UMA391C: NUMERICAL TECHNIQUES & INTEGRAL TRANSFORMS
3 Credits (3-0-0)

Course Objectives:

To apply the knowledge of Mathematics in various engineering fields, students are able

- *To be understand the numerical methods of solving algebraic, transcendental equations.*
- *To be acquired the knowledge about various methods of interpolation*
- *It is very much essential to understand the basic concepts of numerical differention, numerical integration and numerical solutions of ode.*
- *To be understand concepts of Fourier series, Fourier transforms, and z-transforms, because Fourier series is very powerful tool to solve ode and pde.*

Course outcomes:

On the successful completion of this course, students are able

CO1: The ability to solve engineering problems using non-linear equations and interpolation techniques.

CO2: The ability to solve problems using numerical differention and numerical integration.

CO3: Be capable to perform numerical solutions of ordinary differential equations.

CO4: Fourier analysis provides a set of mathematical tools which enable the engineer to break down a wave into its various frequency components. It is then possible predict the effect of a particular waveform.

CO5: It is essential to understand the basic concepts of Fourier transforms and z –transforms, to solve ode, pde and difference equations.

Unit-I

Numerical Analysis-I: 10 Hours

Introduction to root finding problems, Bisection Method, Newton-Raphson method. Finite differences, forward and backward difference operators (no derivations on relations between operators) Newton-Gregory forward and backward interpolation formulae. (Without proof), Lagrange's and Newton's divided difference interpolation formulae (without proof).

Unit-II

Numerical Analysis-II: 10 Hours

Numerical differentiation using Newton's forward and backward formulae-problems.Trapezoidal rule, Simpson's one third rule, Simpson's three eighth rule and Weddle's rule (no derivation of any formulae)-problems. Euler's and Modified Euler's method, Runge-Kutta 4^{th} order method.

Unit-III

Fourier series: **10 Hours**

Periodic functions, Conditions for Fourier series expansions, Fourier series expansion of continuous and functions having finite number of discontinuities, even and odd functions. Half-range series, practical harmonic analysis.

Unit-IV

Fourier transforms and z-transforms: **10 Hours**

Infinite Fourier transforms and inverse Fourier transforms- simple properties, Fourier sine and Fourier cosine transforms, Inverse Fourier sine and cosine transforms. Z-transforms-definition, standard forms, linearity property, damping rule, shifting rule-problems.

Resources:

1. Numerical Methods for Engineers by Steven C Chapra & Raymond P Canale.
2. Higher Engineering Mathematics by Dr. B.S. Grewal, Khanna Publishers, New Delhi.
3. Advanced Engineering Mathematics By H. K. Das, S. Chand & company Ltd. Ram Nagar, New Delhi.
4. Advanced Engineering Mathematics by E Kreyszig (John Wiley & Sons)

Question paper pattern for SEE:

1. Total of eight questions with two from each unit to be set uniformly covering the entire syllabus.
2. Each question should not have more than four subdivisions.
3. Any five full questions are to be answered choosing at least one from each unit.

Assignment Test for 5 Marks: Ten objective type questions can be prepared from **entire** syllabus.

UEI341C: ELECTRONIC CIRCUIT ANALYSIS AND DESIGN
4 Credits (4-0-0)

Course Objectives:

1. To impart the knowledge of electronic devices.
2. To practice the techniques of FET biasing and small signal analysis.
3. To apply the knowledge of biasing, stability, and feedback concept in designing amplifiers.

UNIT-I

Diode application: Diode equivalent circuits, series biased clippers, parallel biased clippers, positive clampers, negative clampers. **Differential amplifiers:** Introduction, common mode rejection, bipolar differential amplifier pair, DC bias operation, AC operation, common mode operation of circuit, current mirror circuits.

13 Hrs.

UNIT-II

Field Effect Transistor: Introduction, depletion type MOSFET: Basic construction, basic operation and characteristics, P-channel depletion type MOSFETs and symbols, Enhancement type MOSFET: Basic construction, basic operation and characteristics, P-channel enhancement type MOSFETs and symbols, Basics of CMOS. **FET biasing**: Self bias and voltage divider bias arrangements of depletion type MOSFET, feedback biasing and voltage divider biasing arrangements of enhancement type MOSFET.

13 Hrs.

UNIT-III

FET small signal analysis: Introduction, FET small signal model, mathematical and graphical determination of transconductance ratio, self bias configuration, voltage divider bias configuration, E-MOSFET drain-feedback configuration, E-MOSFET voltage divider configuration, designing FET amplifier networks. **Power amplifiers:** Definition and amplifier types, series fed class-A amplifier, transformer coupled class-A amplifier, class-B operation.

13 Hrs.

UNIT-IV

Feedback Amplifiers: Feedback concepts, feedback connection types, feedback amplifiers. **Oscillator amplitude stabilization**: Meaning, diode stabilization circuit for phase shift oscillator and for Wein bridge oscillator, FET stabilization circuit for Wein bridge oscillator, designing of stabilizing circuits. **BJT and FET frequency response**: General frequency considerations, Miller effect capacitance.

13 Hrs.

Total Hrs.: 52

Course Outcomes:

Students will be able to:

- **CO1:** Describe the working principles of electronic devices.
- **CO2:** Interpret and illustrate the working of electronic circuits.
- **CO3:** Analyze various electronic circuit configurations and derive expressions for their specifications.
- **CO4:** Solve electronic circuit problems and design electronic circuits.

TEXT BOOKS:

1. Boylestad and Nashelsky, "Electronic Devices and Circuit Theory," 10th Edition, Pearson, 2009.

2. David A. Bell, “Electronic Devices and Circuits,” 4th Edition, PHI, 2007.

REFERENCE BOOKS:

1. Behzad Razavi, “Fundamentals of Microeletronics,” 2nd edition, Wiley Publication, 2012.
2. Jacob Milman, Christos C. Halkias, “Integrated Electronics,” TMH, 2010.
3. A.P. Malvino, “Electronic Principles,” TMH, 2003.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	2
CO2	3	3	-	-	-	-	-	-	-	-	-	-	2	2
CO3	3	3	-	-	-	-	-	-	-	-	-	-	1	3
CO4	3	1	1	-	-	-	-	-	-	-	-	-	-	2

UEI342C: DIGITAL DESIGN AND VHDL
4 Credits (3-2-0)

Course Objectives:

1. To impart techniques for simplification of Boolean equations.
2. To illustrate design of combinational and sequential logic circuits.
3. To develop ability to analyze combinational and sequential circuits.
4. To impart HDL programming skills.

UNIT-I

Principles of Combinational Logic: Definition of combinational logic, canonical forms, generation of switching equations from truth tables, Karnaugh maps-3 and 4 variables, incompletely specified functions (don‘t care terms), simplifying max term equations. Quine-McCluskey minimization technique. **Introduction to VHDL:** Structure of VHDL module, operators, data types, styles of description, dataflow description.

10 Hrs.(L)
06 Hrs.(T)

UNIT-II

Analysis and Design of Combinational Logic: General approach, decoders-BCD decoders, encoders., digital multiplexers: Boolean function implementation, adders and subtractors - cascading full adders, look ahead carry adder, binary comparators. **VHDL behavioral description:** Variable assignment statement, sequential statements, VHDL behavioral description for encoders, decoders, multiplexers, adders and comparators

10 Hrs.(L)
06 Hrs.(T)

UNIT-III

Introduction to Sequential Circuits: Basic bistable element, latches, SR latch, application of SR latch, a switch debouncer, the SR Latch, the gated SR latch, the gated D latch, the master-slave flip-flops (pulse-triggered flip-flops): SR, JK, edge triggered flip-flop: the positive edge-triggered D flip-flop, negative-edge triggered D flip-flop. characteristic equations, registers, counters - binary ripple counters, counters based on shift registers. . **VHDL behavioral description** of latches, flip-flops, registers, asynchronous counters

10 Hrs.(L)
06 Hrs.(T)

UNIT-IV

Synchronous binary counters: Introduction, design of a synchronous Mod-n counter using clocked JK , D, T and SR flip-flops. **Sequential Circuits:** Introduction to state machines, Mealy and Moore models, state machine notation, synchronous sequential circuit analysis. Sequential design: construction of state diagrams, design examples. **VHDL behavioral description** of synchronous counters

10 Hrs.(L)
06 Hrs.(T)

Tutorial:

Exploring the VHDL concepts in each unit using appropriate software/modern tool.

Total Hrs.: 40 (L)
24 (T)

Course Outcomes:

Students will be able to:

CO1: (a) Construct the truth table for the given logical problems , obtain Boolean expressions in canonical forms and Simplify Boolean equations using K-map, QM techniques.

(b) Illustrate VHDL data types, operators and write VHDL dataflow description.

CO2: **(a)** Analyze and design combinational circuits.

(b) Describe the VHDL sequential statements and develop VHDL behavioral description for combinational circuits.

CO3: **(a)** Analyze and design registers and counters using flip flops

(b) Develop VHDL behavioral description for flip-flops, registers and asynchronous counters.

CO4: **(a)** Identify, analyze and design sequential circuits.

