KUMARAGURU
college of technology
character is life

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

KCT's Unique CBCS Framework

KCT's Unique CBCS Framework

KCT's Unique CBCS Framework

WHY FCLF?

Kumaraguru Collegeof Technology (KCT) envisions to nurture knowledge, skills, attitude and valuesof the aspiring youth to enable them to become global citizens. To enable this vision, KCT is introducing a unique ChoiceBasedCreditSystem(CBCS)frameworkcalledtheFlexibleandComprehensiveLearning Framework (FCLF), in linewith University Grants Commission's guidelineson CBCS.

WHAT DOES FCLF OFFER?

- Freedom to choosea setofcourses that interest you
- Eachsemester, ideally, youhaveto take one course(in Semester 5&6)
- However,ifyouhavearrearsinopenelectives,thenkeepinmindthatyouhavetodoatotalof 6 credits toearnyourengineeringdegreeandyoumayhavetodomorethan1coursepersemester.
- Each courseisof 3 credits(total 6 credits); Instruction is for45hours
- Courses are offered in four baskets – SET, ML, HSF,CESD
- You can choose any three courses based onyourinterests

Basket	Description
SET	Science, Engineering and Technology
ML	Management & Leadership
HSF	Humanities,SocialSciences&FineArts
CESD	Career Enhancement & Skill

- Different courses willbeevaluateddifferently, i.e. ranging fromin-classactivities, assignments, writtentests,openbooktests,outdooractivities,projectsetc.

- The Faculty member offering a course under open elective has the autonomy to opt for his/ her own pattern of assessment or could choose one of the following patterns for evaluation/assessment.

Pattern I	**Two Assessment Component (Each Carries 50 Marks)**
Pattern II	**Regular Pattern (Internal Test I- 15 Marks, Internal Test II- 15 Marks, Assessment - 20 Marks, End Semester - 50 Marks)**
Pattern III	**Five Assessment Component (Each Carries 20 Marks)**

While choosing, consider the following factors:

- Career interests – courses that will enhance yourcareer
- Assessment methodologies as stated in the coursedocument
- Expertise of the faculty who is taking the course
- Timeslotinwhichcourseisofferedandissuitable foryou.Forstudentstaking2open electivesina semester, see that your time slots do notoverlap.

Be an early bird!

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Science, Engineering & Technology

FACULTY PROFILE

Faculty Name
Dr.G.L.SATHYAMOORTHY
PROFESSOR

Department
Civil Engineering

Institution
KCT

Faculty profile link

SUSTAINABLE TECHNOLOGIES AND CIRCULAR ECONOMY

(This course is offered by Department of CIVIL)

L	T	P	C
3	0	0	3

Description

This course provides an overview of Sustainable Development and address the fusion of technology and its interconnection with the three pillars (Environment, Society and Economy) of sustainability.

Objectives

- To impart knowledge on sustainable technology and create an awareness on the Sustainable Development Goals
- To give an exposure to different Sustainability Assessment Methods
- To motivate for the development of eco-friendlydesign/products.

Expected Outcomes:

- At the end of the course the students will be able
- Recognize the importance of sustainability
- Analyze a problem from the sustainability perspective
- Apply sustainable design approaches in decision making

Expected Audience

The course is aimed to focus on all branches of students particularly who are interested to develop eco-friendly, sustainable products for the benefit of community

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

1. Classroom Teaching
2. Demonstration videos
3. Expert talk on eco-friendly design and development
4. Mini -projects design and development

Modules covered	Title	Hours
Module / Unit -1	Introduction to sustainability - Human well-being and sustainability -Substitutability - Reasons for un-sustainability- Tragedy of the Commons- Sustainable Development Goals(SDGs) and its Importance - Implementation of SDGs opportunities and challenges –Case studies	15
Module / Unit -2	Sustainability Assessment Methods - Important factors in sustainability assessment - Ecological Foot Prints(EFP) as an Indicator of Sustainability- Life cycle Assessment(LCA) - Life Cycle Impact Assessment(LCIA)- LCA Framework - LCA application-Case Studies	15
Module / Unit -3	Introduction to Green principles-Application of green principles for possible sustainable innovations- Bio mimicry for sustainable product developments Interconnection between sustainable technology and Climate Change Government policies and Implementations- Case studies – Circular Economy Model of circular economy- Circular economy stakeholders and their needs Benefits of circular economy.	15

Text books

1. Bhavik R. Bakshi(2016) –Sustainable Engineering: Principles and Practice
2. David T. Allen, David R. Shonnard (2012) Sustainable Engineering: Concepts, Design and Case Studies
3. Matthews, Hendrickson, Matthews (2014)–LCA textbook (lcatextbook.com)

Reference books and Online

1. MartinAbraham(2017)Encyclopedia of Sustainable Technologies
2. Sikdar, Subhas K., Sengupta, Debalina, Mukherjee, Rajib(2017) Measuring Progress Towards Sustainability
3. Heriberto Cabezas, Urmila Diwekar (2012) Sustainability: Multi-Disciplinary Perspectives
4. Joanne Kauffman Kun-Mo Lee(2013)Handbook of Sustainable Engineering
5. Martin A. Abraham (2005) Sustainability Science and Engineering (Defining Principles)
6. https://sustainabledevelopment.un.org/
7. http://www.footprintcalculator.org
8. The Biomimicry Institute: http://biomimicry.org/
9. Ask Nature: http://www.asknature.org/
10. https://www.facebook.com/SustainableEngineeringPrinciples/CL665 - Sustainable Engineering Principles

Pattern 3 Five Assessment Component (Each carries 20 Marks)

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
Dr. MOHANRAJ M

Department
EEE

Institution
KCT

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Faculty profile link

ELECTRICAL WIRING, ESTIMATION &COSTING

(This course is offered by Department of Electrical and Electronics Engineering)

L	T	P	C
3	0	0	3

Description

This course is intended to motivate undergraduate students to understand the problems in house hold wiring and plan the tentative expenses estimation in the field of electrification. This will be basic understanding to plan for commercial wiring later in their life when returns to be an entrepreneur. Students will be trained to the latest development in the wiring field and estimating their requirements and budgeting.

Objectives

- To impart Science & Technological aspects of electrical utility.
- To motivate students to learn basics of wiring.
- To know the expenses and work process.
- To develop entrepreneurship skills.

Expected Outcomes

- Students will know Fundamentals of electricity
- Students will learn how to design & layout wiring for Residential electrical systems
- Students will be able to know the placing of Switches, receptacles and Fixtures
- Students will relate creative thinking and innovation in their utility area.

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to apply engineering in domestic utility
- Students with entrepreneurship interests

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching.
- Demonstration videos/ Site Visit
- Showcase of prototypes by students
- Hands on training
- Case study analysis (Estimation & Costing-Tutorials)

Modules covered	Title	Hours
Module / Unit -1	Conventional symbols for various wiring items, accessories etc - Service connection, Distributors- Power rating of some important house hold electrical appliances – selection of Fuses.	15
Module / Unit -2	Wiring systems - Types of wiring - points to be considered for selection of wiring - comparison - Looping back system and Jointbox system and tree system - Position of switches, cutouts, main switch board, sub-distribution boards. Considerations for selecting wire size - size of conductors/cable used for Domestic installation	15
Module / Unit -3	Case study analysis: Conditions and Requirements for Domestic, Commercial and Industrial Installation - steps to be followed in preparing electrical estimate. **Estimate the quantity of material required for** (1) Residential single bed room Flat (1BHK). (2) Industrial power wiring having 4 or 5 machines.	15

Text books

1. Electrical Wiring, Estimating And Costing ,S.L. Uppal & G.C. Garg, Khanna Publishers,6th edition,2016, New Delhi.
2. Electrical Design Estimating and Costing,K.B.Raina&S.K.Bhattacharya, New age international (P) Ltd,Reprint, 2005,New Delhi.

Reference books and Online

1. Electric Wiring, S. Samaddar , New Central Book Agency, 7th edition, 2012.
2. Modern Wiring Practice: Design and Installation, W E Steward & T A Stubbs , Taylor & Francis, Italy, 14th edition, 2010.
3. A Course in Electrical Installation Estimating and Costing, J.B. Gupta, S.K. Kataria& Sons, 9th *edition,* 2013.

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

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FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
VENKATESAN R

Department
Mechatronics Engineering

Institution
KCT

Faculty Profile Link

LOW COST AUTOMATON

(This Course is offered by Department of Mechatronics Engineering)

L	T	P	C
3	0	0	3

Description

This course is intended to familiarize the undergraduate students with major aspects of low cost automation which has wide spread applications in industries such as automated assembly lines, material handling and packaging.

Objectives

- To provide basic knowledge to implement low cost Automation in various industries
- To study the pneumatics devices and circuits and itsapplications
- To understand the Hydraulic devices and circuits
- To configure the Automation assembly lines used in industries
- To know the Applications in material handling and packagingindustries

Expected Outcomes

- Apply basic knowledge of low cost automation in industrialapplications
- Design Pneumatic circuits by selecting appropriate pneumatics control valves and actuators
- Design Hydraulics circuits by selecting appropriate control valves and actuators
- Able to construct automated assembly lines and material handling for industries

Expected Audience

Those who are interested in taking project in Automation Interested in pursuing higher studies in Industrial automation and Robotics Interested to do startup companies in Automation and material handling

Teaching methodology

- Classroom teaching
- Simulations and videos
- Guest lectures by industrial experts
- Visit to Automation Lab
- Demo of Industrial Automation applications
- Case Studies from nearby industries
- Group Presentations

Modules covered	Title	Hours
Module / Unit -1	INTRODUCTION TO AUTOMATION : Automated manufacturing systems, fixed /programmable /flexible automation, Need of automation, Basic elements of automated systems- power, program and control. Levels of automation; control systems: Continuous and discrete control; Low cost automation, Economic and social aspects of automation.	05
Module / Unit -2	BASICS OF PNEUMATICS AND CIRCUIT DESIGN: Operational principles and application, air compressors, Pneumatic cylinders and air motors, Pneumatic valves, Design of pneumatic circuits: speed control, reciprocating, synchronization and sequencing circuits. Hydro-pneumatic, Electro pneumatic Control in pneumatic systems.	12
Module / Unit -3	BASICS OF HYDRAULICS AND CIRCUIT DESIGN : Principles of hydraulics, Hydraulic fluids, Filtration technology, Hydraulic- pumps, valves, and actuators. Standards in circuit diagram representation, Power pack design layout, Basic hydraulic circuits.	12
Module/ Unit -4	ASSEMBLY AUTOMATION : Types and configurations, Parts delivery at workstations-Various vibratory and non-vibratory devices for feeding, hopper feeders, rotary disc feeder, centrifugal and orientation, Product design for automated assembly.	8
Module/ Unit -5	APPLICATIONS AND CASE STUDIES: Material handling- sorting- door opening- labelling Alignment method examples-Direction change-Automatic Screw Fastening- locking and clamping devices.	8

Text books

1. Anthony Esposito, "Fluid Power with applications", Prentice Hall international, 2014.
2. Mikell P Groover, "Automation, Production System and Computer Integrated Manufacturing", Prentice Hall

Publications, 2016.

Reference books and Online

1. Kuo.B.C, "Automatic control systems", Prentice Hall India, New Delhi, 2007.
2. James A Sullivan, "Fluid power Theory and Applications", 4th edition, C.H.I.P.S, 2007.
3. Mujumdar.S.R, "Pneumatic System", Tata McGraw Hill 2009.
4. E.G. Phillips, "Pneumatic conveying", 2017.
5. http://www.misumi-techcentral.com/tt/en/lca/

Grading Policy

Pattern I
Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
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MCE

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Faculty profile link

AUTOMATION IN AGRICULTURE

(This course is offered by Department of Mechatronics)

L	T	P	C
3	0	0	3

Description

The complex agricultural environment combined with intensive production requires development of automated robust systems with short development time at low cost. The unstructured nature of the external environment increases chances wastages of resources and time. Therefore, inherent safety and reliability is an important feature. This syllabus will give an insight to agricultural automation systems including field machinery, geographical information system about water resources, irrigation systems, and automation in crop production systems.

Objectives

- To understand the basics of automation in agriculture.
- To understand the concepts of Precision agricultural systems and trends
- To understand importance of automation in Irrigation systems
- To understand the various Automation Practices in agriculture through case studies.

Expected Outcomes

- Describe various automation methodology adopted in agriculture
- Illustrate different types of irrigation systems.
- Apply the automatic systems to enrich the agricultural process.
- Visit to agricultural university lab and exposed to R&D projects

Expected Audience

The course will primarily benefit students with interests as below:

- Those who are interested in agriculture.
- Students aspire to develop innovative automatic agricultural equipments.

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching.
- Demonstration videos.
- Guest lectures by agri product industrial experts.
- Agricultural university visit.
- Farm equipment industry visit.

Modules covered	Title	Hours
Module / Unit -1	**AUTOMATION IN AGRICULTURE** Introduction to automation- Robot farming system –wheel type robot tractor, crawler type robot tractor, rice planting robot, robot combine harvester – sensing crop status.	10
Module / Unit -2	**PRECISION AGRICULTURAL SYSTEMS** Soil sensors- crop sensors – yield monitors –remote sensing- airborne multispectral and hyper spectral imaging-satellite imaging system-Principle – applications	10
Module / Unit -3	**IRRIGATION SYSTEMS** Introduction –Types of irrigation system GIS in irrigation -Planning and design – rain fall monitoring- drought monitoring- automated controller based irrigation system-IOT based irrigation system- case study evaluation of irrigation system in agriculture	15
Module / Unit -4	**AUTOMATION PRACTICES** Field crop production automation – Mechanization, Sensing and Control in cotton production – Automatic Rubber Tapping.	10

Text books

1. Qin Zhang, Francis J. Pierce, "Agricultural Automation: Fundamentals and Practices",CRC Press, A Chapman and Hall Book, 2013.
2. Qin Zhang,"Precision Agriculture Technology for Crop Farming",CRC Press, 2016.
3. Irrigation Systems,A Laycock,Irrigation Systems-Design, Planning and Construction ,2011

Reference books and Online

1. Shimon Y Nof, Springer Handbook of Automation ,2009.
2. Jensen, J.R., 2004. "Introductory Digital Image Processing: A Remote Sensing Perspective". Prentice – Hall. New Jersey.
3. A.M.Michael, 2010. Irrigation - theory and practice, Vikas publishers, New Delhi.

Grading Policy:

Pattern I
Two Assessment Component (Each Carries 50 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

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FACULTY PROFILE

Faculty Name
Mr.S.INBAKUMAR

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9789665388

Faculty Profile Link

PLASMA APPLICATIONS IN ENGINEERING AND TECHNOLOGY

(This course is offered by Department of Science & Humanities – Physics)

L	T	P	C
3	0	0	3

Description:

Provide an overview of the importance of plasma technology in the modern world. Give the students an awareness and appreciation of the ways in which applications of plasmas can enable the development of new manufacturing technologies and processes. Deal with the specific plasma surface interactions which determine the performance of processing technologies. Examine the most important surface processing applications used in high technology industries, through a detailed treatment of specific examples.

Objectives:

Industrial and economic importance of plasma applications. Light sources, displays and gas lasers. Chemical conversion, novel materials growth and toxic waste abatement. Surface modification and micromachining. Environmental aspects of industrial plasma applications.

Expected Outcomes

- Be able to understand and explain the economic and environmental importance of modern plasma applications.
- Know the most important types of plasma applications, including details of specific examples.
- Understand the technical aspects of plasma surface interactions and their impact on product quality.
- Be able to access and evaluate the scientific literature dealing with specific applications and use the results in process development, troubleshooting and evaluation of results.

Expected Audience

III or Final year Textile, Fashion and Bio technology students

Teaching methodology

Chalk and board with projector

Modules covered	Title	Hours
Module / Unit -1	**Basics of plasmas**: Plasma as a state of matter, Debye length, Debye shield-Types of plasma-Low temperature plasma- High temperature plasma **Plasma Surface Interactions:** Surface states and structure. Ion, electron and photon surface interactions. Surface chemical kinetics.	9
Module / Unit -2	**Surface Processing:** Activation (surface energy, wetability and adhesion). Sputtering (sputter etching, sputter deposition and reactive sputter deposition). Etching (including RIE and high density plasma etching), etching characteristics (anisotropy, residues, selectivity, uniformity, damage).	9
Module / Unit -3	**Thin film preparation**: Deposition of thin films, PECVD. Film properties and structure (hardness and other physical properties, amorphous films, plasma polymerisation, epitaxial growth, interface issues).	9
Module/ Unit -4	**Nano particle synthesis**: RF plasma sputtering- construction- process technique, DC plasma sputtering- construction- process technique, Laser ablation-CNT preparation technique	9
Module/ Unit -5	**Specific Examples:** Detailed examples of plasma processes including the plasma surface interaction mechanisms. Activation of polymers and plasma processing of natural and artificial fibres, deposition of biocompatible thin films, deposition of metallic coatings and alloys, and/or others.	9

Text books

1.Fundamentals of Plasma Physics Authors: **Bittencourt**, J. A. **2.Plasma**

Surface Modification of Polymers: Relevance to Adhesion edited by

Mark Strobel, C. S. Lyons, K. L. Mittal

Reference books and Online

1. **Plasma Science and Technology for Emerging Economies** edited by Rajdeep Singh Rawat/springer

2. **Plasma Science:** From Fundamental Research to Technological Applications,National Research Council, Division on Engineering and Physical Sciences, Board on Physics and Astronomy, Plasma Science Committee, Panel on Opportunities in Plasma Science and Technology.

Grading Policy

PATTERN III FOR THE ASSESSMENT
Five Assessment Component (Each Carries 20 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

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FACULTY PROFILE

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Mobile No.
9962348330

Faculty profile link

SMART MATERIALS: NEED OF THE HOUR FOR RENEWABLE ENERGY RESOURCES

(This course is offered by Department of Science and Humanities - Physics)

L	T	P	C
3	0	0	3

Description

The course is intended to motivate the undergraduate students to impart knowledge about energy requirement and its importance. With depleting conventional resources and the need to focus on environmentally benign technologies, the renewable energy (RE) sector is clearly poised for rapid growth. Not only can RE options contribute towards a cleaner environment, but also help address issues of energy security and access that hold great relevance in developing countries like India. Renewable Energy Engineering and Management opens doors to a wide range of sectorial and research oriented opportunities in the fast paced RE field.

Objectives

- To outline division aspects and utilization of renewable energy sources for both domestics and industrial applications.
- To learn about Photovoltaic technology principles and techniques of various solar cells / materials for energy conversion.
- To detail on the hydrogen production methodologies, possible applications and various storage options.
- To discuss on the working of a typical fuel cell, its types and to elaborate on its thermodynamics and kinetics.
- To develop the ability to understand / analyse the various types of new technologies for energy production and storage.

Expected Outcomes

- Able to understand the problems in conventional energy sources and the importance of renewable energy sources.
- Able to develop knowledge on various types of materials required for renewable energy sources.
- Able to analyze the various types of energy requirement and perform the selection based on techno-economic view point.

