

Course No.	Course Name	L-T-P - Credits	Year of Introduction
MA201	LINEAR ALGEBRA AND COMPLEX ANALYSIS	3-1-0-4	2016
Prerequisite : Nil			
Course Objectives COURSE OBJECTIVES <ul style="list-style-type: none"> To equip the students with methods of solving a general system of linear equations. To familiarize them with the concept of Eigen values and diagonalization of a matrix which have many applications in Engineering. To understand the basic theory of functions of a complex variable and conformal Transformations. 			
Syllabus Analyticity of complex functions-Complex differentiation-Conformal mappings-Complex integration-System of linear equations-Eigen value problem			
Expected outcome . At the end of the course students will be able to (i) solve any given system of linear equations (ii) find the Eigen values of a matrix and how to diagonalize a matrix (iii) identify analytic functions and Harmonic functions. (iv) evaluate real definite Integrals as application of Residue Theorem (v) identify conformal mappings (vi) find regions that are mapped under certain Transformations			
Text Book: Erwin Kreyszig: Advanced Engineering Mathematics, 10 th ed. Wiley			
References: 1. Dennis g Zill & Patric D Shanahan-A first Course in Complex Analysis with Applications-Jones & Bartlet Publishers 2. B. S. Grewal. Higher Engineering Mathematics, Khanna Publishers, New Delhi. 3. Lipschutz, Linear Algebra, 3e (Schaums Series) McGraw Hill Education India 2005 4. Complex variables introduction and applications-second edition-Mark.J.Owitz-Cambridge Publication			
Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Complex differentiation Text 1[13.3,13.4] Limit, continuity and derivative of complex functions	3	15%
	Analytic Functions	2	
	Cauchy–Riemann Equation (Proof of sufficient condition of analyticity & C R Equations in polar form not required)-Laplace’s Equation	2	
	Harmonic functions, Harmonic Conjugate	2	
II	Conformal mapping: Text 1[17.1-17.4] Geometry of Analytic functions Conformal Mapping,	1	15%
	Mapping $w = z^2$ conformality of $w = e^z$.	2	

	<p>The mapping $w = z + \frac{1}{z}$</p> <p>Properties of $w = \frac{1}{z}$</p> <p>Circles and straight lines, extended complex plane, fixed points</p> <p>Special linear fractional Transformations, Cross Ratio, Cross Ratio property-Mapping of disks and half planes</p> <p>Conformal mapping by $w = \sin z$ & $w = \cos z$</p> <p>(Assignment: Application of analytic functions in Engineering)</p>	1 3 3	
FIRST INTERNAL EXAMINATION			
III	<p><u>Complex Integration. Text 1[14.1-14.4] [15.4&16.1]</u></p> <p>Definition Complex Line Integrals, First Evaluation Method, Second Evaluation Method</p> <p>Cauchy's Integral Theorem(without proof), Independence of path(without proof), Cauchy's Integral Theorem for Multiply Connected Domains (without proof)</p> <p>Cauchy's Integral Formula- Derivatives of Analytic Functions(without proof)Application of derivative of Analytical Functions</p> <p>Taylor and Maclaurin series(without proof), Power series as Taylor series, Practical methods(without proof)</p> <p>Laurent's series (without proof)</p>	2 2 2 2 2	15%
IV	<p><u>Residue Integration Text 1 [16.2-16.4]</u></p> <p>Singularities, Zeros, Poles, Essential singularity, Zeros of analytic functions</p> <p>Residue Integration Method, Formulas for Residues, Several singularities inside the contour Residue Theorem.</p> <p>Evaluation of Real Integrals (i) Integrals of rational functions of $\sin\theta$ and $\cos\theta$ (ii) Integrals of the type $\int_{-\infty}^{\infty} f(x)dx$ (Type I, Integrals from 0 to ∞)</p> <p>(Assignment : Application of Complex integration in Engineering)</p>	2 4 3	15%
SECOND INTERNAL EXAMINATION			
V	<p>Linear system of Equations Text 1(7.3-7.5)</p> <p>Linear systems of Equations, Coefficient Matrix, Augmented Matrix</p> <p>Gauss Elimination and back substitution, Elementary row operations, Row equivalent systems, Gauss elimination-Three possible cases, Row Echelon form and Information from it.</p>	1 5	20%

	Linear independence-rank of a matrix Vector Space-Dimension-basis-vector space \mathbf{R}^3	2	
	Solution of linear systems, Fundamental theorem of non-homogeneous linear systems(Without proof)-Homogeneous linear systems (Theory only)	1	
VI	Matrix Eigen value Problem Text 1.(8.1,8.3 &8.4) Determination of Eigen values and Eigen vectors-Eigen space Symmetric, Skew Symmetric and Orthogonal matrices –simple properties (without proof) Basis of Eigen vectors- Similar matrices Diagonalization of a matrix- Quadratic forms- Principal axis theorem(without proof) (Assignment-Some applications of Eigen values(8.2))	3 2 4	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN:

