighbours ➢ Francophone countries
<u>Unit 7</u> **Se déplacer à Paris**	➢ Moving around in Paris and other towns: means of transport	➢ Prepositions and adverbs of place	➢ Types of transport ➢ Parisian transport system	➢ Dialogue describing how to go from one station to the other	➢ Reading the metro map of Paris and looking at other means of transport in the city and suburbs

<u>Unit 8</u> **Les Sports et les loisirs**	➢ Sports and other hobbies	➢ Present tense of the verbs 'faire', 'jouer' etc. ➢ Introduction to 2nd category verbs	➢ Vocabulary of different sports	➢ Writing a dialogue discussing different hobbies and activities	➢ Sports and French Society ➢ Hobbies and the French
<u>Unit 9</u> **La géographie de la France**	➢ Giving a brief description of the physical features of France	➢ Adjectives and their agreement with nouns	➢ Introducing colours ➢ Rivers, mountains etc.	➢ Writing an informal letter describing a region in France	➢ Looking at the map of France
<u>Unit 10</u> **Le Temps**	➢ Describing the weather	➢ The verb 'faire' ➢ Expressions	➢ Different weather elements ➢ Seasons ➢ Festivals	➢ Writing a paragraph about one's favorite season	➢ The weather: an important French and European preoccupation
<u>Lesson 11</u>	➢ Revision ➢ Clearing doubts ➢ Sample Test				

<u>BOOKS</u>: Extracts taken from various French as Foreign Language Course Books and Grammar books:

1) Forum 1, Méthode de Français, Hachette
2) Alter Ego A1, Méthode de Français, Hachette
3) Exercices de Grammaire Française, Didier
4) Online resources

LIBERAL LEARNING COURSE (LLC)

LLC Interior Design LL- 18063

B. Tech. & M.Tech. 2018-19

Teaching Scheme
Lecture/Demonstration/Tutorial:
1 hr/Week

Examination Scheme
Project/Presentation/Written Exams:
100 Marks

Evaluation Scheme:
Presentation: 40 Marks
Printed submission: 60 Marks

Course Education Objectives (CEO)

1. Introduction to Interior design as a field
2. Understanding case studies
3. Exposure to fundamentals of design in an interior
4. Exposure to materials and finishes
5. Design a small/fun interior project

Course Outcomes (CO)

a) Students would be introduced to a popular "design field"
b) Students would understand the fundamentals of a case study
c) Students would be able to approach a project not just from a technical but an aesthetic stand point
d) Students would be able to identify basic fundamentals and materials in an interior project
e) Students will *"Design and Present a very basic Interior Design Project "*

Session-wise Lesson-Plan

1. **Knowledge**

Class I –Introduction to interior design as a field and freeze on the Project eg Café

2. **Comprehension**

Class 2- students will discuss the basic observations that they saw at the Café and thus will be introduced to the basics of how and why a case study is done. Inferences and details will be drawn from the same and a list of basic design requirements for a café will be frozen

3. **Application**

Class 3- Revision of the frozen requirements and introduction of fundamentals of interior design in correlation with the frozen requirements
Class 4-Introduction of materials and finishes specific to the project (café)

4. **Analysis**

Class 5- Freeze the exact café dimensions and details to be designed by the students

5. **Synthesis**

Class 6- Students (group) start designing the project in the class in the faculty's presence
Class 7- Students (group) continue designing the project in the class in the faculty's presence
Class 8- Students (group) continue designing the project in the class in the faculty's presence
Class 9- Students (group) continue designing the project in the class in the faculty's presence
Class IO- Students (group) finish designing the project in the class in the faculty's presence

6. **Evaluation**

Class I I- Students (group) present the design
Class 12- students will submit the design in a printed portfolio format

College of Engineering, Pune
Applied Science Department
LL-18053
Japanese Language
2021-2022