Expected Audience

- Students from Civil, Electrical, Electronics, Mechanical and Mechatronics Engineering,
- Interested in pursuing higher studies in Environmental and Energy engineering
- Who choose their career in the field of Energy engineering – either as consultant or start up entrepreneurs / NGO

Teaching methodology

- Classroom teaching
- Guest Lecture from Industrial experts
- Visit to Solar plant sites
- Typical Case Studies from Journal papers and Technical article

Modules covered	Title	Hours
Module / Unit -1	**Energy and environment :** Energy Sectors: Domestic, Transportation, Agriculture, Industry Sector, Energy Scenario, World Energy Present Situation, Availability of Conventional & Non-Conventional. Energy Resources, Fossil Fuel, Hydro Resources, Nuclear Resources, Coal, Oil, Gas, Thermal Power Stations, Comparison of various conventional energy systems their prospects and limitations	9
Module / Unit -2	**Photovoltaics:** Solar cells – Introduction, Characteristics and Operations – Figure of merits of solar cell – Efficiency measurements – Thin film solar cells: Amorphous Silicon, Cadmium Telluride and Copper Indium Gallium diselenide - Photovoltaic Solar cell array design concepts – Process and optimization – Photovoltaic plant installation – Operation and Maintenances.	9
Module / Unit -3	**Fuel cells:** Introduction to principles and operations of fuel cells- Performance evaluation of fuel cells-Types of Fuel cells: AFC, PAFC, SOFC – Merits and demerits- Applications : Large scale power generation, Automobile and space applications	9
Module/ Unit -4	**Hydrogen Energy:** Hydrogen – physical and chemical properties, salient characteristics. Production of hydrogen– steam reforming – water electrolysis – gasification and woody biomass conversion – biological hydrogen production – photo dissociation – Direct thermal - Catalytic splitting of water	9
Module/ Unit -5	**Thermal Energy** Ocean Thermal Energy Cycle (OTEC) - Baseline design - Heat design - Power cycle design - plant working. Energy - commercialization - problems and opportunities. Thermoelectric converter - Thermionic converter – Magneto Hydra Dynamic system (MHD) - Electro gas dynamics (EGD) principles - types.	9

Text books

1. Twidell, J.W. and Weir, A., Renewable Energy Sources, EFN Spon Ltd., (1986).
2. Kishore VVN, Renewable Energy Engineering and Technology, Teri Press, New Delhi, (2012).
3. Solar Cell Device Physics (2nd edition),Stephen J. Fonash ,Academic Press (2010).
4. Chetan Singh Solanki, Solar Photovoltatics – Fundamentals, Technologies and Applications, PHI Learning Private limited, (2011).
5. Goswami, D.Y., Kreider, J. F. and & Francis., Principles of Solar Engineering, Taylor and Francis, (2000).
6. Kordesch. K, and Simader.G, Fuel Cell and Their Applications, Wiley-Vch, Germany (2016).
7. Viswanathan, B and M Aulice Scibioh, Fuel Cells – Principles and Applications, Universities Press (2006).
8. Bent Sorensen, Hydrogen and Fuel Cells: Emerging Technologies and Applications, Elsevier, UK (2005).
9. Veziroglu, T.N., Alternative Energy Sources, Vol 5 and 6, McGraw-Hill, (1990).
10. Bridgurater, A.V., Thermochemical processing of Biomass, Academic Press, (1981).

Reference books and Online

1. Bent Sorensen, Renewable Energy, Elsevier, Academic Press, (2011)
2. Peter Gevorkian, Sustainable Energy Systems Engineering, McGraw Hill, (2007)
3. Sukhatme S P, J K Nayak, Solar Energy – Principle of Thermal Storage and collection, Tata McGraw Hill, (2008).
4. Hart, A.B and G.J. Womack, Fuel Cells: Theory and Application, Prentice Hall, New York Ltd., London (1989)
5. https://lagunita.stanford.edu/courses/Engineering/Solar/Fall2013/about
6. https://ocw.mit.edu/courses/mechanical-engineering/2-627-fundamentals-of-photovoltaics-fall-2013/index.htm

Grading Policy

PATTERN III FOR THE ASSESSMENT
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

L	T	P	C
3	0	0	3

FACULTY PROFILE

Faculty Name
Dr. R. KANNAN

Department
Physics

Institution
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Faculty profile link

INSIGHTS INTO MATERIALS FOR ENGINEERING APPLICATIONS

(This course is offered by Department of Science & Humanities – Physics)

Description

Studying materials can lead to an international career. Materials science and materials engineering is a key aspect of most companies the world over. Insights into *Materials* describes both the science (theory) and engineering (application) principles to explore relevant examples of their practical use in commercial applications. In the race to make things stronger, cheaper, lighter, more functional and more sustainable, the manipulation of materials, their properties and processes is key. This course will enable the students to apply Scientific, Technological, Engineering and Mathematical (STEM) principles to improve the device fabrication at the local, regional and global levels. By pursuing this course, students will develop materials engineering skills and techniques to fabricate the micro and Nano level devices for society.

Objectives

- To understand the principles and concepts of importance of materials and Its Engineering aspects.
- To demonstrate the necessity and viability of the characterization methods of
  Different engineering materials
- To focus on the application of Nano level device fabrication by "modern Engineering materials".

Expected Outcomes

- The ability to use modern materials and Engineering concepts, principles and procedure to design and construct or improve viable solutions.
- To create an understanding of how to incorporate the principles of novel Materials into engineering practices and applications.
- To promote awareness of the global challenges related to modern engineering materials and its impact on present and future generations

Expected Audience

- Students from any discipline
- Students who are interested to known about the importance ofmaterials and its characteristics for the fabrication of novel engineering devices (both micro and Nano scale).

Teaching methodology

- Classroom teaching
- Power Point Presentation/ videos
- Group discussion
- Guest lectures
- Field trip
- Case study analysis
- Mini project

Modules covered	Title	Hours
Module / Unit -1	**Nature of Engineering Materials:** Nucleation and Growth - film formation - Semiconducting, Superconducting and Magnetic alloy materials - Sputter Deposition - DC and RF.	05
Module / Unit -2	**Basic structural needs of engineering materials:** Scanning Electron Microscope (SEM) - Transmission Electron Microscope (TEM) – EDAX - Atomic Force Microscopy (AFM) - X-ray diffraction (XRD).	10
Module/ Unit -3	**Characteristic analysis for fabrication of devices:** Thermogravimetric Analysis (TGA) - Differential Scanning Calorimetry (DSC) - Vibrating sample magnetometer - Electrochemical corrosion studies - I – V characteristics.	10
Module/ Unit -4	**Case study analysis and Field Trip**	20

Text books

1. Thin Film Fundamentals by A. Goswami New Age International.(2003).
2. Nano: The Essentials, T.Pradep, Tata McGraw Hill, New Delhi (2007)
3. Introduction to Nanotechnology, Charles P Poole Jr and Frank J Ownes, John Wiley Sons,inc (2003)

Reference books and Online

1. Nanocomposite Science and Technology, Pulickel m.Ajayan, Linda S.Schadler, Paul V.Braun, Wiley-VCH Verlag weiheim (2003)
2. Nanotechnology – Basic sciences and emerging technologies, Mick Wilson, Kamali Kannangara, Geoff Smith, Michelle Simmons, Burkar Raguse, Overseas Press (2005)
3. Lnstrumental Methods of Analysis, Willard, 2000.
4. Instrumental Methods for Chemical Analysis, Ewing Etal 2000.
5. https://www.amazon.in/Materials-Characterization-Introduction.../dp/3527334637
6. https://onlinelibrary.wiley.com/doi/book/10.1002/9780470823002

Suggested video clip

1. https://www.youtube.com/watch?v=MwpGKBFNjXA
2. https://youtu.be/1-p7nGmT75g
3. https://www.youtube.com/watch?v=Tqz9s-2MLwg
4. https://www.youtube.com/watch?v=SnC7btzRFEo

Grading Policy

PATTERN III FOR THE ASSESSMENT
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
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Course Title
Introduction to Neural Networks and Deep Learning

L	T	P	C
3	0	0	3

Description
This course will provide some basic introduction about Neural Networks and Deep Learning Architectures. Also introduce some toolsfor the implementation of these architectures for various applications.

Objectives
1. To study the basic introduction for Neural Network Architectures.
2. To study the basics of Deep Learning and convolutional networks
3. To learn the tools for the implementation of Neural Networks andDeep Learning Architectures

Expected Outcomes
At the end of this course, the students will be able to
1. Build a Neural Network model for any applications.
2. Demonstrate the basics of convolutional neural Networks and applyfor some applications.
3. Write a technical paper on applications related to Neural Networksand Deep Learning Techniques.

Expected Audience

Students having some having knowledge in basic mathematics andlinear algebra.

Teaching methodology
Lecturing
Hands-on sessions
Simulation
projects

Modules covered	Title	Hours
Module / Unit -1	Introduction - What Are Neural Networks: Artificial and biological neural networks, Artificial intelligence and neural networks, Neurons and Neural Networks: Biological neurons, Models of single neurons, Different neural network models. Introduction to Python concepts and programming. Introduction to google colab and Jupiter notebook.	10
Module / Unit -2	Perceptron - Single Layer Perceptrons - Least mean square algorithm. The XOR problem, Multilayer Perceptrons, Hidden Layers, Activation Functions, Model, Loss Function, Training.	7
Module / Unit -3	Implementation of Multilayer Perceptrons - Back-propagation algorithm, Heuristic for improving the back-propagation algorithm, Training Error and Generalization Error, Implementation of Multilayer Perceptrons from Scratch.	8
Module/ Unit -4	Layers and Blocks: A Custom Block, The Sequential Block, Executing Code in the Forward Propagation Function, Efficiency, Parameter Management, Custom Layers: Layers without Parameters, Layers with Parameters, Computing Devices: Tensors and GPUs, Neural Networks and GPUs	10
Module/ Unit -5	Deep Neural Networks: Deep Convolutional Neural Networks (AlexNet), Networks Using Blocks (VGG),	10

Text books

1. Laurene Fausett, "Fundamentals of Neural Networks", Prentice Hall India, New Delhi, 2006.
2. Simon Haykin, "Neural Networks", 2nd Edition, Pearson Education- 2008.

Reference books and Online

1. https://www.python.org/about/gettingstarted/
2. https://colab.research.google.com/notebooks/intro.ipynb
2. Dive into Deep Learning by Aston Zhang, Zachary C. Lipton, Mu Li, and Alexander J. Smola
3. https://www.deeplearningbook.org/

Grading Policy (Pattern III- Five Assessment Component (Each Carries 20 Marks))

KCT's Unique CBCS Framework

FCLF

FACULTY PROFILE

Faculty Name:
Mr.S.SURYAPRAKASH

Designation:
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Institution
Kumaraguru College of Technology

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Mobile No. 9894065306

Faculty Profile Link

L	T	P	C
3	0	0	3

INTRODUCTION TO INTERNET OF THINGS FOR CORE ENGINEERING

(This course is offered by Department of Computer Science and Engineering)

Description

Internet of Things (IoT) is presently a hot technology worldwide. Government, academia, and industry are involved in different aspects of research, implementation, and business with IoT. IoT is used in different verticals ranging from civilians to defense sectors. Today it is possible to envision pervasive connectivity, storage, and computation, which, in turn, gives rise to building different IoT solutions. IoT-based applications such as innovative shopping system, infrastructure management in both urban and rural areas, remote health monitoring and emergency notification systems, and transportation systems, are gradually relying on IoT based systems. Therefore, it is very important to learn the fundamentals of this emerging technology.

Objectives

The objective of the course is

- To identify the solution to the real-world problem using Internet of Things
- To understand the various components and networking protocols used in it.

Expected Outcomes

The students can able to

- Identify the various terminology and architectural components in IoT
- Describe the various types of sensors and program it.
- Understand the concepts of Networking and Communication Protocol.
- Describe and Demonstrate the various application of IoT.

Expected Audience

The Students who intend to learn

- Automation
- Explore new technologies
- Want to provide new solution to real world problems.

Teaching methodology

- Practical Demonstration
- Lab Demo
- Project Review/Demo

Modules covered	Title	Hours
Module / Unit -1	Introduction to IoT – IoT definition – Characteristics – Things in IoT – IoT Complete Architectural Stack – IoT enabling Technologies – IoT Challenges – IoT Levels – A Case Study to realize the stack.	9
Module / Unit -2	Sensors and Hardware for IoT – Accelerometer, Proximity Sensor, IR sensor, Gas Sensor, Temperature Sensor, Chemical Sensor, Motion Detection Sensor. Hardware Kits – Arduino, Raspberry Pi, Node MCU. A Case study with any one of the boards and data acquisition from sensors (Lab Component)	9
Module / Unit -3	Protocols for IoT – Infrastructure protocol (IPV4/V6/RPL), Identification (URIs), Transport (Wifi, Lifi, BLE), Discovery, Data Protocols, Device Management Protocols. – A Case Study with MQTT/CoAP usage. (Lab Component)	9
Module/ Unit -4	Connecting an Arduino to the Web-Cloud Data Monitoring-Interacting with Web Services-Machine-to-Machine Interactions	9
Module/ Unit -5	Case studies with architectural analysis: IoT applications – Smart City – Smart Water – Smart Agriculture – Smart Energy – Smart Healthcare – Smart Transportation – Smart Retail – Smart waste management.	9

Text books

1. "Internet of Things: A Hands-on Approach", by Arshdeep Bahga and Vijay Madisetti (Universities Press)

Reference books and Online

1. "The Internet of Things: Enabling Technologies,Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press)
2. Adrian McEwen, Designing the Internet of Things, Wiley (8 November 2013), ISBN-13:978-1118430620,
3. NPTEL Reference : https://onlinecourses.nptel.ac.in/noc17_cs22/preview

Grading Policy (Choice of Pattern)

Pattern I - Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
Dr. R. ASHOKKUMAR

Department
Chemistry

Institution
KCT

Faculty Contact Details
ashokkumar.r.sci@kct.ac.in

Faculty Profile Link

LASER FOR ENGINEERING MATERIAL PROCESSING

(This course is offered by Department of Chemistry)

L	T	P	C
3	0	0	3

Description:

Laser machining is an emerging area with a wide variety of applications, ranging from bulk machining in metal forming to micromachining and micro structuring in electronics and biomedical applications. The unique characteristics of laser have made it an important tool in various applications of modern science and technology. Today lasers have entered almost all fields of science and have made a wide step of progress. In medicine, it became the "beam that heals" and has been utilized in diagnosis, therapy, surgery and medical instrumentation. Lasers become the cutting edge global technology for the "innovative material fabrication". This course will enable the students to learn the fundamentals, material processing, industrial and biomedical applications of Laser. This course will empower the students to fabricate macro to nanoscale, cost effective high precision materials with potential applications to meet the global challenges.

Objectives

- To understand the principles and applications of Laser for engineering material processing.
- To familiarize the students on types of Lasers and its application for material processing with global competency.
- To focus on the advanced material fabrications and biomedical applications of Laser for technological advancements.

Expected Outcomes

- Able to identify suitable Laser for engineering material processing in device fabrications.
- To create new materials with the state of the art and improve the material properties for better industrial utilization.
- To apply the knowledge of Laser to fabricate cost effective materials for biomedical applications with global significance.

Expected Audience

- Students from any discipline
- Students who are interested to prepare high precision materials for fabrication of higher efficiency devices.

Teaching methodology

- Classroom teaching
- Power Point Presentation/videos
- Group discussion
- Guest lectures
- Field trip
- Case study analysis
- Mini project

Modules covered	Title	Hours
Module / Unit -1	**Fundamentals and Applications of LASER:** Introduction – Properties, Types and selection of Laser –Principle of Laser Action - Amplification and Population Inversion - Designing a Laser – Applications of Laser.	8
Module / Unit -2	**LASER for Engineering Materials Processing:** Material processing - drilling of metal and ceramics, welding, cutting, surface treating, texturing, marking, engraving, patterning, cleaning.	9
Module/ Unit -3	**Material Fabrication and Biomedical Applications of LASER:** Rapid prototyping - Laser vapour deposition - Thin film applications – diagnosis – cancer therapy – ophthalmology - safety measures of Laser	8
Module/ Unit -4	**Field Trip and Certified Internship Program**	20

Text books

1. Lasers, Theory and Applications, K. Thyagarajan, A.K. Ghatak, Macmillan,1981.
2. Laser Processing of Engineering Materials: Principles, Procedure and Industrial Applicatios, John C Ion, Elsevier (2005)
3. Medical Applications of Lasers, D.R. Vij, K. Mahesh, Springer Science (2002)

Reference books and Online

1. W.T. Silvafast, Laser Fundamentals, Cambridge, 2003.
2. Industrial Applications of Lasers, John F. Ready, Academic Press, 2nd Edition(1997)
3. Reddy, J.F. High power Laser Applications, AP, 1977
4. William M. Steen, Laser Material Processing, Springer-Verlag. 2003.
5. Ian W. Boyd, Laser Processing of thin films and microstructures, Springer-Verlag, 1987.
6. Lasers for Medical Applications: Diagnostics, Therapy and Surgery, Helena Jelínková, Woodhead Publishing, 2103

Suggested video clip

1. https://youtu.be/PK4yFaGHSFc?list=PLU0oJASIjGxdZMtypwhvGrnmuzNnNdcKt
2. https://youtu.be/saVE7pMhaxk
3. https://youtu.be/IQn83Jc_bwc
4. https://youtu.be/8wiKBGDsCfU
5. https://youtu.be/puDD_CrVH7g
6. https://youtu.be/WuxKCZoIEdE

Grading Policy

In -classs participation and discussion	Assignment & Presentation	Case study and presentation	Internship Program	Product Demo	Total
20	**20**	**20**	**20**	**20**	**100**

FACULTY PROFILE

Faculty Name
DR.M.SARAVANAN
Department
Textile

Institution
KCT

TEXTILES AND ITS APPLICATIONS

(This course is offered by Department of Textile Technology)

L	T	P	C
3	0	0	3

Description

This course is intended to motivate undergraduate students to

- Get familiar with Textiles in day-to-day use.
- Know the importance of Textiles and their safety.
- Acquire industrial knowledge from field visit and guest lectures.
- Different unique aspects of textiles in life sustainability.
- Know-how of textiles in part of the life.
- Fun of knowing Textiles used in dress materials.

Objectives

To teach the basic information's about textile materials and their versatile roles as part of their regular life time.

- Acquire knowledge on fibres and fabrics used in Textile Apparels.
- Understand the life saving textile products used in different applications.
- Apply and analyze the concept of rehabilitation, comfort and other psychological aspects in the light of Textiles
- Appreciate the concepts of textiles in medical field.
- Understand the concept of comforts of Textile ready-mades.

Expected Outcomes

At the end of the course:

- Students will acquire knowledge and practical skills through field visits.
- Students will have a fundamental understanding of fibres and their fabrics.
- Students will apply the concepts and solve the home textile needs.
- Students will be able to develop fabrics for medical applications.
- Students will use right practice for life safety through Textiles.

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to understand and appreciate Textile materials.
- Students with entrepreneurship interests.

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Field visits.
- Guest sessions.
- Classroom teaching.
- Demonstration videos.

- Classrooms live Quiz.
- Group Discussion.
- Guest lectures by experts.

Modules covered	Title	Hours
Module / Unit -1	Introduction to Fibres and Fabrics. Fibres: Cotton, Viscose, Wool, Silk, Kora silk Polyester, Elastane and Nylon. Fabrics: Woven, Knitted, Braided and Nonwovens. **Field visit to Industrial products exhibition at Tirupur to gain knowledge on various fibres.**	9
Module / Unit -2	Essential Properties and classification of Medical Textiles, Implantable, Non-Implantable and Healthcare/Hygiene Products, Super absorbent polymers Application of nonwovens in medical field, Textiles in infection prevention control, Tissue engineering: scaffolds. **Invited Lecture from Industry Expert, to gain knowledge on various products of medical textiles.**	9
Module / Unit -3	Global Scenario: Market share and strategically developments in Industrial Textiles - Seat Belts - Air Bags - Tire Cords and Automotive Interiors – Role of nonwovens in Automotive applications.	9
Module/ Unit -4	Home textile goods: Global scenario; Fabrics for the Living / Kitchen & Dining / Private Bedrooms / Floor coverings / Wall coverings, Green fabrics and eco - Home textiles. **Field visit to Karur/ Then Thirumalai to gain knowledge on Textile production process**	9
Module/ Unit -5	Comfortable clothing - Human clothing system - Physical, Physiological and psychological aspects of comfort – Tactile and pressure sensation aspects. Thermal and permeability comfort properties for different textile structures. **Invited Lecture from Freelancer, to gain knowledge on Entrepreneurship opportunities in Textile Field.**	9

Text books

1. Apurba Das and R. Alagirusamy, Science in Clothing Comfort, Woodhead Publishing India Ltd., 2010.
2. Bartels V, Handbook of Medical Textiles, Woodhead Publishing India Ltd., 2011.
3. Subrata Das, Alagirusamy, Performance of Home Textiles, Woodhead Publishing India Ltd.,2010.
4. H. V. Sreenivasa Murthy, Introduction to Textile Fibres, Woodhead Publishing India Ltd., 2018.
5. Walter Fung and Mike Hardcastle, Textiles in automotive engineering, Woodhead Publishing India Ltd., 2001.
6. Gordon Cook J, Hand book of Textile fibres (Volume 1 & 2)", CBS Publishers and Distributors, 2005.

