

**ANNA UNIVERSITY, CHENNAI**  
**NON - AUTONOMOUS COLLEGES AFFILIATED ANNA UNIVERSITY**  
**M. E. E-LEARNING TECHNOLOGIES**  
**REGULATIONS – 2021**  
**CHOICE BASED CREDIT SYSTEM**

**I. PROGRAM EDUCATIONAL OBJECTIVES:**

1. To succeed in the E-Learning Technologies profession by adapting to the rapid advances in learning technologies.
2. To design, develop, and manage technology based instructional products for teaching, learning, and training.
3. To enable future e-learning professionals to integrate theory and practice
4. To analyze and solve educational issues and create new solutions rooted in instructional design.
5. To inculcate leadership qualities, ethical attitude, team work and effective communication skills for successful professional growth.

**II. PROGRAM SPECIFIC OUTCOMES (PSOs):**

1. To demonstrate knowledge of instructional design principles, theories, trends, and current issues.
2. To create and manage education technology for learners in various teaching and learning environments.
3. To select and evaluate instructional systems such as learning management systems, social media, virtual reality, gaming, and other multimedia technologies to aid curricula and improve learning outcomes in educational settings

PROGRESS THROUGH KNOWLEDGE

**ANNA UNIVERSITY, CHENNAI**  
**NON - AUTONOMOUS COLLEGES AFFILIATED ANNA UNIVERSITY**  
**R - 2021**  
**M.E. E-LEARNING TECHNOLOGIES**  
**I TO IV SEMESTERS CURRICULA AND 1<sup>st</sup> SEMESTER SYLLABI**  
**SEMESTER I**

S. NO.	COURSE CODE	COURSE TITLE	CATE- GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	MA4151	Applied Probability and Statistics for Computer Science Engineers	FC	3	1	0	4	4
2.	RM4151	Research Methodology and IPR	RMC	2	0	0	2	2
3.	MU4151	Advanced Graphics and Animation	PCC	3	0	2	5	4
4.	MU4153	Principles of Multimedia	PCC	3	0	0	3	3
5.	LE4101	Instructional Systems Design	PCC	3	0	0	3	3
6.	LE4102	E- Learning Design and Development	PCC	3	0	0	3	3
7.		Audit Course – I*	AC	2	0	0	2	0
PRACTICALS								
8.	LE4111	Educational Technology Laboratory	PCC	0	0	2	2	1
9.	MU4161	Multimedia Authoring Tools Laboratory	PCC	0	0	4	4	2
TOTAL				19	1	8	28	22

\*Audit course is optional

**SEMESTER- II**

S. NO.	COURSE CODE	COURSE TITLE	CATE- GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	LE4201	Learning Analytics	PCC	3	0	0	3	3
2.	LE4202	Game Design and Programming	PCC	3	0	0	3	3
3.	MU4253	Mixed Reality	PCC	3	0	2	5	4
4.	MP4073	Human Computer Interaction	PCC	3	0	0	3	3
5.		Professional Elective I	PEC	3	0	0	3	3
6.		Professional Elective II	PEC	3	0	0	3	3
7.		Audit Course – II*	ACC	2	0	0	2	0
PRACTICALS								
8.	LE4211	Game Programming and HCI Laboratory	PCC	0	0	4	4	2
9.	LE4212	Term Paper and seminar	EEC	0	0	2	2	1
TOTAL				20	0	8	28	22

\*Audit course is optional

SEMESTER- III

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	LE4301	Digital Asset Management	PCC	3	0	0	3	3
2.		Professional Elective III	PEC	3	0	0	3	3
3.		Professional Elective IV	PEC	3	0	2	5	4
4.		Open Elective	OEC	3	0	0	3	3
PRACTICALS								
5.	LE4311	Project Work I	EEC	0	0	12	12	6
TOTAL				12	0	14	26	19

SEMESTER- IV

S. NO.	COURSE CODE	COURSE TITLE	CATE- GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
PRACTICALS								
1.	LE4411	Project Work II	EEC	0	0	24	24	12
TOTAL				0	0	24	24	12

**TOTAL:75 CREDITS**

**PROFESSIONAL ELECTIVES**

**PROFESSIONAL ELECTIVE I , SEMESTER II**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	LE4001	Python Programming	PEC	3	0	0	3	3
2.	MP4071	Cognitive Computing	PEC	3	0	0	3	3
3.	ML4251	Natural Language Processing	PEC	2	0	2	4	3
4.	LE4071	Multimedia Information Storage and Retrieval	PEC	3	0	0	3	3
5.	LE4073	Voice Technologies	PEC	3	0	0	3	3

**PROFESSIONAL ELECTIVE - II , SEMESTER II**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	LE4002	Learning Science	PEC	3	0	0	3	3
2.	LE4003	Software Project Management and Quality Assurance	PEC	3	0	0	3	3
3.	LE4004	Multimedia Systems And Application	PEC	3	0	0	3	3
4.	IF4080	Visualization Techniques	PEC	3	0	0	3	3
5.	MU4254	Multimedia Databases	PEC	3	0	0	3	3