Maximum Marks : 100 Exam Duration: 3 hours

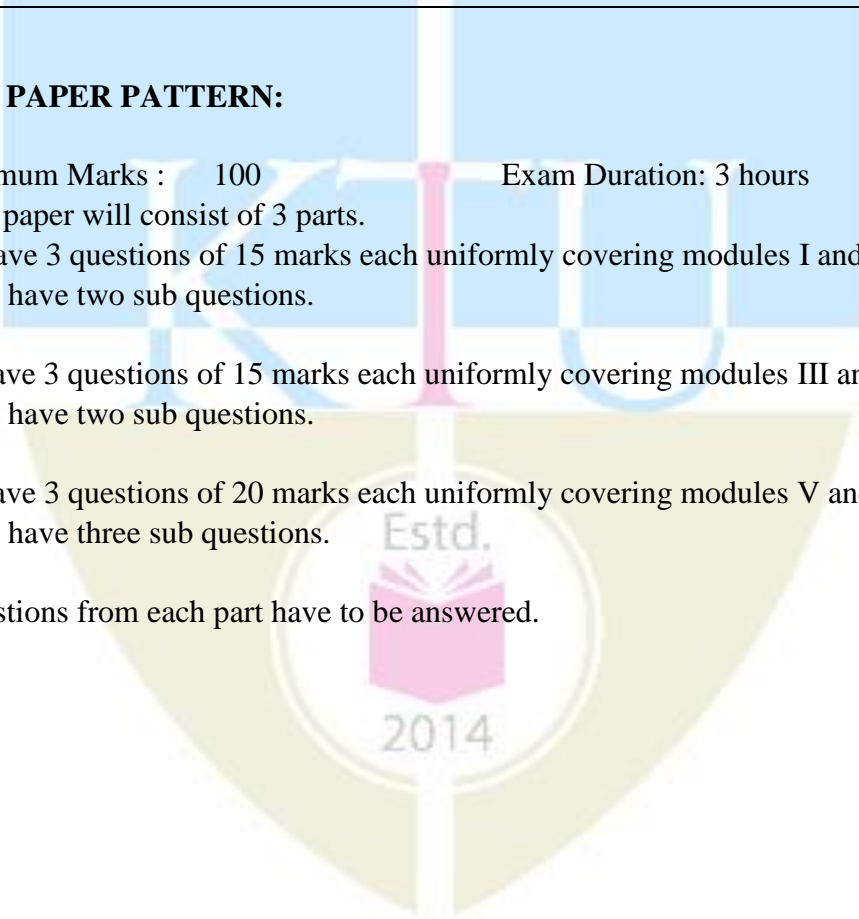
The question paper will consist of 3 parts.

Part A will have 3 questions of 15 marks each uniformly covering modules I and II. Each question may have two sub questions.

Part B will have 3 questions of 15 marks each uniformly covering modules III and IV. Each question may have two sub questions.

Part C will have 3 questions of 20 marks each uniformly covering modules V and VI. Each question may have three sub questions.

Any two questions from each part have to be answered.



Course No.	Course Name	L-T-P - Credits	Year of Introduction
MA202	Probability distributions, Transforms and Numerical Methods	3-1-0-4	2016
Prerequisite: Nil			
Course Objectives			
<ul style="list-style-type: none"> To introduce the concept of random variables, probability distributions, specific discrete and continuous distributions with practical application in various Engineering and social life situations. To know Laplace and Fourier transforms which has wide application in all Engineering courses. To enable the students to solve various engineering problems using numerical methods. 			
Syllabus			
Discrete random variables and Discrete Probability Distribution. Continuous Random variables and Continuous Probability Distribution. Fourier transforms. Laplace Transforms. Numerical methods-solution of Algebraic and transcendental Equations, Interpolation. Numerical solution of system of Equations. Numerical Integration, Numerical solution of ordinary differential equation of First order.			
Expected outcome .			
After the completion of the course student is expected to have concept of (i) Discrete and continuous probability density functions and special probability distributions. (ii) Laplace and Fourier transforms and apply them in their Engineering branch (iii) numerical methods and their applications in solving Engineering problems.			
Text Books:			
<ol style="list-style-type: none"> Miller and Freund's "Probability and statistics for Engineers"-Pearson-Eighth Edition. Erwin Kreyszig, "Advanced Engineering Mathematics", 10th edition, Wiley, 2015. 			
References:			
<ol style="list-style-type: none"> V. Sundarapandian, "Probability, Statistics and Queuing theory", PHI Learning, 2009. C. Ray Wylie and Louis C. Barrett, "Advanced Engineering Mathematics"-Sixth Edition. Jay L. Devore, "Probability and Statistics for Engineering and Science"-Eight Edition. Steven C. Chapra and Raymond P. Canale, "Numerical Methods for Engineers"-Sixth Edition-Mc Graw Hill. 			
Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Discrete Probability Distributions. (Relevant topics in section 4.1,4,2,4.4,4.6 Text1)		
	Discrete Random Variables, Probability distribution function, Cumulative distribution function.	2	
	Mean and Variance of Discrete Probability Distribution.	2	
	Binomial Distribution-Mean and variance.	2	
	Poisson Approximation to the Binomial Distribution. Poisson distribution-Mean and variance.	2	
			15%