Reference books and Online

1. Morton W.E and Hearle., J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 4th Edition,2008.
2. Shishoo R, Textile advances in the automotive industry, Woodhead Publishing Limited, Cambridge, England- 2008.

Grading Policy (Choice of Pattern)

Pattern III
Five Assessment Component (Each Carries 20 Marks)

FACULTY PROFILE

Faculty Name
Dr.K.Kalapriya

Department
Chemistry

Institution
KCT

Faculty Contact Details
Kalapriya.k.sci@kct.ac.in

GREEN CHEMISTRY AND ENGINEERING

(This course is offered by Department of Chemistry)

L	T	P	C
3	0	0	3

Description

Green Chemistry and Engineering describes both the science (theory) and engineering (application) principles of Green chemistry to explore relevant examples of their practical use in commercial applications. Green chemistry or environmentally benign chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances. This course will enable the students apply Scientific, Technological, Engineering and Mathematical (STEM) principles to improve the environment at the local, regional and global levels. By pursuing this course, students will develop engineering skills and ethics in creating innovative ideas required for a sustainable development.

Objectives

- To understand the principles and concepts of Green chemistry and Engineering
- To demonstrate the necessity and viability of the methods of Green Chemistry and Engineering
- To focus on the application of innovative technology by "greener" routes to produce innovative and eco friendly products.

Expected Outcomes

- The ability to use Green Chemistry and Engineering concepts, principles and procedure to design and construct or improve viable solutions.
- To create an understanding of how to incorporate the principles of Green Chemistry into engineering practices and applications.
- To promote awareness of the global challenges related to environment and its impact on present and future generations

Expected Audience

- Students from any discipline
- Students who are interested in knowing the Green Chemistry and Engineering concepts and apply those principles in developing innovative ideas for Engineering applications.

Teaching methodology

- Classroom teaching
- Power Point Presentation/ videos
- Group discussion

- Guest lectures
- Field trip
- Case study analysis
- Mini project

Modules covered	Title	Hours
Module / Unit -1	**Green Chemistry and Engineering**: Introduction - Definition -Scope and importance - Need for Green Chemistry, Green Engineering and sustainability– Goals – National Green Tribunal - powers and its functions.	15
Module / Unit -2	**Principles of Green Chemistry and Engineering**: Twelve principles of Green Chemistry and Engineering with the explanations and examples – Important techniques and directions in practicing Green Chemistry and Engineering	15
Module/ Unit -3	**Green Chemistry in action**: Green product design - Green computing– Green nanotechnology – Green photo catalyst – Green technology in waste management – Green corrosion inhibitors – Green concepts in buildings-Ionic liquids – Agrochemicals from nature – smart materials - remediation technology of textile effluents – Green biopolymer, bioplastics, biodiesel-Green natural products – Future Green Technology – Case studies.	15

Text books

1. P. T. Anastas and J.C. Warner, Green Chemistry, Theory and Practice Oxford, 2000.
2. Asim K.Das , Environmental chemistry with Green chemistry, Kolkata, 2010
3. Rashmi sanghi, M.M. Srivastava, Green chemistry, Environment friendly alternatives, Narosa publishing house, 2012 edition.
4. M. Doble and A. K. Kruthiventi, Green Chemistry and Engineering, Academic Press, Amsterdam, 2007.

Reference books and Online

1. V. K. Ahluwalia, Green Chemistry: Environmentally Benign Reactions, Ane Books India, New Delhi, 2006.
2. M. M. Srivastava, R. Sanghi, Chemistry for Green Environment, Narosa, New Delhi, 2005.

Suggested video clip

1. Overview of Major Environmental Sustainability Issues: http://css.snre.umich.edu/css_edu_resources.htm

2. Biomimicry: 12 sustainable design ideas from nature: https://www.youtube.com/watch?v=n77BfxnVlyc

3. Renewable Energy and the Energy Transition: https://www.youtube.com/watch?v=25bmXpEPosc

4. Sustainability explained https://www.youtube.com/watch?v=_5r4loXPyx8

5. Handing on a sustainable futurehttps://www.youtube.com/watch?v=xrXyRJV96mk

Grading Policy

PATTERN III FOR THE ASSESSMENT
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Dr.SAMUEL RATNA KUMAR P S

Department
Mechanical Engineering

Institution
KCT

Faculty profile link

RESEARCH SCOPE FOR NANO-MATERIALS

(This course is offered by Physics department)

L	T	P	C
3	0	0	3

Description

This course is intended to motivate the undergraduate students to impart knowledge about basics of nana materials & its types. Nan materials is used everywhere such as Biomedical, Computers, Structures, Solar panel, Aerospace, Marine, Aircraft, Automobile, Electrical wires, Batteries, Water purification and more. It is not restricted to only Mechanical or Metallurgical field. More research work can be carried out in this field to solve the social problems and create a green environment for better future.

Objectives

- To impart Science, Engineering and Technology knowledge
- To understand the basics ofnanomaterial
- To identify the types of non material and its properties
- To understand the concepts of nanofabrication techniques
- To understand the concept of nano measuring devices
- To identify and apply the nonmaterial for specific application

Expected Outcomes

- Students will have a better fundamental understanding of nanomaterials and its techniques.
- Students will apply the concepts and solve the social needs.
- Students will be able to develop algorithms for complex problems

Expected Audience

Students who are interested in the field of nanotechnology and green environment.

Teaching methodology

- Classroom teaching
- Demonstration videos
- Guest lectures by experts

Modules covered	Title	Hours
Module / Unit -1	Introduction – nonmaterial – nano manufacturing - Chemical vapor deposition-Physical vapor deposition-Electro plating-Etching, types-High energy ball milling-Sol gel process-Inert gas condensation process- Sputtering process-Arc discharge method.	9
Module / Unit -2	Scanning Electron Microscope, Transmission Electron Microscope, STEM, Atomic Force Microscope-Types and	9
Module / Unit -3	X ray Diffraction Technique application, Energy dispersive X-ray spectroscope, X-Ray spectrometry, Auger Spectroscopy, Differential thermal analysis.	9
Module/ Unit -4	Carbon nano tubes -Mechanical, Electrical and optical properties-Nano fluids- Preparation methods, properties and applications-nano coating, Diamond like coatings	9
Module/ Unit -5	CNT Based nano composites-Metal based nano composites-CNT based solar and fuel cells-Nano steel-Nano copper-Nano Aluminum – Applications of nonmaterial.	9

Text books

1. Bharat Bhushan., "*Springer Handbook of Nanotechnology*", Springer,2004.
2. CullityAddision, "Elements of X-ray diffraction", Wesley Publishing Co.,1967
3. H.Gleiter. Nanostructured materials: basic concepts and microstructures// ActaMetallurgica. – 2000. – 48, N1. – P. 1–29

Reference books and Online

1. Handbook of nanophase and nanostructured materials. Ed. by Zhong Lin Wang, Yi Liu, ZeZhang. Synthesis;
Characterization; V.3. Materials systems and applications I;V.4. Materials systems and applications II. Kluwer Academic/ Plenum Publishers, 2003.
2. P. J. Harris. Carbon nano tubes and related structures. Cambridge University Press,1999.
3. Philips.V.A, "Modern Metallographic Techniques and their Applications", Wiley Interscience,1971.
4. Cao.G, "Nanostructures and Nanomaterials: Synthesis,
Properties and Applications", Imperial College Press, 2004.
http://onlinelibrary.wiley.com/doi/10.1002/9783527673919.oth1/pdf

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Athappan V

Department
Department of EIE

Institution
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athappan.v.eie@kct.ac.in

Mobile No.
9047033221
9361133221

L	T	P	C
3	0	0	3

Course Title

Automation Made Easy – Micro to Macro

(*This course is offered by EIE department)*

Description

This course will enable undergraduate students to gain knowledge in automation covering a wide range of skills ranging from micro level to macro level with emphasis on the concepts of instrumentation, automation, and process control with a strong practical focus. Automation is an extremely fast-moving area especially compared to the more traditional areas such as electrical and mechanical engineering. The field is diverse and dynamic and offers the opportunity for the students to develop and implement their own strategy towards automating their prototype.

Objectives

- To impart Science & Technological aspects of Automation.
- To motivate students for developing their own strategy.
- To develop interest among students to create their own control s system model for their prototype.
- To develop team spirit and be a team worker.

Expected Outcomes

- Students will know how to apply their own control strategy towards automating their system and thus understand challenges in the automation field.
- Students will be able to develop their ideas into prototypes to provide new automation solution to a given problem.
- Students will relate creative thinking and innovation to technology research, design, and product development.
- Students will improve programming skills

Expected Audience

The course will primarily benefit students with interests as below:

- Students who want to develop a systematic approach towards development of an automation system for their own prototype model.
- Students with core industry placement interests

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching
- Demonstration of Automated Process model.
- Guest lectures by experts who have launched successful startups through their innovation.

Modules covered	Title	Hours
Module / Unit -1	Introduction and evolution of automation, feedback, and feed forward systems, hierarchical levels of automation.	5
Module / Unit -2	Necessity and working principle along with block schematic of PLC, Programming language – basic instruction for programming,	10
Module / Unit -3	Demonstration of PLC functioning and development of ladder logic for sequencing of motor, tank level control, temperature process control	10
Module/ Unit -4	Distributed Control System – an introduction and overview, Plant wide automation, demonstration of DCS functioning for liquid level process, pressure process and temperature process	15
Module/ Unit -5	An opportunity for the students to develop and implement their own strategy towards automating their prototype	5

Text Books

1. "Applied Instrumentation in the Process Industries, Volume I, Andrew and Williams, Gulf Publishing Company, Second Edition.
2. "Programmable Logic Controllers" Garry Dunning, 3rd Edition, PHI Publication – 2004.
3. Petrezeulla, "Programmable Controllers", McGraw-Hill, 2004.
4. Yokogawa Centum VP Fundamentals & Engineering –Training Handouts, 2nd Edition

Reference books and Online

1. Hughes, T., "Programmable Logic Controllers", ISA Press, 2000.
2. John W. Webb, Ronald A.Ries, "programmable logic controllers: Principle and application " 5th Edition.
   Ronald L.Kurtz, "securing SCADA System", Wiley publishing.

Grading Policy (**Pattern III- Five Assessment Components -Each Carries 20 Marks)**

Written Assignment & Open Book Test	In class Participation & Quiz	Technical Presentation	Case Studies & Investigation	Mini Project Presentation	TOTAL
20	20	20	20	20	100

KUMARAGURU college of technology

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

Humanities, Social Sciences & Fine Arts

FACULTY PROFILE

Faculty Name
Mr.BALAMURUGAN R

Department
Physics

Institution
KCT

Faculty profile link

HUMAN RIGHTS AND RTI ACT

(This course is offered by Department of English)

L	T	P	C
3	0	0	3

Description

The basic aim of the course is to introduce the students, the values and culture of human rights, and to make them aware the benefits we get out of it by strict adherence to tenets of them.

The basic object of the Right to Information Act is to promote transparency and accountability in the working of the Government and to enhance student's participation in democratic process thereby making our democracy work for the people in a real sense.

Objectives

UGC prepared a blue print for imparting Education on Human Rights and Duties at the Universities and Colleges with the following objectives:

- To develop interaction between society and the educational institutions.
- To sensitize the citizens for the norms and values of human rights and duties.
- To encourage research activities related to human rights.
- To encourage research studies concerning the relationship between human rights and duties and International Humanitarian law.
- Drafting and filing RTI Applications to ensure the human rights and fundamental rights to people.

Expected Outcomes

- Human Rights could be achieved mainly through Human Rights Education.
- The knowledge of human rights would also lead us to establish an orderly, peaceful, and friendly society both at the international and national spheres. Promote the fundamentals of Human rights and duties
- The aim of human rights is to do justice to every individual
- Classroom teaching

- Demonstration videos
- Case laws–study
- RTI Act's purpose is to bring accountability and transparency in public life in our country and is more popularly perceived as the common man's law
- Students are able to draft and file RTI Application at the end of the course.

Expected Audience

The course will primarily benefit students with interests as below: All students

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course: Filing application (RTI Act drafting) by students.

Modules covered	Title	Hours
Module / Unit -1	**Basic concepts:** Significance of Value - Human Values - Dignity Liberty - Equality - Justice –Ethics& Morals - Unity in Diversity - Meaning & Significance of Human Rights Education- Objectives of Human Rights Education	8
Module / Unit -2	**Perspective of Rights and Duties: Rights:** Meaning of Right-Analysis of Right-Natural Rights- Legal Rights - Claim Rights and Liberty Rights Positive and Negative Rights -Individual and Group Rights-Universal Rights **Nature and Concept of Duties** Differences between Obligation and Duty-The Different Types of Duties -Rights and Protections accorded to Human Rights Defenders- The Duties of States-Impact of Duty on Society -Relationship between Rights and Duties.	9
Module / Unit -3	**United Nations and Human Rights:** An Overview of UN System - Provisions of the UN Charter dealing with Human Rights- Universal Declaration of Human Rights- Significance of the UDHR-Analysis of the Declaration- Preamble of the Declaration.	9
Module/ Unit -4	Introduction of RTI Act **Important Definitions in RTI Act:** 1. Information [Section2(f)] 2. Record [Section2(I)] 3. Right to Information [Section2(j)] 4. Public Authority [Section2(h)] Exemption from disclosure of information [Section 8] Administration of the Act [Section 12]	9
Module/ Unit -5	Limitation of time period-Penalties for not making available the desired information – Appeals- Drafting RTI(Assignment)	10

Text books

Textbook on Human Rights law and Practice, by Jain Rashee, Universal Law Publishing, ISBN- 10: 9351437388, (2016)

Human Rights by Dr. H.O.Agarwal, Central Law Publications, ISBN-10: 9382676791, 2014

. Right to Information Act 2005 An Analysis, by A. S.Yadav.
Publisher: Central Law Publication, ISBN-10:
9382676791(2016)

Reference books and Online

1. Human Rights by Dr. T.S. Ravi, Margham Publications; ASIN: B01M4J4863,(2009)

2. Right to Information Act, 2005, by Lawmann, Kamal Publishers, ISBN-10:9384668508(2017).

3. http://www.youthforhumanrights.org/what-are-human-rights.html

4. http://righttoinformation.gov.in/rti-act.pdf

5. http://rti.gov.in/

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Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

FACULTY PROFILE

Faculty Profile
DR.C.RAJANKRUPA
Professor
Leadership council

Institution
KCT

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+91-9486328295

Faculty Profile Link

LIFE DESIGN

(This course is offered by Department of Human Excellence)

L	T	P	C
3	0	0	3

Description

The course focuses on some of the essential aspects of life. The course has five major components: Fitness, Sports, Social Responsibility, Nature and Engineering methodologies. The course will be handled by members of Students Leadership Council. The course handling by students will be the first of its kind in KCT. The ultimate aim of the course is to unlock the full potential of KCTians.

Objectives

- To give a general awareness about personal development and practice them through fitness activities and habits.
- To get students involved in Sports activities and make them realize the power of teamwork.
- To be aware of social responsibility and develop proactive disaster management techniques.
- To make the students observe, understand, experience and appreciate different aspects of Nature and Sustainability.
- To give an overview about trending engineering methodologies and to ignite the process of ideation.

Expected Outcomes

At the end of this course, the students will be able

- Be self-aware through daily habits and values.
- Practice fitness and sports seriously into life action.
- Build skills to contribute for the betterment of society and safeguard during a disaster.
- Adopt environmental conservation as a way of living in their everyday activity.
- Able to understand trending engineering methodologies and pitch project ideas, which are socially valuable.

Expected Audience

Students from every department can enroll this course

Teaching methodology

- Lectures
- Power Point Presentations
- Guided Group
- Field activities

Modules covered	Title	Hours
Module / Unit -1	**Fitness and Personal development** Importance of physical, mental and social fitness- Millennials- Social media addiction- Self Awareness- Self Introspection- Importance of *why?* Practical Activities: • Social media detox, journaling, blogging • Mediation exercises, Relaxation and stress release activities-Workouts: (a) Stretching (b) Balancing (c) Core	9
Module / Unit -2	**Sports and Synergy** Sports in daily life- ground science- silence and science of sports- P4 Athletics- balance- accuracy- speed- Defense – TEAM-Framing Role models - Defense life- NCC- foreign policies of India- security issues. Practical Activities: • Mind Marathon- Circuit life- Link and Sink- Sports with LC	9
Module / Unit -3	**Social Responsibility** Social work as profession - social welfare policies – UN's 17 sustainable developmental goals - social problems in India and strategies to solve – Health Insurance- First Aid basics – Scene safety and personal protection - Disaster management Practical Activities: • Field work: volunteering with Namathu Pangu- First aid training: Role play and session by experts	9
Module/ Unit -4	**Connect with Nature** Sholas and Grasslands- Man animal conflict- poaching, snakebite, mitigation, wildlife black market- endangered species and measures to their conservation-Pollution- Sustainability Practical Activities: • Nature walk - Field visit to ecologically sensitive niches	9
Module/ Unit -5	**Engineering Methodologies** How to find and approach a problem statement - art of Ideation - Getting started with projects - Embedded Systems - Designing and rapid prototyping - Industrial analysis - Business Pitch - Path Plan for an Engineer. Practical Activities: • Tinkercad simulations- Puzzle solving programming- 3D modelling in Autodesk fusion- Exploring developmental boards like Arduino, Raspberry pi	9

References and Online:

- Pale blue dot by Carl Sagan: https://youtu.be/wupToqz1e2g
- Bear Grylls: Mud, Sweat and Tears
- *Simon Sinek* Ted talks: https://startwithwhy.com/
- **BNHS-India**, a pan-India wildlife research organization, has been promoting the cause of nature conservation.http://bnhs.org
- Activities from Canopy Nature Academy (https://www.facebook.com/canopynatureacademy/)
- First aid - British Red Cross: https://www.redcross.org.uk/first-aid
- Introduction to Internal Disaster Management by Damon PCoppola
- Basics of electronics https://www.allaboutcircuits.com/education/ , https://www.electronics-tutorials.com/
- Product Design and Development by Karl T.Ulrich and Steven D.Eppinger (2nd Edition, Irwin McGraw Hill, 2000)
- Software development and Operations https://www.webopedia.com/TERM/D/devops_development_operations.html

Grading Policy:

Pattern 3 **Five Assessment Component (Each carries 20 Marks)**

KUMARAGURU college of technology
character is life

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

Management & Leadership

FACULTY PROFILE

Faculty Name
Mr.BHASKAR S

Department
Mechanical Engineering

Institution
KCT

Faculty profile link

DISRUPTIVE THINKING

(This course is offered by MBA)

L	T	P	C
3	0	0	3

Description

This course focuses on training students to introspect and bring out their best out-of-the-box ideas by setting them on the path of breaking conditionings that in general has made them to have a stereo type thinking pattern. The course will be carried out in a training mode involving individual and group exercises, though provoking games for introspection, class room projects and the like. Students will be made to prepare a journal of their thinking experiences that will be their take away to build-on in their life journey

Objectives

To make students to understand their hidden potential and natural existing traits by thinking 'out-of-the-box' by understanding the way they have been conditioned.