**PROFESSIONAL ELECTIVE - III, SEMESTER III**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	ML4151	Artificial Intelligence	PEC	3	0	0	3	3
2.	MU4152	Multimedia communication Networks	PEC	3	0	0	3	3
3.	MU4252	Media Security	PEC	3	0	0	3	3
4.	MU4072	Sound Engineering	PEC	3	0	0	3	3
5.	IF4079	Social Network Analysis	PEC	3	0	0	3	3

**PROFESSIONAL ELECTIVE - IV, SEMESTER III**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	MU4071	Short film Development	PEC	3	0	2	5	4
2.	MU4073	Web Design and Programming	PEC	3	0	2	5	4
3.	MP4252	Mobile Application Development	PEC	3	0	2	5	4
4.	LE4005	Design and development of MOOC	PEC	3	0	2	5	4
5.	LE4072	Video Processing and Analytics	PEC	3	0	2	5	4

**AUDIT COURSES (AC)**

**Registration for any of these courses is optional to students**

SL. NO	COURSE CODE	COURSE TITLE	PERIODS PER WEEK			CREDITS
			L	T	P	
1.	AX4091	English for Research Paper Writing	2	0	0	0
2.	AX4092	Disaster Management	2	0	0	0
3.	AX4093	Constitution of India	2	0	0	0
4.	AX4094	நற்றமிழ் இலக்கியம்	2	0	0	0



**MA4151 APPLIED PROBABILITY AND STATISTICS FOR COMPUTER SCIENCE ENGINEERS**

**L T P C**  
**3 1 0 4**

**COURSE OBJECTIVES:**

- To encourage students to develop a working knowledge of the central ideas of Linear Algebra.
- To enable students to understand the concepts of Probability and Random Variables.
- To understand the basic probability concepts with respect to two dimensional random variables along with the relationship between the random variables and the significance of the central limit theorem.
- To apply the small / large sample tests through Tests of hypothesis.
- To enable the students to use the concepts of multivariate normal distribution and principal components analysis.

**UNIT I LINEAR ALGEBRA 12**

Vector spaces – norms – Inner Products – Eigenvalues using QR transformations – QR factorization – generalized eigenvectors – Canonical forms – singular value decomposition and applications – pseudo inverse – least square approximations.

**UNIT II PROBABILITY AND RANDOM VARIABLES 12**

Probability – Axioms of probability – Conditional probability – Baye's theorem – Random variables – Probability function – Moments – Moment generating functions and their properties – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma and Normal distributions – Function of a random variable.

**UNIT III TWO DIMENSIONAL RANDOM VARIABLES 12**

Joint distributions – Marginal and conditional distributions – Functions of two dimensional random variables – Regression curve – Correlation.

**UNIT IV TESTING OF HYPOTHESIS 12**

Sampling distributions – Type I and Type II errors – Small and Large samples – Tests based on Normal, t, Chi square and F distributions for testing of mean, variance and proportions – Tests for independence of attributes and goodness of fit.

**UNIT V MULTIVARIATE ANALYSIS 12**

Random vectors and matrices – Mean vectors and covariance matrices – Multivariate normal density and its properties – Principal components – Populations principal components – Principal components from standardized variables.

**TOTAL : 60 PERIODS**

**COURSE OUTCOMES:**

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

1. apply the concepts of Linear Algebra to solve practical problems.
2. use the ideas of probability and random variables in solving engineering problems.
3. be familiar with some of the commonly encountered two dimension random variables and be equipped for a possible extension to multivariate analysis.
4. use statistical tests in testing hypothesis on data.

5. develop critical thinking based on empirical evidence and the scientific approach to knowledge development.

## REFERENCES:

1. Dallas E Johnson, "Applied multivariate methods for data Analysis", Thomson and Duxbury press, Singapore, 1998.
2. Richard A. Johnson and Dean W. Wichern, "Applied multivariate statistical Analysis", Pearson Education, Fifth Edition, 6<sup>th</sup> Edition, New Delhi, 2013.
3. Bronson, R., "Matrix Operation" Schaum's outline series, Tata McGraw Hill, New York, 2011.
4. Oliver C. Ibe, "Fundamentals of Applied probability and Random Processes", Academic Press, Boston, 2014.
5. Johnson R. A. and Gupta C.B., "Miller and Freund's Probability and Statistics for Engineers", Pearson India Education, Asia, 9<sup>th</sup> Edition, New Delhi, 2017.

**RM4151**

**RESEARCH METHODOLOGY AND IPR**

**L T P C**

**2 0 0 2**

### **UNIT I RESEARCH DESIGN**

**6**

Overview of research process and design, Use of Secondary and exploratory data to answer the research question, Qualitative research, Observation studies, Experiments and Surveys.

### **UNIT II DATA COLLECTION AND SOURCES**

**6**

Measurements, Measurement Scales, Questionnaires and Instruments, Sampling and methods.

Data - Preparing, Exploring, examining and displaying.

### **UNIT III DATA ANALYSIS AND REPORTING**

**6**

Overview of Multivariate analysis, Hypotheses testing and Measures of Association.

Presenting Insights and findings using written reports and oral presentation.