(b) Develop VHDL behavioral description for synchronous counters and state machines

TEXT BOOKS:

1. John M Yarbrough, "Digital Logic Applications and Design," Thomson Learning, 2001. ISBN 981-240-062-1.
2. Donald D. Givone, "Digital Principles and Design‖, "McGraw Hill, 2002. ISBN 978-0- 07-052906-9.
3. Nazeih M. Botros, "HDL Programming – VHDL and Verilog," Dreamtech Press, 2009 Reprint

REFERENCE BOOKS:

1. Charles H. Roth Jr, "Fundamentals of Logic Design", Thomson Learning, 2004.
2. Mono and Kim, "Logic and Computer Design Fundamentals", Pearson, 2nd Edition, 2001.
3. John F. Wakerly, "Digital Design- Principles and Practices," Prentice Hall, Third Edition.
4. Rajshekhar Allurkar, "Logic Design", CBS Publishers, 2008.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	2	2	1	1	1	2	2	2	3	2
CO2	3	3	2	3	3	3	2	1	2	3	3	3	3	2
CO3	3	3	3	3	3	3	2	1	2	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	2	2	3	3	3	3

UEI343C: ELECTRICAL SENSORS AND TRANSDUCERS
4 Credits (4-0-0)

Course Objectives:

1. To impart the fundamental concepts, working principles, and applications of sensors/ transducers.
2. To provide the knowledge on sensor selection.
3. To use sensor/transducer for a particular application.

UNIT-I

Introduction to sensor: Meaning of sensors and transducers, classification of transducers (Mechanical/electrical, Active/passive, Absolute/Modulated output type), Sensor based measurement system, Static characteristics (Accuracy, precision, sensitivity, error, linearity, resolution, hysteresis), Dynamic characteristics (order, I, II order system response to step input), Introduction to microsensors. **Resistive Sensors:** Potentiometers, Strain gages, Resistive temperature detectors (RTD), Thermistors, Magnetoresistors, Light-dependent resistors (LDR), Resistive hygrometers, Resistive gas sensors, Liquid conductivity sensors.

13 Hrs.

UNIT-II

Self-Generating Sensors: Thermoelectric sensors: Thermocouples, Piezoelectric sensors, Hall effect sensors, Pyroelectric sensors, Photo voltaic sensors, Electrochemical sensors. **Capacitive Sensors:** Variable capacitors: Differential arrangement, Different applications. Differential capacitor: Principle based on variable are, distance and dielectric property, applications.

13 Hrs.

UNIT-III

Inductive sensors: Variable reluctance type, Eddy current type, LVDT, LVDT applications, Variable transformers: Synchros, Resolvers, Inductosyns. Magnetoelastic and magnetostrictive type, Super quantum Interference devices (SQUIDS). **Electromagnetic Sensors:** Sensors based on Faraday's law, Linear velocity sensor, Serach coil magnetometer, Electromagnetic flow meter.

13 Hrs.

UNIT-IV

Digital and Intelligent Sensors: Position encoders, Resonant sensors, Intelligent sensors. **Miscellaneous Sensors:** Sensors based on semiconductor junctions, sensors based on MOSFET transistors, Fiber optic sensors, Ultrasonic based sensors, Biosensors**.**

13 Hrs.

Total Hrs.: 52

Course Outcomes:

Students will be able to:

- **CO1:** **(a)** Describe and interpret dynamic and static characteristics of sensors and transducers.
  (b) Describe and solve problems on resistive sensors.
- **CO2:** **(a)** Describe self generating and capacitive sensors.
  (b) Interpret and analyze self generating and capacitive sensors.
- **CO3:** **(a)** Describe inductive and electromagnetic sensors.
  (b) Interpret and analyze inductive and electromagnetic sensors.
- **CO4:** **(a)** Describe digital, intelligent, semiconductor, fiber optic, ultrasonic sensors.
  (b) Identify and use sensor for a particular application.

TEXT BOOK:

1. Ramon P. Areny, John G. Webster, "Sensors and Signal Conditioning," 2nd Edition, Wiley India Private Ltd.

REFERENCE BOOKS:

1. Ian R. Sinclair, "Sensors and Transducers," 3rd Edition, Newnes Publication.
2. D. Patranabis, "Sensors and Transducers," 2nd Edition, PHI.
3. Allan S. Morris, "Measurement and Instrumentation Principles," 3rd Edition, Butterworth & Heinmann Publication.
4. John P. Bentley, "Principles of Measurement Systems," 3rd Edition, 2004, Pearson Publication

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	1	1	1	2	2	2	1	2	3	2
CO2	3	2	2	2	1	1	1	2	2	2	1	3	3	2
CO3	3	2	2	2	1	1	1	2	2	2	1	3	3	2
CO4	3	2	2	2	1	1	1	2	2	2	1	2	3	2

UEI344C: ELECTRICAL CIRCUIT ANALYSIS
4 Credits (3-2-0)

Course Objectives:

1. To impart knowledge on basics of electrical circuits.
2. To practice different methods of circuit analysis.
3. To apply Laplace Transform for electrical circuit analysis.

UNIT-I

The concepts and analysis techniques of AC and DC circuits: Voltage and current sources, Kirchhoff's voltage and current laws, series and parallel combinations of sources, series and parallel combinations of elements, voltage and current division, source transformations, delta-Y conversions, sinusoidal steady state analysis, nodal and mesh analysis**.**

10 Hrs.(L)
06 Hrs.(T)

UNIT-II

Network theorems (applied to DC and AC circuits): Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem. **Transient behavior and initial conditions in networks:** Initial and final conditions in elements, geometrical interpretation of derivatives, procedure for evaluating initial conditions.

10 Hrs.(L)
06 Hrs.(T)

UNIT-III

Resonance: The resonance effect, series resonance, parallel resonance, bandwidth and selectivity of resonant circuit, Q factor of resonant circuit. **Circuit Analysis with Laplace transformations:** Introduction of LT and ILT, S-domain impedance and admittance, the s-domain models for initially charged capacitor and initially fluxed inductor, determination of the complete s-domain model for a given circuit, application of various circuit analysis methods to s-domain circuit models, application of LT methods to obtain the complete solutions for first-order and second order circuits.

10 Hrs.(L)
06 Hrs.(T)

UNIT-IV

Network topology: Network and network graph, incidence matrix, properties of incidence matrix, tree of network variables, tie set and tie set schedule, cut set and cut set schedule, formulation and solution of network equations using tie set schedule and cut set schedule. **Two port network parameters:** Relationship of two-port variables, short circuit admittance parameters, open-circuit impedance parameters, transmission parameters, hybrid parameters, relationship between parameter sets.

10 Hrs.(L)
06 Hrs.(T)
Total Hrs.: 40 (L)
24 (T)

Course Outcomes:

Students will be able to:

- **CO1:** **(a)** Explain basic concepts of electrical sources and circuits.
  (b) Analyze AC and DC circuits using different techniques.
- **CO2:** **(a)** Analyze AC and DC circuits using theorems.
  (b) Evaluate transient behavior and initial conditions in electrical circuits.
- **CO3:** **(a)** Analyze the resonance behavior of electrical circuits.
  (b) Analyze electrical circuits using Laplace transforms.
- **CO4:** **(a)** Analyze electrical circuits using network topology.
  (b) Evaluate two port network parameters

TEXT BOOKS:

1. M.E. Van Valkenburg, "Network Analysis," PHI, 3rd Edition, 2002.
2. William D. Stanley, "Network Analysis with Applications," Pearson Education, 4th Edition, 2004.

REFERENCE BOOKS:

1. Hayt, J. E. Kemmerly, S. M. Durbin, "Engineering Circuit Analysis," TMH, 6th Edition, 2006.
2. Fawwaz T. Ulaby, Michel M. Maharbiz , Cynthia M. Furse, "Circuits," NTS Press, 3rd Edition.
3. Charles K. Alexander, Matthew N. O. Sadiku, "Fundamentals of Electric Circuits," McGraw Hill Publications, 5th Edition.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	3	2	1	1	1	2	2	2	3	2
CO2	3	3	2	2	3	2	1	1	1	2	2	2	3	2
CO3	3	3	2	2	3	2	1	1	1	2	2	2	3	2
CO4	3	3	2	2	3	2	1	1	1	2	2	2	3	2

UEI345L: ANALOG CIRCUITS LABORATORY
1.5 Credits (0-0-3)

Course Objectives:

1. To design, test, and analyze various electronic circuits based on diode, BJT, and JFET.
2. To understand the usage of transistors in amplifier circuits.
3. To verify network theorems using resistive networks.

List of experiments:

1. Study of basic instruments.
2. Characteristic of Diode.
3. Characteristic of Transistor.
4. Characteristic of FET.
5. Rectifiers: Half, full, bridge, with and without filters.
6. Clipping circuits.
7. Clamping circuits.
8. Darlington Emitter follower.
9. Frequency response of RC coupled amplifier.
10. Verification of Thevenin's & Norton's theorem.
11. Verification of Maximum power transfer & Superposition theorem.
12. Frequency response of series and parallel resonance circuit.

Minimum 10 experiments to be completed from the above list

Course Outcomes:

Students will be able to:

CO1: Design and develop a circuit/system for the given objective
CO2: Conduct the experiment and demonstrate the theoretical concepts
CO3: Analyze and interpret the experimental results

REFERENCE BOOKS:

1. Boylestad and Nashelsky, "Electronic Devices and Circuit Theory," 10th Edition, Pearson, 2009.
2. David A. Bell, "Electronic Devices and Circuits," 4th Edition, PHI, 2007.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	2	3	2	3	3	3	3	3	3

UEI346L: DIGITAL CIRCUITS LABORATORY
1.5 Credit (0-0-3)

Course Objectives:

1. To experience the operation of various logic gates and digital circuits.
2. To design combinational and sequential logic circuits.
3. To give hands on experience of digital components and circuits.