II	Continuous Probability Distributions. (Relevant topics in section 5.1,5.2,5.5,5.7 Text1)		
	Continuous Random Variable, Probability density function, Cumulative density function, Mean and variance.	2	
	Normal Distribution, Mean and variance (without proof).	4	
	Uniform Distribution.Mean and variance.	2	
	Exponential Distribution, Mean and variance.	2	
FIRST INTERNAL EXAMINATION			
III	Fourier Integrals and transforms. (Relevant topics in section 11.7, 11.8, 11.9 Text2)		15%
	Fourier Integrals. Fourier integral theorem (without proof).	3	
	Fourier Transform and inverse transform.	3	
	Fourier Sine & Cosine Transform, inverse transform.	3	
IV	Laplace transforms. (Relevant topics in section 6.1,6.2,6.3,6.5,6.6 Text2)		15%
	Laplace Transforms, linearity, first shifting Theorem.	3	
	Transform of derivative and Integral, Inverse Laplace transform, Solution of ordinary differential equation using Laplace transform.	4	
	Unit step function, second shifting theorem.	2	
	Convolution Theorem (without proof).	2	
	Differentiation and Integration of transforms.	2	
SECOND INTERNAL EXAMINATION			
V	Numerical Techniques. (Relevant topics in section.19.1,19.2,19.3 Text2)		20%
	Solution Of equations by Iteration, Newton- Raphson Method.	2	
	Interpolation of Unequal intervals-Lagrange's Interpolation formula.	2	
	Interpolation of Equal intervals-Newton's forward difference formula, Newton's Backward difference formula.	3	
VI	Numerical Techniques. (Relevant topics in section 19.5,20.1,20.3, 21.1 Text2)		20%
	Solution to linear System- Gauss Elimination, Gauss Seidal Iteration Method.	3	
	Numeric Integration-Trapezoidal Rule, Simpson's 1/3 Rule.	3	
	Numerical solution of firstorder ODE-Euler method, Runge-Kutta Method (fourth order).	3	
END SEMESTER EXAM			

QUESTION PAPER PATTERN:

Maximum Marks : 100

Exam Duration: 3 hours

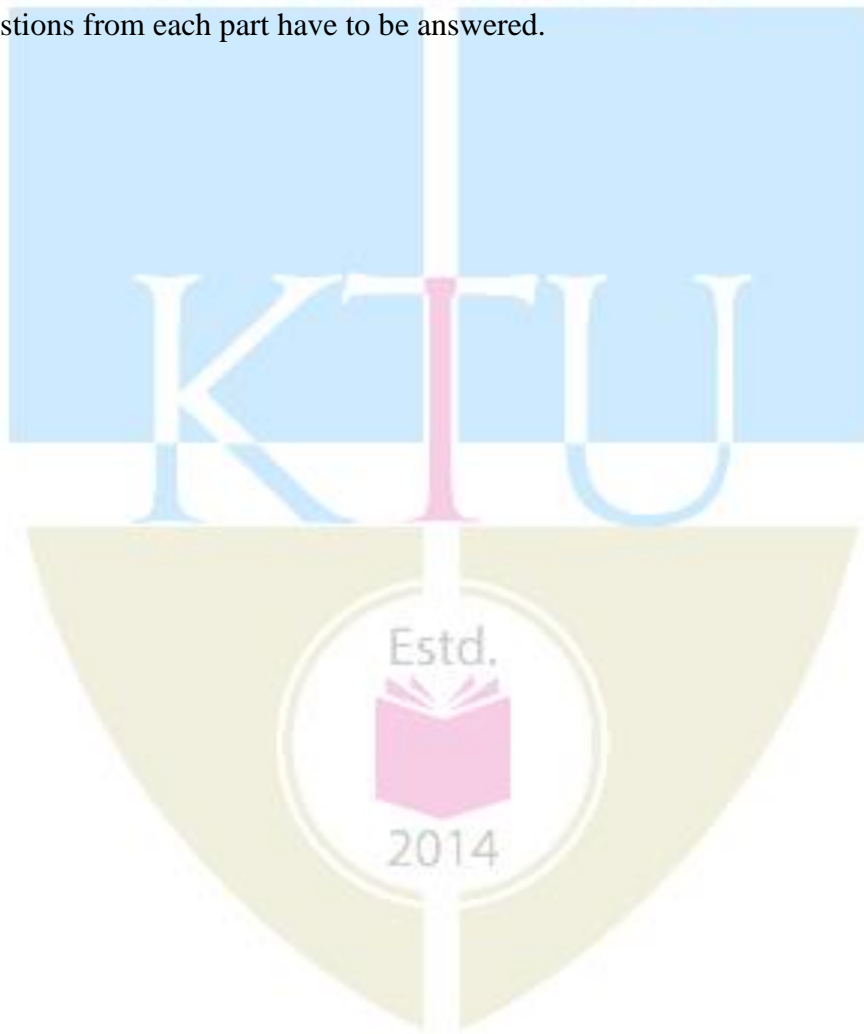
The question paper will consist of 3 parts.