### **UNIT IV INTELLECTUAL PROPERTY RIGHTS**

**6**

Intellectual Property – The concept of IPR, Evolution and development of concept of IPR, IPR development process, Trade secrets, utility Models, IPR & Bio diversity, Role of WIPO and WTO in IPR establishments, Right of Property, Common rules of IPR practices, Types and Features of IPR Agreement, Trademark, Functions of UNESCO in IPR maintenance.

### **UNIT V PATENTS**

**6**

Patents – objectives and benefits of patent, Concept, features of patent, Inventive step, Specification, Types of patent application, process E-filing, Examination of patent, Grant of patent, Revocation, Equitable Assignments, Licences, Licensing of related patents, patent agents, Registration of patent agents.

**TOTAL : 30 PERIODS**

## REFERENCES:

1. Cooper Donald R, Schindler Pamela S and Sharma JK, "Business Research Methods", Tata McGraw Hill Education, 11e (2012).
2. Catherine J. Holland, "Intellectual property: Patents, Trademarks, Copyrights, Trade Secrets", Entrepreneur Press, 2007.
3. David Hunt, Long Nguyen, Matthew Rodgers, "Patent searching: tools & techniques", Wiley, 2007.
4. The Institute of Company Secretaries of India, Statutory body under an Act of parliament, "Professional Programme Intellectual Property Rights, Law and practice", September 2013.

MU4151

ADVANCED GRAPHICS AND ANIMATION

L T P C

3 0 2 4

## COURSE OBJECTIVES:

- To understand the basics of geometry processing.
- To understand the fundamentals of pipelined rasterization rendering of meshed objects and curved surfaces.
- To understand and work with advanced rendering methods such as radiosity.
- To design programs for advanced animation methods.
- To become proficient in graphics programming using OpenGL

## UNIT I FUNDAMENTALS

9

Basics - Scope and Applications – Graphics Standards – Display Systems – Image Formation – Graphics Systems – 2D and 3D Coordinate Systems – Vectors – Matrices and Basic Vector/Matrix Operations – Line Drawing – Object Representation – Anti-Aliasing.

### Suggested Activities:

1. Practical - Basic application to be implemented for vectors and matrices.
2. Practical - Apply various implementations of the graphics algorithms and analyze.
3. Practical - Execute some shader application and fix the warnings and errors

### Suggested Evaluation Methods:

1. Quiz to check the understanding of the graphics concepts (like graphics hardware, displays and standards).
2. Assessing the understanding of various basic graphics algorithms through programming assessment by using vectors and matrices

## UNIT II TRANSFORMATIONS

9

2D and 3D Geometric Transformations: Translation, Rotation, Scaling, Affine – Hierarchical Modelling & viewing – The Camera Transformation – Perspective – Orthographic and Stereographic Views.

### Suggested Activities:

1. Flipped classroom on rasterization.
2. Practical - Execute any shader application and set viewports, windows, draw polylines and explore the keyboard and mouse interaction routines.
3. Familiarize with transformations and hierarchical in OpenGL using a matrix stack



**Suggested Evaluation Methods:**

1. Quizzes on rasterization schemes.
2. Assessing the understanding of the basic elements available in the OpenGL environment through the programming structs.
3. Demonstration on transformations hierarchies using matrix stack.

**UNIT III                      FRACTALS**

**9**

Fractals and Self Similarity – Peano Curves – Creating Image by Iterated Functions – Mandelbrot Sets – Julia Sets – Random Fractals – Intersecting Rays with Other Primitives – Reflections and Transparency – Boolean Operations on Objects and its Applications.

**Suggested Activities:**

1. Flipped classroom on various algorithms used to generate the fractals.
2. Practical - Generation of fractals using Python and Numpy
3. Practical - Run any shader application and set viewports, windows, fractal rendering and explore the keyboard and mouse interaction routines.

**Suggested Evaluation Methods:**

1. Quiz on Fractals.
2. Demonstration the generation of fractals using Python and Numpy.
3. Assessing the understanding of generation of fractals by changing the various parameters in the OpenGL environment through the programming structs.

**UNIT IV                      ADVANCED GRAPHICS**

**9**

Hidden Surface Removal– Parametric Curves and Surfaces– Global Illumination – Ray Casting –Monte Carlo Algorithm – Texture Synthesis – Bump Mapping – Environmental Mapping –Advanced Lighting and Shading – Shadows –Volumetric Rendering.

**Suggested Activities:**

1. Flipped classroom on Texture Synthesis and photo realistic rendering
2. Run the shader application and add the texture and shadow.
3. Analyze few more shaders - Toon/Cell, Cook-Torrance, Oren-Nayar, Gradient.

**Suggested Evaluation Methods:**

1. Quiz on advanced graphics techniques (like texture synthesis and photo realistic rendering).
2. Demonstration of shader application exploring texture and shadow features.
3. Discussion on bi-directional reflectance distribution function after analyzing the various shader models.

**UNIT V                      ANIMATION**

**9**

Overview of Animation Techniques – Key framing, Computer Animation – Motion Capture and Editing– Forward/Inverse Kinematics– 3D Computer Animation for Applications Such as Games and Virtual Environments – Character Animation Techniques Such as Synthesizing their Body Movements – Facial Expressions and Skin Movements – Behaviors in Crowded Scenes.

**Suggested Activities:**

1. Exploration of various animation techniques and tools (Self Study).
2. Carry out small projects like Design of small animation movies using any tools with good aesthetic sense.