List of experiments:

1. Simplification, realization of Boolean expressions using logic gates/universal gates
2. Realization of Half/Full adder and Half/Full Subtractors using logic gat
3. Realization of Binary to Gray code conversion, BCD to Excess-3 and vice versa
4. Realization of parallel adder/Subtractors, Code converter (BCD to Excess-3) using 7483chip
5. MUX/DEMUX – use of 74153, 74139 for arithmetic circuits and code converter
6. Realization of One/Two bit comparator and study of 7485 magnitude comparator
7. Use of: a) Decoder chip to drive LED display b) Priority encoder
8. Truth table verification of Flip-Flops: (i) JK Master slave (ii) T type and (iii) D type
9. Realization of 3 bit counters as a sequential circuit and MOD – N counter design (7476, 7490, 74192,74193)
10. Shift register (74LS95)

Course Outcomes:

Students will be able to:

CO1: Design and develop a circuit/system for the given objective
CO2: Conduct the experiment and demonstrate the theoretical concepts
CO3: Analyze and interpret the experimental results

REFERENCE BOOKS:

1. Donald D. Givone, "Digital Principles and Design", Tata McGraw Hill, Edition 2002.
2. John M Yarbrough, "Digital Logic Applications and Design", Thomson Learning, 2001.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	2	3	2	3	3	3	3	3	3

UBT133M: ENVIRONMENTAL STUDIES

UNIT-I

Environment & Ecology **L:07 Hrs**

Environmental segments, Ecosystem and classification of ecosystem. Environmental Impacts of human activities : Agriculture, Transportation, Industry, Mining, Urbanization.

Natural **Resources**

Forest, water, mineral, food, land resources and biodiversity,

Renewable Energy: Solar energy, wind energy, Hydropower, Tidal energy, Ocean thermal energy, Geo thermal energy, Biomass energy, Biogas, Biofuels, Hydrogen as fuel.

Non renewable Energy: Coal, Petroleum, Natural gas, Nuclear energy.

UNIT-II

Environmental Pollution **L:07 Hrs**

Water pollution, water quality standards, water borne diseases, Fluoride problem, Air pollution, Noise pollution. Effect ofelectro magnetic waves.

Sustainable future

Concept of sustainable development, threats to sustainability, over exploitation of resources, strategies for sustainable development. Environmental education, conservation of resources. Environment economics — concept of green building, Clean Development Mechanism(CDM).

UNIT-III

Current Environmental Issues of concern **L: 06 Hrs**

Population growth, Greenhouse Effect- Greenhouse gases and Global Warming, Climate change, ozone layer depletion, Acid rain, Eutrophication **Environmental policy legislation rules & regulations**

National environmental policy, environment protection act, legal aspects of air & water act. Functions of Government agencies.

UNIT-IV

Fundamentals of Waste management **L: 06 Hrs**

Solid waste management: Sources, classification, characteristics, collection & transportation, disposal, and processing methods. Hazardous waste
management and handling.

Concept of waste water treatment, Bioremediation.

Industrial waste management (Case studies: Cement, plastic, chemical, E—waste, food & construction industry waste management).

Course Outcomes: Students will be able

1. To identify basic aspects of environment and ecology.
2. To recognize natural resources and its uses.
3. To illustrate types of pollution and its effects on environment.
4. To demonstrate the concept of sustainable development.
5. To apply knowledge of environmental protection acts in various societal concerns.
6. To apply the waste management techniques in various fields.

Text Books

1. Benny Joseph "Environmental Studies" Tata McGraw Hill, 2005.
2. Dr. D. L. Manjunath, "Environmental Studies" Pearson Education, 2006
3. Koushik and Koushik "Environmental Science & Engineering" New Age International Publishers, New Delhi, 2006

Reference Books

1. P. Venugopal Rao "Principles of Environmental Science & Engineering" Prentice Hall ofIndia, 2006.
2. Meenakshi "Environmental Science & Engineering" Prentice Hall of India, 2006.
3. S. K. Garg "Environmental Science & Ecological Studies" Khanna Publishers New Delhi, 2007.
4. P.D.Sharma"Ecology and Environment" Rastogi Publications, 2012.

UMA330M: BRIDGE COURSE MATHEMATICS-I

Course Learning Objectives: This course (**UMA330M**) will enable students to master the basic tools of calculus and vectors to become skilled for solving problems in science and engineering.

Differential Calculus: **15 Hours**

Review of elementary calculus, Polar curves - angle between the radius vector and tangent, angle between two curves, pedal equation. Taylor's and Maclaurin's series expansions for one variable (statements only)without proof. problems

Partial differentiation : Introduction to function of several variables, Partial derivatives; Euler's theorem - problems. Total derivatives-differentiation of composite functions. Jacobians-problems,

Integral Calculus: **15 Hours**

Reduction formula $\int \sin^n xdx$, $\int \cos^n xdx$, $\int \tan^n xdx$ and $\int \sin^n x \cos^n xdx$. Evaluation of double and triple integrals. Area bounded by the curve.

Beta and Gamma functions: Definitions, Relation between beta and gamma functions-problems.

Vector Calculus: **10 Hours**

Vector Differentiation: Scalar and vector fields**.** Gradient, directional derivative; curl and divergence-physical interpretation; solenoidal and irrotational vector fields- problems

Course Outcomes:

On completion of this course, students are able to:

CO1: Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.

CO2: Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and Jacobians.

CO3: Apply the concept of multiple integrals and their usage in computing the area and volumes.

CO4 : Apply the knowledge of vector calculus to solve the engineering problems

Text Books:

- B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.
- E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed.(Reprint), 2016.

Reference books:

1. Thomas' Calculus: Early Transcendentals, Single Variable (13th Edition)
2. **Calculus:** Early Transcendentals James Stewart
3. C.Ray Wylie, Louis C.Barrett : "Advanced Engineering Mathematics", 6th Edition, McGraw-Hill Book Co., New York, 1995.
4. B.V. Ramana: "Higher Engineering Mathematics" 11th Edition, Tata McGraw-Hill, 2010.
5. Veerarajan T.," Engineering Mathematics for First year", Tata McGraw-Hill, 2008.
6. N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers, 7th Ed., 2010.

UMA491C: Statistics and Probability Distributions
3 Credits (3-0-0)

Course Objectives:

To apply the knowledge of Mathematics in various Engineering fields, students are able

- To be acquired knowledge about predictions preferably on the basis of mathematical equations.
- To be understand the principal concepts about probability.

Course outcomes:

On completion of this course, students are able

CO1: To apply the least square sense method to construct the specific relation for the given group of data.

CO2: To understand the concept of probability

CO3: To apply the concept of probability to find the physical significance of various distribution phenomena.

CO4: To understand the concepts of probability distributions

CO5: To apply the concept of Markov Chain for commercial and industry purpose.

Unit –I

Statistics: **10 Hours**

Curve fitting by the method of least squares: $y = a + bx$, $y = ab^x$, $y = a + bx + cx^2$ *Correlation, expression for the rank correlation coefficient and regression.*

Unit –II

Probability: **10 hours**

Probability: addition rule, conditional probability, multiplication rule, Baye's rule. Discrete and continuous random variables-Probability density function, Cumulative distribution function, Problems on expectation and variance

Unit –III

Probability distributions: **10 Hours**

Binomial distributions Poisson distributions and Normal distributions. Concept of joint probability, Joint probability distributions.

Unit –IV

Markov chains: **10 Hours**

Markov chains: Introduction, Probability vectors, Stochastic Matrices, Fixed Points and Regular stochastic Matrices, Markov chains, higher transition probabilities, stationary distribution of regular Markov chains and absorbing states.

Resources:

1. Higher Engineering Mathematics by Dr. B.S. Grewal, Khanna Publishers, New Delhi.
2. Theory and problems of probability by Seymour Lipschutz (Schaum's Series).
3. Advanced Engineering Mathematics by H. K. Dass
4. Advanced Engineering Mathematics by E Kreyszig (John Wiley & Sons)
5. Probability and stochastic processes by Roy D. Yates and David J. Goodman, wiley India pvt.ltd 2nd edition 2012.
6. Advanced Engineering Mathematics by Peter V. O'Neil.

Question paper pattern for SEE:

1. Total of eight questions with two from each unit to be set uniformly covering the entire syllabus.
2. Each question should not have more than four subdivisions.
3. Any five full questions are to be answered choosing at least one from each unit.

Assignment Test for 5 Marks: Ten objective type questions can be prepared from entire syllabus.

UEI441H: ENTREPRENEURSHIP DEVELOPMENT

3 Credits (3-0-0)

Course Objectives:

1. To impart and inculcate entrepreneurial awareness and qualities.
2. To give awareness about various supports of state/central Govt. agencies.
3. To develop and practice entrepreneurial skills to set up new enterprise.

UNIT-I

Entrepreneur: Meaning of entrepreneur, Evolution of the concept, Functions of an entrepreneur, Characteristics of an entrepreneur, Competencies of an entrepreneur, Types of entrepreneur, Intrapreneur – an emerging class. **Entrepreneurship:** Evolution of entrepreneurship, Development of entrepreneurship, Stages in entrepreneurial process, Role of entrepreneurs in economic development, Entrepreneurship in India, Barriers of entrepreneurship. **Women Entrepreneurship**: Definition, Environment, Challenges in the path of women entrepreneurship, Strategies for the development of women entrepreneurs, Self-help groups.

