KURUKSHETRA UNIVERSITY, KURUKSHETRA
('A^{+}' Grade, NAAC Accredited)

SCHEME OF EXAMINATIONS FOR
Master of Technology (Civil Engineering) Specialization: Structural Engineering
(w.e.f. SESSION: 2018-19)

SEMESTER- I

S. No.	Course Code	SUBJECT	L	T	P	Total	Evaluation		Cr.	Duration of Exam (Hrs.)
							Mid Sem	End Sem		
1	MTSE-101 A	Advanced Structural analysis	3	-	-	3	40	60	3	3
2	MTSE-103 A	Advanced solid mechanics	3	-	-	3	40	60	3	3
3	*	Program Elective –I	3	-	-	3	40	60	3	3
4	**	Program Elective-II	3	-	-	3	40	60	3	3
5	MTSE-117 A	Structural Design Lab	-	-	2	2	40	60	2	3
6	MTSE-119 A	Advanced Concrete Lab	-	-	2	2	40	60	2	3
7	MTRM-111 A	Research Methodology and IPR	2	-	-	2	40	60	2	3
8	***	Audit Course-I	2	-	-	0	100	-	0	0
	TOTAL		**16**	**0**	**4**	**18**	**280**	**420**	**18**	
							700			

*Program Elective - I		**Program Elective- II	
MTSE-105 A	Theory of Thin Plates and Shells	MTSE-111A	Analytical and Numerical Methods for Structural Engineering.
MTSE-107 A	Theory and Applications of Cement Composites	MTSE-113 A	Structural Health Monitoring
MTSE-109 A	Theory of Structural Stability	MTSE-115 A	Structural Optimization

*** Audit Course-I	
MTAD-101 A	English for Research Paper Writing
MTAD-103 A	Disaster Management
MTAD-105 A	Sanskrit for Technical Knowledge
MTAD-107 A	Value Education

Note: 1.The course of program elective will be offered at 1/3rd or 6 numbers of students (whichever is smaller) strength of the class.
2. *** Along with the credit course, a student may normally be permitted to take audit course, however for auditing a course; prior consent of the course coordinator of the course is required. These courses shall not be mentioned for any award/calculation of SGPA/CGPA in the DMC. A certificate of successful completion of the audit course will be issued by the Director/Head of institution.

MTSE-101 A	Advanced Structural Analysis						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Analyze the skeleton structures using stiffness analysis code.*						
CO2	*Use direct stiffness method understanding its limitations*						

Unit I

Influence Coefficients: Physical Significance, Effects of Settlements, Temperature Change and Lack of Fit, Member Approach and Structure Approach

Unit II

Stiffness Method applied to Large Frames: Local Coordinates and Global Coordinates.

Stiffness Matrix Assembly of Structures: Stiffness Matrix in Global Coordinates, Boundary Conditions, Solution of Stiffness Matrix Equations, Calculation of Reactions and Member Forces

Unit III

Applications to Simple Problems: Beams, Plane Trusses, Plane Rigid Jointed Frames and Grids by Structure Approach and Member Approach.

Unit IV

Boundary Value Problems (BVP): Approximate Solution of Boundary Value Problems, Modified Galerkin Method for One-Dimensional BVP, Matrix Formulation of the Modified Galerkin Method.

Linear Element: Shape Functions, Solution for Poisson's Equation, General One Dimensional Equilibrium Problem.

References:

1) Matrix Analysis of Framed Structures, Weaver and Gere.
2) The Finite Element Method, Lewis P. E. and Ward J. P., Addison-Wesley Publication Co.
3) Computer Methods in Structural Analysis, Meek J. L., E and FN, Span Publication.
4) The Finite Element Method, Desai and Able, CBS Publication.
5) Matrix Analysis of Structures, Pandit & Gupta, Tata McGraw Hill Publications

MTSE-103 A	Advanced Solid Mechanics						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Solve simple problems of elasticity and plasticity understanding the basic concepts*						
CO2	*Apply numerical methods to solve continuum problems*						

Unit I

Introduction to Elasticity: Displacement, Strain and Stress Fields, Constitutive Relations, Cartesian Tensors and Equations of Elasticity.