Part A will have 3 questions of 15 marks each uniformly covering modules I and II. Each question may have two sub questions.

Part B will have 3 questions of 15 marks each uniformly covering modules III and IV. Each question may have two sub questions.

Part C will have 3 questions of 20 marks each uniformly covering modules V and VI. Each question may have three sub questions.

Any two questions from each part have to be answered.



Course code	Course Name	L-T-P -Credits	Year of Introduction
MA204	Probability, Random Processes and Numerical Methods	3-1-0-4	2016
Prerequisite: Nil			
Course Objectives <ul style="list-style-type: none"> To introduces the modern theory of probability and its applications to modelling and analysis and processing of random processes and signals. To learn most of the important models of discrete and continuous probability distributions and widely used models of random processes such as Poisson processes and Markov chains. To understand some basic numerical methods for interpolation and integration and also for finding roots of equations and solutions of ODEs. 			
Syllabus Discrete random variables- Continuous Random variables-Multiple Random variables. Random Processes- Autocorrelation, Power spectrum-Special Random Processes. Numerical Methods.			
Expected outcome. At the end of the course students would have become familiar with quantifying and analysing random phenomena using various models of probability distributions and random processes. They would also have learned the concepts of autocorrelation and power spectral density. Some of the fundamental numerical methods learned in the course would help them to solve a variety of mathematical problems by the use of computers when analytical methods fail or are difficult.			
Text Book: <ol style="list-style-type: none"> V.Sundarapandian, "Probability, Statistics and Queueing theory", PHI Learning, 2009 Erwin Kreyszig, "Advanced Engineering Mathematics", 10th edition, Wiley, 2015. 			
References: <ol style="list-style-type: none"> HosseinPishro-Nik, "Introduction to Probability, Statistics and Random Processes", Kappa Research, 2014 (Also available online at www.probabilitycourse.com) OliverC.Ibe,FundamentalsOfAppliedProbabilityandRandomProcesses"Elsevier,2005. T Veerarajan "Probability Statistics and Random Process" Third edition-McGraw Hill. Ward-Cheney , Numerical Mathematical and computing,Cengage Learning-7th Edition 			
Course Plan			
Module	Contents	Hours	End Sem. Exam Marks
I	Discrete random variables [Text 1: Relevant portions of sections 2.1, 2.2,2.3, 2.5, 3.3 and 3.4]		
	Discrete random variables, probability mass function, cumulative distribution function, expected value, mean and variance.	3	
	Binomial random variable-, mean, variance.	2	
	Poisson random variable, mean, variance, approximation of binomial by Poisson.	2	
	Distribution fitting-binomial and Poisson.	2	15%
II	Continuous random variables [Text 1: Relevant portions of sections 2.4, 2.5, 3.7, 3.8 and 3.11]		
	Continuous random variables, Probability density function, expected value, mean and variance.	2	
	Uniform random variable-, mean, variance.	2	15%