Teaching Scheme	Evaluation Scheme
2 Credits	**Total Marks : 100 Marks**
Lectures : 60 Minutes / week	**Test 1 : 20 Marks**
	Assignment : 20 Marks
	End Sem Exam : 60 Marks

Course Outcomes (CO)

a) Students would know the basic information of Japan

b) Students would be familiar with the pronunciation, Accent, Intonation and Japanese writing System Hiragana, Katakana and Kanji

c) Students would be able to speak daily greetings

d) Students would be able to count the numerals

e) Students would be able to introduce themselves, Family members

f) Students would be able to form basic questions

g) Students would be able to understand Colors, Years, Months and Days, Time expressions, Directions to read the city map

h) Students would be able to learn Engineering Terminology and Japanese work culture Such as Monozukuri, 5S, Kaizen, 3M, 5W1H etc.

Unit 1 : Introduction to Japanese Language (Nihongo)

1.1 Recognizeze Japanese Characters Hiragana. Can read /write Hiragana script.

1.2 Use basic classroom expressions.

1.3 Exchange greetings Can thank someone or apologize someone.

Unit 2: Japanese Syllabary

2.1 Recognize Japanese Character Katakana Can read /write Katakana script.

2.2 Can ask someone to say something again if you don't really understand.

Unit 3 : About Me

3.1 Give simple self introduction Can ask and answer where you live and your age.

3.2 Can write your name, nationality, date of birth and occupation in Japanese.

3.3 Recognizeze the parts of a business card

3.4 Talk someone briefly about your family using a family photo and answer simple questions such as who is that? Number of family members.

Unit 4: Food

4.1 Talk about your favorite foods you like and dislike. Talk about your breakfast.

4.2 Can respond when offered a drink. For example saying what you want to drink.

4.3 Can look at menu in a fast food restaurant and understand what is available.

4.4 Can look at different restaurants' signboards and understand what each place is.

Unit 5 : Home

5.1 Say what kind of house you live in. Say what you have in your home.

5.2 Write an e mail inviting someone to your home. Visit/ Welcome a friend.

5.3 Ask /say where to put things in the room. Can read the buttons on an electric appliance.

5.4 Can listen to a simple explanation when being shown around a room and understand the layout.

5.5 Recognize the name and address on signs.

Unit 6: Daily life

6.1 Talk about your daily routine. Say the time you do something. .

6.2 Talk about your schedule at work for the week.

6.3 Can listen to short and simple instructions at work and understand what to do.

6.4 Can read a simple, handwritten note at work and understand the instructions.

6.5 Can ask someone to lend you something at work.

Unit 7: Holidays and Days off 1

7.1 Can give a simple answer when asked about your hobbies & favorite things to do.

7.2 Talk about what you do on your days off.

7.3 Can read an event poster and find the important information such as the date,time and place.

7.4 Can ask and answer questions about whether you are going to an event etc.

7.5 Can say when you are available, when you are inviting someone to something or being invited.

Unit 8: Towns

8.1 Recognize station and Taxi signs.

8.2 How to get to particular destination using a map.

8.3 Can say how you go to work and how long it takes.

8.4 Describe places in town and location.

8.5 Can look at common signs in a station and understand what they mean.

Unit 9: Shopping

9.1 Talk about what you want to buy.

9.2 Can ask staff in a shopping center etc. Where to go for a certain item and understand the answer.

9.3 Can look at discount signs and read the prices.

9.4 Make a brief comment on things in a shop.

Unit 10 : Holidays and Days off 2

10.1 Can read a short blog / simple e mail

10.2 Can talk in simple terms about impressions of the holiday/trip.

10.3 Can write a simple post for social media etc. About what you did in holiday.

Unit 11 : Business Japanese

11.1 Business Email terminologies

11.2 Kaizen, 5'S, 3'M and 5W1H

Unit 12 : Engineering Terminologies in Japanese

12.1 Useful work terminologies used necessary for Japanese Companies.

12.2 Horenso, Monozukuri

References :