Strain and Stress Field: Elementary Concept of Strain, Stain at a Point, Principal Strains and Principal Axes, Compatibility Conditions, Stress at a Point, Stress Components on an Arbitrary Plane, Differential Equations of Equilibrium, Hydrostatic and Deviatoric Components.

Unit II

Equations of Elasticity: Equations of Equilibrium, Stress- Strain relations, Strain Displacement and Compatibility Relations, Boundary Value Problems, Co-axiality of the Principal Directions.

Unit III

Two-Dimensional Problems of Elasticity: Plane Stress and Plane Strain Problems, Airy's stress Function, Two-Dimensional Problems in Polar Coordinates.

Torsion of Prismatic Bars: Saint Venant's Method, Prandtl's Membrane Analogy, Torsion of Rectangular Bar, Torsion of Thin Tubes

Unit IV

Plastic Deformation: Strain Hardening, Idealized Stress- Strain curve, Yield Criteria, von Mises Yield Criterion, Tresca Yield Criterion, Plastic Stress-Strain Relations, Principle of Normality and Plastic Potential, Isotropic Hardening.

References:

1) Theory of Elasticity, Timoshenko S. and Goodier J. N., McGraw Hill, 1961.
2) Elasticity, Sadd M.H.,Elsevier,2005.
3) Engineering Solid Mechanics, Ragab A.R., Bayoumi S.E., CRC Press,1999.
4) Computational Elasticity, Ameen M., Narosa,2005.
5) Solid Mechanics, Kazimi S. M. A., Tata McGraw Hill,1994.
6) Advanced Mechanics of Solids, Srinath L.S., Tata McGraw Hill, 2000.

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MTSE-117 A	Structural Design Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
0	**0**	**2**	**2**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Design and Detail all the Structural Components of Frame Buildings.*						
CO2	*Design and Detail complete Multi-Storey Frame Buildings*						

Syllabus Content:

Design and detailed drawing of complete G+ 3 structures by individual student using latest relevant IS codes.

MTSE-119 A	Advanced Concrete Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
0	**0**	**2**	**2**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Design high grade concrete and study the parameters affecting its performance*						
CO2	*Conduct Non Destructive Tests on existing concrete structures*						
CO3	*Apply engineering principles to understand behavior of structural/ elements*						

List of Experiments:

1. Study of stress-strain curve of high strength concrete, Correlation between cube strength, cylinder strength, split tensile strength and modulus of rupture.
2. Effect of cyclic loading on steel.
3. Non-Destructive testing of existing concrete members.
4. Behavior of Beams under flexure, Shear and Torsion.

References:

1. Properties of Concrete, Neville A. M., 5th Edition, Prentice Hall, 2012.
2. Concrete Technology, Shetty M. S., S. Chand and Co., 2006.

MTRM -105 A	Research Methodology and IPR						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Understand Research problem formulation*						
CO2	*Analyze research related information*						
CO3	*Follow research ethics*						
CO4	*Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.*						
CO5	*Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.*						
CO6	*Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits*.						

Unit I

Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem.

Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations

Unit II

Effective literature studies approaches, analysis Plagiarism, Research ethics.

