BHARATHIAR UNIVERSITY:COIMBATORE-641 046
B.Sc., GAME DEVELOPMENT
(For the CPP students admitted during the academic year 2013-2014 & onwards)
SCHEME OF EXAMINATIONS - (CBCS Pattern)

Part	COURSE TITLE	Inst hrs / week	Examination				Credit
			Dur	CIA	Mark	Total	
Year 1							
	Semester 1						
I	Language – I	6	3	25	75	100	4
II	English – I	6	3	25	75	100	4
III	Core 1: Computer Systems Technology	4	3	25	75	100	4
	Core 2: Professional context, technology & Communication methods	4	3	25	75	100	4
	Core 3: Introduction to Programming	3	3	25	75	100	4
	Allied Paper 1: Visual art for Interactive Media	5	3	25	75	100	4
IV	Environmental Studies #	2	3	-	50	50	2
	Semester 2						
I	Language – II	6	3	25	75	100	4
II	English – II	6	3	25	75	100	4
III	Core 4: Flash Game Development	5	3	25	75	100	4
	Core 5: Data Design and Analysis	5	3	25	75	100	4
	Core Lab 1: Studio Assimilation lab	2	3	20	30	50	2
	Allied paper 2: Visual Design for Interactive Media	6	3	25	75	100	4
IV	Value Education – Human Rights #	2	3	-	50	50	2
Year 2							
	Semester 3						
III	Core 6: Graphics programming	6	3	25	75	100	4
III	Core Lab 2: Graphics programming Lab	5	3	40	60	100	4
III	Core 7: Web Technology	6	3	25	75	100	4
III	Allied paper 3: Introduction to Java	6	3	25	75	100	4
IV	Skill based 1: Web Game using HTML5	5	3	25	50	75	3
IV	Tamil @ /Advanced Tamil # (or) Non-major elective-I (Yoga for Human Excellence) # / Women's Rights #	2	3	50		50	2
	Semester 4						
III	Core 8: Console Game Development	6	3	25	75	100	4
III	Core Lab 3: Console Game Development Lab	6	3	40	60	100	4
III	Core 9: Mobile Game Technology	5	3	25	75	100	4
III	Allied paper 4: Computer communication networks	6	3	25	75	100	4
IV	Skill based 2: Mobile Game development using IOS	4	3	25	50	75	3
IV	Tamil @ /Advanced Tamil # (or) Non-major elective-II : General Awareness #	2	3	50		50	2

Year 3							
	Semester 5						
III	Core 10: Game Engines	6	3	25	75	100	4
III	Core Lab 4: Game Engines Lab	6	3	40	60	100	4
III	Core 11: Social Application	5	3	25	75	100	4
III	Core Lab 5: Social Application Lab	6	3	40	60	100	4
III	*Elective I*	5	3	25	75	100	4
IV	Skill based 3: Social Game Development	4	3	25	50	75	3
	Semester 6						
III	Core 12: Artificial Intelligence	5	3	25	75	100	4
	Core Lab 6: Game Testing Lab	6	3	40	60	100	4
	Elective II	5	3	25	75	100	4
	Elective III	5	3	25	75	100	4
	Project Work	5	3	25	75	100	4
IV	Skill based 4: Internship	4	3	30	45	75	3
V	Extension Activities@	-	-	50	-	50	2
					Total	3500	140

$ Includes 25% / 40% continuous internal assessment marks for theory and practical papers respectively.
@ No University Examinations. Only Continuous Internal Assessment (CIA)
# No Continuous Internal Assessment (CIA). Only University Examinations.

Elective I	World Design for Game Engines
	Science for Gaming
Elective II	Research Methods
	Dissertation
Elective III	Project Management
	Professional Practice

COMPUTER SYSTEMS TECHNOLOGY

Unit I:

Computer components: History of Computer - Basics of Modern Computer systems - Primary Memory, Secondary Memory, Optical Memory, Virtual Memory, Cache Memory, Memory hierarchy. Input/output devices and interface - RAMs and their classification - ROMs and their classification- application of ROMs - Secondary storage devices-floppy disk and its types-hard disk and its types - optical disk and its types- hard disk Vs. CD-ROMs- flash memory- comparative characteristic of secondary memory- cache memory and virtual memory– CPU and GPU – North Bridge and South Bridge

Unit II:

Introduction to Computer Organization and Architecture: Computer Block Diagram - Microprocessor and CPU design: Introduction-central processing unit- microprocessor and CPU organisation- clock and its speed- processor and its types- parallel processing and parallel processing and parallel computers- commonly used CPUs and CPU related terminology - Functions of CPU - register classification and organization - Instruction sets - instruction formats - instruction cycle and instruction pipe lining - GPU Architecture– Interpreter - Compilers and Classifications

Unit III:

Operating System Fundamentals: Introduction to Operating System - Kernel - Process Management - Memory Management - File Management - Input & Output Device Management – Deadlock - Hardware Abstraction Layer – System software and application software – file management and security

Unit IV:

Introduction to networks: Introduction to Networking - Networking Standards - Data Packets – Topologies - Methods of Communication - Client Server Technology - Peer to Peer Technology - Network Security – Need to network – Network management and network deployment – Introduction to; Distributed networking – Neural network - Cloud network

Unit V:

Digital Logic: Number System and Data representation: Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates. Boolean algebra - Basic identities of Boolean Algebra - Boolean functions - Logic Gates and truth table - Number systems - Computer Arithmetic - Codes for character representation – Coder – Encoder - Decoder

REFERENCES:

- D. Nasib S. Gill, J.B. Dixit, Digital Design and Computer Organisation, Firewall Media, 2008
- M. Morris Mano , Computer System Architecture , Prentice Hall; 3 edition,1992
- Albert Paul Malvino, Donald P Leach , Digital principles and applications, McGraw-Hill Science/Engineering/Math; 5 edition 1994
- Ramesh S.Goankar , Microprocessors and its Applications , V edition, 2002
- Puri , Digital electronics circuits and systems , McGraw-Hill education
- Nicholas carter ,Computer architecture, Schaum's outline series, 2001
- Andrew Rollings Dave Morris , Game Architecture and Design Publisher New Riders, 2003

PROFESSIONAL CONTEXT, TECHNOLOGY & COMMUNICATION METHODS

Unit I:

Introduction to communication - Types of communication, Communication models, Psychological Principles involved in Communication, Case study of skinner box, user centric design. What is interactive multimedia: multimedia- interaction- a brief history of computers & multimedia- a brief history of computers and interaction-what is IMM? Communicative interaction? Objects and agents-channels of communication-artificial language-natural communication-meta languages-components of interactive multimedia systems

Unit II:

Interactive and New Media - Gaming & Human Computer Interaction Fundamentals, User Interface, Behavioral Studies (Impacts of various multimedia elements in communication) Understanding users: Why are users are important-things you might know about a user-how to apply user knowledge-how to acquire user knowledge-techniques of user profiling-techniques of user modelling Interaction and interface: Introduction-traditional HCI-modalities and interface-channels of communication and the interface-functionality and usability-visual appearance and graphic design.

Unit III:

Ethics of New Media - Copywriter, Patent, Cultural acceptances & differences, Software Rating Board, Entertaining Software Rating Board, Software Standards, Standard & code of ethics for interactive media (HCI, Web, Game, Interface) – Intellectual property - Copyrights and moral rights - Contracts – Ethics - Freedom of speech - Freedom of expression and codes of practice - Knowledge: Introduction-why does knowledge matter-the basic idea of knowledge-a work definition-techniques of knowledge representation-techniques of knowledge elicitation

Unit IV:

Idea Generation and content creation - Pilot study, Mind map, 6 thinking hats, improving existing products/services, Ergonomics. Game Development process-Concept phase-Pre production-production-post production-The Business of Game Development-Current gaming trends-Future of Game Development; Semiotics: Multimedia content-what is semiotics- the idea of a sign- more complex signs-semiotics and media

Unit V:

Project Management - Software Development Life Cycle, Introduction to Agile - Introduction to software version control system - Game Industry-Roles of People in Game Industry-Game Development team-Production-Design team-Programming team-Art team-Quality Assurance team-Outside Contractors. General approach-planning for-management-evolution-documentation-deployment and acceptance, Future trends: Conceptual-cultural-technological-hot topics

REFERENCES:

- Andrew Rollings Dave Morris , Game Architecture and Design Publisher New Riders, 2003
- Mark Elsom Cook, Principles of Interactive Multimedia, Tata McGraw-hill, 2001
- Fred T. Hofstetter, Multimedia literacy, Tata McGraw-hill, 2001
- Tay Vaughan, Multimedia making it work, Tata McGraw-hill, Seventh Edition, 2008
- John F. Koegel Buford, Multimedia systems, ACM Press, 1994

INTRODUCTION TO PROGRAMMING

UNIT-I:

Fundamentals of Computers : Introduction – History of Computers-Generations of Computers- Classification of Computers - Basic Anatomy of a Computer System-Input Devices-Processor - Output Devices-Memory Management – Types of Software - Overview of Operating System - Programming Languages-Translator Programs - Problem Solving Techniques

UNIT-II:

Programming Basics: Programming Hello world - Data types - Variables - Constants - Operators - Conditional Statements - Looping. Functions: Understanding Functions - pass values to functions - recursive functions

UNIT-III:

C++ Key Data Concepts: Arrays: One Dimensional - Two Dimensional - Multi Dimensional - Dynamic arrays. Pointers: - Pointers Advantage & disadvantage - Variable pointers ,Generating pointer to an array - Function Pointers - Array pointers - Pointers to Pointers - Functions - passing pointers to functions - returning pointers - passing Arrays to functions . User Defined Data types: Union & Enum - Structures

UNIT-IV:

C++ and OOPS :Classes & Objects ; Encapsulation - Constructors & Destructors ; Polymorphism – Abstraction - Virtual Function - Function Overloading & Overriding ; Inheritance ; Constructors & Destructors ; Exception Handling - Templates

UNIT-V:

Standard Template Library: Containers - Sequences (vector, list, slist, deque) ; Container Adaptors (Stack, Queue), Algorithms - Mutating Algorithms (Swap, Replace, Remove) , Sorting (Sort, Binary Search, Merge) ; Function Object - Random Number Generator ; Iterators - Forward & Random Access - Data Structures Types - Linear Data Structure - Array - Linked list, Stack, Queue, Sorting & Searching - Trees - Graphs - Shortest Path Algorithm.

REFERENCES

- E. Balagurusamy, COMPUTING FUNDAMENTALS & C PROGRAMMING, Tata McGraw-Hill, Second Reprint, 2008
- Essential Reading Herbert Scheldt, The Complete Reference C++, Tata McGraw Hill, 2002
- Bjarene Stroustrup, Programming: Principles and practices using C++, Addison-Wesley Professional; 1 edition,2008
- David Kruglinski .J, Programming with visual C++, fifth edition, Microsoft press, 1998

VISUAL ART FOR INTERACTIVE MEDIA

UNIT-I:
Plane curves and free hand sketching, Construction of ellipse, parabola and hyperbola –Drawing of tangents and normal to the curves- Scales- Visualization concepts and Free Hand sketching- Visualization principles – Representation of Three Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of objects

UNIT-II:
Projection of points, lines and plane surfaces: Orthographic projection- principles-Principal planes-First angle projection-Projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes- Projection of planes (polygonal and circular surf access) inclined to both the principal planes by rotating object method.

UNIT-III:
Projection of solids: Projection of simple solids like prisms- pyramids- cylinder- cone and truncated solids when the axis is inclined to one of the principal planes by rotating object method and auxiliary plane method.

UNIT-IV:
Isometric and perspective projections: Principles of isometric projection – isometric scale –Isometric projections of simple solids and truncated solids – Prisms- pyramids- cylinders- cones- combination of two solid objects in simple vertical positions and miscellaneous problems. Perspective projection of simple solids-Prisms- pyramids and cylinders

Unit V:
Figure drawing basics -Essentials of human figure drawing -Proportion and Gesture -Simplifying body parts in to 2D shapes -Relative proportion of various parts of the body - Constructing the front view using basic shapes - stick figure -line of action –balance -contour drawing(different poses) - Cylindrical forms (front and side view) – foreshortening overlapping - quick sketches - study from live figure.

REFERENCES-

- Luzzader Warren.J. and Duff John M, Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Prentice Hall of India Pvt Ltd, 2005
- K.Venugopal and V.Prabhu Raja, Engineering Graphics, New Age International (P) Limited, 2008.
- N.D.Bhatt and V.M.Panchal, Engineering Drawing, Charotar Publishing House, 2010
- K. V.Natrajan, A text book of Engineering Graphics, Dhanalakshmi Publishers, 2009.
- Basant Agarwal and Agarwal C.M, Engineering Drawing, Tata McGraw Hill, 2008.