	Exponential random variable-mean, variance, memoryless property. Normal random variable-Properties of Normal curve mean, variance (without proof), Use of Normal tables.	2 3			
FIRST INTERNAL EXAMINATION					
III	Joint distributions [Text 1: Relevant portions of sections 4.1, 4.2, 4.4 4.7 and 4.10] Joint probability distributions- discrete and continuous, marginal distributions, independent random variables. Expectation involving two or more random variables, covariance of pairs of random variables. Central limit theorem (without proof).	4 3 2	15%		
	IV	Random processes [Text 1: Relevant portions of sections 5.1, 5.2, 5.3 and 6.2] Random processes, types of random processes, Mean, correlation and covariance functions of random processes, Wide Sense Stationary (WSS) process, Properties of autocorrelation and auto covariance functions of WSS processes. Power spectral density and its properties.		2 4 2	
		SECOND INTERNAL EXAMINATION			
V		Special random processes [Text 1: Relevant portions of sections 5.5, 5.5.1, 5.5.2, 5.5.3, 5.5.4) and 5.6] Poisson process-properties, probability distribution of inter arrival times. Discrete time Markov chain- Transition probability matrix, Chapman Kolmogorov theorem (without proof), computation of probability distribution and higher order transition probabilities, stationary distribution.	4 5	20%	
	VI	Numerical Methods [Text 2: Relevant portions of sections 19.2, 19.3, 19.5 and 21.1] (Derivation of formulae not required in this module) Finding roots of equations-Newton-Raphson method. Interpolation-Newton's forward and backward difference formula, Lagrange's interpolation method. Numerical Integration-trapezoidal rule, Simpson's 1/3rd rule. Numerical solution of first order ODE-Euler method, Runge-Kutta fourth order (classical method).	3 3 3 3		20%
END SEMESTER EXAM					

QUESTION PAPER PATTERN:

Maximum Marks : 100

Exam Duration: 3 hours

The question paper will consist of 3 parts.

Part A will have 3 questions of 15 marks each uniformly covering modules I and II. Each question may have two sub questions.

Part B will have 3 questions of 15 marks each uniformly covering modules III and IV. Each question may have two sub questions.

Part C will have 3 questions of 20 marks each uniformly covering modules V and VI. Each question may have three sub questions.

Any two questions from each part have to be answered.

Course code	Course Name	L-T-P - Credits	Year of Introduction
HS200	Business Economics	3-0-0-3	2016
Prerequisite: Nil			
Course Objectives <ul style="list-style-type: none"> To familiarize the prospective engineers with elementary Principles of Economics and Business Economics. To acquaint the students with tools and techniques that are useful in their profession in Business Decision Making which will enhance their employability; To apply business analysis to the “firm” under different market conditions; To apply economic models to examine current economic scenario and evaluate policy options for addressing economic issues To gain understanding of some Macroeconomic concepts to improve their ability to understand the business climate; To prepare and analyse various business tools like balance sheet, cost benefit analysis and rate of returns at an elementary level 			
Syllabus Business Economics - basic concepts, tools and analysis, scarcity and choices , resource allocation, marginal analysis, opportunity costs and production possibility curve. Fundamentals of microeconomics - Demand and Supply Analysis, equilibrium, elasticity, production and production function, cost analysis, break-even analysis and markets. Basics of macroeconomics - the circular flow models, national income analysis, inflation, trade cycles, money and credit, and monetary policy. Business decisions - investment analysis, Capital Budgeting decisions, forecasting techniques and elementary Balance Sheet and taxation, business financing, international investments			
Expected outcome . A student who has undergone this course would be able to <ol style="list-style-type: none"> make investment decisions based on capital budgeting methods in alignment with microeconomic and macroeconomic theories. able to analyse the profitability of the firm, economy of operation, determination of price under various market situations with good grasp on the effect of trade cycles in business. gain knowledge on Monetary theory, measures by RBI in controlling interest rate and emerging concepts like Bit Coin. gain knowledge of elementary accounting concepts used for preparing balance sheet and interpretation of balance sheet 			
Text Books <ol style="list-style-type: none"> Geetika, Piyali Ghosh and Chodhury, <i>Managerial Economics</i>, Tata McGraw Hill, 2015 Gregory Mankiw, <i>Principles of Macroeconomics</i>, Cengage Learning, 2006. M.Kasi Reddy and S.Saraswathi, <i>Economics and Financial Accounting</i>. Prentice Hall of India. New Delhi. 			