10 Hrs.

UNIT-II

Small Scale Enterprises (SSEs): Definition, Characteristics, Need and rationale, Objectives, Scope, Role of SSE in economic development, Advantages of SSE, Steps to start an SSE, Various government policy towards SSE, Different policies of SSE, Government support for SSE during 5 year plans, Impact of liberalization, privatization, globalization on Indian SSE, Effect of WTO/GATT, Supporting agencies of government for SSE in India: Meaning, Nature of support, Types of help, Ancillary industry(Definition Only).

10 Hrs.

UNIT-III

Institutional Support for SSEs: TECSOK, KIADB, KSSIDC, KSIMC, DIC Single window agency, SISI (MSME-DI), NSIC, SIDBI, KSFC, Institutions supporting women entrepreneurship in India.

10 Hrs.

UNIT-IV

Preparation of Project: Meaning of project, Project identification, Project selection, Project report, Need and significance of report, Contents, Formulation, Guidelines by planning commission of India for project report, Errors of project report, Project appraisal. **Identification of Business Opportunities:** Business opportunity in various sectors, Formalities for setting up of a small business enterprise (In brief with flow chart), Market feasibility study, Technical feasibility study, Financial feasibility study, Social feasibility study. **The E–commerce**: Benefits of selling on the web, Factors to be considered in launching, Myths of E-commerce, Approaches to E-commerce, Strategies for E-success.

10 Hrs.

Total Hrs.: 40

Course Outcomes:

Students will be able to:

CO1: **(a)** Describe an entrepreneur/ship and interpret qualities of entrepreneurs.
(b) Identify the importance of woman entrepreneurship.

CO2: **(a)** Describe the importance and rationale of SSE.
(b) State the status of SSE in India and narrate the government policies and support.

CO3: Identify and elaborate state and central government SSE supporting agencies in India.

CO4: **(a)** Describe the meaning and selection of project and identify business opportunity.
(b) Describe the meaning and importance of selling on web.

TEXT BOOK:

1. Poornima M. Charantimath, “Entrepreneurship Development - Small Business Enterprises”, Pearson Education, 2006.
2. Ramesh Burbere, “Management & Entrepreneurship”, Rohan Publishers, Hubli, Karnataka, 2013.
3. Thomas W. Zimmerer, Norman M. Scarborough, “Essentials of Entrepreneurship & Small Business Management”, 4th Edition, Pearson Education.Ramon P. Areny, John G. Webster, "Sensors and Signal Conditioning", 2nd Edition, Wiley India Private Ltd.

REFERENCE BOOKS:

1. Vasant Desai, “Dynamics of Entrepreneurial Development & Management”, Himalaya Publishing House.
2. Edward de Bono, “Six Thinking Hats”, Back Bay Books - Little, Brown and Company.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	1	1	1	2	2	2	3	3	2	2	3	1
CO2	1	2	1	1	1	2	2	2	3	3	2	2	3	1
CO3	1	2	1	1	1	2	2	2	3	3	3	2	3	2
CO4	1	2	2	1	1	2	2	2	3	3	3	2	3	2

UEI442C: SIGNALS AND SYSTEMS

4 Credits (3-2-0)

Course Objectives:

1. To comprehend basic system properties and signals.
2. To compute the output of LTI systems through convolution.
3. To apply Fourier analysis to signals.
4. To apply z-transform technique to signals and systems.

UNIT-I

Introduction: Definition of signal and system**,** signals and systems in various disciplines of engineering and science, classification of signals, elementary signals, basic operations on signals, sampling and aliasing, sampling theorem, systems viewed as interconnections of operations, basic system properties: stability, memory, causality, time invariance and linearity.

10 Hrs.(L)
06 Hrs.(T)

UNIT-II

Time-domain Analysis of Discrete-Time LTI Systems: The convolution sum, convolution sum evaluation procedure, convolution properties, system interconnections. **Time-domain Analysis of Continuous-Time LTI Systems:** The convolution integral, convolution integral evaluation procedure, convolution properties, system interconnections.

10 Hrs.(L)
06 Hrs.(T)

UNIT-III

Fourier Series Representations: Complex sinusoids and frequency response of LTI systems, discrete-time periodic signals: Continuous-time periodic signals: Fourier Series (FS), properties of FS, Discrete-Time Fourier Series (DTFS). **Fourier Transforms Representations:** Continuous-time aperiodic signals: Fourier Transform (FT), properties of FT. Discrete-time aperiodic signals: The Discrete-Time Fourier Transform (DTFT).

10 Hrs.(L)
06 Hrs.(T)

UNIT-IV

The z-transform: The z-transform, the ROC for the z-transform, properties of ROC, properties of z-transform, the inverse z-transform, the transfer function, transform analysis and characterization of LTI systems, the unilateral z-transform and its application to solve difference equations, relationship between z-transform and DTFT, relationship between s-plane and z-plane.

10 Hrs.(L)
06 Hrs.(T)

Tutorial:

Exploring the concepts covered in each unit using appropriate software/modern tool.

Total Hrs.: 40 (L)
24 (T)

Course Outcomes:

Students will be able to:

- **CO1:** **(a)** Classify signals and perform the basic operations on signals.
  (b) Determine system properties.
- **CO2:** **(a)** Perform convolution operation and prove its properties.
  (b) Use the convolution to determine the output of an LTI system.
- **CO3:** **(a)** Represent the signals in the Fourier domain.
  (b) Analyze the signals in the Fourier domain.

CO4: **(a)** Define z-transform, its ROC and compute z-transform of any sequence and vice versa.

(b) State and prove properties of z-transform and use z-transform techniques to solve difference equations.

TEXT BOOK:

1. Simon Haykin, Barry van Veen, "Signals and Systems," John Wiley &Sons (Asia) Pvt. Ltd, 2nd Edition, 2004.
2. B. P. Lathi, "Principles of Linear Systems and Signals," Oxford University Press, 2nd Edition, 2005

REFERENCE BOOKS:

1. A.V. Oppenheim, A.S. Willsky, S.H. Nawab, "Signals and Systems," 2nd Edition, 2006.
2. R.E. Ziemer, W.H. Tranter, D.R. Fannin, "Signals and Systems," Pearson Education, 2nd Edition, 2002.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	3	2	1	1	1	2	2	2	3	2
CO2	3	3	2	2	3	2	1	1	1	2	2	2	3	2
CO3	3	3	2	2	3	2	1	1	1	2	2	2	3	2
CO4	3	3	2	2	3	2	1	1	1	2	2	2	3	2

UEI443C: LINEAR ICs AND DATA CONVERTERS

4 Credits (4-0-0)

Course Objectives:

1. To provide knowledge of linear ICs and data converters.
2. To design circuits using OPAMPs, timer ICs and voltage regulators.
3. To describe data converters.
4. To facilitate the use of linear and data converter ICs in an application.

UNIT-I

Basics of OPAMP: OPAMP Symbol, Block diagram representation, Important electrical specifications of OPAMP: Input bias current, Input offset current, Input offset voltage, CMRR, PSRR, SR, SVRR, Output current, power dissipation. Ideal OPAMP characteristics. **Direct coupled (DC) amplifiers using OPAMP:** Inverting, Non-inverting type-Circuit design (No derivation). Instrumentation amplifiers using single and three OPAMs. **Capacitor coupled (AC) amplifiers:** Basic voltage follower, High input impedance voltage follower, Non-inverting amplifiers, High input impedance non-inverting Amplifiers, Inverting amplifiers.

13 Hrs.

UNIT-II

OPAMP applications: Active Butterworth HPF and LPF- first, second order design, design examples. Precision rectifiers (Non-inverting positive half wave and full wave types only). Sample and hold amplifiers, Log amplifiers, Integrator and differentiator, Astable multivibrator (square wave generator using single OPAMP), Phase shift oscillators, Wein bridge oscillators, Zero crossing detectors (ZCD), Schmitt trigger.

13 Hrs.

UNIT-III

OPAMP applications: Clamping and clipping, Signal converters: I/V, V/I, V/F, F/V converters. **Phase locked loop:** PSD, VCO, PLL, PLL applications. **Voltage regulators:** Fixed and variable regulators (78/79 Series and IC 317 regulator), Meaning of LDO regulators. **IC 555 timer:** Basic circuit, Design of astable, monostable multivibrator.

13 Hrs.

UNIT-IV

Data Converters: Meaning of Data Acquisition System (DAS), Typical example. Generalized block diagram of ADCs and DACs. Specifications of ADCs/DACs: Accuracy, Linearity, Error, Code skipping, Conversion speed, Resolution (meaning only). **ADC:** Classification (Dual slope, Successive approximation, Flash, Delta-Sigma converter, Dynamic ADC – All these working principle only). **DAC:** Classification- (R-2R, Inverted R-2R, binary weighted- working principle only). Typical ADC/DAC ICs: ADC0816, TL0820, DAC0800/0808, DAC7821. Typical application of ADC and DAC.

13 Hrs.

Total Hrs: 52

Course Outcomes:

Students will be able to:

- **CO1:** **(a)** Describe OPAMP and distinguish important electrical specifications of it.
  (b) Design DC and AC amplifiers in inverting, non-inverting and differential modes.
- **CO2:** **(a)** Describe various applications of OPAMP
  (b) Design a particular OPAMP circuit for the requirements of an application.
- **CO3:** **(a)** Describe and design OPAMP circuit as clipper/clamper, signal converter.
  (b) Describe voltage regulator and timer IC and use them in an application.
- **CO4:** **(a)** Describe DAS, specifications of ADC/DAC.
  (b) Use some ADC/DAC ICs for an application.