Expected Outcomes

Students will be able to:

CO1: Understand the need to get into self-introspection (K2)

CO2: Analyze their existing thinking zone, experience and create new perspectives and apply them (K6)

CO3: Analyze issues, select tools and record disruptive thoughts (K4)

CO4: Understand and evaluate the impact of disruptive thinking ability in their life / working life (K5)

CO5: Work as individuals and in teams involving path breathing idea generation concepts (K3)

CO6: Develop an attitude to involve in lifelong learning activities to groom disruptive thinking abilities (K3)

Expected Audience

The course will benefit students with interests as below:

- Those who want to set their life/career path on disruptive / out-of- the-box strategies
- Students with dare devil approach towards entrepreneurship
- Those who aspire to live their dreams in their way by grooming their emotional intelligence

Teaching methodology

The course will be delivered adapting the pedagogical approaches listed:

- Discussion forums
- Panel discussions (by students)
- Concept movies /videos
- Concept audios
- Workbooks
- Concept learning and thought provoking games
- Demonstrations
- Role-plays
- Reading exercises

Modules covered	Title	Hours
Module / Unit -1	The thinking stuff: The science of thinking – Thought/Action/Reality –Mental blocks in Decision making– The law of attraction – Conditioning – Intelligence – Case studies on Problem finding, Thinking and decision-making	15
Module / Unit -2	The philosophy of creativity – Horizontal exposure and thinking – Vertical expertise and thinking – Concepts to nurture thinking – The human flywheel	15
Module / Unit -3	The hedgehog leaders – organizing / acting with Johari window management approach – brain writing and nominal grouping techniques to collect and prioritize brutal facts – Concept of "them is a way and the way is on the way"	15

Reference books and Online

BOOKS

- The Alchemist – PauloCoelho
- In the wonderland of Indian Managers – SharuRangnekar
- In the world of Corporate Managers – SharuRangnekar
- And now and here –Osho
- Rich Dad Poor Dad – Robert Kiyosaki and SharanLechter
- Good to great – JimCollins
- My experiments will truth – Mahatma Gandhi

AUDIO

1. The science of getting rich – Bob Proctor
2. The day that changed my life around – JimRohns
3. Conditioning / Intelligence / Creativity / Money –Osho
4. Harness The Power Of Your Mind [John Kehoe, T Harv Eker, Tony Robbins, Jack Canfield]

VIDEO

1. Thoughts / Horizontal Exposure – T.T.Rangarajan
2. Don't take advice from Golfers If you want to play basketball / The Entrepreneurship journey – Jeff Hoffman
3. Thought concepts –Osho

MOVIES

1. The Secret (The law ofattraction)
2. Being there (The power of verticalexpertise)
3. Pay – it – forward (Giving back throughinnovation)
4. 12 angry man (standing for a belief / cause (micro analysis throughqueries)
5. The king'sspeech
6. OMG
7. Cromwell
8. The party

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

KUMARAGURU
college of technology
character is life

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

Career Enhancement & Skill Development

KCT's Unique CBCS Framework

FCLF

FACULTY PROFILE

Faculty Name
Sivakumar S

Department
Automobile Engineering

Institution
KCT

Faculty Profile Link

THE ART OF PUBLIC SPEAKING

(This course is offered by Department of Science & Humanities - English)

L	T	P	C
3	0	0	3

Description

The aim of this course is to enhance the public speaking skills of the students in their mother tongue as well as in common language .This skill is a key factor for every student to express effectively so that they can excel in their performances. If someone can speak to any crowd without fear which means he or she can communicate better in any situation. Speaking is not just speaking but expressing the content. This course will be interesting to many students as everybody likes to hear good speech.

Objectives

- To improve the public speaking skills
- To improve the ability to convince the team
- To improve the confidence level
- To remove shy factor and inhibitions
- To bring out the leadership qualities

Expected Outcomes

- Students will be able to communicate effectively
- Students will be able to develop presentation skills
- Students will be able to understand the importance of language
- Students will be very confident and extravert

Expected Audience

- Students from any branch who feel they know everything but lack in expressing
- Technology Enthusiasts.

Teaching methodology

- On the spot speaking(Extempore)
- Making their own video clips of their speech and analyzing
- Debating
- Group discussions
- Invited lectures by popular orator
- Showcase of prototypes by students.
- Lab exercises to validate innovative ideas

Modules covered	Title	Hours
Module / Unit -1	**The Importance of Art of Public Speaking:** Intellectual image building, Usage of Presence of mind, sense of humor, Situational awareness. Transferring the information with clarity. Making the speech interesting to the audience	**15**
Module / Unit -2	**Public speaking skill development: How** to understand the pulse of the audience. Role-play. Invited lectures by three speakers for two hours each	**15**
Module / Unit -3	**Presentation skills:** • Self-made audio/ Video Presentations to the group. • Self-assessment. • Group Discussions • Debates	**10**

Text books

- The art of public speaking by DaleCamegie
- Effective communication and public speaking by SKMandal

Reference books and Online

- Introduction to Public speaking -Brent Coberg
- Art of Public speaking–Lucas
- YouTube

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

FACULTY PROFILE

Faculty Name
Vijeta Iyer

Department
Mathematics

Institution
KCT

Faculty Profile Link

Vedic Mathematics

(This course is offered by Department of Mathematics)

L	T	P	C
3	0	0	3

Description

Vedic Mathematics' course is ideal for students preparing for SAT, GMAT, GRE, CAT and other entrance exams, as it helps to improve calculation speed and numerical skills. It sharpens the brain and enhances analytical thinking. It helps to develop left and right sides of the brains by increasing visualization and concentration abilities.

Objectives

- To eradicate the fear of arithmetic calculations and instill confidence in students
- To provide an insight into ancient Indian Mathematics
- To help students to crack competitive exams.

Expected Outcomes

- Students will have improved calculation speed and numerical skills.
- Students will be able to utilize both left brain (logic) and right brain (creativity)

It will inculcate the habit of analytical thinking and measured approach towards any problem in students.

Expected Audience

Anyone who is interested in learning techniques of Vedic Mathematics

Teaching methodology

- Class room teaching
- Practice exercises

Modules covered	Title	Hours
Module / Unit -1	**Introduction to Sutras,** **Addition and Subtraction** Addition Subtraction	5
Module / Unit -2	**Multiplication with Recognizable** **Patterns** Multiplication of complementary numbers like 23 x 27 Multiplication by numbers consisting of all 9s Multiplication by numbers above the base Multiplication by numbers below the base Multiplication by 11 Multiplication by 12 Multiplication of any number by 9, 99, 999	12
Module / Unit -3	**Generic Multiplication** Multiplication by two-digit numbers Multiplication by three and four-digit numbers **Advanced Multiplication** Working base Multiplication above and below the base Multiplication above and below the working base Compound multiplication	9
Module/ Unit -4	**Squaring, Square Root and Cubing** Squaring of numbers in patterns Squaring numbers with any number of digits Square root Cubing	9
Module/ Unit -5	**Division Nikhilam-division General Division** **Fractions and recurring decimals** **Equations** **Linear and quadratic equations**	10

Text books

Jagadguru Swami Sri BharatiKrsnaTirthaji Maharaja, Vedic Mathematics ,MotilalBanarsidass Delhi.

Reference books and Online

- Fundamentals and Applications of Vedic Mathematics, State Council of EducationalResearch &Training, 2014,Varun Marg, Defence Colony, NewDelhi-110024
- Sri SathyaSai Veda Pratishtan ,Vedic Mathematics Methods, EBook
- Prof M. Basanna, Vedic Mathematics, EBook

John M Mailman, Maharishi's Vedic Mathematics At The Elementary Level,1993., Dissertation Information Service

Grading Policy

Pattern III

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Dr. K MAHESWARI

Department
Mathematics

Institution
KCT

EMAIL:
maheswari.k.sci@kct.ac.in

MOBILE NUMBER
9943797457

FACULTY PROFILE

Mathematics for Competitive Examinations

(This course is offered by Department of Mathematics)

L	T	P	C
3	0	0	3

Description

- This course helps the student to excel in competitive examinations that test the candidate's clarity of concept, speed of calculation and accuracy of the solution. It is ideal for students preparing for SAT, GMAT, GRE, CAT, Bank PO, RBI, Campus recruitment tests etc.

Objectives

- To help the student to know the basic concepts innumber theory, algebra, geometry, reasoning and statistics.
- To improve his problem-solving skills through class work, online assignments etc.

Expected Outcomes

- The student will gain knowledge and confidence to face competitive exams
- The student will be able to use short cut methods and work out the problems within the given time.
- The student will have improved logical thinking and reasoning skills

Expected Audience

Pre-final year students

Teaching methodology

Chalk and
Board Quiz
Online tests
Library
Reference

Module s	Title	Hours
Module / Unit-1	**Number System** Natural numbers, Integers, Rational and Real numbers. Fundamental operations: addition, subtraction, multiplication, division, Square roots, Decimal fractions. Unitary method – time and distance, time and work, clocks and Calendar- percentages, applications to simple and compound interest, profit and loss, ratio and proportion, variation.	15
Module / Unit-2	**Algebra** Division algorithm. Prime and composite numbers. Tests of divisibility by 2, 3, 4, 5, 9 and 11. Multiples and factors. H.C.F & L.C.M of numbers-Euclidean algorithm – Permutation and Combinations: seating arrangement – Linear equations and inequalities- Quadratic equations with real coefficients	9
Module / Unit-3	**Geometry** Areas of squares, rectangles, parallelograms, triangle and circle, Surface area and volume of cube and cuboids, spheres, right circular cones and cylinders.	9
Module /Unit -4	**Reasoning** Coding-decoding-Letter & symbol series - Statement and argument- Syllogism -Blood relations - Data sufficiency	6
Module /Unit -5	**Statistics and Probability** Basic Concepts of probability - Data Interpretation: Tabulation – Histograms-Bar Graphs – Pie Charts - Line Graphs-Frequency Polygons- Measures of central tendency	6

Text books

R.S. Aggarwal, "Quantitative Aptitude for Competitive Examinations", S.Chand, 17th Edition.

Reference books and Online

1. DineshKhattar, "The Pearson Guide to Quantitative Aptitude for CompetitiveExaminations",

2016. 2.Edgar Thorpe, "Course in Mental Ability and Quantitative Aptitude", 3e, Tata McGraw

HillEducation.

Grading Policy

Pattern III

FACULTY PROFILE

Faculty Name
Jegadeesan R

Faculty Designation
In charge

Institution
The Vanavarayar Foundation

EPIGRAPHY, ART & ARCHITECTURE

(This course is offered by Department of Human Excellence)

L	T	P	C
3	0	0	3

This course is intended to motivate undergraduate students to undertake innovative projects with emphasis on design or design of experiments with ideas to prove a concept. It will be carried out in an interactive environment in a framework of exploration of problems with Potential Technology Relevance and /or Socioeconomic impact and entrepreneurship. Students will be trained to develop a proposal on the project and implementation of the respective ideas towards developing a conceptual prototype and business strategy with marketresearch.

- To develop the knowledge of AncientCulture.
- To motivate students for developingnuances.
- To develop goal oriented synergetic approach & entrepreneurship skills.
- To develop team spirit and be a teamworker.

- Students will know how to apply *research* inquiry methods to understand challenges in the scientific &technologicalfields.
- Students will learn how to brainstorm research andinnovate.
- Students will be able to develop their ideas into prototypes to provide new /improved/modified solution to a given problem leading to entrepreneurship of socio -economicvalue.
- Students will relate creative thinking and innovation to technology research, design and productdevelopment
- Studentswillrelate creative thinking and designinnovationandproduct developmentideas
- Students will improve communication and networking skills

Expected Audience

The course will primarily benefit students with interests as below:

- Thosewhowanttodevelopasystematicapproachtowardssolvingproblems.
- Students with entrepreneurshipinterests
- TechnologyEnthusiasts

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroomteaching
- Demonstrationvideos
- Guestlecturesbyexpertswhohavelaunchedsuccessfulstart-upsthroughtheirinnovation.
- Fieldwork

Modules	Title	Hour
Module / Unit -1	Epigraphy – Brahmi script, Tamil Brahmi script, Vattazhuthu, Grantha	15
Module / Unit -2	Paintings & Sculpture	15
Module / Unit -3	Traditional Architecture	15

Text books

1. K.Rajan, 'Epigraphy `, Mano publications,Thanjavur.
2. R.Venkataraman, 'Art & Architecture` Kudal publications,Madurai.

State Archaeology dept. publication books.

Reference books and Online

1. K.V.Ramesh, ' IndianEpigraphy`,
2. K.G.Krishnan, 'South IndianEpigraphy`.
3. Bercy Brown, 'Indian Art &Architecture`.
4. S,R,Balasubramaniam, 'Chola Art` - Three volumes.

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

FACULTY PROFILE

Faculty Name
Mrs. Kousalya Karthikeyan ,
Mrs. Rema K Giridhar &

Faculty Profile Link - Mrs. Kousalya Karthikeyan

Faculty Profile Link - Mrs. Reema K Giridhar

PSYCHOLOGY:TRANSACTIONAL ANALYSIS

(This course is offered by Department of Human Excellence)

L	T	P	C
3	0	0	3

Description

It has been designed to support young minds to communicate better and have positive relationships and take responsibilities towards them. TAPA is operated internationally by the Institute of Developmental Transactional Analysis (IDTA) with support in Europe from the European Association for Transactional Analysis (EATA), in order to recognize the competent application of TA concepts. TAPA operates through a process whereby a TA facilitator teaches a range of TA concepts and the 'students' produce portfolios of evidence. The National Coordinators of TAPA India would arrange for the awards and Certificates from IDTA.

The TAPA is not centered around a pass or fail system; instead the emphasis throughout the scheme is acknowledging the involvement of candidates in a TA-based learning process. The TA can be learned in a variety of ways and from a range of sources. The assessors acting on behalf of IDTA will have met stringent criteria under international TA accreditation processes so that the TAPA scheme ensures consistent, values-based practice.

Transactional Analysis is a discipline in counseling psychology. TA is a rational approach to understand behavior and is based on the assumption that all individuals can learn to trust themselves, think for themselves, make their own decisions and express their feelings.

TA provides a great many techniques for alleviating distress and promoting growth and self-awareness as well as methods for improving interpersonal relationships. Most important it is concerned with helping people change their lives in significant ways. Developmental Transactional Analysis (DTA) is about growth and emphasizes on positive psychology.

Objectives

- To enable choice or change, helping to empower self by dealing with their thinking, feeling and behavior and improvise interpersonal communication.
- Give the participants a corrective experience, to know about their strength and construct, know their limitations and work on it.
- Motivate them through education and through experiential learning to bring a remarkable growth and development in their mental health.

Expected Outcomes

- Integration of new learning manifests in thoughts, feelings and behavior.
- Improvement in Self-esteem, in Open Communication, in expressing authentic feelings

Expected Audience

Students who are interested in learning a new skill to improve the thinking and behavior and thereby establish a healthy relationship

Teaching methodology

Experiential, Mentoring, Coaching & Eclectic with reference to Transactional Analysis(TA), Relational Emotional Behavior Therapy (REBT), Neuro-linguistic Programming (NLP), Psychodrama.

Modules covered	Title	Hours
Module / Unit -1	**Ego States/PAC Model/Transactions Windows on the World/OK OK Status**	15
Module / Unit -2	**Working Styles Strokes**	15
Module / Unit -3	**Drama Triangle and Potency Pyramid Discounting & Steps to Success**	15

Text books

1. TA Today - Ian Stewart & Vann Joines

2. Born to Win - James Jongeward

Grading Policy

The emphasis in the award is on understanding and application. Students are encouraged to draw from their experiences and to provide a range of types of evidence. Possibilities might include: written accounts, worksheet responses, drawings and diagrams, video footage, photographs, paintings, models, clay work, craftwork, audiotapes, work based on TV/media stimulus, web-based responses.

Individuals can use evidence to demonstrate both understanding and application – for example by telling a real story of an incident a student might identify Drama Triangle positions and explain Winning Triangle solutions; this would show understanding and application.

When learners have created an item of evidence – regardless of its format – they will include it in their portfolio and list it on a contents page at the front. This is to ensure the learner presents their understanding and application in a way that makes it easily seen by the moderator and others.

Pattern I

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SPOKEN HINDI

(This course is offered by Department of Human Excellence)

L	T	P	C
3	0	0	3

Description

This course is intended to teach the students to understand the language and interact with others through the medium of the language. Students will get know the usage of the language with proper grammatical, phonetic and linguistic skills at the end of the course.

Objectives

- Understand the alphabets, vowels, consonants and grammar
- To make the students understand the way the language is to bespoken
- To make the students confident enough to speak in the language
- To ensure that the students are empowered with the linguistics knowledge

Expected Outcomes

- Students will get to know the usage of the words
- Make the students confident enough to speak in the language
- To sound grammatically correct and confident

Expected Audience

The students who intend to

- Know the language
- Speak the language with fluency
- To sound grammatically correct and confident

Expected Audience

The students who intend to

- Know the language
- Speak the language with fluency
- Handle the language grammatically correct

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching
- Classroom teaching
- Power point presentations

Modules covered	Title	Hours
Module	• Introduction to the Hindi Language, a general discussion and Importance. • Introduction to Hindi Phonetics and the Chart of Hindi Alphabet. • Introduction to Hindi Numerals. • Names of the days, time, relations • Read, write and speak consonants • Read, write and speak the words formed with letters we learned so far. • Making your own and speaking simple sentences for past actions. Counting to twenty and 10, 20, 30, 40, 50, 60, 70, 80, 90,100 • Review of simple actions. • Speaking the Simple Present events in Hindi, using simple action words. • Making and speaking your own sentences for presentations. • Speaking Present Continuous (imperfect) events in Hindi (I am eating, I am drinking • Speaking Past Continuous (imperfect) events in Hindi (I was eating, I was drinking) • Use of 'already' completed actions (I have eaten) • Using pronouns I, we, you, he, she, it, they with the present and past actions we learned • Speaking past habitual actions • Speaking simple sentences for Future events (I will eat, I will drink) • Use of 'for, with, near, has' Speaking sentences for 'perfect' actions with (I went, I came; I ate, I drank) Use of 'to, with, by, from • Use of postpositions 'in, on, at' • Reading Hind& Storybooks • Speaking complex sentences • Short Storytelling • Making to tell them, How to make tea, how to play hockey, how go to New York, how to cut grass, how to drive a car,	45

	• Stories from Panchatantra, Mahabharata etc. • General conversation.	

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

FACULTY PROFILE

Faculty Profile
PADAIYAL SIVAKUMAR R

Faculty Designation
Natural Food Expert

Email ID
sivawinpadaiyal@gmail.com

Mobile No.
8637410022

Faculty Profile Link

GREATNESS OF NATURAL FOODS & NUTRITION

(This course is offered by Department of Human Excellence)

L	T	P	C
3	0	0	3

Description

- This course is been designed with a unique core concept and subject to create an awareness & realization about the Natural food and nutrition especially among the students.
- This course has been composed to enhance and amplify the momentous of physical health and mental wealth among the students as well as general public.
- Its core focus is on Physical fitness and removing the toxins from the body. Also, it concentrates on helping the students to have profound knowledge about the functions of internal organs.

Objectives

- To Train and edify the students on physical health and mental wealth.
- To inculcate and foster the habit of removing the toxins from the body and to make them self-realize the same.
- To train the students to prepare the natural food on their own through the simple and effortless way by evading the customary cooking practices.