References:

1. Dornbusch, Fischer and Startz, *Macroeconomics*, McGraw Hill, 11th edition, 2010.
2. Khan M Y, *Indian Financial System*, Tata McGraw Hill, 7th edition, 2011.
3. Samuelson, *Managerial Economics*, 6th edition, Wiley
4. Snyder C and Nicholson W, *Fundamentals of Microeconomics*, Cengage Learning (India), 2010.
5. Truett, *Managerial Economics: Analysis, Problems, Cases*, 8th Edition, Wiley
6. Welch, *Economics: Theory and Practice* 7th Edition, Wiley
7. Uma Kapila, *Indian Economy Since Independence, 26th Edition: A Comprehensive and Critical Analysis of India's Economy, 1947-2015*
8. C Rangarajan, *Indian Economy, Essays on monetary and finance*, UBS Publishers'Distributors, 1998
9. A.Ramachandra Aryasri, *Managerial Economics and Financial Analysis*, Tata McGraw-Hill, New Delhi.
10. Dominick Salvatore, *Managerial Economics in Global Economy*, Thomas Western College Publishing, Singapore.
11. I.M .Pandey, *Financial Management*, Vikas Publishing House. New Delhi.
12. Dominick Salvatore, *Theory and Problems of Micro Economic Theory*. Tata Mac Graw-Hill, New Delhi.
13. T.N.Hajela. *Money, Banking and Public Finance*. Anne Books. New Delhi.
14. G.S.Gupta. *Macro Economics-Theory and Applications*. Tata Mac Graw- Hill, New Delhi.
15. Yogesh, Maheswari, *Management Economics* , PHI learning, NewDelhi, 2012
16. Timothy Taylor , *Principles of Economics*, 3rdedition, TEXTBOOK MEDIA.
17. Varshney and Maheshwari. *Managerial Economics*. Sultan Chand. New Delhi

Course Plan

Module	Contents	Hours	Sem. Exam Marks
I	Business Economics and its role in managerial decision making-meaning-scope-relevance-economic problems-scarcity Vs choice (2 Hrs)-Basic concepts in economics-scarcity, choice, resource allocation- Trade-off-opportunity cost-marginal analysis- marginal utility theory, Law of diminishing marginal utility -production possibility curve (2 Hrs)	4	15%
II	Basics of Micro Economics I Demand and Supply analysis-equilibrium-elasticity (demand and supply) (3 Hrs.) -Production concepts-average product-marginal product-law of variable proportions- Production function-Cobb Douglas function-problems (3 Hrs.)	6	15%
FIRST INTERNAL EXAMINATION			
III	Basics of Micro Economics II Concept of costs-marginal, average, fixed, variable costs-cost curves-shut down point-long run and short run (3 Hrs.)- Break Even Analysis-Problem-Markets-Perfect Competition, Monopoly and Monopolistic Competition, Oligopoly-Cartel and collusion (3 Hrs.).	6	15%
IV	Basics of Macro Economics - Circular flow of income-two sector and multi-sector models- National Income Concepts-Measurement methods-problems-Inflation, deflation (4 Hrs.)-Trade cycles-Money-stock and flow concept-Quantity theory of money-Fischer's Equation and Cambridge Equation -velocity of circulation of money-credit control methods-SLR, CRR, Open Market Operations-Repo and Reverse Repo rate-emerging concepts in money-bit coin (4 Hrs.).	8	15%

SECOND INTERNAL EXAMINATION			
V	Business Decisions I -Investment analysis-Capital Budgeting-NPV, IRR, Profitability Index, ARR, Payback Period (5 Hrs.)- Business decisions under certainty-uncertainty-selection of alternatives-risk and sensitivity- cost benefit analysis-resource management (4 Hrs.).	9	20%
VI	Business Decisions II Balance sheet preparation-principles and interpretation-forecasting techniques (7 Hrs.)-business financing-sources of capital- Capital and money markets-international financing-FDI, FPI, FII-Basic Principles of taxation-direct tax, indirect tax-GST (2 hrs.).	9	20%
END SEMESTER EXAM			

Question Paper Pattern

Max. marks: 100, Time: 3 hours

The question paper shall consist of three parts

Part A

4 questions uniformly covering modules I and II. Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part B

4 questions uniformly covering modules III and IV. Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part C

6 questions uniformly covering modules V and VI. Each question carries 10 marks
Students will have to answer any four questions out of 6 (4X10 marks =40 marks)

Note: In all parts, each question can have a maximum of four sub questions, if needed.