Marugoto A1 Katsudo Starter Coursebook for Communicative Language Activities.
Marugoto A1 Rikai Starter Coursebook for Communicative Language Competences
The Japan Foundation

Teaching & Assessment Scheme

Teaching Scheme	**Lectures : 2 Hours/week**	**Marks**
Theory based Test on Moodle	Test 1	20
Assignment based on Japanese work culture	Test 2	20
Theory based on entire syllabus	End Semester Exam	60
Total Marks		100

LIBERAL LEARNING COURSE (LLC)

LLC Painting LL- 18065

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Objectives

1- Introduction of different patterns : landscape, portrait, abstract etc.

2- Introduction of different mediums : water , acrylic, poster, pencil.

3- Introduction of different styles and textures

4- Study of perspective and composition in Paintings

5- Introduction for expression through Painting .

Course Outcomes :

1- Students will be aware of Demonstration of different mediums and illustrations.

2- Students would relate logically and technically with their inner creativity and think accordingly.

3- Tell yourself to think out of the box and express through Art.

4- Influence of Society and Surroundings will seen in their artwork.

5- Purpose :-This art will act as stress reliever from their routine, hectic schedule and will help them concentrate to achieve their main goal.

LLC Painting Syllabus

1- Introduction to the art (painting.) Depiction of emotions, thoughts, ideas through the medium of paintings.

2- Sketching demonstration and it's techniques

3- Demonstration of colour application- various mediums (water,poster, acrylic,pencil etc) it's properties and tools needed for painting.

4- Light and Shade - The major role of light and Shade in Paintings. Balance of colour during keeping in mind the light and Shade.

5- Perspective drawing and proportion - distance and colour perspective

6- Composition of forms,shapes, figures in a painting keeping in mind it's correct proportion.

7- Demonstration of Landscape

8- Demonstration of Abstract / Portrait

9- Various styles of paintings and how to read a painting.

10- Submission and suggestions on students work.

11- Discussion will be conducted and will give suggestions to students regarding their current work and for future progress and prospects.

Marks distribution

Final exm---20

- submission s 20/20/20

Attendance- 10

Interest towards Subject and Development - 10

Total --100

LIBERAL LEARNING COURSE (LLC)

LLC Political Science LL- 18015

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

1. Introduction to the Constitution of India
2. Basic Structure of Indian Government
3. Election Commission in India
4. Party System in India

Course Outcomes (CO)

a) Students would be able to understand the basic features of Indian Constitution of India.
b) Students would be able to analyze the meaning of equality with reference of India.
c) Students would be able to compare between Socialism & Communism.
d) Students would be able to identify Fundamental Rights of the citizen.
e) Students would be able to know the importance and need of Federal structure of India
f) Students would be able to differentiate between Parliamentary and Presidential system.
g) Students would be able to recognize the basic features of Federal structure.
h) Students would be able to know the concept of Socialism, Communism & Industrial revolution.
i) Students would be able to assess Party system in India. And they would also understand the changes in Party System of India.
j) Students would be able to appreciate or comprehend an Election Commission of India.
k) Students would be able to discuss on the issue of Simultaneous elections.

Syllabus

Class 1-Basics of Indian Constitution --- Liberty, Equality, Justice, Sovereign, democratic, Republican,
Class 2- Socialism, Communism

Class 3- Fundamental Rights,
Class 4- Directive Principles
Class 5- Parliamentary & Presidential system,
Class 6- Federal System
Class 7- - Election Commission
Class 8- Adult Franchise, Majority Vote System, Simultaneous elections
Class 9 - Political party. Party system.
Class 10 - Indian Party System.
Class 11- Indian Democracy. Diversity and democracy in India
Class 12 - Challenges to Indian Democracy and solutions.
Class 13- End of Semester- Written test- Two hours - 60 marks- Tentative Date – 15 Nov

LIBERAL LEARNING COURSE (LLC)

LLC Dance LL- 18062

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course objectives

Dance LLC course syllabus is subject to the interest area of the present group of students. There are 5 different ways to explore information and develop skills in given timeframe. Apart from enjoyment and exercise, dance has benefits for health and personality. all this will be taken in account while designing the course.