TEXT BOOK:

1. Ramakant Gayakwad, “Operational Amplifiers,” PHI, 2005.
2. David A. Bell, “Linear ICs and Applications,” PHI, 2007 [only for AC amplifiers].
3. Behzad Razavi, “Principles of Data Conversion System Design,” IEEE Press, 1995.

REFERENCE BOOKS:

1. Sergio Franco, “Design with OPAMPs and Analog ICs,” TMH, 3rd Edition, 2005.
2. Hnatek, “Handbook of A/D and D/A Converters,” John Wiley Publishers.
3. Franco Maloberti, “Data Converters,” Springer Publication, 2007.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	1	1	1	1	2	2	1	2	3	2
CO2	3	3	3	2	1	1	1	1	2	2	1	2	3	2
CO3	3	3	3	2	1	1	1	1	2	2	1	2	3	2
CO4	3	3	3	2	1	1	1	1	2	2	1	2	3	3

UEI444C: MEASUREMENT TECHNIQUES AND INSTRUMENTS

3 Credits (3-0-0)

Course Objectives:

1. To impart the knowledge of units, dimensions and generalized measurement systems.
2. Describe the bridge configurations and their application.
3. To provide working details of digital measuring instruments, CRO, signal generators, and display devices.

UNIT-I

Introduction: Measurements, significance of measurements, application of measurement systems. **Units and Dimensions:** Introduction, unit, absolute unit, fundamental and derived units, dimensions, dimensions of mechanical quantities, dimension equations: dimensions in electrostatic systems, dimensions of electromagnetic systems, problems. **Measurement of Resistance:** DC bridges: measurement of medium resistance: Wheatstone bridge, sensitivity of Wheatstone bridge, limitation of Wheatstone bridge, measurement of low resistances: Kelvin's double bridge, Problems on bridges.

10 Hrs.

UNIT-II

AC Bridges: Sources and detectors, general equation for bridge balance. Maxwell's inductance bridge, Maxwell's inductance-Capacitance bridge, Hays bridge, Anderson bridge, Owens bridge, De Sauty's bridge, Schering bridge, Wein bridge, problems on bridges..

10Hrs.

UNIT-III

Digital Instruments: Digital Voltmeters– Introduction, DVMs based on V – T, V – F , Resolution and sensitivity, General specifications, Digital Multi-meters, Digital frequency meters, Digital measurement of time. **Oscilloscopes:** Introduction, Basic principles, CRT features, Block diagram and working, Typical CRT connections, Dual beam and dual trace CROs, Measurement of phase angle and frequency.

10 Hrs.

UNIT-IV

Signal Generators: Introduction, Fixed and variable AF oscillator, Standard signal generator, Laboratory type signal generator, AF sine and Square wave generator, Square and Pulse generator, Sweep frequency generator, Random noise generator. **Display Devices:** Digital display system, classification of display, Display devices, LEDs, LCD displays.

10 Hrs.

Total Hrs.: 40

Course Outcomes:

Students will be able to:

- **CO1:** **(a)** Describe the significance of measurement, units, and dimensions and derive units and dimensions for systems.
  (b) Interpret the measurement of resistance using bridges.
- **CO2:** **(a)** Analyze AC bridges and use them to determine the capacitance/inductance value.
- **CO3:** **(a)** Illustrate the working principle of digital instruments.
  (b) Describe and use CROs.
- **CO4:** Describe the working of signal generator and display devices.

TEXT BOOKS:

1. A. K. Sawhney, "Electronics and Electrical Measurements," 9th Edition, Dhanpat Rai & Sons, 2011.
2. H. S. Kalsi, "Electronic Instrumentation," 3rd Edition, Tata McGraw Hill, 2010.

REFERENCE BOOKS:

1. John P. Bentley, "Principles of Measurement Systems," 3rd Edition, Pearson Education, 2003.
2. Cooper D., A. D. Helfrick, "Modern Electronic Instrumentation and Measuring Techniques," PHI/Pearson Education India, 2015.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	2	1	1	2	2	2	2	3	2
CO2	3	3	3	3	2	2	1	1	2	2	2	2	3	2
CO3	3	3	3	3	3	3	2	1	2	1	3	3	3	3
CO4	3	3	3	3	3	3	3	3	2	2	3	3	3	3

UEI445L: LINEAR ICs AND DATA CONVERTERS LABORATORY
1.5 Credit (0-0-3)

Course Objectives:

1. To implement basic circuits for the evaluation of OPAMP characteristics.
2. To realize the operation of OPAMP circuits for different applications.
3. To realize ADC and DAC.

List of experiments:

1. Measurement of Op-Amp parameters: CMRR, Slew rate
2. Design of voltage follower, Inverting, non inverting and Differential amplifier for desired gain
3. Design of adder and substractor circuit
4. Design of Precision full wave rectifier using 741 IC
5. Design of Butter worth I and II order low-pass filters
6. Design of Butter worth I and II order high-pass filters
7. Design of square wave and triangular wave generator using 741 IC
8. Design and implementation of astable and monostable multivibrator using 555 timer
9. 4 Bit Binary weighted and R-2R DAC (using discrete components)
10. DAC using IC DAC 0800/0808/ DAC7821
11. ADC using IC ADC 0809/ ADC0816/TL0820
12. Design and test a function generator that can generate square wave and triangular wave output for a given frequency
13. Design and test voltage controlled oscillator for a given specification (voltage range and frequency range)

Minimum 10 experiments to be completed from the above list

Course Outcomes:

Students will be able to:

CO1: Design and develop a circuit/system for the given objective
CO2: Conduct the experiment and demonstrate the theoretical concepts
CO3: Analyze and interpret the experimental results

REFERENCE BOOKS:

1. Ramakant Gayakwad, “Operational Amplifiers”, PHI, 2005.
2. David A. Bell, “Linear ICs and Applications”, PHI, 2007.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	2	2	2	2	3	3	2	2	3	3
CO2	2	2	2	3	3	3	2	2	3	3	2	2	3	3
CO3	2	2	2	3	3	3	2	2	2	2	2	2	3	3

UEI446L: PROCESS INSTRUMENTATION AND MEASUREMENT LABORATORY
1.5 Credits (0-0-3)

Course Objectives:

1. To get hands on experience of sensors/transducers and to analyze the sensor/transducer characteristics.
2. To promote the usage of various sensors and transducers in varieties of applications.
3. To understand the fundamental concepts, working principles of various DC and AC bridges.
4. To familiarize the use of measuring instruments.

List of Experiments:

1. Transfer characteristics of Thermocouple, Thermistor and RTD.
2. Transfer characteristics of LVDT.
3. Transfer characteristics of LDR.
4. Transfer characteristics of resistive displacement transducer (linear & angular potentiometer).
5. Transfer characteristic of level transmitter.
6. Transfer characteristic of load cell (Full bridge strain gauge arrangement).
7. Resistance measurement using Wheatstone bridge.
8. Low resistance measurement using Kelvin double bridge.
9. Capacitance measurement using Schering capacitance bridge.
10. Inductance measurement using Maxwell bridge.
11. Inductance measurement using Hays bridge.
12. Inductance measurement using Andersons bridge

Minimum 10 experiments to be completed from the above list

Course Outcomes:

Students will be able to:

CO1: Design and develop a circuit/system for the given objective.
CO2: Conduct the experiment and demonstrate the theoretical concepts.
CO3: Analyze and interpret the experimental results.

REFERENCE BOOKS:

1. Ramon P. Areny, John G. Webster, "Sensors and Signal Conditioning," 2nd Edition, Wiley India Private Ltd.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	2	2	2	2	3	3	2	2	3	3
CO2	2	2	2	3	3	3	2	2	3	3	2	2	3	3
CO3	2	2	2	3	3	3	2	2	3	3	2	2	3	3

UHS388C/UHS488C: Samskrutika Kannada
1 Credit (2-0-0)
(ME,CV,AU,IP AND BT BRANCHES)

ಕೋರ್ಸ್ ಉದ್ದೇಶಗಳು:

1 'ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ' ಪಠ್ಯದ ಮೂಲಕ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಕನ್ನಡ ನಾಡು, ನುಡಿ, ಭಾಷೆ, ಮತ್ತುಕನ್ನಡಿಗರ ಸಾಂಸ್ಕೃತಿಕ ಬದುಕಿನ ಬಗೆಗೆ ಅರಿವು ಮೂಡಿಸುವುದು.

2 ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಕನ್ನಡ ಭಾಷೆ ಹಾಗೂ ಅದಕ್ಕೆ ಪೂರಕವಾಗಿರುವ ಕನ್ನಡ ವ್ಯಾಕರಣಾಂಶಗಳ ಬಗೆಗೆ ಅರುವು ಮೂಡಿಸುವುದು. ಪ್ರಾದೇಶಿಕ ಭಾಷೆಯಲ್ಲಿಅರ್ಜಿ ಮತ್ತು ಪತ್ರವ್ಯವಹಾರಗಳನ್ನು ಸಮರ್ಥವಾಗಿ ನಿರ್ವಹಿಸಲು ಪ್ರೇರೇಪಿಸುವುದು. .