Course code	Course Name	L-T-P-Credits	Year of Introduction
HS210	LIFE SKILLS	2-0-2	2016
Prerequisite : Nil			
<p>Course Objectives</p> <ul style="list-style-type: none"> • To develop communication competence in prospective engineers. • To enable them to convey thoughts and ideas with clarity and focus. • To develop report writing skills. • To equip them to face interview & Group Discussion. • To inculcate critical thinking process. • To prepare them on problem solving skills. • To provide symbolic, verbal, and graphical interpretations of statements in a problem description. • To understand team dynamics & effectiveness. • To create an awareness on Engineering Ethics and Human Values. • To instill Moral and Social Values, Loyalty and also to learn to appreciate the rights of others. • To learn leadership qualities and practice them. 			
<p>Syllabus</p> <p>Communication Skill: Introduction to Communication, The Process of Communication, Barriers to Communication, Listening Skills, Writing Skills, Technical Writing, Letter Writing, Job Application, Report Writing, Non-verbal Communication and Body Language, Interview Skills, Group Discussion, Presentation Skills, Technology-based Communication.</p> <p>Critical Thinking & Problem Solving: Creativity, Lateral thinking, Critical thinking, Multiple Intelligence, Problem Solving, Six thinking hats, Mind Mapping & Analytical Thinking.</p> <p>Teamwork: Groups, Teams, Group Vs Teams, Team formation process, Stages of Group, Group Dynamics, Managing Team Performance & Team Conflicts.</p> <p>Ethics, Moral & Professional Values: Human Values, Civic Rights, Engineering Ethics, Engineering as Social Experimentation, Environmental Ethics, Global Issues, Code of Ethics like ASME, ASCE, IEEE.</p> <p>Leadership Skills: Leadership, Levels of Leadership, Making of a leader, Types of leadership, Transactions Vs Transformational Leadership, VUCA Leaders, DART Leadership, Leadership Grid & leadership Formulation.</p>			
<p>Expected outcome</p> <p>The students will be able to</p> <ul style="list-style-type: none"> • Communicate effectively. • Make effective presentations. • Write different types of reports. • Face interview & group discussion. • Critically think on a particular problem. • Solve problems. • Work in Group & Teams • Handle Engineering Ethics and Human Values. • Become an effective leader. 			

Resource Book:

Life Skills for Engineers, Compiled by ICT Academy of Kerala, McGraw Hill Education (India) Private Ltd., 2016

References:

- Barun K. Mitra; (2011), *“Personality Development & Soft Skills”*, First Edition; Oxford Publishers.
- Kalyana; (2015) *“Soft Skill for Managers”*; First Edition; Wiley Publishing Ltd.
- Larry James (2016); *“The First Book of Life Skills”*; First Edition; Embassy Books.
- Shalini Verma (2014); *“Development of Life Skills and Professional Practice”*; First Edition; Sultan Chand (G/L) & Company
- John C. Maxwell (2014); *“The 5 Levels of Leadership”*, Centre Street, A division of Hachette Book Group Inc.

Course Plan

Module	Contents	Hours L-T-P		Sem. Exam Marks
		L	P	
I	Need for Effective Communication, Levels of communication; Flow of communication; Use of language in communication; Communication networks; Significance of technical communication, Types of barriers; Miscommunication; Noise; Overcoming measures,	2		See evaluation scheme
	Listening as an active skill; Types of Listeners; Listening for general content; Listening to fill up information; Intensive Listening; Listening for specific information; Developing effective listening skills; Barriers to effective listening skills.		2	
	Technical Writing: Differences between technical and literary style, Elements of style; Common Errors, Letter Writing: Formal, informal and demi-official letters; business letters, Job Application: Cover letter, Differences between bio-data, CV and Resume, Report Writing: Basics of Report Writing; Structure of a report; Types of reports.		4	
	Non-verbal Communication and Body Language: Forms of non-verbal communication; Interpreting body-language cues; Kinesics; Proxemics; Chronemics; Effective use of body language	3		
	Interview Skills: Types of Interviews; Ensuring success in job interviews; Appropriate use of non-verbal communication, Group Discussion: Differences between group discussion and debate; Ensuring success in group discussions, Presentation Skills: Oral presentation and public speaking skills; business presentations, Technology-based Communication: Netiquettes: effective e-mail messages; power-point presentation; enhancing editing skills using computer software.		4	