### Suggested Evaluation Methods

1. Discussion on various animation techniques and tools.
2. Projects may be evaluated based on the theme, design, creativity, tools and aesthetic sense.

### PRACTICAL EXERCISES:

**30 PERIODS**

1. Introduction to Programming in OpenGL.
2. Write a program to draw the following points: (0.0,0.0), (20.0,0.0), (20.0,20.0), (0.0,20.0) and (10.0,25.0). For this purpose, use the GL\_POINTS primitive.
3. Re-write the previous program in order to draw a house. The house consists of two figures: a square and a triangle. The first four points given above define the square, while the last three points define the triangle. For this purpose, use the GL\_QUADS and GL\_TRIANGLES primitives.
4. Write a program to color to primitives like cube, triangle and perform 2D rotation using OpenGL.
5. Modify the above program extending the 2D rotation to 3D with a simple 3D Orthographic Projection.
6. Write a program to roll a wheel on a horizontal line using OpenGL.
7. Draw the Koch snowflake (or some other variation of the Koch curve) using python.
8. Create a rotating cube with lighting using OpenGL.
9. Create a scene consisting of multiple spheres and cubes, apply a different texture to each object, and give a bumpy-looking appearance to each surface using normal mapping.
10. Create 10 seconds Walking animation with a rigged character using any animation tool.

**TOTAL : 75 PERIODS**

### COURSE OUTCOMES:

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

1. Prepare for the emerging field of digital modelling and fabrication based on the competence gained.
2. Understand and apply 3d graphics algorithms related to transformations, illumination, texturing, etc. With the aid of software libraries.
3. Develop interactive applications using 3d graphics
4. Investigate and apply software libraries for 3d graphics and related software needs.
5. Understand the issues relevant to computer animation.
6. Describe and synthesize character animation techniques, including motion, changing their facial expressions and crowd behavior.

### REFERENCES

1. Donald D. Hearn, M. Pauline Baker, Warren Carithers, "Computer Graphics with Open GL", Fourth Edition, Prentice Hall, 2011.
2. JungHun Hyan, "3D Graphics for Game Programming", Chapman and Hall/CRC, 1st Edition, 2011.
3. Foley van Dam, Feiner Hughes, "Computer Graphics Principles and Practice", Third Edition, Addison Wesley, 2014.
4. Alan Watt, Mark Watt, "Advanced Animation and Rendering Techniques: Theory and Practice", Addison Wesley, 1992.
5. Rick Parent, "Computer Animation – Algorithms and Techniques", Third Edition, Morgan Kaufman, 2012.
6. Edward Angel, Dave Shreiner, "Interactive Computer Graphics: A Top-Down Approach with OpenGL", Sixth Edition, Addison Wesley, 2012.

**COURSE OBJECTIVES:**

- To get familiarity with gamut of multimedia and its significance
- To acquire knowledge in multimedia components.
- To acquire knowledge about multimedia tools and authoring.
- To acquire knowledge in the development of multimedia applications.
- To explore the latest trends and technologies in multimedia

**UNIT I INTRODUCTION**

9

Introduction to Multimedia – Characteristics of Multimedia Presentation – Multimedia Components – Promotion of Multimedia Based Components – Digital Representation – Media and Data Streams – Multimedia Architecture – Multimedia Documents, Multimedia Tasks and Concerns, Production, sharing and distribution, Hypermedia, WWW and Internet, Authoring, Multimedia over wireless and mobile networks.

**Suggested Activities:**

1. Flipped classroom on media Components.
2. External learning – Interactive presentation.

**Suggested Evaluation Methods:**

1. Tutorial – Handling media components
2. Quizzes on different types of data presentation.

**UNIT II ELEMENTS OF MULTIMEDIA**

9

Text-Types, Font, Unicode Standard, File Formats, Graphics and Image data representations – data types, file formats, color models; video – color models in video, analog video, digital video, file formats, video display interfaces, 3D video and TV: Audio – Digitization, SNR, SQNR, quantization, audio quality, file formats, MIDI; Animation- Key Frames and Tweening, other Techniques, 2D and 3D Animation.

**Suggested Activities:**

1. Flipped classroom on different file formats of various media elements.
2. External learning – Adobe after effects, Adobe Media Encoder, Adobe Audition.

**Suggested Evaluation Methods:**

1. Demonstration on after effects animations.
2. Quizzes on file formats and color models.

**UNIT III MULTIMEDIA TOOLS**

9

Authoring Tools – Features and Types – Card and Page Based Tools – Icon and Object Based Tools – Time Based Tools – Cross Platform Authoring Tools – Editing Tools – Painting and Drawing Tools – 3D Modeling and Animation Tools – Image Editing Tools – Sound Editing Tools – Digital Movie Tools.

**Suggested Activities:**

1. Flipped classroom on multimedia tools.
2. External learning – Comparison of various authoring tools.

**Suggested Evaluation Methods:**

1. Tutorial – Audio editing tool.
2. Quizzes on animation tools.

**UNIT IV MULTIMEDIA SYSTEMS**

**9**

Compression Types and Techniques: CODEC, Text Compression: GIF Coding Standards, JPEG standard – JPEG 2000, basic audio compression – ADPCM, MPEG Psychoacoustics, basic Video compression techniques – MPEG, H.26X – Multimedia Database System – User Interfaces – OS Multimedia Support – Hardware Support – Real Time Protocols – Play Back Architectures – Synchronization – Document Architecture – Hypermedia Concepts: Hypermedia Design – Digital Copyrights, Content analysis.