3 ತಂತ್ರಿಕಅಧ್ಯಯನದ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಕನ್ನಡ ಭಾಷೆಯ ಬರವಣಿಗೆ ಮತ್ತು ಬರವಣಿಗೆಯಲ್ಲಾಗುವ ದೋಷಗಳನ್ನು ಗುರುತಿಸುವ ಸಾಮರ್ಥ್ಯವನ್ನು ನೀಡುವುದು.

4 ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಅಡಗಿರುವ ಸೂಪ್ತ ಪ್ರತಿಭೆಯನ್ನು ಅನಾವರಣಗೊಳಿಸುವ ನಿಟ್ಟಿನಲ್ಲಿಅವರಲ್ಲಿ ಕಲೆ, ಬರವಣಿಗೆ ಮತ್ತು ಭಾಷಾಂತರಕಲೆಯಲ್ಲಿಆಸಕ್ತಿಯನ್ನು ಕೆರಳಿಸುವುದು.ಎಲ್ಲಕ್ಕೂ ಮೇಲಾಗಿ ಮಾನವೀಯ ಮೌಲ್ಯಗಳೊಂದಿಗೆ ಸರ್ವಾಂಗೀಣವಾಗಿ ಸಂವರ್ಧನೆಗೊಳಿಸಿ ಅವರನ್ನುರಾಷ್ಟ್ರದಅಮೂಲ್ಯ ಸಂತ್ತನ್ನಾಗಿ ರೂಪಿಸಿಸುವುದು.

ಭಾಗ: I ಕನ್ನಡ ನಾಡು, ನುಡಿ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ವ್ಯಕ್ತಿಚಿತ್ರಣ **ಅವಧಿ: 6 ಗಂಟೆ**

1. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ – ಹಂಪ ನಾಗರಾಜಯ್ಯ
2. ಕರ್ನಾಟಕಏಕೀಕರಣ :ಒಂದುಅಪೂರ್ವಚರಿತ್ರೆ– ಜಿ.ವೆಂಕಟಸುಬ್ಬಯ್ಯ
3. ಕನ್ನಡ ಭಾಷೆ ಮತ್ತುಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ– ವಿತಾವಿ
4. ಡಾ.ಸರ್.ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತುಐತಿಹ್ಯ– ಎ.ಎನ್.ಮೂರ್ತಿರಾವ್

ಭಾಗ: II ಕಥೆ, ಪ್ರವಾಸಕಥೆ ಮತ್ತುಕರಕುಶಲ ಕಲೆ **ಅವಧಿ: 6 ಗಂಟೆ**

1. ಯುಗಾದಿ – ವಸುಧೇಂದ್ರ
2. ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ – ಹಿ. ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
3. ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ–ಕರಿಗೌಡ ಬೀಚನಹಳ್ಳಿ

ಭಾಗ: III ಕಾವ್ಯ **ಅವಧಿ: 7ಗಂಟೆ**

1. ವಚನಗಳು – ಬಸವಣ್ಣ, ಅಲ್ಲಮಪ್ರಭು, ಅಕ್ಕಮಹಾದೇವಿ
2. ಕೀರ್ತನೆಗಳು – ಪುರಂದರದಾಸರು, ಕನಕದಾಸರು
3. ತತ್ವಪದಗಳು – ಶಿಶುನಾಳ ಶರೀಫರು, ಬಾಲಲೀಲಾ ಮಹಾಂತ ಶಿವಯೋಗಿಗಳು
4. ಜನಪದಗೀತೆ, 5. ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗ –ಡಿವಿಜಿ
6. ಬೆಳಗು – ಅಂಬಿಕಾತನಯದತ್ತ, 7.ಅನಿಕೇತನ – ಕುವೆಂಪು

ಭಾಗ: IV ಕಾವ್ಯ, ವಿಜ್ಞಾನ ಮತ್ತುತಂತ್ರಜ್ಞಾನ **ಅವಧಿ: 7ಗಂಟೆ**

ಕಾವ್ಯ

1. ಹೆಂಡತಿಯಕಾಗದ – ಕೆ.ಎಸ್.ನರಸಿಂಹಸ್ವಾಮಿ
2. ಮುಂಬೈ ಜಾತಕ–ಜಿ.ಎಸ್.ಶಿವರುದ್ರಪ್ಪ
3. ಆ ಮರ ಈ ಮರ–ಚಂದ್ರಶೇಖರಕಂಬಾರ
4. ಚೋಮನ ಮಕ್ಕಳ ಹಾಡು – ಸಿದ್ಧಲಿಂಗಯ್ಯ

ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ

1. 'ಕ' ಮತ್ತು 'ಬ' ಬರಹ ತಂತ್ರಾಂಶಗಳು, ಕಂಪ್ಯೂಟರ್ ಮುಖಾಂತರಕನ್ನಡದಟೈಪಿಂಗ್
2. ಕನ್ನಡ ಕಂಪ್ಯೂಟರ್ ಶಬ್ದಕೋಶ,
3. ತಾಂತ್ರಿಕ ಪದಕೋಶ

Total: L-26 Hours

ಪಠ್ಯಪುಸ್ತಕ:

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ (ಸಂ), ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ, ಡಾ.ಎಲ್.ತಿಮ್ಮೇಶ, ಪ್ರೊ.ವಿ.ಕೇಶವಮೂರ್ತಿ, Prasaranga VTU, Belagavi, Karnataka, 2020.

ಕೋರ್ಸ್ ಫಲಿತಾಂಶಗಳು:

At the end of the course the student should be able to:

1. ವಿದ್ಯಾರ್ಥಿಗಳು ಬೌದ್ಧಿಕವಾಗಿ ಬೆಳೆಯುವುದರೊಂದಿಗೆ ನಮ್ಮ ನಾಡಿನ ಮತ್ತುದೇಶದ ಸಾಂಸ್ಕೃತಿಕ ವಾರಸುದಾರರಾಗಿ ಬೆಳೆದು ಸ್ವಾವಲಂಬಿಯಾಗಿ ಬದುಕು ಕಟ್ಟಿಕೊಳ್ಳುತ್ತಾರೆ
2. ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಸಮರ್ಥವಾಗಿ ಮಾತನಾಡುವುದರೊಂದಿಗೆ, ಅನ್ಯರನ್ನು ಅರ್ಥೈಸಿಕೊಳ್ಳುವ ಮನೋಬಲ ಬೆಳೆಸಿಕೊಳ್ಳುತ್ತಾನೆ. ಇವತ್ತಿನ ಸಂಕೀರ್ಣವಾದ ಸಾಮಾಜಿಕ ವ್ಯವಸ್ಥೆಯಲ್ಲಿ ಸೌಹಾರ್ದಯುತವಾದ ನಡುವಳಿಕೆಯೊಂದಿಗೆ ಸಂಪನ್ಮೂಲ ವ್ಯಕ್ತಿಯಾಗಿ ರೂಪುಗೊಳ್ಳುತ್ತಾನೆ.
3. ಜಾಗತಿಕರಣದಇವತ್ತಿನ ಸಂದರ್ಭದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ಸ್ವತಂತ್ರವಾಗಿಆಲೋಚಿಸುವ, ಸ್ವತಂತ್ರವಾಗಿ ಬರೆಯುವ, ಸ್ವತಂತ್ರವಾಗಿ ಚಿಂತನಶೀಲರಾಗುವ ಸಾಮರ್ಥ್ಯವನ್ನು ಪಡೆದು, ಸಮಯೋಚಿತವಾಗಿ ಸೂಕ್ತ ನಿರ್ಧಾರಗಳನ್ನು ಕೈಗೊಳ್ಳುವಲ್ಲಿ ಈ ಅಧ್ಯಯನ ದೀಪಸ್ಥಂಬವಾಗಿದೆ.
4. ವಿದ್ಯಾರ್ಥಿಗಳು ಇಂದಿನ ಜಾಗತಿಕ ವಿದ್ಯಮಾನಗಳನ್ನು ಅರ್ಥೈಸಿಕೊಂಡು, ಸಮಾಜದಲ್ಲಿ ಸಂಘಜೀವಿಯಾಗಿ ಬೆಳೆಯುವ ಮನೋಬಲವನ್ನು ಮತ್ತುಆತ್ಮಸ್ಥೈರ್ಯವನ್ನುತುಂಬುವಲ್ಲಿ ಈ ಅಧ್ಯಯನ ಸೂಕ್ತವಾದ ಮಾರ್ಗದರ್ಶಿಕೆಯಾಗಿದೆ.
5. ತನ್ನ ಅಸ್ಮಿತೆಯ ಹುಡುಕಾಟದಲ್ಲಿರುವ ವ್ಯಕ್ತಿಗೆ, ಅದು ಈ ನೆಲದ ಸ್ವಾಭಿಮಾನ, ಭಾತೃತ್ವ, ಪ್ರೀತಿ, ಸೌಹಾರ್ದಯುತವಾದ ಮನಸ್ಸುಗಳಲ್ಲಿ ಇದೆಎಂಬುದನ್ನು ವಿದ್ಯಾರ್ಥಿಗಳ ಅರಿತಕ್ಕೆತರುತ್ತದೆ.
6. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಪರಿಸರ ಪ್ರಜ್ಞೆಯನ್ನು ಜಾಗೃತಗೊಳಿಸಿ, ದೈವಸೃಷ್ಟಿಯಾದ ಈ ಅಮೂಲ್ಯ ಸಂಪತ್ತನ್ನು ಹಿತ–ಮಿತವಾಗಿ ಬಳಸಿಕೊಂಡು ಮುಂದಿನ ತಲೆಮಾರಿಗೆಅದನ್ನು ಬಳುವಳಿಯಾಗಿ ಬಿಟ್ಟುಹೋಗುವಲ್ಲಿಜಾಗೃತನಾಗುತ್ತಾನೆ.