Expected Outcomes

- To become persistent and strong mentally and physically.
- Students perceive the significance and functions of natural food and its nutrition.
- Student will be aware of the facts about the physical body, consumable food, nutrition and its medicinal value

Expected Audience

- Students who aspire to get mastered in Natural food and fire less cooking.
- Students who would yearn to understand the intensity and importance of physical health and the value of our country/organic vegetables.
- Students who desire to pursue and implement the healthy & natural life style

Teaching methodology

- captivating presentation
- Informative Videos
- Stimulating Discussions
- Interaction with the subject Experts
- Indoor training
- Field Trip

Modules covered	Title	Hours
Module / Unit -1	• Introduction of Food • Value of Food • Method of Food • Medicinal Value of Food	10
Module / Unit -2	• Relation between body and food • Relation between body and mind • Metabolize system of our body	5
Module / Unit -3	• Introduction of Natural food • Greatness of Natural food • Benefit of Natural food • Detoxification • Difference between Natural & Cooked food • Medicinal value of Natural food	10
Module/ Unit -4	• Delicious Recipes of Natural food without Boil and Oil. • Delicious Natural food for kids • Delicious Natural food for youngsters • Delicious Natural food for seniors • Vegetable Therapy • Delicious foods prepared by herbals and greens • Our traditional food varieties	10
Module/ Unit -5	• To make the students to prepare a Natural food without oil and boil • To make the students to prepare themselves their healthy diet	10

Text books

- **UyirKakkum Unave Marunthu –***Jai Guruji*
  - **Uyir ulla Iyarkai Unavugal –** *Dr.A.V.G.Reddy M.Sc., NDDRT*
  - **Iyarkai Unave Noi Theerkum Marunthu –** *M.A.Appan*
- **Dry fruits that heal –***Dr.G.N.Chaugan*
- **Unavu Maruthuvam –** *S.KandasamyMuthaliyar*

Reference books and Online

1. http://www.vegitableclinic.com

Grading Policy

Assessment	Model	Total
1	In Class Participation & Discussion	20
2	Written Assessment - I	20
3	Practical Session of Fireless Cooking	20
4	Case Study	20
5	Practical Session of Fireless Cooking	20

Pattern III
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

FCLF

FACULTY PROFILE

Faculty Name
Ms.R. INDUMATHI

Department
Open Elective

Institution
KCT

Faculty Contact Details

Indu.saraswathi@gmail.com

Faculty Profile Link

SPOKEN FRENCH

(This course is offered by Department of Science & Humanities - English)

L	T	P	C
3	0	0	3

Description

This Course is to introduce basic French Language to the students who are willing to learn a new language or pursue higher studies/jobs in French speaking countries.

Objectives

- To recognize and use familiar words and simple phrases for concrete purposes.
- To introduce himself or someone else.
- To ask and answer basic questions about home, family, surroundings, etc.
- To communicate in a basic way when the other person speaks slowly and clearly and is ready to repeat or reformulate to help communication.

Expected Outcomes

- Students can recognize and use familiar words and simple phrases for concrete purposes.
- Students can introduce himself or someone else.
- Students can ask and answer basic questions about home, family, surroundings, etc.
- Students can communicate in a basic way when the other person speaks slowly and clearly and is ready to repeat or reformulate to help communication.

Expected Audience

The course will primarily benefit students with
interests as below:

- Students who want to learn a new language

Students who want to purse higher studies/job in French speaking countries

Teaching Methodology

- Grammar Translation
- Interaction and communication
- Audio - Lingual
- Videos

- Activities/Exercises

Modules covered	Title	Hours
Module / Unit 1 - 3	Greetings, Introduction, Talk about your daily life, Describing a person, Grammar – Introducing present tense verbs 'to be', 'to have', 'to go', Definite/Indefinite Articles (singular), Phonetiques, Masculine and Feminine, Alphabets, Numbers, Nationalities, Adjective Interrogative (Quel), adjective possessives (Singular).	20
Module / Unit 3 - 6	Finding/Showing an object, Article(plurals), interrogative(Qu'est-ce que), Pronouns, Negation, Adjective possessives (plural), Interrogation, demonstrative adjectives, prepositions, verbs(prendre, faire, partir, lire, ecrire, jouer, boire, acheter, manger)	25

Text Books

1. Le nouveau taxi-1(Méthode de français)– By Guy Capelle, Robert Menand
2. Dondo Modern French Course – Oxford Publications

Reference books and Online Materials

1 . https://www.youtube.com/user/learnfrenchwithalexa

2. https://www.youtube.com/user/imagiers

3. http://clickonfrench.com/

4. http://www.jefrench.com/basic-french-lessons

Grading Policy

Pattern III
Five Assessment Component (Each Carries 20 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

KUMARAGURU college of technology character is life

FCLF FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name

J SHANMRITHA

Department
EXTERNAL

FACULTY PROFILE

Creative art and craft

(This course is offered by FT Department)

Description

This course focus on the art work used in our daily life.Art and craft stimulates creativity and imagination.It provides visual,tactile and sensory experiences and a special way of understanding and responding to the world.It enables students to communicate what they see,feel and think through the use of colour,texture,form,pattern and different materials and processes.Art and craft describes a wide variety of activities involving making things with one's own hand.

Objectives

- The ability to develop creativity and imagination through a range of complex activities.
- The ability to increase the critical awareness of the roles and purpose of art and craft.
- The ability to develop increasing confidence in use of visual and tactile elements.

Expected Outcomes

At the end of this course the students will be able,

- To prepare an art work for their own theme.
- It brings out good creativity.

Expected Audience

The course will primarily benefits students with interests as below:

- Students from various department can enroll this course.
- Those who are interested in drawing or creating craft works can enroll this course.

Teaching methodology

- Board with chalk piece
- Visual drawing
- Group work
- Free hand drawing

Modules covered	Title	Hours
Module / Unit -1	Types of shapes and model on clay embossing champagne grapes. Basic shapes-Drawing-Shaping-Sculpturing-Designing-Painting.	9
Module / Unit -2	Model on foil work girl. Model on multicolour flower mirror frame. Outlining small figures-Sketching-Background preparation-Sheet filling. Preparation for model cutting-Colouring-Shaping-Sculpturing-Painting.	9
Module / Unit -3	Model on plaster of paris Lord ganesh. Base mixing-Fixing-Colour applying-Color mixing-Painting.	9
Module/ Unit -4	Model on warli tribal art. Model on tanjore glass painting. Base work-Drawing-Shaping-Sculpturing-Colour applying-Painting. Dotting-Color mixing-Applying(dotting surface)-Skin tone-Background-Finishing.	9
Module/ Unit -5	Model on glass bottle art-2 techniques. Basic techniques-Background texture-Mixing-Drawing-Painting. Black matt finish-Clay modelling-Flower making-Painting.	9

Text books

FEVI ART,by fevicryl.hobby ideas.

Reference books and Online

Make it with Air dry clay,Author-fay de winter.

Warli painting,step by step instruction and design.Author-amrita gupta.

www.hobbyideas.in

www.aluminiumfoilembossing.com

Grading Policy

Pattern-III

CHOICE BASED CREDIT SYSTEM (CBCS)

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Dr.A.S.Mythili

Faculty Designation
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Course Title

L	T	P	C
3	0	0	3

Art of Cracking English Competitive Exams

(This course is offered by Department of English)

Description

Art of cracking English Competitive Exams aims to help the aspirants of competitive exams (like SSC Exams, UPSC- ESC, CSE, Combined Defense Exam, Bank Exams, Railway Exams, LIC Exams, etc) in honing English language skills that facilitates aspects of vocabulary, grammar and writing. The course design provides a hands-on training which will help the learners face competitive exams with confidence. The practice sessions will motivate the learners meet the demand of various competitive exams.

Objectives

- Create awareness and learning about the various competitive exams
- Impart specific language training for various Competitive examinations.
- Familiarize students on interpreting and comprehending skills required for competitive exams.
- Improve writing skills of students to attempt descriptive questions in competitive exams.

Expected Outcomes

By the end of the course the students will be able to:

- Gain valuable insights on various Competitive exams to mark out the capability.
- Face competitive exams with confidence after having acquired the necessary language skill to appear for various competitive exams
- Apply language strategies and techniques to attempt grammar and vocabulary questions.
- Comprehend and interpret the texts to write effective descriptive answers.

Expected Audience

- Aspirants of Competitive exams.
- Learners who are interested in developing language skills.

Teaching Methodology

- Classroom Lecture Method
- Power point Presentations
- Paper based Practice tests

- Google Classroom
- Online Quiz

  Practices

Modules covered	Title	Hours
Module / Unit -1	General over view of various competitive exams (like SSC Exams, UPSC-ESC, CSE, Combined Defense Exam, Bank Exams, Railway Exams, LIC Exams, etc) **Building Vocabulary**–Vocabulary Formation, Homonyms, One word substitution, Idioms and Phrases, Phrasal verbs, Selecting words or Phrases. **Verbal analogy** **Comprehending Skills** – Comprehension, Deriving Conclusion from Paragraph, Completing a paragraph, Reconstruction of Paragraph, Rearrangement of Jumbled Parts	**15**
Module / Unit -2	**Applying grammar** - Spotting Errors, Error correction, Identifying the correct spelling, Punctuation, Voice and Preposition. **Sentence Skills**- Reconstruction of Sentences, Rearrangement of Sentences in a paragraph	**15**
Module / Unit -3	**Writing for Competitive Exams –** Paragraph writing, Essay Writing, Précis writing and Letter writing.	**15**

Text books

- Objective English for Competitive Examination by Hari Mohan Prasad and Uma Sinha.
- A modern approach to verbal & non-verbal reasoning,Dr.R.S.Agarwal, S Chand publications
- Perfect Competitive English For All Competitive examinations by V.K.Sinha

Reference books and Online

- Maha English Practice Sets for Competitive Exams by Maha Gupta.
- General English for All Competitive Examinations by S.C. Gupta.
- https://examsdaily.in/english-study-materials-free-pdf-download
- https://www.gyanjosh.com/paper/english-language

Grading Policy

Pattern III

Building Vocabulary and Verbal Analogy	Comprehending Skills and Sentence Skills	Applying grammar	Writing for Competitive Exams	All three Modules/Units	Total
20	20	20	20	20	100

CHOICE BASED CREDIT SYSTEM (CBCS)

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Dr.Hema.R

Faculty Designation
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L	T	P	C
3	0	0	3

Course Title

English for Career Pursuits

(This course is offered by Department of English)

Description

English for Career Pursuits is designed for the learners who are interested in advancing their career on different national and global platforms with the aid of English language skills. This course will offer an opportunity to explore various career paths in order to achieve professional goals. It will help the learners to focus in the contexts of higher education and employability. The course will benefit the students in leveraging the skills and abilities to route map an appropriate career choice.

Objectives

- Provide a detailed insight and practice into various task types of GRE, GMAT pertaining to English Language.
- Provide familiarity with reading and writing sections of TOEFL Exam.
- Assist the learners in acing reading and writing sections of IELTS (General and Academic).

Expected Outcomes

- Understand and plan for future educational and career pursuits.
- Achieve comprehensive skills to attempt Language related questions in GRE and GMAT.
- Demonstrate competency to attempt reading and writing task types of TOEFL Exam.
- Establish ability to attempt reading and writing task types of IELTS (General and Academic).

Expected Audience

- Learners interested in pursuing higher studies and seeking employability with the help of Engineering, Management and Language Exams.
- Aspirants of GRE and GMAT.
- Aspirants of TOEFL and IELTS (General and Academic).

Teaching Methodology

- Classroom Lecture Method
- Power point Presentations
- Google Classroom
- Blended Learning
- Paper Based Test and Computer Based Test Practice Sessions.

Modules covered	Title	Hours
Module / Unit -1	**Practice for GRE & GMAT Task questions** **GRE Verbal Reasoning -** Reading Comprehension (Select One Answer Choice, Select One or More Answer Choices, Select-in-Passage) – Text Completion - Sentence Equivalence. **GRE Analytical Writing -** Analyze an issue, Analyze an argument. **GMAT Verbal Reasoning -** Reading Comprehension, Critical Reasoning, Sentence Correction. **GMAT Analytical Writing Assessment**	**15**
Module / Unit -2	**Practice for TOEFL Reading and Writing Task Types** **TOEFL Reading Tasks -** Vocabulary, Detail, Purpose, Negative Factual Information, Essential Information, Reference, Inference, Insert a Sentence, Complete the summary, Complete the table **TOEFL Writing Tasks -** Integrated Writing, Independent Writing	**15**
Module / Unit -3	**Practice for IELTS Reading and Writing Task Types (General and Academic)** **IELTS Reading Tasks -** Matching Headings, True/False/Not Given, Matching Paragraph Information, Matching Features, Summary Completion Question, Sentence Completion Questions, Multiple Choice Questions, List Selection, Choosing a Title, Categorisation Questions, Matching Sentence Endings, Table and Flow Chart Completion and Diagram Label Completion, Short Answer Questions **IELTS Writing Tasks -** Writing about a table, chart or diagram, Writing a letter, Writing an essay.	**15**

Text books

- The Official Guide to the GRE General Test – Third Edition – Mc Graw Hill Education
- Complete GMAT Strategy Guide Set – Fifth Edition – Manhattan
- The Official Guide to the TOEFL – Fifth Edition – MC Graw Hill Education
- The Official Cambridge Guide to IELTS for Academic & General Training – Cambridge University Press

Reference books and Online

- https://magoosh.com/gre/2020
- GMAT Prep Plus 2020 – Kaplan, Kaplan Publishing, New York.
- https://www.ets.org
- https://magoosh.com/ielts/ielts-resources/ielts-books/best-books-books-resources

Grading Policy

Pattern III					
GRE Task Questions	**GMAT Task Questions**	**TOEFL Test**	**IELTS Test**	**All Modules**	**Total**
20	**20**	**20**	**20**	**20**	**100**

CHOICE BASED CREDIT SYSTEM (CBCS)

KUMARAGURU college of technology character is life

FCLF FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Dr. D. Jalajaa

Assistant Professor
Department of Chemistry

Kumaraguru College of Technology

EMERGING ENVIRONMENT TECHNOLOGIES

(This course is offered by Department of Chemistry)

L	T	P	C
3	0	0	3

Description

Demand for new energy policies, overutilization of natural resources, acute water supply, alarming climatic changes and deforestation reversibility are some of the global and environmental issues need to be addressed for humans to achieve sustainable living on this planet and its very survival.

Objectives

- To understand the importance of environmental conservation.
- To make the technologist to realize the ethics of environment
- To emphasize the researchers to go hand in harmony with the nature
- To ensure the quality and safety of life on earth.

Expected Outcomes

Students will be able to

- Evaluate the current environmental issues today
- Analyze the key findings and prioritize them based on severity.
- Apply the emerging environmental technologies to go for the solution

Expected Audience

- All branches of Engineering and technology

Teaching methodology

- Power Point presentation
- Chalk and Board
- Group discussions
- Reviews
- Seminars by Environmentalists
- Field study in KCT Campus
- Case study

Modules covered	Title	Hours
Module -1	ENVIRONMENTAL ISSUES – CURRENT UPDATE Over utilization of Natural Resources – Deforestation and Paper Obsolete –– Water Crisis an acute problem – Global warming and Roof Gardening	9
Module - 2	ENVIRONMENTAL IMPACT ASSESSMENT (EIA) Introduction – Screening – Scope – Alternatives – Mitigating measures – Environmental Status - Present status EIA of India.	9
Module - 3	EMERGING TECHNOLOGY IN AFFORESTATION AND CLIMATIC CHANGES Genetic improvement – Improved growth environment - Rooting Technology – Climatic changes (Carbon Credit, Carbon offset and Carbon footprint - an overview)	9
Module - 4	EMERGING TECHNOLOGY IN ENERGY AND WATER CRISIS Energy Crisis and New policy - Microbial fuel cells – Broad spectrum solar – Beta Voltaic – Modular floating wind – Tidal power – Green Hydrogen – Drip irrigation – Recycling – Leakage Sensors	9
Module - 5	EMERGING TECHNOLOGY IN ECO-ENVIRONMENTAL REMEDIATION – AN OVERVIEW Ground water remediation – Air sparging - Nano remediation Case study: (Self-remediation & Clean environment – KCT campus - a paradigm) Small project: improvement in design and process	9

Text books

Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co., 2013

Masters G.M., and Ela W.P., Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., 3rd Edition, 2015.

Reference books and Online

H. Naber. Environmental Impact Assessment. Washington, DC: World Bank, 2012

Emerging Technologies in Environmental Bioremediation Paperback – Import, 1 May 2020 by Maulin P. Shah (Editor), Susana Rodriguez-Couto (Editor), S. Sevinc Sengor (Editor)

Grading Policy

Pattern III
Five Assessment Component (Each Carries 20 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

KUMARAGURU college of technology character is life

FCLF FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

R.Mayildurai

K.Karthik

Assistant Professor

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Faculty Profile Link
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Modern Techniques in Solid Waste Management

(This course is offered by Department of Chemistry)

L	T	P	C
3	0	0	3

Description

This course is a study of the convolutions related with environmental impacts of solid wastes and its management; waste management strategies; disposal and diversion methods. This course will have both a classroom component where solid waste management issues and practices will be learned and a non-classroom component where students will apply these practices in real-life situations.

Objectives

This course will create awareness, knowledge, skills and attitudes among the students on the solid wastes and its management.

Expected Outcomes

Illustrate the waste generation in a technological society and analyze the waste generation trends.

Designing an engineered landfill for waste produced from society

Categorizing the various design parameters to be fulfilled while adopting various processes for waste treatment.

Figure out the present situation of solid waste and its management.

Expected Audience

Students from all engineering programmes.

Teaching methodology

Lectures
Power Point Presentations
Videos
Industrial Visit

Modules covered	Title	Hours
Module / Unit -1	Solid waste - Public health and ecological impacts - Sources and types of solid wastes - waste generation in a technological society - factors affecting the generation rates - future challenges and opportunities.	9
Module / Unit -2	Waste generation - Waste audit - Transfer and transport -Storage	9
Module / Unit -3	Physical and chemical composition of various solid wastes, hierarchy of waste management – Waste disposal mechanism - Resource recovery park	9
Module/ Unit -4	Solid waste disposal methods - Composting	9
Module/ Unit -5	Solid waste management practices – Field Visit.	9

Text books

1. The Complete Book on Waste Treatment Technologies, Mahendra Pal, Niir Project Consultancy Services, 2015, ISBN : 9381039674, 9789381039670

Reference books and Online

1. Bhide, A.D., B.B. Sundaresan, Solid Waste Management in developing Countries.
2. Guidelines for Management and Handling of Hazardous wastes MOEF (1991), Govt. of India.
3. Datta, M; Waste Disposal in Engineered Landfills, Narosa Publishers, Delhi
4. https://www.intechopen.com/books/e-waste-in-transition-from-pollution-to-resource/the-generation-composition-collection-treatment-and-disposal-system-and-impact-of-e-waste
5. http://www.pacebutler.com/blog/e-waste-disposal-methods-in-us/

Grading Policy (Choice of Pattern)

Pattern III
Five Assessment Component (Each Carries 20 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

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L	T	P	C
3	0	0	3

Energy, Environment and Society

(This course is offered by Department of Chemistry)

Description

This world is connected with 3E – Energy, Economy, and Environment. Society needs to keep all energy options open to satisfy the growing demand. The available energy sources, utilization and transformation of resources directly influence the economy of a country. Energy innovation is a key area where every nation is working on it. Cleanenergy technology should be developed by reducing the nationwide carbon-dioxide emission. The energy audit is an important step in improving the energy efficiency of a country. In the future, every individual should be aware of sustainable development, energy, and environmental challenges. Such social change also requires a new way of thinking. The framework structure consists of cleaner energy supply andenergy demand. In-depth knowledge in these areas will, therefore, be in high demand.

Objectives

1. To help the essential understanding of growing energy need, highlighting the energy consumption and energy wastage.
2. To help the individual to understand the social role of energy, and learn to analyse the issues and opportunities related to energy.

Expected Outcomes

1. Students will get an insight into the economic, environmental and social aspects of energy production and consumption.
2. A better understanding of these issues is important with regard to participating in technological, business development in the energy domain.

Expected Audience

All B.E /B.TECH Engineering graduates.