**Suggested Activities:**

1. Flipped classroom on concepts of multimedia hardware architectures.
2. External learning – Digital repositories and hypermedia design.

**Suggested Evaluation Methods:**

1. Quizzes on multimedia hardware and compression techniques.
2. Tutorial – Hypermedia design.

**UNIT V MULTIMEDIA APPLICATIONS FOR THE WEB AND MOBILE PLATFORMS**

**9**

ADDIE Model – Conceptualization – Content Collection – Storyboard–Script Authoring Metaphors – Testing – Report Writing – Documentation. Multimedia for the web and mobile platforms. Virtual Reality, Internet multimedia content distribution, Multimedia Information sharing – social media sharing, cloud computing for multimedia services, interactive cloud gaming. Multimedia information retrieval.

**Suggested Activities:**

1. External learning – Game consoles.
2. External learning – VRML scripting languages.

**Suggested Evaluation Methods:**

1. Demonstration of simple interactive games.
2. Tutorial – Simple VRML program.

**TOTAL : 45 PERIODS**

**COURSE OUTCOMES:**

- Handle the multimedia elements effectively.
- Articulate the concepts and techniques used in multimedia applications.
- Develop effective strategies to deliver Quality of Experience in multimedia applications.
- Design and implement algorithms and techniques applied to multimedia objects.
- Design and develop multimedia applications following software engineering models.

**REFERENCES:**

1. Li, Ze-Nian, Drew, Mark, Liu, Jiangchuan, “Fundamentals of Multimedia”, Springer, Third Edition, 2021.

2. Prabhat K. Andleigh, Kiran Thakrar, "MULTIMEDIA SYSTEMS DESIGN", Pearson Education, 2015.
3. Gerald Friedland, Ramesh Jain, "Multimedia Computing", Cambridge University Press, 2018. (digital book)
4. Ranjan Parekh, "Principles of Multimedia", Second Edition, McGraw-Hill Education, 2017

LE4101

**INSTRUCTIONAL SYSTEMS DESIGN**

**L T P C**  
**3 0 0 3**

**COURSE OBJECTIVES:**

- Analyse and discuss various learning theories and how they relate to e-Learning design
- Acquire a working knowledge of instructional systems design
- Explain Bloom's taxonomy and its implications on learning strategies and objectives
- Apply the instructional systems design model to a learning environment
- Produce analysis and design outputs at each stage of the ISD process
- Develop an evaluation plan for the E-Learning

**UNIT I LEARNING THEORIES AND PRINCIPLES**

**9**

Learning and Instruction - Learning theories – Behaviorism, Cognitivism, Constructivism and Connectivism – Principles of Learning – Multimedia Learning Principles - Cognitive Load Theory - Cognitive Flexibility Theory – E-Learning

**UNIT II INSTRUCTIONAL DESIGN MODELS AND THEORIES**

**9**

Overview of Instructional Design (ID) – Instructional System Design Models - ADDIE Models – Dick and Carey Model — Rapid eLearning Design - 4C-ID Model ASSURE Model – Collaborative Learning - Scenario-Based Learning - Problem-Based Learning - Top Down and Bottom up models in curriculum Development

**UNIT III INSTRUCTIONAL DESIGN PROCESSES**

**9**

Learning Domains – Taxonomy for Cognitive, Psychomotor, Affective - Bloom's Revised Taxonomy – Constructing Learning objectives - Gagne's Nine principles of ID - Learners and Learning Styles - Vygotsky: Language of thought - Banner-Memory and learning -Structuring the online course - Role of Instructional Designer

**UNIT IV INSTRUCTIONAL DEVELOPMENT – STRATEGIES AND MATERIALS**

**9**

Computer Mediated Tools - Concept Mapping - Technology Analysis for e-Learning - Synchronous Online Learning - Tools for Synchronous Learning - Asynchronous Online Learning - Tools for Asynchronous Learning – Online –Blended – Flipped -Online Tutoring- Skills and Competencies of Online Tutors - Developing Instructional Materials

**UNIT V ASSESSMENT AND EVALUATION**

**9**

Activities for Online Learning -e-Moderating, The Five Stage Model for Online moderation - R2D2 (Read, Reflect, Display, Do) Model –Assessment – Diagnosis, Formative and Summative - The Many Faces of Evaluation - Kirkpatrick's Model – Developing Evaluation Instruments – Evaluating e-Learning Development – Evaluating E-Learning Course

**COURSE OUTCOMES:**

- Demonstrate a working knowledge of instructional systems development (ISD) process and instructional design models through class discussion and collaborative activities

- Create a design document for a training program in a selected work setting
- Demonstrate ability to use computer-based technologies effectively to facilitate instructional design process.
- Formulate instructional objectives and design learning activities and assessments for a specified online course
- Determine the quality, effectiveness, and continuous improvement of the e-Learning