Effective technical writing, how to write report paper,

Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

Unit III

Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

Unit IV

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

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

References:

1. Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science & engineering students'".
2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"
3. Ranjit Kumar, 2nd Edition, "Research Methodology: A Step by Step Guide for beginners"
4. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007.
5. Mayall , "Industrial Design", McGraw Hill, 1992.
6. Niebel , "Product Design", McGraw Hill, 1974
7. Asimov , "Introduction to Design", Prentice Hall, 1962.
8. Robert P. Merges, Peter S. Menell, Mark A. Lemley, " Intellectual Property in New Technological Age", 2016.
9. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008

Program Elective -I

MTSE-105 A	Theory of Thin Plates and Shells						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Use analytical methods for the solution of thin plates and shells*						
CO2	*Use analytical methods for the solution of shells.*						
CO3	*Apply the numerical techniques and tools for the complex problems in thin plates*						
CO4	*Apply the numerical techniques and tools for the complex problems in shells.*						

Unit 1

Introduction: Space Curves, Surfaces, Shell Co-ordinates, Strain Displacement Relations, Assumptions in Shell Theory, Displacement Field Approximations, Stress Resultants, Equation of Equilibrium using Principle of Virtual Work, Boundary Conditions.

Unit 2

Static Analysis of Plates: Governing Equation for a Rectangular Plate, Navier Solution for Simply-Supported Rectangular Plate under Various Loadings, Levy solution for Rectangular Plate with other Boundary Conditions

Unit 3

Circular Plates: Analysis under Axi- Symmetric Loading, Governing Differential Equation in Polar Co-ordinates. Approximate Methods of Analysis- Rayleigh-Ritz approach for Simple Cases in Rectangular Plates.

Unit 4

Static Analysis of Shells: Membrane Theory of Shells - Cylindrical, Conical and Spherical Shells,

Unit 5

Shells of Revolution: with Bending R**esistance** - Cylindrical and Conical Shells, Application to Pipes and Pressure Vessels.

Unit 6

Thermal Stresses in Plate/ Shell

References:

1. Theory of Plates and Shells, Timoshenko S. and Krieger W., McGraw Hill.
2. Stresses in Plates and Shells, Ugural Ansel C., McGraw Hill.
3. Thin Elastic Shells, Kraus H" John Wiley and Sons
4. Theory of Plates, Chandra shekhara K., Universities Press
5. Design and Construction of Concrete Shells, RamaswamyG.S

Program Elective -I

MTSE-107 A	Theory and Applications of Cement Composites						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Formulate constitutive behaviour of composite materials – Ferrocement, SIFCON and Fibre Reinforced Concrete - by understanding their strain- stress behaviour.*						
CO2	*Classify the materials as per orthotropic and anisotropic behaviour.*						
CO3	*Estimate strain constants using theories applicable to composite materials.*						
CO4	*Analyse and design structural elements made of cement composites.*						

Unit 1

Introduction: Classification and Characteristics of Composite Materials- Basic Terminology, Advantages. Stress-Strain Relations- Orthotropic and Anisotropic Materials, Engineering Constants for Orthotropic Materials, Restrictions on Elastic Constants, Plane Stress Problem, Biaxial Strength, Theories for an Orthotropic Lamina.

Unit 2

Mechanical Behaviour: Mechanics of Materials Approach to Stiffness- Determination of Relations between Elastic Constants, Elasticity Approach to Stiffness- Bounding Techniques of Elasticity, Exact Solutions - Elasticity Solutions with Continuity, Halpin, Tsai Equations, Comparison of approaches to Stiffness

Unit 3

Cement Composites: Types of Cement Composites, Terminology, Constituent Materials and their Properties, Construction Techniques for Fibre Reinforced Concrete - Ferrocement, SIFCON, Polymer Concretes, Preparation of Reinforcement, Casting and Curing

Unit 4

Mechanical Properties of Cement Composites : Behavior of Ferrocement, Fiber Reinforced Concrete in Tension, Compression, Flexure, Shear, Fatigue and Impact, Durability and Corrosion

Unit 5

Application of Cement Composites: FRC and Ferrocement- Housing, Water Storage, Boats and Miscellaneous Structures. Composite Materials- Orthotropic and Anisotropic behaviour, Constitutive relationship, Elastic Constants

Unit 6

Analysis and Design of Cement Composite Structural Elements - Ferrocement, SIFCON and Fibre Reinforced Concrete.