FLASH GAME DEVELOPMENT

UNIT I:

Introduction to Flash - Flash IDE - Document Setting - Tools - Properties - Symbols – Types of Symbols - Converting Images to symbols - Types of Tweening - Adding Buttons and applying effects to buttons - Working with Bitmaps - Adding Video - Settings - Creating simple Drawings - Animating the drawing - Working with Layers

UNIT II:

Symbols - Types of Symbols - Linking Symbols with Bones - Adding Buttons and applying effects to buttons, Working with Bitmaps - Adding Video - Introduction to Action Script - Frame actions - First Program in AS3 - trace - variable - Data types - Operators - Conditional Statements - Looping - Arrays - Functions - Function Overloading

Unit III:

Object Oriented Programming Structure using Action Script - Advanced Scripting - Classes - Encapsulation - Constructors - Constructor Overloading - Polymorphism - Inheritance - Adding external files - Including Text files – Saving sessions – reading formatted xml or txt files

Unit IV:

Game in Flash Action script - Movements - Event Handling – Keyboard and Mouse - Timer - Animations - Adding sounds - Drawing - BG, Player and AI - Collision Detection - Working with Action Script File – Movements - Event Handling, - Game elements - Collision Detection – Triggers

Unit V:

Game development for Mobile – Flash Game engines/ game libraries –Game asset and layer structure – Deploying for iOS method –Building for iTunes – Selecting your iOS device – iOS Process - Publish Settings - Game deployment on iTunes – Tracking downloads and issues

REFERENCES:

- Griffith, Christopher , Real-World Flash Game Development: How to Follow Best Practices and Keep Your Sanity , Focal Press; 2 Edition , 2011
- Chris Grover, E A. Vander Veer ,Flash Cs4: The Missing Manual , Pogue Press; Third Edition , 2008
- Lott, Joey & Patterson, Danny. , Advanced Action script 3 with Design Patterns , Adobe Press; 1 Edition , 2006
- Matthew David, Flash Mobile: Developing Android and iOS Applications, Focal Press, First edition, 2011

DATA DESIGN & ANALYSIS

Unit I:

Algorithm & Flow Chart - Introduction to algorithms- Order notations- induction- floor and ceiling functions- pigeon-hole principle- recurrence relations- Algorithm design techniques Greedy algorithms- divide-and-conquer algorithms- dynamic programming- amortization- optimal algorithms - Algorithms on arrays Selection and median-finding- counting- radix and bucket sorts- string matching - Geometric algorithms Convex hulls- sweep paradigm- Algorithms on graphs- Traversal- topological sort- minimum spanning trees- shortest path- network flow

Unit II:

Object Oriented Analysis & Design - Introduction to OOAD- Use Case Diagram - What is Use Case Diagram - How to develop Use Case Diagrams - Class Diagram – What is Class Diagram - How to develop p Class Diagrams - Activity Diagram - What is Activity Diagram - How to develop Activity Diagrams - Sequence Diagram - What is Sequence Diagram - How to develop Sequence Diagrams - State Diagram - What is State Diagram - How to develop State Diagrams.

Unit III:

Database and Database management systems - File systems versus Database systems – Data Models – DBMS Architecture – Data Independence – Data Modeling using Entity – Relationship Model – Enhanced E-R Modeling – Architecture - Data modeling; Normalization techniques - Structured Query Language - Data Manipulation Language, Data Definition Language, constraints - Transaction Processing - Procedural Language/Structured Query Language.

Unit IV:

Definition – Prototype models – iterative design - Value of Prototyping - Types of Prototyping – Rapid prototyping - Software prototype – Digital game prototyping – Paper prototyping - Principles of Prototyping - Process of iteration – Communication testing– Usability testing – Design testing – Information Architecture testing

Unit V:

Versioning Control System- Subversion history – Version and revision control difference – DVCS – Git and Mercurial – Bitbucket.org – committing – updating and reverting – Resolving conflicts - Testing approach- Box approach – White box - Black box– Visual testing – Testing levels –Unit testing – integration testing – System testing – Acceptance test - Types of Testing; Alpha testing – Beta testing –Installation test –Compatibility test – Function and destructive testing – Game testing; focus group testing –functionality testing – Usability testing – Aggression testing

REFERENCES:

- Thomas H. Cormen- Charies E. Leiserson and Ronald. L. Riveit , Introduction to Algorithms, Prentice Hall of India, 2001
- Jon Kleinberg and Éva Tardos , Algorithm Design , Pearson, 2005.
- Abraham Silberschatz , Operating System Concepts , Wiley; 9 edition, 2012
- Yashavant P. Kanethkar , Data Structure through C++, BPB Publications, 2003
- Jean-Paul Trembly Paul G.Sorenson ,An Introduction in Data Structures with applications, Tata Mc-Grew Hill, 1991
- Ramez Elamassri and Shankant B-Navathe , Fundamentals of Database Systems , Third Edition, Pearson Education, 2002.