**TOTAL:45 PERIODS**

**REFERENCES:**

1. Dick, W., Carey, L. & Carey, J. (2008). *Systematic Design of Instruction*, (7th ed.)
2. Upper Saddle River, NJ: Pearson Available at the U.T. Co-op and other bookstores (in this syllabus: DC).
3. Rothwell, W.J. & Kazanas, H. C. (2008). *Mastering the Instructional Design Process : A Systematic Approach*, 2nd Ed
4. Julie Dirkse, *Design for How People Learn* (2nd Edition), Pearson Education (US), 2015
5. Ruth Colvin Clark and Richard E. Mayer: "e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning, 4th Edition Pfeiffer Wiley, 2012
6. Marina Arshavskiy, Instructional Design for ELearning: Essential guide to creating successful eLearning courses, CreateSpace Independent Publishing Platform; 1st edition, 2013
7. *Empowering Online Learning* (2008) by Curtis J. Bonk and Ke Zhang. Published by Jossey Bass: San Francisco.

**LE4102**

**E-LEARNING DESIGN AND DEVELOPMENT**

**L T P C**  
**3 0 0 3**

**COURSE OBJECTIVES:**

- To learn the various E-learning approaches and components.
- To understand the key elements of Design Thinking.
- To explore the models for E-learning courseware development.
- To design E-learning courses using Authoring tools.
- To analyze various E-learning solutions for design and development

**UNIT I INTRODUCTION**

**9**

Introduction to E- Learning - Need for E-Learning – Types of E-Learning – Components of E-Learning – Synchronous and Asynchronous Modes of Learning – Quality of E-Learning – Blended Learning: Activities, Team and Technology – Workflow to Produce and Deliver E-Learning Content. Design Thinking: Introduction – Actionable Strategy – Act to Learn – Leading Teams to Win.

**Suggested Activities:**

1. External learning - E-learning approaches and components.
2. Discussion on design thinking

**Suggested Evaluation Methods:**

1. Assignment on E-learning approaches and components.
2. Quiz on design thinking

**UNIT II DESIGNING E-LEARNING CONTENT / COURSE**

**9**

Design Models of E-Learning – Identifying and Organizing E-Learning Course Content: Needs Analysis –Analyzing the Target Audience – Identifying Course Content - Defining Learning Objectives – Defining



the Course Sequence – Defining Instructional Methods – Defining Evaluation and Delivery Strategies – Case Study.

**Suggested Activities:**

1. Preparation of Concept Map
2. Discussion forum – design models.
3. External learning - E-learning instructional methods.

**Suggested Evaluation Methods:**

1. Assignment on design models of multimedia E-learning.
2. Quiz on E-Learning instructional methods.

**UNIT III CREATING INTERACTIVE E- CONTENT**

**9**

Preparing content: Tips for Content Development and Language Style – Creating storyboards: Structure of an interactive Multimedia E-lesson – Techniques for presenting Multimedia content – Integrating multimedia elements -Developing Practice and Assessment Tests – Courseware Development – Authoring tools – Types of Authoring Tools – Selecting an Authoring Tool.

**Suggested Activities:**

1. Discussion forum on creation of multimedia storyboards.
2. External learning on types of authoring tools.

**Suggested Evaluation Methods:**

1. Assignment on multimedia story boards creation.
2. Quiz on authoring tools

**UNIT IV LEARNING PLATFORMS**

**9**

Types of Learning Platforms – Proprietary vs. Open – Introduction to Learning Management System (LMS) – Content management System – CMS vs LMS – LMS solutions – Functional Areas of LMS.

**Suggested Activities:**

1. Design of CMS using FOSS framework
2. Course and User Administration
3. Resource and Activities scheduling in LMS
4. Plugin Management
5. Report Generation

**Suggested Evaluation Methods:**

1. Assignment on proprietary and open source LMS.
2. Quiz on LMS solutions.

**UNIT V COURSE DELIVERY AND EVALUATION**

**9**

Components of an Instructor Led or Facilitated Course – Planning and Documenting Activities – Facilitating Learners Activities – E-learning Methods and Delivery Formats – Using Communication Tools for E-learning – Course Evaluation.

**Suggested Activities:**

1. Discussion on planning and documentation.
2. External learning - Evaluation and delivery methods.

**Suggested Evaluation Methods:**

1. Assignment on planning and documentation.
2. Quiz on evaluation and delivery methods.

**COURSE OUTCOMES:**

1. Distinguish the phases of activities in models of E-learning
2. Identify appropriate E-Learning instructional methods and delivery strategies
3. Choose appropriate E-learning Authoring tools
4. Create interactive E-Learning courseware
5. Evaluate the E-learning courseware

**TOTAL : 45 PERIODS**

**REFERENCES:**

1. Clark, R. C., & Mayer, R. E. . E-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning. John Wiley & Sons., 2016.
2. Means, B., Toyama, Y., Murphy, R, "Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies", 2010.
3. Crews, T. B., Sheth, S. N., Horne, T. M, "Understanding the Learning Personalities of Successful Online Students. Educause Review", 2014.
4. Jonny Schneider, "Understanding Design Thinking, Lean and Agile", O'Reilly Media, 2017.
5. William Horton, e-Learning by Design, John Wiley & Sons, 2011.
6. Madhuri Dubey, "Effective E-learning Design, Development and Delivery", Universities Press, 2011.
7. Arshavskiy, M. Instructional design for Elearning: Essential guide to creating successful eLearning courses. CreateSpace Independent Publishing Platform, 2013

**LE4111**

**EDUCATIONAL TECHNOLOGY LABORATORY**

**L T P C**  
**0 0 2 1**

The Educational Technology lab course will help students in understanding tools useful for creating online learning content, online assessment, using visualization, analyzing data, etc.