Following are the five streams in which the objectives can be achieved.

- Practical performance based on basic Kathak dance skills.
  We develop good body posture, balancing skills, eye focus and graceful body movements.
- Knowledge of related concepts.
  E.g. Types of dances, musical instruments, Rhythm etc.
- Watching and reviewing a live dance performance.
- Creating a performance
- Developing technical support for dance and music with electronic instruments and apps.

Course outcomes

By the end of term 1 of academic year 2018-2019, dance LLC students should be able to remember a structured dance sequence. Demonstrate it in a group and individually. Relate it with different concepts from contemporary times.

Students will watch a live performance and evaluate its presentation. They will apply the information to design their own performance at the end of the semester. They will improve their performance for the final assessment according to the suggestions by their batch mates and teacher.

These outcomes focus on team efforts, developing muscle memory and think in relation with contemporary time.

Detailed Syllabus description

- Introduction to origin and development of different types of dances and improvisational activity
- Dance of palms.
- Basic introduction to Kathak, practical training of the same.
- Basic introduction toBharatanatyam, practical training of the same.
- Basic introduction to contemporary dance, practical training of the same.
- Basic introduction to folk dances, practical training of the same.
- Basic introduction and practical of any dance style of student's choice.
- Solo presentation
- Duet or trio presentation
- Group dance presentation
- Innovative concept presentation
- Theory exam
- Practical exam

Dance is all about energy, innovation and expressions. So every session will have creative activities that will provoke students to experiment with concepts movements. If students wish explore more in one particular style like Kathak or Bharatanatyam, this approach is also appreciated in LLC classes. And accordingly plan is made. Some of the students have taken LLC for second time. Their level of intricacy will be higher than that of first timers.

Prof. Sonal Pendse

Mob. No. 9689615339

LIBERAL LEARNING COURSE (LLC)

LLC Holistic Health LL- 18051

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial: 1 hr/Week	Project/Presentation/Written Exams: 100 Marks

Course Outcomes

1. At the end of the semester students will know what it takes to experience Complete Health at any given point
2. They will understand importance of the Emotional Status of an individual in development of any disease as well as in the process of recovery
3. They will be able to apply the knowledge gathered during the course for their well being

Syllabus

1. Holistic Health Perspective
2. Diet
3. Exercise
4. Sleep as a healer
5. Bodies, Chakras, Elements
6. MBM concept
7. Alternative Therapies
8. Three main streams of medicine in India
9. First Aid, Home Remedies
10. One ailment... Different Approach
11. Lifestyle management
12. Stress... What does it mean?

LIBERAL LEARNING COURSE (LLC)