<p>II</p>	<p>Need for Creativity in the 21st century, Imagination, Intuition, Experience, Sources of Creativity, Lateral Thinking, Myths of creativity</p> <p>Critical thinking Vs Creative thinking, Functions of Left Brain & Right brain, Convergent & Divergent Thinking, Critical reading & Multiple Intelligence.</p> <p>Steps in problem solving, Problem Solving Techniques, Problem Solving through Six Thinking Hats, Mind Mapping, Forced Connections.</p> <p>Problem Solving strategies, Analytical Thinking and quantitative reasoning expressed in written form, Numeric, symbolic, and graphic reasoning, Solving application problems.</p>	<p>2</p> <p>2</p> <p>2</p>	<p>2</p> <p>2</p>	
<p>III</p>	<p>Introduction to Groups and Teams, Team Composition, Managing Team Performance, Importance of Group, Stages of Group, Group Cycle, Group thinking, getting acquainted, Clarifying expectations.</p> <p>Group Problem Solving, Achieving Group Consensus.</p> <p>Group Dynamics techniques, Group vs Team, Team Dynamics, Teams for enhancing productivity, Building & Managing Successful Virtual Teams. Managing Team Performance & Managing Conflict in Teams.</p> <p>Working Together in Teams, Team Decision-Making, Team Culture & Power, Team Leader Development.</p>	<p>3</p> <p>3</p> <p>3</p>	<p>2</p> <p>2</p>	
<p>IV</p>	<p>Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic Virtue, Respect for Others, Living Peacefully.</p> <p>Caring, Sharing, Honesty, Courage, Valuing Time, Cooperation, Commitment, Empathy, Self-Confidence, Character</p> <p>Spirituality, Senses of 'Engineering Ethics', variety of moral issues, Types of inquiry, moral dilemmas, moral autonomy, Kohlberg's theory, Gilligan's theory, Consensus and controversy, Models of Professional Roles, Theories about right action, Self-interest, customs and religion, application of ethical theories.</p> <p>Engineering as experimentation, engineers as responsible experimenters, Codes of ethics, Balanced outlook on.</p> <p>The challenger case study, Multinational corporations, Environmental ethics, computer ethics,</p>	<p>3</p> <p>3</p> <p>3</p>	<p>2</p> <p>2</p>	

	Weapons development, engineers as managers, consulting engineers, engineers as expert witnesses and advisors, moral leadership, sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers(India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers(IETE), India, etc.	3		
V	Introduction, a framework for considering leadership, entrepreneurial and moral leadership, vision, people selection and development, cultural dimensions of leadership, style, followers, crises.	4	2	
	Growing as a leader, turnaround leadership, gaining control, trust, managing diverse stakeholders, crisis management			
	Implications of national culture and multicultural leadership Types of Leadership, Leadership Traits.	2		
	Leadership Styles, VUCA Leadership, DART Leadership, Transactional vs Transformational Leaders, Leadership Grid, Effective Leaders, making of a Leader, Formulate Leadership		2	
END SEMESTER EXAM				

EVALUATION SCHEME

Internal Evaluation

(Conducted by the College)

Total Marks: 100

Part – A

(To be started after completion of Module 1 and to be completed by 30th working day of the semester)

1. Group Discussion – Create groups of about 10 students each and engage them on a GD on a suitable topic for about 20 minutes. Parameters to be used for evaluation is as follows;

- | | | | |
|-------|------------------------|---|----------|
| (i) | Communication Skills | – | 10 marks |
| (ii) | Subject Clarity | – | 10 marks |
| (iii) | Group Dynamics | - | 10 marks |
| (iv) | Behaviors & Mannerisms | - | 10 marks |

(Marks: 40)

Part – B

(To be started from 31st working day and to be completed before 60th working day of the semester)

2. Presentation Skills – Identify a suitable topic and ask the students to prepare a presentation (preferably a power point presentation) for about 10 minutes. Parameters to be used for evaluation is as follows;

(i)	Communication Skills*	-	10 marks
(ii)	Platform Skills**	-	10 marks
(iii)	Subject Clarity/Knowledge	-	10 marks

(Marks: 30)

* Language fluency, audibility, voice modulation, rate of speech, listening, summarizes key learnings etc.

** Postures/Gestures, Smiles/Expressions, Movements, usage of floor area etc.

Part – C

(To be conducted before the termination of semester)

3. Sample Letter writing or report writing following the guidelines and procedures. Parameters to be used for evaluation is as follows;

(i)	Usage of English & Grammar	-	10 marks
(ii)	Following the format	-	10 marks
(iii)	Content clarity	-	10 marks

(Marks: 30)

External Evaluation
(Conducted by the University)

Total Marks: 50

Time: 2 hrs.

Part – A

Short Answer questions

There will be one question from each area (five questions in total). Each question should be written in about maximum of 400 words. Parameters to be used for evaluation are as follows;

- (i) Content Clarity/Subject Knowledge
- (ii) Presentation style
- (iii) Organization of content

(Marks: 5 x 6 = 30)

Part – B

Case Study

The students will be given a case study with questions at the end the students have to analyze the case and answer the question at the end. Parameters to be used for evaluation are as follows;

- (i) Analyze the case situation
- (ii) Key players/characters of the case
- (iii) Identification of the problem (both major & minor if exists)
- (iv) Bring out alternatives
- (v) Analyze each alternative against the problem
- (vi) Choose the best alternative
- (vii) Implement as solution
- (viii) Conclusion
- (ix) Answer the question at the end of the case

(Marks: 1 x 20 = 20)