ಬಳಕೆ ಕನ್ನಡ

UHS389C/UHS489C Balake Kannada

1 Credit (2-0-0)

(ME,CV,AU,IP AND BT BRANCHES)

ಕೋರ್ಸ್ ಉದ್ದೇಶಗಳು:

1 'ಬಳಕೆ ಕನ್ನಡ 'ಪಠ್ಯದಅಧ್ಯಯನದಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳು ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಅರ್ಥೈಸಿಕೊಂಡು, ಕನ್ನಡದಲ್ಲಿ ಸಂವಹನ ಮಾಡಲು ಸಾಧ್ಯವಾಗುತ್ತದೆ.

2 ಕನ್ನಡ ವರ್ಣಮಾಲೆಯ ಬಗೆಗೆ ಅರಿವು ಮೂಡಿಸುವುದು ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಆಂತರಿಕ ಸಂವಹನ ಕ್ರಿಯೆಯನ್ನು ವೃದ್ಧಿಗೊಳಿಸುವುದು

3 ಕನ್ನಡ ಸಂಖ್ಯೆಗಳ ಬಗೆಗೆ ಅರಿವು ಮೂಡಿಸಿ, ಅವುಗಳನ್ನು ಸಮಯೋಚಿತವಾಗಿ ಬಳಸುವ ವಿದಾನವನ್ನು ಕಲಿಸಿಕೊಡುವುದು..

4 ನಮ್ಮ ನಾಡಿನ ಸಾಂಸ್ಕೃತಿಕ ವೈವಿಧ್ಯತೆಯನ್ನುಅರಿತು, ಅರ್ಥೈಸಿಕೊಂಡು ನಾಡವರೊಂದಿಗೆ ಸೌಹಾರ್ದಯುತವಾಗಿ ಬದುಕಲು ಕಲಿಸುವುದು.

Unit – I

Listening and Hearing 06 Hrs

Introduction: Activity -I

- Easy learning of a Kannada Language: A few tips
- Necessity of learning a local language:
- Tips to learn the language with easy methods.
- Hints for correct and polite conservation
- About Kannada Language (Kannada Bhashe)
- Eight Kannada authors who have won 'Jnanpith Award'
- Information about Karnataka State

Kelisikolluvudu mattu Alisuvudu: Activity -II

Listening to Kannada words and Sentences through different types of communications of day to day affairs. [Conversations in Kannada – Kannada Bhasheyalli Sambhashanegalu]

Conversation with

- With Friends – Snehitharodane-(ಸ್ನೇಹಿತರೊಡನೆ)
- With Teachers- (ಗುರುಗಳೊಡನೆ)
- In Shop, Market, Bus and Train(ಅಂಗಡಿ, ಮಾರುಕಟ್ಟೆ, ಬಸ್, ರೈಲು)
- In Hotel / Canteen(ಹೊಟೆಲ್/ಕ್ಯಾಂಟೀನ್‌ನಲ್ಲಿ)
- With Dependents(ಅವಲಂಬಿತರೊಡನೆ)
- In Hostel with Friends, Warden, Cooks and Security(ಹಾಸ್ಟೆಲ್‌ನಲ್ಲಿ)
- Vocabulary - Shabdakosha–ಶಬ್ದಕೋಶ
- Conversation - Sambhashane– ಸಂಭಾಷಣೆ- 1 (about City)
- Conversation - Sambhashane–ಸಂಭಾಷಣೆ-2(between Friends)
- Excersises to test their knowledge of understanding the Language.

Conversation with Teacher, House Owner and Roommate

- Vocabulary - Shabdakosha –ಶಬ್ದಕೋಶ
- Conversation - Sambhashane–ಸಂಭಾಷಣೆ- 1 (with Teacher)
- Conversation-Sambhashane–ಸಂಭಾಷಣೆ-2(With House Owner)
- Conversation-Sambhashane–ಸಂಭಾಷಣೆ- 3 (with Roommate)
- Excersises to test their knowledge of understanding the Kannada Wards and Sentenses in Conversation

Activity - III - Conversation with

- Vocabulary - Shabdakosha –ಶಬ್ದಕೋಶ
- Conversation - Sambhashane–ಸಂಭಾಷಣೆ-1 (with Teacher)
- Conversation-Sambhashane–ಸಂಭಾಷಣೆ-2 (with House Owner)
- Conversation-Sambhashane–ಸಂಭಾಷಣೆ-3 (with Roommate)
- Excersises to test their knowledge of understanding the Kannada Wards and Sentenses in Conversation

Activity - IV - Conversation with

- Vocabulary - Shabdakosha –ಶಬ್ದಕೋಶ
- Conversation - Sambhashane–ಸಂಭಾಷಣೆ-1 (with Teacher)
- Conversation-Sambhashane–ಸಂಭಾಷಣೆ-2 (with House Owner)
- Conversation-Sambhashane–ಸಂಭಾಷಣೆ-3 (with Roommate)
- Excersises to test their knowledge of understanding the Kannada Wards and Sentences in Conversation

Unit – II

Speaking and Asking 06Hrs

Maatanaadhuvudu mattu Keluvudu –ಮಾತನಾಡುವುದು ಮತ್ತು ಕೇಳುವುದು

[Kannada Words and Sentences in Conversation - Sambhashaneyalli Kannadada Padagalu mattu Vakyagalu - ಸಂಭಾಷಣೆಯಲ್ಲಿ ಕನ್ನಡದ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು]

In Speaking / Asking -Sambhashaneyalli–ಸಂಭಾಷಣೆಯಲ್ಲಿ

- Nouns - Naamapadagalu– ನಾಮಪದಗಳು
- Pronouns – Sarvanamapadagalu– ಸರ್ವನಾಮಪದಗಳು
- Adjectives – namavisheshanagalu - ನಾಮ ವಿಶೇಷಣಗಳು
- Verbs- Kriyapadagalu– ಕ್ರಿಯಾಪದಗಳು
- Adverbs - kriya visheshanagalu–ಕ್ರಿಯಾ ವಿಶೇಷಣಗಳು
- Conjunctions - Samyogagalu–ಸಂಯೋಗಗಳು
- Prepositions - Upasarga– ಉಪಸರ್ಗಗಳು

- Interrogative words and Sentences in Conversation – Sambhashaneyalli Prashnarthaka padagalu mattu vakyagalu–ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
- Vicharaneya/ Vicharisuva / Bedikeyavakyagalu (Enquiry / Request sentences in Conversation) - ವಿಚಾರಣೆಯ / ವಿಚಾರಿಸುವ / ಬೇಡಿಕೆಯ ವಾಕ್ಯಗಳು
- Excersises to test their knowledge of understanding the Kannada Wards and Sentenses in Conversation.

UNIT III

Reading – Ooduvudu – ಓದುವುದು 07Hrs

Kannada Wards and Sentenses in General Reading and Conversation- Samanya Sambhashaneyalli Kannadada Padagalu mattu Vakyagalu - ಸಂಭಾಷಣೆಯಲ್ಲಿ ಕನ್ನಡದ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು)

- Singular and Plural nouns in Conversation- SambhashaneyalliEkaavachana mattu Bhahuvachana - ಏಕವಚನ ಮತ್ತು ಬಹುವಚನ
- Gender in Conversation - Sambhashaneyalli Linga– ಲಿಂಗ
- Viruddha padagalu /Virodarthaka padagalu (Antonyms)– ವಿರುದ್ದ / ವಿರೋದಾರ್ಥಕ ಪದಗಳು.
- AsamanjasaUchcharane (Inappropriate Pronounciation) – ಅಸಮಂಜಸಉಚ್ಚಾರಣೆ
- SankhyaVyavasthe (Numbers system)- ಸಂಖ್ಯಾ ವ್ಯವಸ್ಥೆ
- Bhinnamshagalu (Fractions) –ಭಿನ್ನಾಂಶಗಳು
- Tindiya Hesarugalu/ Belagina upaharagala Hesarugalu - Menu (Names) of the breakfast Items –ತಿಂಡಿಯ ಹೆಸರುಗಳು
- Aaharakke sambandhisida padagalu / Aahara padarthagala Hesarugalu– (Names connected with food) –ಆಹಾರಕ್ಕೆ ಸಂಬಂದಿಸಿದ ಪದಗಳು.
- Samaya / Kalakke Sambhandhisida padhagalu (Words Relating to Time)– ಸಮಯ / ಕಾಲಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತಹ ಪದಗಳು
- Dikkugalige sambhadisida padhagalu (Words Relating to Directions) – ದಿಕ್ಕಿಗೆ ಸಂಬಂಧಿಸಿದಂತಹ ಪದಗಳು
- Manavana Bhavanegalige sambandisida Padagalu (Words Relating to Human's feelings and Emotions) –ಮಾನವನ ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪದಗಳು
- Manavana shareerada bhagagalu / Angagalu (Parts of the Human body)- ಮಾನವನ ಶರೀರದ ಭಾಗಗಳು / ಅಂಗಗಳು
- Manava Sambhandhada / Sambhandhaakke sambhadisida padhagalu (Terms Relating to Human Relationship)– ಮಾನವ ಸಂಬಂದಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತಹ ಪದಗಳು
- Vaasada sstalakke sambhandisidanthaha padhagalu (Words Relating to Place of Living) - ವಾಸದ ಸ್ಥಳಕ್ಕೆ ಸಂಬಂದಿಸಿದಂತಹ ಪದಗಳು
- Saamanya Sambhashaneyalli Bhalasuvanthaha Padagala Patti (List of Words, used in the general conversation) – ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಯಲ್ಲಿ ಬಳಸುವಂತಹ ಪದಗಳ ಪಟ್ಟಿ

- Additional Excersises to test their knowledge of understanding the Kannada words and sentences in their communication.