LLC Modern Computerized Film Making LL-18054

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Lecture No	***Syllabus/Topics to be covered***
1	• Films as a mode of entertainment for people and 4th dimension of human life nowadays . • Impact and Reach of Films • Introduction to Filmindustry (India and Worldwide) • Introduction to Sub verticals of the Industry : AVGC verticals : Animation, Visual Effects, Gaming and Comics . • Industry projections, Demos on sub verticals with particular reference to PFW work in stereo conversion, visual effects (DN) and Digital Intermediate work for Bollywood **(to carry 30 paper anaglyphs)**
2	• Basic introduction to how the Film Industry Evolved, History of Films in India . Evolution of Marathi films and other regions, Hindi films and American Cinema . Notable people in the industry . • Its inception in India, First Film's, Camera Technology Then and Now, etc (Meaning of 16 mm, 35 mm , 70 mm , perforations)and DCP format and the future. • Brief on Film / digital shooting . Advantages and Disadvantages
3	• Video as a medium of communication. • The changing nature of video production, • Stages and types of production, Functional and practical factors of production, Production planning, Technical and aesthetic elements of video production • 5Cs of Cinematography . Visual arts (Rule of 1/3, 180 deg rule etc)
4	• Making budget for feature film and television serials, making story board for shot selection and division, scheduling process and practical problems. • Coordination process among crew members for functioning of video production, Short Film Production Process. • ***Exercise for Students*** :**Study of Opening and Closing credits of a films which you have seen . Identify different people and write your own interpretation of job roles .**
5	• Basic of Shots and their Composition, • Types of Camera and their Features, Specific Use of Various Types of Camera, Working Principle of a Video Camera. Various Camera Movements and Angles • Types of Cuts and transitions.
6	• Sound in the video production, basic principles of acoustics and types of sound, • dB scale and physics and typical sound levels . • Microphone characteristics, Camera mounted microphones, external microphones, standardized recording procedures, monitoring sound. • Equalizing and filtering to improve sound quality, constructing the audio

	portion of the sound. • enhanncing sound Quality by removing noise , folley recording ,lip synchro
7	• Animation types and 12 principles of animation • Production line for 2d and 3D animation • Other types of Animation (Demos through Videos) • History of animation films (Japnese Vs. American)
8	• Photoshop –I • What we can do with photoshop • Layer based vs node based • Illustration of commands
9	• Photoshop –II • Demo on clean plate and compositing • Extraction of images from a video in VLC . • VFx as an essential tool . Typical Before and after VFx and Vfx breakdown . • Softwares used in the industry for visual effects, sample demonstrations of Vfx breakdown of selected shots from recent films. (
10	• **RECENT TRENDS :-**Web Series, Short Films. • The Digital Domain to showcase Film Making Talent and earning money thru you tube . • Walter Murch principles on video editing
11	• Gaming 2D and 3d pipeline . • Computer science / IT for Media and Entertainment Industry. • Film Promotion and Mktg in India . What are the problems and how do we overcome it . Regional films problems of getting screen . • Clarification of doubts , What we do at PFAMES . distribution of brochures and course details.

LIBERAL LEARNING COURSE (LLC)

Agriculture (LL-18042)

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to define basic problems/ constrains in agriculture.
2. Students will be able to interpret and summarize the various technology in agriculture with the help acquired knowledge.
3. Students will be able to solve the problems by developing new models and techniques .
4. Students will be able to conclude merits and demerits of old and new technologies in agriculture and suggest solutions or recommendations for improvement in agriculture so as to improve the yield and farmers income,.

SYLLABUS

1) RECENT ADVANCES IN AGRICULTURE.

2) 2) ORGANIC FARMING ; PRINCIPLES,GOOD AGRICULTURE PRACTICES .SCOPE AND IMPORTANCE ,LIMITATIONS .

3) 3) SUSTAINABLE AGRICULTUREAND ITS ROLE IN IMPROVING YIELD AND FARMERS INCOME

4) 4)PLANT NUTRITATION ;ESSANTIAL ELEMENTS FOR NORMAL GROWTH AND DEVELOPMENT,MACRO AND MICRO ELEMENTS,THER ROLES/FUNCTIONS ,DEFICIENCY SYMPTOMS

5) BIOFERTILIZERS ,TYPES ,SCOPE AND IMPORTANCE

6) TISSUE CULTURE TECHNIQUE

7) GREEN HOUSE TECHNOLOGY

8) CLIMATE CHANGE AND ITS IMPACT ON AGRICULTURE

9) ADVANCED METHODS OF IRRIGATION ;DRIP SPINKLERS MICROTUBES USE OF MOISTURE SENSORS ,FERTIGATION AND FOLIAR NUTRITION

10) TECHINIQUES OF SOIL IMPROVEMENT

11) CULTIVATION OF MEDICINAL PLANTS;AGROTECHNIQUES ,HARVESTING PROCESSING AND MARKETING

12) PROCESSING ,TECHINQUES

13) POST HARVEST TECHNOLOGY, STORAGE LIFE /SHELF LIFE.