**PRACTICAL EXERCISES**

**E-Content Development**

1. Concept Mapping Tools: e.g. CMAP, MindMap, Freemind
2. Graphics and Animation Tools :GIMP, Blender
3. Camstudio for screencast, image editing, audio editing (audacity), video management, etc
4. Assessment Tools like Hot Potato
5. Online Collaboration Tools: e.g. Wiki



### Learning Management System : MOODLE

1. Creation of Users and Schedule users Vs Courses in Moodle.
2. Preparation and Organization of Multimedia Course Contents in Moodle.
3. Aligning the course objectives, Assessments and evaluation methods of Courseware in Moodle.
4. Courseware Content generation with various Multimedia instructional formats.
5. Adding communication tools in Moodle for effective collaboration.
6. Creation of instructor led courses in Moodle.
7. Creation of self-Learning courses in Moodle.
8. Implementation of various Evaluation strategies of Courseware in Moodle .
9. Implementation of various delivery strategies in Moodle

**TOTAL : 30 PERIODS**

**MU4161**

**MULTIMEDIA AUTHORIZING TOOLS LABORATORY**

**L T P C**  
**0 0 4 2**

### COURSE OBJECTIVES:

- To explore the various multimedia editing tools like Photoshop/EQV/MATLAB, audacity, Garageband, iMovie and Open CV.
- To explore media processing tools.

The following experiments should be practiced

1. Audi and video editing
2. Image editing
3. 2D and 3D animation

(Tools such as HTML/Frontpage/Dreamweaver, Multimedia application enabling software, System software support for multimedia, Performance measurement tools for multimedia, Multimedia authoring tools, Web tools and applications). The case studies are:

- Video on-demand
- Interactive TV
- Home shopping
- Remote home care
- Electronic album
- Personalized electronic journals

**TOTAL: 60 PERIODS**

### COURSE OUTCOMES:

**Upon Completion of the course, the students should be able to:**

- Process media elements using various multimedia tools
- Create 2D and 3D animations
- Build multimedia applications

**AUDIT COURSES**

**AX4091**

**ENGLISH FOR RESEARCH PAPER WRITING**

**L T P C**

**2 0 0 0**

**COURSE OBJECTIVES:**

- Teach how to improve writing skills and level of readability
- Tell about what to write in each section
- Summarize the skills needed when writing a Title
- Infer the skills needed when writing the Conclusion
- Ensure the quality of paper at very first-time submission

**UNIT I INTRODUCTION TO RESEARCH PAPER WRITING**

**6**

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

**UNIT II PRESENTATION SKILLS**

**6**

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

**UNIT III TITLE WRITING SKILLS**

**6**

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, Methods, Results, Discussion, Conclusions, The Final Check

**UNIT IV RESULT WRITING SKILLS**

**6**

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

**UNIT V VERIFICATION SKILLS**

**6**

Useful phrases, checking Plagiarism, how to ensure paper is as good as it could possibly be the first-time submission

**TOTAL: 30 PERIODS**

**COURSE OUTCOMES:**

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 – Understand the skills needed when writing the Conclusion

CO5 – Ensure the good quality of paper at very first-time submission

**REFERENCES:**

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

**COURSE OBJECTIVES :**

- Summarize basics of disaster
- Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- Describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- Develop the strengths and weaknesses of disaster management approaches

**UNIT I INTRODUCTION 6**

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 6**

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 III DISASTER PRONE AREAS IN INDIA 6**

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

**UNIT IV DISASTER PREPAREDNESS AND MANAGEMENT 6**

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 V RISK ASSESSMENT 6**

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

**TOTAL : 30 PERIODS**

**COURSE OUTCOMES:**

- CO1: Ability to summarize basics of disaster
- CO2: Ability to explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- CO3: Ability to illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- CO4: Ability to describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- CO5: Ability to develop the strengths and weaknesses of disaster management approaches

## REFERENCES:

1. Goel S. L., Disaster Administration And Management Text And Case Studies", Deep & Deep Publication Pvt. Ltd., New Delhi, 2009.
2. Nishitha Rai, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "New Royal book Company, 2007.
3. Sahni, Pardeep Et. Al. , " Disaster Mitigation Experiences And Reflections", Prentice Hall Of India, New Delhi, 2001.

**AX4093**

**CONSTITUTION OF INDIA**

**L T P C**

**2 0 0 0**

## COURSE OBJECTIVES:

Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional
- Role and entitlement to civil and economic rights as well as the emergence nation hood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

### UNIT I HISTORY OF MAKING OF THE INDIAN CONSTITUTION

History, Drafting Committee, (Composition & Working)

### UNIT II PHILOSOPHY OF THE INDIAN CONSTITUTION

Preamble, Salient Features

### UNIT III CONTOURS OF CONSTITUTIONAL RIGHTS AND DUTIES

Fundamental Rights, Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies, Directive Principles of State Policy, Fundamental Duties.