References:

1) Mechanics of Composite Materials, Jones R. M,, 2nd Ed., Taylor and Francis ,BSP Books, 1998. Ferrocement – Theory and Applications, Pama R. P., IFIC, 1980
2) New Concrete Materials, Swamy R.N., 1stEd., Blackie, Academic and Professional, Chapman & Hall, 1983

Program Elective -I

MTSE-109 A	Theory of Structural Stability						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Determine stability of columns and frames*						
CO2	*Determine stability of beams and plates*						
CO3	*Use stability criteria and concepts for analyzing discrete and continuous systems*						

Unit-1

Criteria for Design of Structures: Stability, Strength, and Stiffness, Classical Concept of Stability of Discrete and Continuous Systems, Linear and nonlinear behaviour.

Unit-2

Stability of Columns: Axial and Flexural Buckling, Lateral Bracing of Columns, Combined Axial, Flexural and Torsion Buckling.

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Unit-3

Stability of Frames: Member Buckling versus Global Buckling, Slenderness Ratio of Frame Members.

Unit-4

Stability of Beams: lateral torsion buckling

Unit-5

Stability of Plates: axial flexural buckling, shear flexural buckling, buckling under combined loads

Unit-6

Stability of Plates: axial flexural buckling, shear flexural buckling, buckling under combined loads

Reference Books:

1) Theory of elastic stability, Timoshenko and Gere, Tata Mc Graw Hill,1981
2) Principles of Structural Stability Theory, Alexander Chajes, Prentice Hall, New Jersey
3) Structural Stability of columns and plates, Iyengar, N. G. R., Eastern west press Pvt. Ltd.
4) Strength of Metal Structures,Bleich F. Bucking, Tata McGraw Hill, New York.

Program Elective -II

MTSE-111 A	Analytical and Numerical Methods for Structural Engineering						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Solve ordinary and partial differential equations in structural mechanics using numerical methods*						
CO2	*Write a program to solve a mathematical problem.*						

Unit 1

Fundamentals of Numerical Methods: Error Analysis, Polynomial Approximations and Interpolations

Unit 2

Curve Fitting; Interpolation and extrapolation

Unit 3

Solution of Nonlinear Algebraic and Transcendental Equations

Unit 4

Elements of Matrix Algebra: Solution of Systems of Linear Equations, Eigen Value Problems

Unit 5

Numerical Differentiation & Integration: Solution of Ordinary and Partial Differential Equations.

Unit 6

Finite Difference scheme: Implicit & Explicit scheme

Unit 7

Computer Algorithms: Numerical Solutions for Different Structural Problems, Fuzzy Logic and Neural Network

References:

1) An Introduction to Numerical Analysis, AtkinsonK.E., J. Wiley and Sons, 1989.
2) Theory and Problems of Numerical Analysis, Scheid F, McGraw Hill Book Company, (Shaum Series), 1988.
3) Introductory Methods of Numerical Analysis, Sastry S. S, Prentice Hall of India, 1998

Program Elective -II

MTSE-113 A	Structural Health Monitoring						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Diagnosis the distress in the structure understanding the causes and factors.*						
CO2	*Assess the health of structure using static field methods.*						
CO3	*Assess the health of structure using dynamic field tests*						
CO4	*Suggest repairs and rehabilitation measures of the structure*						

Unit 1

Structural Health: Factors affecting Health of Structures, Causes of Distress, Regular Maintenance.

Unit 2

Structural Health Monitoring: Concepts, Various Measures, Structural Safety in Alteration.

Unit 3

Structural Audit: Assessment of Health of Structure, Collapse and Investigation, Investigation Management, SHM Procedures.

Unit 4

Static Field Testing: Types of Static Tests, Simulation and Loading Methods, sensor systems and hardware requirements, Static Response Measurement.