14) VALUE ADDITION

15) ROLE OF BIOTECHNOLOGY IN AGRICULTURE ,GENITICALLY MODIFIED ORGANISIMS(GMOs)

16) ROLE OF NANOTECHNOLOGY IN AGRICULTURE.

17) USE OF ROBOTICS, A I., COMPUTERS AND DRONE TECHNOLOGY IN AGRICULTURE .

LIBERAL LEARNING COURSE (LLC)

Business (LL-18024)

B. Tech. 2021-22

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

At the end of the course, student will be able to

1. discover, develop, and assess different types of Entrepreneurial ventures and opportunities
2. learn about opportunity and risk analysis
3. use the strategies for valuing your own company, and how venture capitalist and angel investors use valuations in negotiating milestones, influence and control
4. pick correct marketing mix and how to position the company in the market by using analytical tools
5. learn how to sell themselves and the product/service and to handle objections
6. know how organizations operates, their process matrices, start new ventures, write business plans

SYLLABUS

Unit I: Market Research **(1 hr)**

Introduction to Entrepreneurship, Profile of the Entrepreneur, Market Gap / Opportunity Analysis, Market Research Methods, Defining the Focal Market: Market Segmentation, Industry analyzing – Research / Competitive Analysis

Unit II: Types of Companies and Organizations **(1hr)**

Company/ Organization Types, Legal Aspects, Taxation, Government Liaison, Building the

Team, Mergers and Acquisitions

Unit III: Business Finance (2hrs)

Shares and Stakes, Valuation, Finance Creation (Investors / Financers), Revenue Plans and Projections, Financial Ratios, Business Lifecycle, Break Even

Unit IV: Marketing & Digital Marketing (2hrs)

Marketing Basics, Marketing Strategy and Brand Positioning, Plans and Execution Techniques, Marketing Analytics, Online Marketing

Unit V: Sales (2hrs)

Understanding Sales, Pitching Techniques, Sales strategies, Inside Sales v/s Outside Sales, RFP

Unit VI: Operations Management (1hr)

Operational Basics, Process Analysis, Productivity, Quality

Unit VII: Start-ups (2hrs)

Start-up Basics, Terms, Start-up Financing, Start-up Incubation, Start-upIncubation, Getting Listed

LIBERAL LEARNING COURSE (LLC)

Clay Art & Pottery (LL-18061)

B. Tech. & M.Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to increase their ability to focus while they learn centering the clay on wheel
2. Students will be able to adapt to a new material and translate their thoughts to clay as a medium of expression
3. Students will be able to value art through their own creation
4. Students will be able to create objects literally by using their hands as tools

SYLLABUS

1. Understanding terms important in Clay art and Potter
2. Learning basics of hand built pottery using pinching, coiling and slab
3. understanding how to use the potters wheel and construct a variety of vessels such as cylinders, bowls, and cups
4. Introduction to glazing and other decorating techniques to complete successful designs in clay
5. study examples of ceramic works and will gain an understanding of the tools and vocabulary used in the ceramic arts

LIBERAL LEARNING COURSE (LLC)

DEFENCE (LL-18047)

M. Tech & B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. Introduce the basics of non-engineering disciplines in engineering
2. Understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. Learn and apply basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

The course will enable students to get a detailed understanding of the following in the context of the Armed Forces of India :-

1. Macro organisations and hierarchy of the Indian Armed Forces as obtained in the public domain
2. Operational environment relating to border management.
3. Historical perspective and sequential conduct of major wars fought by India and their historic and strategic implications.
4. Equipment profile of the Indian Armed Forces to include the Army, Navy and Airforce.
5. Detailed operational analysis of chosen anti-terrorist operations and connected legal implications