UNIT IV

Writing – Bareyuvudu – ಬರೆಯುವುದು 07Hrs

Kannada Alphabets and their Pronunciation – Kannada AksharaMale mattu uchcharane – ಕನ್ನಡ ಅಕ್ಷರಮಾಲೆ ಹಾಗೂ ಉಚ್ಚಾರಣೆ ಕನ್ನಡ ಅಕ್ಷರಾಭ್ಯಾಸ

- Kannada Aksharamale (ಕನ್ನಡ ಅಕ್ಷರಮಾಲೆ)
- Kannada stress letters - vattakshara (also often written as Ottakashara)
- Kannada khaghunitha (Pronounced as ka-gunitha)
- Excersises to test their knowledge of understanding the Kannada words.
- Pronunciation (Uchcharane), Memorisation and usage of the Kannada Letters
- VargeeyaVyanjanagalaUchcharane (Pronounciation of Structured Consonants) AvargeeyaVyanjanagalaUchcharane (Pronounciation of Unstructured Consonants) Excersises to test their knowledge of understanding the Kannada words.
- Excersises to test their knowledge of understanding the Kannada alphabets.
- Additional Excersises to test their knowledge of understanding the Kannada alphabets.

ಒಟ್ಟು: 26 ಗಂಟೆಗಳು

ಪಠ್ಯಪುಸ್ತಕ:

ಬಳಕೆ ಕನ್ನಡ (ಸಂ), ಡಾ.ಎಲ್.ತಿಮ್ಮೇಶ, ಪ್ರೊ. ವಿ. ಕೇಶವಮೂರ್ತಿ, Prasarang, VTU, Belagavi, Karnataka 2020.

ಕೋರ್ಸ್ ಫಲಿತಾಂಶಗಳು:

At the end of the course the student should be able to:

1 ವಿದ್ಯಾರ್ಥಿಗಳು ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಸುಲಭವಾಗಿ ಅರ್ಥೈಸಿಕೊಂಡು, ಸಾಮಾಜಿಕವಾಗಿ, ಆರ್ಥಿಕವಾಗಿಆಯಾ ಪ್ರದೇಶದಜನರೊಂದಿಗೆಅನ್ಯೋನ್ಯವಾಗಿ ವ್ಯವಹರಿಸುತ್ತಾನೆ.

2 ಈ ಪಠ್ಯಾಧ್ಯಯನದಿಂದ ವಿದ್ಯಾರ್ಥಿಯುಆಯಾ ಪ್ರದೇಶಗಳ ನಂಬಿಕೆ, ಸಂಪ್ರದಾಯ ಮತ್ತು ಆಚರಣೆಗಳನ್ನು ಸುಲಭವಾಗಿ ಅರ್ಥಮಾಡಿಕೊಳ್ಳಲು ಸಾಧ್ಯವಾಗುತ್ತದೆ.

3 ಕನ್ನಡ ಸಂಖ್ಯೆಗಳ ಪರಿಕಲ್ಪನೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಯು ವಾಣಿಜ್ಯ ವ್ಯವಹಾರಗಳನ್ನು ಸುಲಭವಾಗಿ ನೆವೇರಿಸಲು ಸಾಧ್ಯವಾಗುತ್ತದೆ.

4 ಹಂತ ಹಂತವಾಗಿ ವಿದ್ಯಾರ್ಥಿಯು ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ಬರವಣಿಗೆಯಕಲೆಯನ್ನು ಮತು ್ತಓದುವಕಲೆಯನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುತ್ತಾನೆ.

5 ಕನ್ನಡ ಭಾಷೆಯ ನಿರಂತರ ಸಂಪರ್ಕದಿಂದ ವಿದ್ಯಾರ್ಥಿಯು ಸ್ವಂತಂತ್ರವಾಗಿಆಲೋಚಿಸುವ ಮತ್ತುಅಭಿವ್ಯಕ್ತಿಸುವ ಸಾಮರ್ಥ್ಯವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುತ್ತಾನೆ.

6 ಈ ಭಾಷೆಯ ಸಂಪರ್ಕದಿಂದಾಗಿ ವಿದ್ಯಾರ್ಥಿಯು ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳಾದ ಕತೆ, ಕವನ, ಕಾದಂಬರಿ, ನಾಟಕ ಮುಂತಾದ ಕ್ಷೇತ್ರಗಳಲ್ಲಿ ತನ್ನಅಭಿರುಚಿಯನ್ನು ಹೆಚ್ಚಿಸಿಕೊಳ್ಳುತ್ತಾನೆ.

BRIDGE COURSE MATHEMATICS-II

Course Learning Objectives:
The purpose of the course **UMA430M** is to facilitate the students with concrete foundation of differential equations and Laplace transform to acquire the knowledge of these mathematical tools.

Ordinary differential equations of first order: **15 Hours**
Variable seperable,Homogeneous.Exact form and reducible to exact differential equations. Linear and Bernoulli's equation.

Differential Equations of higher order:
Second and higher order linear ODE's with constant coefficients-Inverse differential operator, method of variation of parameters(second order); Cauchy's and Legendre homogeneous equations.

Laplace Transform: **15 Hours**
Introduction, Definition of Laplace Transform, Laplace Transform of Elementary functions, Properties: Shifting, differentiation, Integral and division by t. Periodic function, Heaviside's Unit step function

Inverse Laplace transforms –
Properties. Convolution theorem. Solutions of linear differential equations

Partial Differential Equations(PDE's): **10 Hours**
Introduction to PDE : Formation of PDE's by elimination of arbitrary constants and functions. Solution of non-homogeneous PDE by direct integration. Solution of Lagrange's linear PDE, method of separation of variables,

Course Outcomes:
On completion of this course, students are able to:

CO1: Explain various physical models through first and higher order differential equations and solve such linear ordinary differential equations.

CO2: Apply the Laplace transform techniques to solve differential equations.

CO3: Understand a variety of partial differential equations and solution by exact methods.

CO4: solve PDE by direct integration and Solution of Lagrange's linear PDE, method of separation of variables

Text Books:

- B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.
- E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed.(Reprint), 2016.

Reference books:

1. Thomas' Calculus: Early Transcendentals, Single Variable (13th Edition)
2. **Calculus:** Early Transcendentals James Stewart
3. C.Ray Wylie, Louis C.Barrett : “Advanced Engineering Mathematics", 6th Edition, McGraw-Hill Book Co., New York, 1995.
4. B.V. Ramana: "Higher Engineering Mathematics" 11th Edition, Tata McGraw-Hill, 2010.
5. Veerarajan T.,” Engineering Mathematics for First year", Tata McGraw-Hill, 2008.
6. N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers, 7th Ed., 2010.

UHS001N: FUNDAMENTALS OF QUANTITATIVE APTITUDE AND SOFT SKILLS
1 Credits (2-0-0)

Course Objectives:

1. To develop and augment the professional communication skills
2. To augment the ability to understand and analyse a problem and find its solution through analysis of data given
3. To fine-tune the quantitative analysis and problem-solving skills

UNIT-I

Communication Skills & Vocabulary Development: Communication Tools, Active Listening, Non Verbal Communication, Vocabulary Building Techniques, Root Words

08 Hrs.

UNIT-II

Spoken English, English Language Structure & Number Theory: Introduction to IPA, Sounds in English, Grammar and Bouncing, Number System

08 Hrs.

UNIT-III

Presentation Skills & Linear Equations: Presentation Basics, Drills, Captivating the Audience, The God of Math

07 Hrs.

UNIT-IV

Factors and Multiples & Verbal and Visual Reasoning: HCF, LCM, Human Relations, Direction Tests, Coding Decoding, Clocks and Calendars, Visual Reasoning

07 Hrs.

Total Hrs.: 30

Course Outcomes:

After active participation in tis course, the student will have

CO1: learned the importance of non-verbal communication
CO2: understood the various sounds in the English Language
CO3: enhanced his/her vocabulary and learnt techniques to augment it further
CO4: understood analysis of the given problem and learnt to develop a method for solving it
CO5: enhanced and augmented his/her ability to work with quantitative problems

REFERENCE BOOKS:

1. R. S. Aggarwal, "A Modern Approach to Verbal and Non – Verbal Reasoning", Sultan Chand and Sons, New Delhi, 2018
2. R. S. Aggarwal, "Quantitative Aptitude", Sultan Chand and Sons, New Delhi, 2018
3. Chopra, "Verbal and Non – Verbal Reasoning", MacMillan India
4. M Tyra, "Magical Book on Quicker Maths", BSC Publications, 2018

5. Booher Diana, “Communicate With Confidence”, Booher Research Institute, 2011

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1										3		1		
CO2										2		1		
CO3		3										2		
CO4		3										2		

Evaluation Methodology:

Continuous Internal Evaluation: 3 CIEs with 30 Objective Questions in 60 minutes and one assignment of 5 marks (average of weekly assignments)

Semester Ending Examination: 50 Objective Questions in 90 minutes covering entire syllabus