Unit 5

Dynamic Field Testing: Types of Dynamic Field Test, Stress History Data, Dynamic Response Methods, Hardware for Remote Data Acquisition Systems, Remote Structural Health Monitoring.

Unit 6

Introduction to Repairs and Rehabilitations of Structures: Case Studies (Site Visits), piezo–electric materials and other smart materials, electro–mechanical impedance (EMI) technique, adaptations of EMI technique.

References:

1) Structural Health Monitoring, Daniel Balageas, Claus Peter Fritzen, Alfredo Güemes, John Wiley and Sons, 2006
2) Health Monitoring of Structural Materials and Components Methods with Applications, Douglas E Adams, John Wiley and Sons, 2007
3) Structural Health Monitoring and Intelligent Infrastructure, Vol1, J. P. Ou, H. Li and Z. D. Duan, Taylor and Francis Group, London, UK, 2006
4) Structural Health Monitoring with Wafer Active Sensors, Victor Giurglutiu, Academic Press Inc, 2007

Program Elective -II

MTSE-115 A	Structural Optimization						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
3	**0**	**0**	**3**	**60**	**40**	**100**	**3 Hrs.**
Course Outcomes (CO)							
CO1	*Use Variational principle for optimization*						
CO2	*Apply optimization techniques to structural steel and concrete members*						
CO3	*Design using frequency constraint*						

Unit 1

Introduction: Simultaneous Failure Mode and Design, Classical External Problems.

Unit 2

Calculus of Variation: Variational Principles with Constraints.

Unit 3

Linear Programming Integer Programming, Nonlinear Programming, Dynamic Programming, Geometric Programming and Stochastic Programming.

Unit 4

Applications: Structural Steel and Concrete Members, Trusses and Frames

Unit 5

Design: Frequency Constraint, Design of Layouts

References:

1) Elements of Structural Optimization, Haftka, Raphael T., Gürdal, Zafer, Springer.
2) Variational methods for Structural optimization, Cherkaev Andrej, Springer

Audit-I

MTAD-101 A	English For Research Paper Writing						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
2	**0**	**0**	**0**	**-**	**100**	**100**	**3 Hrs.**
Program Objective (PO)	*Student will able to understand the basic rules of research paper writing.*						
Course Outcomes (CO)							
CO1	*Understand that how to improve your writing skills and level of readability*						
CO2	*Learn about what to write in each section*						
CO3	*Understand the skills needed when writing a Title*						
CO4	*Ensure the good quality of paper at very first-time submission*						

Unit I

Planning and Preparation, Word Order, Breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and Vagueness

Unit II

Clarifying Who Did What, Highlighting Your Findings, Hedging and Criticizing, Paraphrasing and Plagiarism, Sections of a Paper, Abstracts. Introduction

Unit III

Review of the Literature, Methods, Results, Discussion, Conclusions, the Final Check. key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature,

Unit IV

Skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions Useful phrases, how to ensure paper is as good as it could possibly be the first- time submission.

References:

1) Goldbort R (2006) Writing for Science, Yale University Press (available on Google Books)
2) Day R (2006) How to Write and Publish a Scientific Paper, Cambridge University Press
3) Highman N (1998), Handbook of Writing for the Mathematical Sciences, SIAM. Highman'sbook.
4) Adrian Wallwork, English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011

Audit -I

MTAD-103 A	Disaster Management						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
2	**0**	**0**	**0**	**-**	**100**	**100**	**3 Hrs.**
Program Objective (PO)	*Develop an understanding of disaster risk reduction and management*						
Course Outcomes (CO)							
CO1	*Learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.*						
CO2	*Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.*						
CO3	*Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.*						
CO4	*critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in*						

Unit I

Introduction: Disaster: Definition, Factors and Significance; Difference between Hazard and Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.

Unit II

Repercussions of Disasters and Hazards: Economic Damage, Loss of Human and Animal Life, Destruction of Ecosystem.

Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts.