### UNIT IV ORGANS OF GOVERNANCE

Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions.

### UNIT V LOCAL ADMINISTRATION

District's Administration head: Role and Importance, □ Municipalities: Introduction, Mayor and role of Elected Representative, CEO, Municipal Corporation. Pachayati raj: Introduction, PRI: Zila Pachayat. Elected officials and their roles, CEO Zila Pachayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy.

## UNIT VI ELECTION COMMISSION

Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners - Institute and Bodies for the welfare of SC/ST/OBC and women.

**TOTAL: 30 PERIODS**

### COURSE OUTCOMES:

Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization
- of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party[CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
- Discuss the passage of the Hindu Code Bill of 1956.

### SUGGESTED READING

1. The Constitution of India,1950(Bare Act),Government Publication.
2. Dr.S.N.Busi, Dr.B. R.Ambedkar framing of Indian Constitution,1<sup>st</sup> Edition, 2015.
3. M.P. Jain, Indian Constitution Law, 7<sup>th</sup> Edn., Lexis Nexis,2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

**AX4094**

**நற்றமிழ் இலக்கியம்**

**L T P C**

**2 0 0 0**

**UNIT I**

**சங்க இலக்கியம்**

**6**

1. தமிழின் துவக்க நூல் தொல்காப்பியம்  
- எழுத்து, சொல், பொருள்

2. அகநானூறு (82)  
- இயற்கை இன்னிசை அரங்கம்
3. குறிஞ்சிப் பாட்டின் மலர்க்காட்சி
4. புறநானூறு (95,195)  
- போரை நிறுத்திய ஓளவையார்

**UNIT II**

**அறநெறித் தமிழ்**

**6**

1. அறநெறி வகுத்த திருவள்ளுவர்  
- அறம் வலியுறுத்தல், அன்புடைமை, ஒப்புறவு அறிதல், ஈகை, புகழ்
2. பிற அறநூல்கள் - இலக்கிய மருந்து  
- ஏலாதி, சிறுபஞ்சமூலம், திரிகடுகம், ஆசாரக்கோவை  
(தூய்மையை வலியுறுத்தும் நூல் )

UNIT III

இரட்டைக் காப்பியங்கள்

6

1. கண்ணகியின் புரட்சி
  - சிலப்பதிகார வழக்குரை காதை
2. சமூகசேவை இலக்கியம் மணிமேகலை
  - சிறைக்கோட்டம் அறக்கோட்டமாகிய காதை

UNIT IV

அருள்நெறித் தமிழ்

6

1. சிறுபாணாற்றுப்படை
  - பாரி முல்லைக்குத் தேர் கொடுத்தது, பேகன் மயிலுக்குப் போர்வை கொடுத்தது, அதியமான் ஓளவைக்கு நெல்லிக்கனி கொடுத்தது, அரசர் பண்புகள்
2. நற்றிணை
  - அன்னைக்குரிய புன்னை சிறப்பு
3. திருமந்திரம் (617, 618)
  - இயமம் நியமம் விதிகள்
4. தர்மச்சாலையை நிறுவிய வள்ளலார்
5. புறநானூறு
  - சிறுவனே வள்ளலானான்
6. அகநானூறு (4)
  - வண்டு
- நற்றிணை (11)
  - நண்டு
- கலித்தொகை (11)
  - யானை, புறா
- ஐந்திணை 50 (27)
  - மான்
- ஆகியவை பற்றிய செய்திகள்

UNIT V

நவீன தமிழ் இலக்கியம்

6

1. உரைநடைத் தமிழ்,
  - தமிழின் முதல் புதினம்,
  - தமிழின் முதல் சிறுகதை,
  - கட்டுரை இலக்கியம்,
  - பயண இலக்கியம்,
  - நாடகம்,
2. நாட்டு விடுதலை போராட்டமும் தமிழ் இலக்கியமும்,
3. சமுதாய விடுதலையும் தமிழ் இலக்கியமும்,
4. பெண் விடுதலையும் விளிம்பு நிலையினரின் மேம்பாட்டில் தமிழ் இலக்கியமும்,

5. அறிவியல் தமிழ்,
6. இணையத்தில் தமிழ்,
7. சுற்றுச்சூழல் மேம்பாட்டில் தமிழ் இலக்கியம்.

TOTAL : 30 PERIODS

**தமிழ் இலக்கிய வெளியீடுகள் / புத்தகங்கள்**

1. தமிழ் இணைய கல்விக்கழகம் (Tamil Virtual University)  
- www.tamilvu.org
2. தமிழ் விக்கிப்பீடியா (Tamil Wikipedia)  
-https://ta.wikipedia.org
3. தர்மபுர ஆதின வெளியீடு
4. வாழ்வியல் களஞ்சியம்  
- தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்
5. தமிழ்கலைக் களஞ்சியம்  
- தமிழ் வளர்ச்சித் துறை (thamilvalarchithurai.com)
6. அறிவியல் களஞ்சியம்  
- தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்