Teaching methodology

Power point presentations, Video lectures, Group discussions and Case studies

Modules covered	Title	Hours
Module / Unit -1	Introduction to energy – Scope and importance – Different energy scenarios - World's energy distribution – Energy supply - Population and energy problem -Energy and technology - Energy System integration (ESI) - 3E (Energy, Economy and Environment)concept-Carbon footprint in energy production - Energy consumption and sustainable energy development	15
Module / Unit -2	Energy and Environment-Environmental Policies based on energy-Societal transition and transformation in energy consumption-Energy and societal safety-Alternate measures :Future batteries- advanced materials-Energy conversion technologies - Importance - Waste to energy conversion	15
Module / Unit -3	Energy and Society - Energy need in economy - Energy and GDP growth - The Energy conversion act - Energy efficiency and energy efficient products - Energy ethics - Importance of energy management – Energy security - Energy auditing - Energy economics	15

Reference books

1. Sustainable Energy Consumption and Society, David L.Goldblatt, Springer.
2. Environmental and Economic Sustainability, Paul E.Hardisty, CRC Press, Taylor & Francis Group.
3. Encyclopedia of Energy, Natural Resource, and Environmental Economics, Jason Shogren, Elsevier Science.
4. Energy Economics and Policy, James M.Griffin, Henry B.Steele, Academic Press College Division.
5. Sustainable Energy: Choosing Among Options., Tester, J. W., E. M. Drake, M. J. Driscoll, M. W. Golay, and W. A. Peters. Cambridge, MA: MIT Press.

Online materials

1. https://www.eia.gov/outlooks/ieo/pdf/ieo2019.pdf
2. https://www.iucn.org/downloads/pm16_section_1.pdf
3. https://www.need.org/Files/curriculum/infobook/EfficiencyI.pdf
4. https://beeindia.gov.in/sites/default/files/1Ch1.pdf

Grading Policy

Pattern III
Five Assessment Component (Each Carries 20 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

KUMARAGURU college of technology
character is life

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

CHOICE BASED CREDIT SYSTEM (CBCS)

KUMARAGURU college of technology character is life

FCLF FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

K. KARTHIK
Assistant Professor

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Technology

Faculty Profile Link

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L	T	P	C
3	0	0	3

THIN FILMS FABRICATION AND INDUSTRIAL APPLICATIONS OF ENGINEERING MATERIALS

(This course is offered by Department of Chemistry)

Description

This course deals with the importance of thin film coatings in the modern world and various thin film manufacturing technologies along with the applications of thin film in various engineering fields. The processing of materials into thin films makes the component easy integration into various types of devices, in turn enhance the surface properties of the components. Thin films fabrication is one of the key elements for advanced applications in the various fields such as optical devices, environmental applications, telecommunications devices, energy storage devices, and so on. Thin film have wide range of advance technological and industrial applications for the development of innovative products. Applications of thin film fabrication ranges from mechanical, automobile, aeronautical, civil materials to components of electrical, electronics and bio-medical products. Thorough knowledge of thin film fabrication methods and its industrial applications are necessary for development of materials with enhanced properties.

Objectives

- To learn and understand the various methods of fabrication of thin films
- Expertise on the properties, characterization and applications of thin films for industrial applications
- Focus on the thin film fabrication for development of products with global competency

Expected Outcomes

On completion of the course, the student should be able to:

- Fabricate thin films by using different methods
- Capable of fabricate suitable thin film for various industrial applications
- Create new materials and products with enhanced efficiency and competency

Expected Audience

UG Students from all engineering disciplines

Teaching methodology

Classroom Lectures	Power point presentations
Group discussions	Videos

Modules covered	Title	Hours
Module / Unit -1	**Thin film fabrication techniques**: Introduction to thin films - evaporative methods (Spin Coating, Doctor blading, powder coating) – glow discharge processes (Sputtering, plasma processes) – gas phase chemical processes (chemical vapour deposition, CVD Epitaxy) – liquid phase chemical processes(Electroplating, spray pyrolysis) - physical vapour deposition (pulsed laser deposition)	11
Module / Unit -2	**Thin film properties**: Criteria for the selection of a fabrication technology - Thin film growth process - Electrical, thermal, mechanical, morphological, optical, magnetic and chemical properties	8
Module / Unit -3	**Characterization techniques and fabrication of materials:** SEM, TEM, AFM, X-Ray, EDAX, Four point probe and Hall effect measurements - transmission measurements – practical session on coating of thin films by spin coating, dip coating, doctor blading and electrodeposition techniques	13
Module / Unit -4	**Applications of thin films in everyday life**: Anti-reflection coatings on optical components – preventing corrosion and wearing – thin film in a semiconductor – thin films for optoelectronics - diamond thin films for biomedical applications – metal oxide thin films for environmental applications – field visit	13

Text books

1. Materials Science of Thin Films, Milton Ohring, 2nd edition, Elsevier, 2001
2. Handbook of Thin Film Technology, Hartmut Frey, Hamid R. Khan, Springer Science & Business Media 2015

Reference books and Online sources

1. Vacuum deposition of thin films, L. Holland, Chapman and Hall.
2. Glow discharge processes, B. Chapman, Wiley, New York.
3. Thin film phenomena, K. Chopra, McGraw Hill, New York.
4. https://youtu.be/cz9EpdAMmoY?t=86
5. https://nptel.ac.in/content/storage2/courses/112108092/module2/lec08.pdf
6. https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/113104075/lec41.pdf

KCT's Unique CBCS Framework

Grading Policy (Choice of Pattern)

Pattern III
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

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CHEMISTRY OF COSMETICS IN EVERYDAY LIFE

L	T	P	C
3	0	0	3

(This course is offered by Department of Chemistry)

Description

Chemistry of Cosmetics in Everyday Life describes the raw materials of cosmetics and their application, that is, how ingredients like oils, fatty acids, macromolecules, and glycols, among others, are used. Personal care is a specialized field within applied research and product development. There are many niche areas (e.g., cosmetics, soaps, natural products), each of which has their own special considerations. It is also describe how to mix and compose formulas for each kind of synthetic cosmetic product, among which are featured soap-based cleansers, shampoos, conditioners, creams, hair-care products, hair dye etc. At the same time, plants have emerged as the best source of cosmetic ingredients that meet the consumer's growing demand of natural character, efficiency, safety, and are increasingly replacing synthetic ingredients.

Objectives

- Create awareness on the toxic chemical in cosmetics and personal care.
- To covers the chemistry of surface science and how it applies to formulating safe, effective, stable personal care products.
- To understand variety of organic base formulas of cosmetics to boost learner's confidence in this area and give them an immediate start with innovative and eco friendly products.

Expected Outcomes

The learners will be able to

- Identify the toxins in cosmetics and personal care products by applying basics of chemistry knowledge.
- Understand the natural ingredients over the synthetic toxic chemicals.
- Design and formulate new ingredients or combine and modify existing ingredients in new ways to create new products on considering health, safety and environment.

Expected Audience

- Students from any discipline.
- Students who are interested to know the cosmetics and personal care products and to apply those principles on developing the

innovative natural homecare products.

Teaching methodology

- Classroom teaching
- On-line lectures
- Electronic text for all units
- Guest lectures
- Field trip
- Case study analysis
- Submission of practical samples.

Modules covered	Title	Hours
Module / Unit -1	**Chemistry of Cosmetics**: Introduction - Definition - Cosmetic product forms- Ingredients- Function –Toxicity- Role of pH on personal care products- Cosmetic Formula- Formulation development	10
Module / Unit -2	**Developing the formulations Cosmetics:** Raw Material: Oils, Surfactant, Polymer, Glycols, Other Ingredients, Emulsion,	5
Module/ Unit - 3	**Formulas and Cosmetic Production:** Skin, Hair , Oral Care products: Soap and Cleanser- Shampoos- Hair Conditioner- Skin cream- Facial toner.	15
Module/ Unit-4	**Toxicology and Ecotoxicology :** Toxicity- Product toxicity- Eco toxicity - Biodegradation. Green Chemistry Concepts in Personal Care and Cosmetics **Herbal Principle in Cosmetics:** Natural ingredients- Formulating with natural ingredients- Natural antioxidant- Ayruvedic ingredients.	15

Text books

1. Cosmetic Formulation of Skin Care Products, edited by Zoe Diana Draelos

Wake Forest University School of Medicine Winston-Salem, North Carolina, U.S.A. Lauren A. Thaman,P&G Beauty, Cincinnati, Ohio, U.S.A. Hiroshi Iwata and Kunio Shimada , Formulas, Ingredients and Production of Cosmetics

Technology of Skin- and Hair-Care, Products in Japan, Springer (2013)

2. Nava Dayan, Lambros Kromidas, Formulating, packaging, and marketing of natural cosmetic,products Published by John Wiley & Sons, Inc., Hoboken, New Jersey.(2011)

3. Bruno Burlando, Luisella Verotta, Laura Cornara, Herbal Principles in Cosmetics, and Elisa Bottini-Massa, CRC press Taylor & Fransis (2010)

Suggested video clip and online notes

1. https://www.sciencedirect.com/topics/materials-science/personal-care-product
2. https://www.choice.com.au/health-and-body/beauty-and-personal-care/skin-care-and-cosmetics/articles/chemicals-in-cosmetics
3.https://www.youtube.com/watch?time_continue=1&v=pfq000AF1i8&feature=emb_logo

Grading Policy

Pattern III
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Mr.R.S.Mohankumar
Assistant Professor

Department
Mechanical

Institution
KCT

INDUSTRIAL SAFETY

(This course is offered by Department of Mechanical Engineering)

L	T	P	C
3	0	0	3

Description

This course is intended to motivate undergraduate students to

- Get acquainted with industry safety practices
- Know the importance of safety in manufacturing and service industry

Objectives

- To impart Science & Technological aspects of safety in industry.
- Apply the principles of measures of human error and safety in work environment.
- Apply and analyze the concept of safety and risk in the light of engineering ethics

Expected Outcomes

At the end of the course:

- Identify the evaluation of industrial safety and health standards
- Apply the philosophies behind industrial accidents
- Apply the hierarchical levels in a safety organization
- Apply the concept of industrial process safety
- Apply the safety procedures for human
- Apply the types of industrial hazards and preventive measures

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to enter in to service or production industry.
- Students with entrepreneurship interests

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching
- Demonstration videos
- Guest lectures by experts
- Industrial visits

Modules covered	Title	Hours
Module / Unit -1	Definition-Development before industrial revolution-Milestones in industrial safety movement. Development of accident prevention programs-3 E's of safety- Development of Safety organizations-Safety and health movement- Managing emergency in industries. Safety and productivity-Fallacies about safety-Industrial psychology in accident prevention. Basic philosophy of accident prevention-Unsafe condition, Unsafe act, Injury, Fault of persons, Cost of accidents-Safety education.	15
Module / Unit -2	Purpose of a safety organization-Safety policy- Safety committee-types- Role of safety coordinator- Responsibilities, Interferences and Sufferings of safety supervisor-Safety publicity-Accident reporting- Accident investigation-Accident statistics-Safety audits. Overview-Safety performance by industry sector-Incident pyramid- Process hazard and risk Failure of defenses- Process safety management-Scope, Functions, Features and Characteristics, Role of organizational levels in Process safety Management-Assessing organizations safety effectiveness.	15
Module / Unit -3	Management of change-Process and equipment integrity-Human behavior aspects and modes-The	15

	Swiss cheese model of industrial accidents-Active and Latent failures- examples - Safety lessons Human Factors influencing the likelihood of failure-Organizational culture, Demographic effects. OSHA and industrial hygiene-work site analysis-recognizing and controlling hazards Occupational diseases prevention-Employee welfare-Statutory welfare schemes, Non statutory schemes-Health hazards-Control strategies- Fire hazards and prevention, Electrical hazard prevention and safety.	

Text books

1. Krishnan N.V., "Safety in Industry", Jaico Publisher House, 2005.

Reference books and Online

1. R.K. Mishra,"Safety Management", AITBS publishers,2012.
2. Singh,U.K.andDewan,J.M.,"Safety,Securityandriskmanagement",APHPublishingCompany,New Delhi,2005.
3. C. Ray Asfahl, David W. Rieske " Industrial Safety and health management", PrenticeHall,2009.
4. R.K. Mishra,"Safety Management", AITBS publishers,2012.
5. Krishnan N.V., "Safety in Industry", Jaico Publisher House,2005.
6. Singh,U.K.andDewan,J.M.,"Safety,Securityandriskmanagement",APHPublishingCompany,New Delhi,2005.
7. C. Ray Asfahl, David W. Rieske " Industrial Safety and health management", PrenticeHall,2009.

Grading Policy

Pattern III
Five Assessment Component (Each Carries 20 Marks)

KCT's Unique CBCS Framework

FCLF

FACULTY PROFILE

Faculty Profile

Dr K.PARAMASIVAM
Professor

KCT

Paramasivam.k.ece@kct.ac.in

9942989881

Faculty Profile Link

INTELLECTUAL PROPERTY RIGHTS

(This course is offered by Department of Electrical and Electronics Engineering)

L	T	P	C
3	0	0	3

Description

Intellectual property has increasingly assumed a key role with the rapid pace of technological and scientific and innovation witnessing today. Moreover, changes in the global economic environment have influenced the development of business models where intellectual property is a central element establishing value and potential growth of any nation. This trend necessitating the demand for IP professionals well versed in this area to deal with (IPRs) across the national and international borders.

The course provide the students with a wide perspective and in-depth knowledge in intellectual property rights and its process.

Objectives:

- To provide an overview on IPR and its types.
- To provide hands on training on patent search in different database.
- To bring out techno-legal professionals in the field of IPR.
- To provide enough knowledge on IPR and its enforcement for start up innovators.

Expected Outcomes:

After the completion of course, students will be able to:

After the completion of course, students will be able to:

- CO1: Understand the concepts of Intellectual Property Rights of various IPs.
- CO2: Carryout the prior art patent search using different patent databases.
- CO3: Understand the filing and registration process of different IPs.
- CO4: Learn the Licensing and infringements in IP regime.
- CO5: Understand the various aspects and landmark judgement in infringement cases of several IPs.

Expected Audience: Students from any discipline

Teaching methodology: Class room/Computer Lab (Power point presentation)

Modules covered	Title	Hours
Module / Unit -1	**Introduction to Intellectual Property Rights(IPR):** Invention and Creativity – Intellectual Property (IP)- Movable Property - Immovable Property – Importance of IP – Protection of IPR - Intellectual Property types: Copyrights, Trademarks, Patents, Designs, Utility Models, Trade Secrets and Geographical Indications - Bio-diversity and IPR - conventions, treaties, WTO, WIPO - Important examples of IPR.	9
Module / Unit -2	**Patents:** Concept of Patent- Product / Process Patents & Terminology - Elements of Patentability and non-patentability - Procedure for Filing of Patent Application and types of Applications - Patent search through Internet, Patent Databases - Invention Disclosures – provisional and complete specification – patent drafting - Process for Examination & Prosecution - Assignment and licensing of Patents - Compulsory Licensing	9
Module / Unit -3	**Other IPs:** Meaning and practical aspects of registration of Copy Rights, Trademarks, Geographical Indications, Trade Secrets and Industrial Design - registration in India and Abroad	9
Module/ Unit -4	**Digital Products And Law:** Digital Innovations and Developments as Knowledge Assets – IP Laws, Cyber Law and Digital Content Protection –protection of computer program – Unfair Competition – Unfair Competition and IP Laws - Draft of a national Intellectual Property Policy. **Enforcement of IPRs:** Infringement of IPRs, Enforcement Measures, Emerging issues.	9
Module/ Unit -5	**Licensing and Case Studies:** Licensing and commercialization of IP - Case Studies on – Patents (Basumati rice, turmeric, Neem, etc.) – Copyright and related rights – Trade Marks – Industrial design and Integrated circuits – Geographical indications	9
Hands on Training	**Patent search using WIPO-Patentscope, lens, USPTO, Inpass**	

Text books:

1. V. Scople Vinod, Managing Intellectual Property, Prentice Hall of India pvt Ltd, 2012
2. S. V. Satakar, Intellectual Property Rights and Copy Rights, Ess Ess Publications, New Delhi, 2002

Reference books and Online

1. Study Material, Professional Programme- In Intellectual Property Rights Law and Practice, Module 3, The Institute of Company Secretaries of India, New Delhi 2014.
2. K.Bansl & P.Bansal, Fundamentals of lP for Engineers, BS Publications/BSP Books 2013
3. Subbaram N.R. "Handbook of Indian Patent Law and Practice ", S. Viswanathan Printers and Publishers Pvt. Ltd., 1998.
4. Deborah E. Bouchoux, —Intellectual Property: The Law of Trademarks, Copyrights, Patents and Trade Secrets, Cengage Learning, Third Edition, 2012.
5. http://www.ipindia.nic.in/
6. http://ipindiaservices.gov.in/publicsearch
7. http://www.wipo.int/
8. https://patentscope.wipo.int/
9. https://www.lens.org/

Grading Policy (Choice of Pattern)

Pattern III

KCT's Unique CBCS Framework

PROGRAMMABLE LOGIC CONTROLLER (PLC) FOR TEXTILE APPLICATIONS

(This course is offered by Department of Electrical and Electronics Engineering)

L	T	P	C
3	0	0	3

FACULTY PROFILE

Faculty Name
Mr.SASI KUMAR C

Faculty Designation
Assistant Professor

Institution
KCT

Email ID
Sasikumar.c.eee@kct.ac.in

Mobile No.
9786037980

Faculty Profile Link

Description

This course will introduce the fundamentals of Programmable Logic Controller (PLC) operations including interfacing of Sensor and actuators for textile applications. Methods of using the programming interface to troubleshoot applications will be emphasized. The student will write, enter, and execute application programs using the programmable controllers. The use of the PLC Lab equipment will give the student practical programming and troubleshooting skills used in the maintenance of automated systems.

Objectives

- Introductions to the purpose, functions, and operations of the PLC in industrial applications.
- Identification of various components of the PLC.
- Introduction to PLC ladder logic and basic programming concepts.
- Establishing communications with the PLC.
- I/O configuration and downloading PLC programs.
- Installation and troubleshooting sensors wired as sinking or sourcing current.
- PLC timer and counter concepts and programming applications.

Expected Outcomes

After successful completion of this course, the students should be able to
CO 1: Describe the architecture of PLC.
CO 2: Understand the working of PLC analog and digital input and output devices.
CO 3: Program on basic ladder logic diagram using timer and counters.
CO 4: Understand the interface of PC with PLC.
CO 5: Design and program an automated industrial production line

Expected Audience

Auto, Biotech, Civil, ECE, CSE, IT, FT, TXT

Teaching methodology

Chalk and Talk, PPT, PLC Programming Software and Hardware

Modules covered	Title	Hours
Module / Unit -1	**Introduction of Programmable Logic Controllers** Definition and history of PLC, Overall PLC system, PLC Input and output modules, central processing unit, processor, input modules (Interfaces), power supplies, PLC advantages and disadvantages, selection criteria for PLC, Input ON/OFF switching devices, Input analog devices, Output ON/OFF devices, output analog devices.	6
Module / Unit -2	**Ladder Programming** Methods of Programming - construction of PLC ladder diagram, Basic components & their symbols in ladder diagram, Fundamental of ladder diagram, Boolean logic &relay logic, and analysis of rungs.	12
Module / Unit -3	**Relays** Internal relays - Battery-backed relays - One-shot operation - Set and Reset - Master control relay – Application Program - Case Study.	9
Module/ Unit -4	**Instruction List** Jump and Call – Timers – Sequencing, Cascaded, On-off cycle timer, Off-delay timers, Pulse timers – Counters - Up and down counting - Timers with counters – Shift Register - Application Program	9
Module/ Unit -5	**Case Study - Textile Mills** Automation in Weaving Shed, Electronic Let-off, Take-up Mechanism and Stop Motion, Automation in Winding Process.	9

Text books

- Bolton W, "Programmable Logic Controllers", Elsevier's Science & Technology, Fourth Edition, 2006.

Reference books and Online

1. Petrezeulla, "Programmable Controllers", McGraw-Hill, 2004.
2. Clarke, G., Reynders, D. and Wright, E., "Practical Modern SCADA Protocols: DNP3, 60870.5 and Related Systems", Newnes, 1 st Edition, 2004.
3. Hughes, T., "Programmable Logic Controllers", ISA Press, 2000.
4. John W. Webb, Ronald A.Ries, "Programmable Logic Controllers: Principle and application " 5th Edition.
5. Ronald L.Kurtz, "Securing SCADA System", Wiley publiser.