SYLLABUS :- The following subjects will be covered as lecture-presentations and discussions :-

Ser No	Subject
1	The Indian Armed Forces : An Introduction
2	Fighting Arms,Support Services And Major Weapon Systems
3	Rank Structure And Man-Management in the Armed Forces
4	Border Deployment and Border Management
5	Armed Forces Special Powers Act (AFSPA)
6	1948 Indo-Pak War
7	Indian Navy
8	Mumbai Terrorist Attack 2008
9	Indian Airforce
10	Pathankot Terrorist Attack 2016

Ser No	Subject
1 1	1962 India-China War
12	1965 Indo-Pak War
13	1971 Liberation of Bangla Desh
14	1999 Kargil War
15	India-China Doklam Standoff
18	Surgical Strike in Pakistan
19	Central Police Forces and Organisations

LIBERAL LEARNING COURSE (LLC)

Geography (LL-18049)

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to define earth landforms.
2. Student will be able to explain the physical features of India.
3. Student will be able to identify places and develops an understanding of the importance of places to people.
4. Student will be Identifying, interpreting and analyzing geographic problems and processes.

SYLLABUS

Sr.No	Topics	Contents
1	**Fundamentals of Geography**	➢ Latitudes ➢ Longitudes ➢ Seasons on Earth ➢ Time-zones
2	**Introduction of Physical Geography**	➢ Continental drift ➢ Sea-floor spreading ➢ Plate tectonic theory

3	**India**	➢ Physical features in India ➢ urbanization process in India
4	**Disaster Management**	Introduction on Disaster Different Types of Disaster : ➢ Natural Disaster ➢ Manmade Disaster
5	**Geographical Information System (GIS)**	Introduction to GIS ➢ Basic concepts: Definition and history, Components of GIS, ➢ Recent trends and applications of GIS;

LIBERAL LEARNING COURSE (LLC)

Music Vocal (LL-18056)

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1.
2.

SYLLABUS

LIBERAL LEARNING COURSE (LLC)

Music Vocal (LL-18056)

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to develop aesthetic sense towards wood and metallic materials
2. Students will be able to make small, useful and beautiful models from wood and metallic materials

SYLLABUS

Syllabus for Wood and Metal Art

Unit 1 Wood Art:

1. Different types of wood

2. Cutting and Carving instruments

3. Joining methods of wood with wood, glass, Plastics and metals

4. Small wood arts

5. Small furniture items

Unit 2- Metal Arts:

1. Different Types of Metals and Alloys

2. Cutting instruments for metallic articles

3. Joining methods for metallic articles.

4. Small metallic articles: examples.

5. Casting and other shaping methods of metals and alloys

LIBERAL LEARNING COURSE (LLC)

Wood and Metal Art

B. Tech. 2018-19

Teaching Scheme	**Examination Scheme**
Lecture/Demonstration/Tutorial:	Project/Presentation/Written Exams:
1 hr/Week	100 Marks

Course Education Objectives (CEO)

1. To introduce the basics of non-engineering disciplines in engineering
2. To understand the functionality of non-engineering disciplines and appreciate their scope in the 21st century
3. To learn and apply the basics of non-engineering disciplines with a collaborative inter-disciplinary approach at work and elsewhere

Course Outcomes (CO)

1. Students will be able to develop aesthetic sense towards wood and metallic materials
2. Students will be able to make small, useful and beautiful models from wood and metallic materials

SYLLABUS

Syllabus for Wood and Metal Art

Unit 1 Wood Art:

1. Different types of wood

2. Cutting and Carving instruments

3. Joining methods of wood with wood, glass, Plastics and metals

4. Small wood arts

5. Small furniture items

Unit 2- Metal Arts:

1. Different Types of Metals and Alloys

2. Cutting instruments for metallic articles

3. Joining methods for metallic articles.

4. Small metallic articles: examples.

5. Casting and other shaping methods of metals and alloys