Unit IV

Disasters Prone Areas in India: Study Of Seismic Zones; Areas Prone To Floods And Droughts, Landslides And Avalanches; Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami; Post-Disaster Diseases And Epidemics

Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard; Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies, Media Reports: Governmental And Community Preparedness.

Unit 4

Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques of Risk Assessment, Global Co-Operation in Risk Assessment and Warning, People's Participation in Risk Assessment. Strategies for Survival. Meaning, Concept and Strategies of Disaster Mitigation, Emerging Trends in Mitigation. Structural Mitigation and Non-Structural Mitigation, Programs Of Disaster Mitigation in India.

References:

1) R. Nishith, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "'New Royal book Company.

2) Sahni, PardeepEt.Al. (Eds.)," Disaster Mitigation Experiences And Reflections", Prentice Hall Of India, New Delhi.

3) Goel S. L., Disaster Administration And Management Text And Case Studies",Deep &Deep Publication Pvt. Ltd., New Delhi.

Audit -I

MTAD-105 A	Sanskrit for Technical Knowledge						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
2	**0**	**0**	**0**	**-**	**100**	**100**	**3 Hrs.**
Program Objective (PO)	*Students will be able to Understanding basic Sanskrit language and Ancient Sanskrit literature about science & technology can be understood and Being a logical language will help to develop logic in students*						
Course Outcomes (CO)							
CO1	*To get a working knowledge in illustrious Sanskrit, the scientific language in the world*						
CO2	*Learning of Sanskrit to improve brain functioning*						
CO3	*Learning of Sanskrit to develop the logic in mathematics, science & other subjects enhancing the memory power*						
CO4	*The engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature*						

Unit I

Alphabets in Sanskrit, Past/Present/Future Tense, Simple Sentences.

Unit II

Order, Introduction of roots,Technical information about Sanskrit Literature

Unit III

Technical concepts of Engineering: Electrical, Mechanical

Unit IV

Technical concepts of Engineering: Architecture, Mathematics

References

1) "Abhyaspustakam" – Dr.Vishwas, Samskrita-Bharti Publication, New Delhi
2) "Teach Yourself Sanskrit" Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication
3) "India's Glorious Scientific Tradition" Suresh Soni, Ocean books (P) Ltd., New Delhi.

Audit I

MTAD-107 A	Value Education						
Lecture	**Tutorial**	**Practical**	**Credit**	**End Sem. Evaluation**	**Mid Sem. Evaluation**	**Total**	**Time**
2	**0**	**0**	**0**	**-**	**100**	**100**	**3 Hrs.**
Program Objective (PO)	*Understand value of education and self- development, Imbibe good values in students and Let the should know about the importance of character*						
Course Outcomes (CO)							
CO1	*Knowledge of self-development*						
CO2	*Learn the importance of Human values*						
CO3	*Developing the overall personality*						
CO4	*Know about the importance of character*						

Unit I

Values and self-development –Social values and individual attitudes. Work ethics, Indian vision of humanism. Moral and non- moral valuation. Standards and principles. Value judgements.

Unit II

Importance of cultivation of values. Sense of duty. Devotion, Self-reliance. Confidence, Concentration. Truthfulness, Cleanliness. Honesty, Humanity. Power of faith, National Unity. Patriotism. Love for nature, Discipline

Unit III

Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline. Punctuality, Love and Kindness. Avoid fault Thinking. Free from anger, Dignity of labour. Universal brotherhood and religious tolerance. True friendship. Happiness Vs suffering, love for truth. Aware of self-destructive habits. Association and Cooperation. Doing best for saving nature

Unit IV

Character and Competence –Holy books Vs Blind faith. Self-management and Good health. Science of reincarnation. Equality, Nonviolence, Humility, Role of Women. All religions and same message. Mind your Mind, Self-control. Honesty, Studying effectively

References

1) Chakroborty, S.K. “Values and Ethics for organizations Theory and practice”, Oxford University Press, New Delhi