Grading Policy (Pattern III)

FACULTY PROFILE

Faculty Name
Ramsundram N

Department
Civil Engineering
Institution
KCT

Faculty profile link

CLIMATE CHANGE IMPACT ON WATER RESOURCES

Description

L	T	P	C
3	0	0	3

Water is essential for life and earth sustainability. In the present scenario of water availability, it had been become the most crucial thing for a society. This course hasbeen structured in a way to showcase the science behind the water availability, and the role of climate. The course will also introduce the audience to the following concepts, namely; a) The increased emission of greenhouse gases resulted in changes in the prevailing climate. These changes may influence water availability and societal needs b) the ways to identify the climate change, and c) the engineering interventions that may be brought out towards ensuring water availability.

Objectives

- To impart knowledge / science that is behind climate and water availability among the students
- To create interest on water conservation
- To create interest in proposing innovative ideas towards water conservation, management and utilization.

Expected Outcomes

- Students will understand the importance / role of water in their life
- Students will know the essence of climate change, and the role of the IPCC
- Students will be able to suggest the selection of IPCC scenarios based on landuse pattern / cover
- Students will have the knowledge about the various climatic variables that might affect the water availability
- Students will be able to identify the climate change, and possible influences on food production, surface and groundwater availability

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to understand the importance of water in their day to day life
- Who choose their career in the field of water resources – either as consultant or startup entrepreneurs / NGO

Modules covered	Title	Hours
Module / Unit -1	Global Water cycle; Climate; Climate change; impact of climate change on water demands, river flows, groundwater availability, food production	15
Module / Unit -2	Climate Change- identification-IPCC- IPCC Scenarios; Climate change influence on - future weather- rainfall; Engineering interventions – rivers, lakes, and urban environment	15
Module / Unit -3	Water requirement for – food production – human survival; water management and its challenges; possibilities & limitation – surface water availability- groundwater availibility	15

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching
- Demonstration videos
- Lab exercises to validate innovative ideas

Reference books and Online

- Turral H; Burke J; Faures J M, "Climate change, water and food security", Food and agriculture organization of the United nations (FAO), 2011
- Sangam Shrestha, Mukand S. Babel, Vishnu Prasad Pandey, "Climate Change and Water Resources", CRC Press, ISBN 9781466594661
- https://www.edx.org/course/introduction-water-climate-delftx-ctb3300wcx-1#!
- https://www.ipcc.ch/pdf/technical-papers/ccw/chapter1.pdf
- http://indico.ictp.it/event/a02244/contribution/5/material/0/0.pdf
- http://journals.sagepub.com/doi/pdf/10.1177/0956247807076726

http://www.sciencedirect.com/science/article/pii/S0959378099000175

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

FCLF

FACULTY PROFILE

Faculty Name
Francis Jency X

Faculty Designation
CSE

Institution
KCT

Faculty Profile Link

DATA STRUCTURES AND APPLICATIONS

L	T	P	C
3	0	0	3

Description

The goal of the course is to teach fundamental data structures. Data structures and algorithms are patterns for solving problems. It helps to come up with moreelegant solutions to new problems.

Objectives

- To impart the basic concepts of data structures.
- To introduce various techniques for representation of the data in the realworld.
- To understand the applications of various data structures.

Expected Outcomes

- Students will learn how to design and implement linear and nonlinear datastructures such as linked list, stack, queue, tree and graph.
- Students will be able to choose appropriate data structures to solveparticular problems
- Students will be able to develop algorithms for complex problems

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to develop a systematic approach towards solvingproblems.
- Students who are interested to get placements in IT industry
- Students who are interested in programming

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching
- Demonstration videos
- Guest lectures by experts
- Lab exercises

Modules covered	Title	Hours
Module / Unit -1	ARRAYS AND LINKED LIST Efficiency – Analysis – Sample algorithms. Array: Basic Operations and its implementation, Advantages and disadvantages. Application - Library Management Linked List: Basic Operations and its implementation, Advantages anddisadvantages. Applications - Storing history of a web browser - Polynomial operations.	9
Module / Unit -2	STACKS AND QUEUES Stack- Basic Definition, Operation. Applications of stack - Expression evaluation - Expression conversion -Towers of Hanoi. Queue - Circular queue. Applications of Queue - Finding the length of the longest queue in a highwaytoll plaza, Simulate traffic signal in a 4 cross junction.	9
Module / Unit -3	TREES AND HASHING Definitions and concepts – Binary Trees – Representation of binary tree - Conversion of General Trees to Binary Trees - Tree Traversals – Expression manipulation - The Search Tree ADT – Binary Search Trees. Applications – Organizing items in departmental stores, Student Pre-requisite Course tree. Hashing – Hash Function – Separate Chaining – Open Addressing – Linear Probing – Priority Queues (Heaps) – Simple implementations.	9
Module/ Unit -4	SORTING AND SEARCHING Preliminaries – Insertion Sort – Shell sort – Heap sort – Merge sort – Quicksort – Radix sort. Linear and binary Search – Applications – Seating students in height wise in a class room, Address searching in a directory.	9
Module/ Unit -5	GRAPHS Definitions – Representation of graphs – Breadth First Search – Depth FirstSearch. Applications of graphs - Dijkstra's Algorithm – Minimum Spanning Tree.	9

Text books

1. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 3rd edition, Pearson Education Asia, 2007.
R. G. Dromey, "How to Solve it by Computer" (Chaps 1-2), Prentice-Hall of India, 2002..

Reference books and Online

1. Narasimha Karumanchi, Data Structures And Algorithms Made Easy" - (2011), Careermonk Publisher
2. www.tutorialspoint.com/data_structur

eshttp://nptel.ac.in

Grading Policy

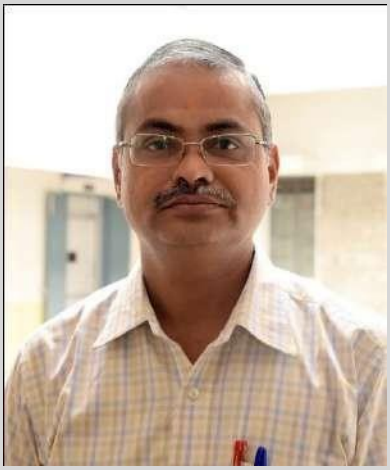
Pattern I - Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

Basics of Electrification

L	T	P	C
3	0	0	3

FACULTY PROFILE



Faculty Name
Prakash N

Department
EEE

Institution
KCT

Faculty profile

Description

This course is designed to introduce the cutting edge technology available tocontrol electrical power for maximum safe utilization with no damages to human & surroundings

Objectives

- Identify different types of hazards and overcome with cutting edgetechnology
- Identify different protective devices for the safety of human life's and Surroundings

Expected Outcomes

- Students will acquire knowledge of electrification of home appliances andfaults occurring at houses due to adverse condition.
- Students will come to know about electrical safety and preventive measuresto avoid and rescue from electrical accidents.
- Students will learn about the protective devices to safeguard the electricalappliances from faults and unbalanced conditions.

Expected Audience

Students of any branch

Teaching methodology

Lecture, ppt, Videos, case study and project

Modules covered	Title	Hours
Module / Unit -1	Electrical faults and protection devices: Types of faults, causes and severity. Protective Devices – Fuses, MCB, ELCB,Phase Neutral Earthing or Grounding, Identifying power ratings of Electricalappliances.	15
Module / Unit -2	Electrical safety and first aids: Introduction to electrical safety - electrical hazards – shocks, causes,severity, protective measures and protection. First aid - case studies.	15
Module / Unit -3	Electrical appliances: Precaution and safety measures of Low power consumption Appliances -Refrigerator, washing machine,Microwave oven, mixers, Grinders and audio systems. High power Consumption Appliances –Electric Heaters, induction stoves, air-conditioners and pump sets.	15

Text books

1. Electrical Safety Handbook, John Cadick, P.E., Mary Capelli-Schellpfeffer, Dennis K. Neitzel, C.P.E., McGraw-Hill,Edition 2012.
2. Troubleshooting and Repairing Major Appliances, Eric Kleinert , McGraw-Hill Education, Third Edition, 2013.

Reference books and Online

India Electrical Rules 1956 Hand book, Chudley R., Butterwarth –London New Delhi.Latest Edition

Grading Policy

Pattern I - Two Assessment Component (Each Carries 50 Marks)

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
Mr.S.Prabhu

Department
Mechanical

Institution
KCT

Introduction to Nanotechnology

L	T	P	C
3	0	0	3

Description

This course is intended to motivate undergraduate students to undertake innovative projects in the area of Nanotechnology and also pursue higher studies in this field. In this course, basics of nanotechnology, nanomaterials, processing technology, applications of nanotechnology in various fields of engineering and current development in this field are presented

Objectives

- To provide basic knowledge about NT
- Various nano materials used in the development of product
- Briefly provide material processing technology in NT
- Aware of area of application of NT in industries
- Motivate students to take-up projects related to NT

Expected Outcomes

- Able to apply basic knowledge of NT material application
- Identify the suitable nano materials for a given applications
- Suggest suitable processing technology for a applications
- Able to identify the problems where the NT can applied for a solution

Expected Audience

- Those who are interested in taking project in NT
- Interested in pursuing higher studies in NT

Interested to do Research /take up career in research in NT

Teaching methodology

- Classroom teaching
- videos
- Guest lectures by experts.
- Visit to Nano Technology Lab
- Showcase typical applications in industry
- Typical Case Studies from Journal papers and Technical articles
- Group Discussions

Modules covered	Title	Hours
Module / Unit -1	What is nanotechnology,- Definition, history, context of technology Motivation for nanotechnology - Materials, devices, systems, issues in miniaturization Scaling laws, materials, forces, device performance, design	12
Module / Unit -2	Nano metrology-imaging nanostructures , non-imaging approaches, otherapproaches, metrology of self-assembly Raw materials of nanotechnology Nanoparticles, Nano fibers and Nanoplates, grapheme based materials, biological effects of nanoparticles	12
Module / Unit -3	Nano devices, -Electronic Devices, Magnetic devices, Photonic devices,mechanical devices, fluidic devices, biomedical devices nanofacture, Top-down methods, Molecular manufacturing, bottom-upmethods, intermolecular interaction Bio nanotechnology, Biomolecules and Biological devices and machines , biophotonic devices	12
Module/ Unit -4	New fields of nanotechnology, Quantum computing and spintronics, nanomedicine, energy and three concepts Implications of Nanotechnology- Enthusiasm Neutrality, Opposition andscepticism and a sober view of future	9

Text books

Nanotechnology - Jeremy Ramsden, Jeremy Ramsden and Ventus publication ApS- 2009

Reference books and Online

1. Intorduction to nanoscience and nanotechnology, chris Binns, Wiley survival guides in engineering and Science
2. Introduction to nanotechnology, Charles P. Poole Jr. and Frank J .Owens, John Wiley and Sons publications, WileyInterscience 2003
3. Nanoscience Nanotechnology and nanophysics, C. Dupas, P Houdy, M.Lahmani, Europiean Materials Research Sociey, Springer Publication 2007
4. Nanoscience,The Science of the Small in Physics,Engineering, Chemistry, Biology and Medicine, Prof. Dr. Hans-Eckhardt Schaefer, Springer Heidelberg Dordrecht , Springer, New York 2010
5. Springer Handbook of Nanotechnology, Bharat Bhushan, Spinger-Verlag Berlin Heidelberg, New York 2004
6. Carbon Nanotubes Properties and Applications -Michael J. O'Connell, Ph.D.Senior Research Scientist, Theranos, Inc. Taylor and Francis 2006 LLA

Grading Policy

Pattern III

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
Seranthian Ramanathan

Department
Mechanical Engineering

Institution
KCT

Faculty Contact Details
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Research Scope on HeatTransfer Enhancement Techniques

L	T	P	C
3	0	0	3

Description

This course is offered to encourage the students to bridge the gap between interdisciplinary domains leading to design or design of experiments to invent new equipment to be used across all domains. The students will be equipped with basicsof science to carry out research in the field of heat transfer.

Objectives

- To impart an elaborate knowledge on recent heat transfer techniques.
- To prepare nano-fluids to be used in Electronic circuits..

Expected Outcomes

- Students will be able to carry out literature survey and research
- Students will be able to correlate different branches of science to fill up thegap

Students will relate creative thinking and design innovation and productdevelopment ideas.

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to develop skills and narrow down the gap ininterdisciplinary domains
- Students with research interests
- Students with entrepreneurship interests

Teaching methodology

- Classroom teaching
- Demonstrating videos
- Guest lectures by experts

Modules covered	Title	Hours
Module / Unit -1	Basic Concepts of Thermal Physics	15
Module / Unit -2	Methods of Heat Transfer Enhancement Techniques	15
Module / Unit -3	Nano-fluid and Heat Pipe	15

Text books

Thermodynamics An Engineering Approach by Yunus A. Cengel Michael A.Boles(any edition, various years)

Reference books and Online

IEEE, Science Direct and ASME Journals, Fundamentals of Heat and Mass Transfer, by Incropera

Grading Policy

Pattern I

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Mr.P.D.Devan

Department
Mechanical

Institution
KCT

Composite Materials and itsApplications

L	T	P	C
3	0	0	3

Description

This course is intended to encourage the students to gain knowledge in composite materials and its applications to various engineering field.

Objectives

- To impart knowledge on different types of composite materials
- To familiarize with the fabrication and applications of composite materials

Expected Outcomes

After successful completion of the course the students will be able to Apply the knowledge of composite materials during materials selection Discuss the applications of composites to various fields

Explain the fabrication methods of composites.

Expected Audience

The course will primarily benefit students with interests as below:

- Composite Materials
- Fabrication
- applications of composites
-

Teaching methodology

- Classroom teaching and discussions
- Video Demonstration

Modules covered	Title	Hours
Module / Unit -1	General Introduction and Concept, Historical development, Concept of Composite materials, Basic definitions, Various types of composites, Classification based on Matrix Material: Organic Matrix composites Polymer matrix composites (PMC), Carbon matrix Composites or Carbon-Carbon Composites, Metal matrix composites (MMC), Ceramic matrix composites (CMC); Classification based on reinforcements: Fiber Reinforced Composites, Fiber Reinforced Polymer (FRP) Composites, Laminar Composites, Particulate Composites	9
Module / Unit -2	Role and Selection or reinforcement materials, Types of fibres, Glass fibers, Carbon fibers, Aramid fibers , Metal fibers, Alumina fibers, Boron Fibers, Silicon carbide fibers, Quartz and Silica fibers, Multiphase fibers, Whiskers, Flakes etc., Mechanical properties of fibres. Functions of a Matrix, Desired Properties of a Matrix, Polymer Matrix (Thermosets and Thermoplastics), Metal matrix, Ceramic matrix, Carbon Matrix, Glass Matrix etc., Fibre reinforced Polymer (FRP) Laminated composites Lamina & Laminate Lay-up.	9
Module / Unit -3	Fabrication of Metal Matrix Composites: Commonly used Matrices, Stir-casting & Compo casting, Screw extrusion, Liquid metal impregnation technique – Squeeze casting, Pressure infiltration. Fabrication of Polymer Matrix Composites - Commonly used Matrices Basic Requirements in selection of Constituents, Moulding method, Low pressure closed moulding, pultrusion, Filament winding.	9
Module/ Unit -4	Fabrication of ceramic matrix composites Sintering - Hot pressing – Cold isostatic pressing. Chemical vapour deposition of carbon on carbon fibre performs. Sol gel technique. Mechanical testing of composites, tensile testing, Compressive testing, Intra-laminar shear testing, Fracture testing etc.,	9
Module/ Unit -5	Applications of composites related to aerospace, Automobile, Bridge and other Civil Engineering Structures, Adhesively Bonded FRP composites in strengthening of civil engineering structural components such as beams, Columns, Masonry etc., Packaging industries, House hold and sports components etc.,	9

Text books

1. Mathews F.L. and Rawlings R.D., Composite materials: Engineering and Science, Chapman and Hall, London,England, 1994.
2. Chawla K.K., Composite materials, Springer – Verlag, 1998

Reference books and Online

1. Sharma S.C., Composite materials, Narosa Publications, 2000.
2. Short Term Course on Advances in Composite Materials, Composite Technology Centre, Department ofMetallurgy, IIT- Madras, December 2001.

Grading Policy

Pattern I

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Dr.K.K.Arun

Department
Mechanical

Institution
KCT

COMPUTER AIDED DESIGN AND MANUFACTURING

L	T	P	C
3	0	0	3

Description

This course is intended to motivate undergraduate students to gain thorough knowledge in CAD systems, different geometric modelling techniques and parametric design concepts to take up innovative design projects with emphasis on new ideas in design. Students will be trained to develop part programming for various operations in CNC machines

Objectives

- To summarize the basic concepts of CAD systems.
- To explain different geometric modeling techniques.
- To make use of parametric design concepts to represent an object.
- To estimate the mass properties of 3D objects and prepare bill of materials.
- To develop part programs for various operations in CNC machines.
- To apply post processing commands for different controllers

Expected Outcomes

At the end of the course:

- Students will be able to know the basic concepts of CAD systems
- Students will be able to understand various geometric modelling techniques.
- Students will learn how to represent the object using parametric design concepts.
- Students will be able to estimate the mass properties of the objects.
- Students will develop part programs for various operations in CNC machine.
- Students will be able to perform the interfacing of part programs to CNC machines for different types of controllers used in CNC machines.

Expected Audience

The course will primarily benefit students with interests as below:

- Those who want to take up careers in Design
- Technology Enthusiasts

Teaching methodology

The course will have a combination of the following pedagogical techniques for delivery of the course:

- Classroom teaching
- Demonstration videos
- Guest lectures by experts

Hands-on training in CNC Machines

Modules covered	Title	Hours
Module / Unit -1	Conventional and computer aided design processes-advantages and disadvantages. Subsystems of CAD-CAD hardware and software, analytical and graphics packages, CAD workstations. Networking of CAD systems.	9
Module / Unit -2	Wireframe, surface, NURBS and solid modeling-applications and advantages. Creating primitive solids, sweeping solids, Boolean operations. Extracting entities from a solid. Filleting of edges of solids. Boundary representation (B-rep) Constructive Solid Geometry (CSG) and Analytical Solid Modeling (ASM)	9
Module / Unit -3	Types of co-ordinate systems. Parametric design - definition and advantages. Parametric representation of analytic and synthetic curves. Parametric representation of surfaces and solids – manipulations, Automated 2D drafting - basics, mechanical assembly - bill of materials generation. Mass property calculations.	9
Module / Unit -4	Manual part programming (Using G and M Codes) in CNC lathe and CNC Milling, Part programming for Linear and Circular interpolation, Part programming using standard canned cycles for Turning, Drilling and Milling.	9
Module / Unit -5	Component Modeling and interfacing with CAM software. CL data generation, NC Code generation for CNC controller like FANUC, HAAS, SINUMERIC etc., Post processing commands for different CAD/CAM software like Pro-E, SOLID WORKS, EDGE CAM etc.,	9

Text books

1. Vera B Anand, "Computer Graphics and Geometric Modeling for Engineers", John Wiley & Sons, New York, 2000.
2. Radhakrishnan P and Subramanyan S, "CAD/CAM/CIM", New Age International Pvt. Ltd., 2004.
3. Radhakrishnan P and Kothandaraman C P, "Computer Graphics and Design", Dhanpat Rai & Sons, New Delhi, 2002.

Reference books and Online

1. Ibrahim Zeid,"CAD/CAM Theory and Practice", McGraw Hill Inc., New York, 2003.
2. Barry Hawhes, "The CAD/CAM Process", Pitman Publishing, London, 1998.
3. William M Newman and Robert Sproul, "Principles of Interactive Computer Graphics", McGraw Hill Inc., New York, 1994.
4. Sadhu Singh, "Computer-Aided Design and Manufacturing", Khanna Publishers, New Delhi, 1998.
5. Mikell.P.Groover, "Computer Aided Design and Manufacturing", Dorling Kindersely India Pvt. Ltd.,2008.

Grading Policy

Pattern I

KCT's Unique CBCS Framework

FCLF

FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Centre for Leadership, Empowerment and Development (CLED)

Faculty In-charge
Mr. Nivethan AM

Faculty In-charge Designation
Programme Lead, CLED

Institution
Kumaraguru Instituitions

Faculty In-charge Profile Link
https://www.linkedin.com/in/nivethanam/

Email ID
nivethan@kct.ac.in

Mobile No.
9994355580

Module Facilitators
Ms Shobana Kumar
Mentor, CLED

Mr Nivethan AM
Programme Lead, CLED

Mr Hari Sankaran T
Executive, Training & Development

Ms Monisha Thangam KS
Programme Executive, CLED

Course Title

Essentials for Emerging Leaders

L	T	P	C
3	0	0	3

Description

Mostly, the leaders we admire seem to juggle competing demands and navigate effectively in the work, with good composure and confidence. Its indeed because of their ability to handle tools of productivity and optimizeprocess for good results. In this course, students will delve into the essentials of managing themselves and leading teams for better implementation and organization of their ideas

Objectives

- Todevelop avision to ask the rightquestions, challenge current practicesand establish defined outcomes for selfandthe team
- Tolearnandapplybestpracticestoplan,execute,monitor and control all the elements of aproject or anidea
- To recognize and consciously use emotional data to maintain and create a productiveenvironment
- To understand appropriate ways of communicatingsuccessfully for appropriate tasks and people

Expected Outcomes

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

- Implement ideas, projects and initiatives effectively knowing the processperspective of leading change
- Understanding their motivational drivers, communication methods and emotional intelligence.
- Manageand sharefeedbackinwaysthat helptodevelopand deliver with quality
- Handle situations with clarity, confidence and courage to attain actionable elements that work for an adaptive culture

Expected Audience:

Students of all departments

- Who aspires to be in leadership positions with self-driven motives for high performance
- Who wishes to understand and improve their leadership style
- Who wants a disciplined process for idea generation, concept development and creative problem solving
- Who seeks to effectively connect with a team and foster teamwork positively

Teaching Methodology:

- Lectures +Presentations
- Expert Sessions and Workshops
- Activity/Project Based Learning
- Supplementary Videos and Reading Lessons

Modules covered	Title	Hours
Introductory Module/Unit	**Leaning In** Leadership & its Importance - Key Traits of Effective Leaders - Understanding your Leadership Profile	5
Module/Unit -1	**Planning & Delivery** Project Management and Tools - Effective Communication **Activity:** Tracking, Reporting & Breaking a Project	10
Module/Unit -2	**Productivity Tools & Techniques** Time & Risk Management - Innovation Matrix & Problem Solving **Activity:** Canvas Modelling a Problem Statement	5
Module/Unit -3	**Individuals and Teams** Organizational Structure - Group Behaviors – Delegation & Negotiation **Activity:** Reflecting a Case-Study Video	10
Module/Unit -4	**Emotional Intelligence** Workplace Sensitivity – Persuasion & Influence – Conflict Resolution **Activity:** Developing a Case Study on Leading Teams Effectively	10
Module/Unit-5	**Strategic Thinking** Using Information & Decision Making - Achieving Sustainable Competitive Advantage **Activity:** Creating & Communicating a Vision	5

Reference books and Online

- https://www.skillsyouneed.com/leadership-skills.html
- https://www.spica.com/blog/time-management-techniques
- https://www.wordstream.com/blog/ws/2015/03/26/productivity-tools
- https://media.healthdirect.org.au/publications/CarerGateway_Resource_02_Effective_communica tion_tec hniques_v03.pdf

Grading Policy

Pattern III

KCT's Unique CBCS Framework

FCLF

L	T	P	C
3	0	0	3

FACULTY PROFILE

Faculty Name
Mr. T VISWANATHAN

ASSISTANT PROFESSOR

KUMARAGURU COLLEGE OF TECHNOLOGY

viswanathan.t.eee@kct.ac.in

9566625001

Faculty Profile Link

DEEP LEARNING FOR COMPUTER VISION WITH PYTHON AND R

(This course is offered by Department of Computer Science and Engineering)

Description

This Course is guide students to mastering deep learning applied to practical,real-worldcomputervisionproblemsutilizingthePythonandR programminglanguage.Thestudentswilllearnhowtoapplydeeplearning to take-onprojectssuchasimageclassification,objectdetection,training networks onlarge-scaledatasets, and much more.

Objectives

To understand the Image classification basics, data sets, classifiers and optimization techniques.
To demonstrate convolution neural network, training and testing.

Expected Outcomes

After successful competition of the course students able to

- Toaccomplishthisgoal,studentslearninapractical,appliedmanner by training networks on your own custom datasets and even competing in challenging state-of-the-art image classification challenges and competitions.
- To find a job in the deep learning space, become a deep learning for computer vision consultant/contractor, or even start your own computer vision-based company that leveragesdeeplearning.

Expected Audience

Those who are interested in

- Machine Learningapplications.
- Self-decisionsystems.

Teaching methodology

Thecoursewillhaveacombinationofthefollowingpedagogical techniques for deliveryofthe course:

- Classroom teaching

- Demonstration ofvideos
- Programming Assignments

Modules covered	Title	Hours
Module / Unit -1	**FUNDAMENTALS OF IMAGES AND DATA SETS** Forming an Image from Channels - Deep Learning Classification Pipeline - Datasets for Image Classification - Configuring Your Development Environment	15
Module / Unit -2	**DEVELOPING NEURAL NETWORK** Your First Image Classifier- Parameterized Learning- Optimization Methods and Regularization - Training Your First CNN - Saving and Loading Your Models - Learning Rate Schedulers	15
Module / Unit -3	**CASE STUDIES** Breaking Captchas with a CNN - Smile Detection	15

Text books

1. Chollet, Francois. Deeplearning withpython. Manning Publications Co., 2017.
2. Nielsen,MichaelA.Neuralnetworksanddeeplearning.Vol.25.USA:Determinationpress,2015.
3. Robert, Christian. "Machine learning, a probabilistic perspective." (2014): 62-63.

Reference books and Online

1. Itseez. Open Source Computer Vision Library (OpenCV). https://github.com/itseez/opencv. 2017
2. IanGoodfellow,YoshuaBengio,andAaronCourville.DeepLearning. http://www.deeplearningbook.org . MIT Press, 2016

Pattern 1 – Two Assessment Component (Each carries 50 Marks)

KCT's Unique CBCS Framework

FCLF
FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
Srikala J

Department
ENGLISH

Institution
KCT

Faculty Profile Link

Creative Writing through Literature

Description

This course introduces students to the practice of Creative writing with a clear focus on the learning genres of Literature. It familiarize on the employability of literary usages from English Literature. It provides an arena for the appreciation of the complexity of Poetry, Short Fiction, and Creative Nonfiction that prove as the foundation of writing skills .
The course focuses on the importance of Creative Writing as a means of self-expression, promoting writing and analytical skills. In addition to honing their skills as creative writers, helps developing critical vocabulary usage with an aesthetic approach.

The courses authorize experimentation in the field of writing poetry, short fiction, and creative nonfiction. It also focuses on production of professional writers and to familiarize the learner with the dynamics of imaginative literature, the synergy of form and content.

Objectives

- To produce graduates familiar with representative literary texts from a significant number of historical, geographical, and cultural contexts, with particular focus on the Modern and contemporary periods.
- To produce graduates with application oriented focus with their knowledge and understanding of critical, theoretical, and technical traditions to the production of original literary works.
- To produce graduates familiar with the contemporary literary publishing milieu.
- To produce graduates, able to effectively communicate as writers, do, and to effectively present literary works, of their own.

Expected Outcomes

- Graduates will be able to identify, analyze, interpret and describe the critical ideas, values, and themes that appear in literary texts.
- Graduates will be able to understand the ways these ideas, values, and themes inform and impact cultures and societies, both in the past and the present.
-
- Graduates will be able to articulate with an awareness of Received pronunciation style .
- Graduates will be able to judge whether a journal or press is an appropriate venue for their literary works.
- Graduates will be able to analyze and critique the quality of literary journals and presses, as well as the work of particular writers.
- Graduates will be able to produce cogent written and/or oral arguments to defend and explain the value of literature to a general population, to be, in other words, public ambassadors for the literary arts.
- Graduates will be able to present their own literary works—and the works of others—orally in a public forum with the ability to bring the written word to life for an audience.

Expected Audience

Students focused on honing their language speaking skills with a blend of aesthetic approach.--B.E/B.TECH Students.

Teaching methodology

Lecture method, Power point presentations and online sources.

Modules covered	Title	Hours
Module / Unit -1	<There can be 3 to 5 Modules or Units covered in 45 hours> INTRODUCTION TO LITERARY FORMS : Elements of Poetry - Rhythm and Meter Poetic Forms – Ballad, Lyrics, Elegy, Odes, Haiku, Sonnets Literary Genres- Short Fiction, Drama, and Non-Fiction	9
Module / Unit -2	POETRY WRITING: Appreciation of the form and content of poem Techniques - figurative language - (structure - rhythm – imagery – tone – style - point of view, voice - read and discuss numerous poems) Ballad - Bridal Ballad by Edgar Allan Poe Lyrics - I Felt a Funeral in my Brain by Emily Dickinson Dramatic Poetry : The Law of the Jungle by Rudyard Kipling Elegy – Requiescat by Oscar Wilde Ode – Ode on Solitude by Alexander Pope Haik u- Matsuo Bashō poems Sonnet - Sonnet 116 by William Shakespeare Concrete poetry - "The Mouse's Tale" by Lewis Carroll Students Creative Assignment – Students will write three poems.	9
Module / Unit -3	SHORT FICTION : Elements of Fiction - Character – Plot- Setting – Theme - Style; Narrator - Point of View - Tone – Suspension of Disbelief. Genres - Adventure, Comic, Fantasy, Gothic, Romance, Historical, Horror, Supernatural, Thriller, Science Fiction 1. Fiction – The Overcoat by Nikolai Gogol 2. Short Story – The Monkey's Paw by W.W. Jacobs Students Creative Assignment – Students will write one Short Story adapting different literary techniques.	9

Module/ Unit -4	FANTASY LITREATURE: Fairy tales-fables-fantasy books-magazines- creative works on history, science, and other subjects. Evaluation- analysis- description- interpretation of literary works- critical essays 1. ONE THOUSAND AND ONE NIGHTS - retold by Hanan al-Shaykh (select stories) Students Creative Assignment- 1. Students will write a review of the Fairy tale read in the class. 2. Students will write a review and explain the content.	9
Module/ Unit -5	CREATIVE NON FICTION : Prose, Biography, Memoirs, and Personal Essays 1. THE SPREADING "YOU KNOW" by James Thurber.	9

	Students Creative Assignment - Students will write two essays (Personal and Impersonal)	

Text books

1. Candace H. Schaefer, Rick Diamond. 1998. The Creative Writing Guide: A Path to Poetry, Nonfiction, and Drama, Longman, New York, USA
2. Shelly Clark and Marjone Saisa, 2009. Road Trip: Conversations with Writers, The Backwaters Press, Nebraska, USA.
3. Nikki Moustaki (ed.), 1998. Writing Fiction: The Practical Guide from New York's Acclaimed Creative Writing School, Publisher: Bloomsbury, ISBN: 0156005743.
4. Oxford Dictionary of Literary Terms by Chris Baldick

Reference books and Online

- The OWL at Purdue - Creative Writing - Guide for creative writers.
- Scribble Pad - Resources for current and future creative writers.
- Code of Best Practices in Fair Use for Poetry - Helps poets understand when they have the right to excerpt, quote and use copyrighted material in poetry.
- Poetry Foundation - The Poetry Foundation is an independent literary organization committed to a vigorous presence for poetry in American culture.
- For Better for Verse - An interactive learning tool that can help you understand what makes metered poetry in English tick.
- Academy of American Poets - Supports American poets at all stages of their careers and fosters the appreciation of contemporary poetry.
- Poets & Writers - The nation's largest nonprofit literary organization serving poets, fiction writers, and creative nonfiction writers.

Grading Policy

Pattern III

KCT's Unique CBCS Framework

FACULTY PROFILE

Faculty Name
Mr.Manikanda Prashath
Department
MECAHNICAL

Institution
KCT

Personal Investment Management

L	T	P	C
3	0	0	3

Description

The first rule saving in different from Investment. Investment has to start from the earliest. Too late is too little. Income Tax can be reduced and a financial independent life post retirement is the need for an individual.

Objectives

- To inculcate the habit ofsaving.
- Convert savings to investments
- Be financially independent in the future
- Financial literacy

Expected Outcomes

- Creation of Wealth
- Know to have various options in financial investment
- Involve and work on- line, off-line on the investment options
- Enroll, use, manage Dmat accounts

Expected Audience

Any year/branches faculty / staff can also join

Teaching methodology

Workshop by Banks /Institutions (Actual investments –how)
Practical to-do

Theory for supplementary

Modules covered	Title	Hours
Module / Unit -1	Origin of Monetary Systems.Evolution in advanced countries.Need for financial literacy.	10
Module / Unit -2	How toenrollfor Dmat, online resources, advantages, need and comprehensive utilization.	15
Module / Unit -3	Different investment options, merits, suitability's	10
Module/ Unit -4	Safety, security of information systems.	10

Text books

Nil

Reference books and Online

- On line resources
- Module –wise resources.

Grading Policy

Pattern III

CHOICE BASED CREDIT SYSTEM (CBCS)

KUMARAGURU college of technology character is life

FCLF FLEXIBLE + COMPREHENSIVE LEARNING FRAMEWORK

FACULTY PROFILE

Faculty Name
VIMAL E.A

Department
CSE

Institution
KCT

Faculty Contact Details
vimal.ea.it@kct.ac.in

Faculty profilelink

WEB DESIGN

(This course is offered by Department of Computer Science Engineering)

L	T	P	C
3	0	0	3

Description

Web design is extremely competitive as an employmentmarket, particularly for the higher end commercial jobs. The nature of the employment market is directly plugged in to the commercial market, and that market's very fluid. The ability to move into different areas of web design is invaluable. This course helps the students to design websites for commercial purposesand forentry-level positions.

Objectives

- To understand the basicsof HTML and JavaScript
- To understand the concepts ofdesigning websites.
- Todevelop responsive websitesusing Bootstrap Framework.

Expected Outcomes

- Explainthebasicconcepts ofHTML,JavaScriptand Bootstrap framework
- Designcustomized websites based onclient needs
- Illustrate the Bootstrap framework.

Expected Audience

The course will primarily benefit students with interests as below:

- Thosewho areinterested in Web Designing.
- Students aspire to develop skillsets in HTML

Teaching methodology

Thecoursewillhaveacombinationofthefollowing pedagogical techniques for deliveryof the course:

- Lab basedSessions
- Online Demos and Illustrations
- Demonstration videos.
- Guestlectures by industrial experts.

Modules covered	Title	Hours
Module / Unit -1	HTML - Tables, Lists – Intermediate HTML table and Formatting – basic HTML Forms and Formatting –More ComplexHTMLForms–FramesetElement–NestedFrameset.	8
Module / Unit -2	**Introduction to Java Script** Basics: Data types, Variables, Loops- Objects: Arrays, Number, Strings - Events-Browser Object Model-Document Object	10
Module/ Unit -3	**HICS IN WEB DESIGN:** Graphics:SelectingaGraphicsFormat– ing Graphics for Web Use – Inserting Graphics – Arranging son the Page – Controlling Image Size and Padding –Hyper from Graphics – Utilizing Thumbnail Graphics – Including ate Text for Graphics.	8
Module / Unit -4	**TABLES & LAYOUTS** Navigation: Creating Navigational Aids – Creating Tables Formatting Tables Layouts: Creating Division-Based Layouts- Creating User Forms – Using Frames for Layout – Incorporating Audio and Video Dynamic HTML	9
Module / Unit -5	**Responsive Websites using Bootstrap** BootstrapwithCSS-BootstrapLayoutcomponents-Bootstrap Plug-in- Building a website using Bootstrap	10

Grading Policy:

Pattern I (2 Internal Assessment - Each Carries 50 Marks)

CHOICE BASED CREDIT SYSTEM (CBCS)

L	T	P	C
3	0	0	3

FACULTY PROFILE

K. SARANYA
Assistant Professor
Information Science and Engineering
Kumaraguru College of Technology
saranya.k.cse@kct.ac.in
8608992264

Course Title

Data visualization Using Tableau

Description

This Course is intended for newcomers to perform visualization of any data with no prior experience using Tableau. By the end of this course, students will be able to generate powerful reports and dashboards that will help people make decisions and take actions.

Objectives

- Examine, navigate, and learn to use the various features of Tableau
- Assess the quality of the data and perform exploratory analysis
- Create and design visualizations and dashboards for your intended audience
- Combine the data to and follow the best practices to present your story

Expected Outcomes

- Understand foundational visualization concepts.
- Apply visualizations principles to enhance data visualization.
- Analyze and apply essential design principles to data exploration and visualization.
- Create and design appropriate charts, tables, maps and dashboards.
- Effectively tell a story based on real data.

Expected Audience

III year and Final Year Students of all branches

Teaching methodology

Classroom delivery with real time visualization projects Using Tableau Public

Modules covered	Title	Hours
Unit -1	Introduction to data visualization-Need for data visualization and its definition-Tools for Visualizing Data-Methods of visualizing data-Overview of modern visualization tools-Introduction to Basic chart types: bar chart-line chart-Tree map- Making dashboard-basics of visualization.	7
Unit -2	Introduction-The Human Brain and Data Visualization-Cognitive vs Perceptual Design Distinction-Introduction of Effective and Ineffective Visuals-Types of Visualizations and its examples-Practicing Good Ethics in Data Visualization-Ineffective Visuals and improvements-Visual Perception and Cognitive Principles-Cognitive Load and Clutter-Principles of Visual Perception-Strategic Use of Contrast-Pre-Attentive Attributes of Visualizations-Color as a Pre-Attentive Attribute-De-Cluttering.	10
Unit -3	Introduction-Gestalt Principle: Proximity-Leveraging Pre-Attentive Attributes-Accessible Visualizations-Aesthetics-Design and Exploratory Analysis Introduction-Exploratory and Explanatory Analysis definition- Identifying Outliers-Constructing a Control Chart-Design For Purpose-Data, Relationships, and Design-Static Versus Interactive Visualizations	10
Unit -4	Basics of Visual Analytics-Introduction to Charting-Charts-Colors, Shapes, and Sizes-Dual Line Charts-Bar Charts, Line Graphs, Pie Charts-Scatter Plots, Gantt Charts, Bubble Charts-Histograms, Bullet Charts, Heat Maps and Highlight Tables-Dates-Discrete vs. Continuous Dates-Basics of table calculations-Maps- Dashboard Design-Dashboard Design Principles-Hierarchies, Actions, Filters, and Parameters- Creating Dashboards	9
Unit -5	The Story of the data-The Art of Storytelling -Storytelling and the Human Brain-Bringing Data to Life-Emotion Modulators-Framing and Format-Framing, Conventions, and Priming-False Narratives and Data Storytelling-Preparation of the Story Points-Setting Up the Story-Creating Points in the Story	9

Reference books and Online

1.Colin Ware and Kaufman M,, Visual thinking for design, Morgan Kaufmann Publishers, 2008.
2.Chakrabarti, S, "Mining the web: Discovering knowledge from hypertext data ", Morgan Kaufman Publishers, 2003.
3.Ben Fry, "Visualizing data", O'Reily, 2007.

Grading Policy (PATTERN 3)

Ass 1	Ass 2	Ass 3	Ass 4	Ass 5	TOTAL
20	20	20	20	20	100