STUDIO ASSIMILATION LAB

- Using Brian storming mind tools generate 20 different ideas
- Perform a SWOT analysis of the given company scenario
- Develop pre production works as required for the given project
- State selection of tools and design pipeline for the execution of the given project
- Develop a presentation for pitching the project
- Develop a simple project to solve a given problem

VISUAL DEISGN FOR INTERACTIVE MEDIA

UNIT I:

Introduction to Image editing application– working with bitmap and vector images– getting familiar with the work area – returning all tools to their default settings – digital painting – using the painting and editing tools – creating brush - smudging a selection - selections – types of selection tools– making a quick selection –tracking layer sizes – cropping – using paths – drawing straight and curved paths – painting paths

UNIT II :

Creating vector mask – creating logo – creating advertisement – actions – using layer styles – using the Curves command – adding adjustment layers – creating and editing layer masks – Applying smart filters – Defining patterns – The clone stamp tool – using the healing brush tool – determining the tonal range in an image – using the levels command – using the curves command – Shadow / Highlight command - photo merge

UNIT III :

Adobe Illustrator – using the Illustrator tools –working with panels – customizing the workspace– changing the view of artwork – logo designing – qualities of a good logo – transforming objects – using the pathfinder feature – positioning objects precisely – using the attributes panel –digital illustration – using the pencil tool – Creating symbols – painting with mesh – using a clipping mask

UNIT IV :

Introduction to user interface – working in 3D – views –the maya workspace - creating manipulating and moving objects – perspective and orthographic windows – creating curves – editing curves – attaching and detaching curves – inserting knots – reverse curve direction - – adding points to a curve – using curve editing tool

UNIT V :

Editing nurbs - rebuilding surfaces – surface fillets – stitching surfaces – creating polygons –append polygon tools – combine – polygon Booleans – mirror geometry – polygon smooth tool –subdivision surfaces – polygon reduction – the cut face tool – extruding polygon faces and edges – UV Unwrapping – UV Editor –Hypershade – Understanding Maya Materials and textures - Adding lights – light theory – artistic theories – types of light – common attributes – ambient lights – spot lights – point lights – directional lights

REFERENCES

- Martin Evening, Adobe Photoshop CS5 for Photographers, Focal Press, 2010
- Adobe creative Team, Adobe Photoshop CS5 Classroom in a Book, Adobe Press , 2010
- Adobe creative Team, Adobe Illustrator CS5 Classroom in a Book, Adobe Press , 2010
- Lee Lanier, Maya Professional Tips and Techniques by Lee Lanier, Sybex , 2007
- Eric Keller, Eric Allen and Anthony Honn, Mastering Maya, 2009

GRAPHICS PROGRAMMING

UNIT – I:

Trignometry: Trignometry functions, Trignometry identities, Problems in Trignometry; Vector Algebra - Vectors, Vector vs Scalar, Coordinate System, Vector addition and subtraction, scalar multiplication, Length and unit Vectors, Dot product, Cross product , D3DX Vector; Matrix Algebra - Matrix Multiplication, Transpose of a Matrix, Transpose of a Matrix, Identity Matrix, Inverse of a Matrix, D3DX Matrices; Transformations - Basic Transformations, D3DX Transformation functions; Analytical geometry - Two dimensional analytical geometry, points and distance, straight lines, lines, circles, elipses, parapola, solid geometry plane

Unit - II :

Fundamentals of Direct X API : Introduction – History of direct x-Different types of API's- Advantages of API - Window creation : - Introduction - win32 window- window -event-multitasking -MSG queue - MSG loop-windows procedure-window properties-client area- creating window -GPU-HAL and its usage- COM- Main concepts of COM- Rendering pipeline-right hand coordinate system - creating direct x window.

UNIT-III:

Drawing objects: Introduction – Computer Memory and its uses types of -memory pools-swap chain & page flipping-depth buffers - Vertex buffer - Index buffer - Applying colour to the vertex-applying skin/texture to the vertex- lighting, types of lighting - Sprite and Movements – Collision – Blending - Multi threading

UNIT – IV:

Flexible Camera Class - Functionalities of camera - Basic Terrain Rendering – Creating a Heightmap - Loading a .raw file- Generating the Terrain Geometry - Computing the Vertices – Computing the Indices - Lighting – Walking on the Terrain - Particle System - Particles and Point Sprites – Structure of Particles – Point Sprite and Render States - Particle System Components - Randomness of Particles - Concrete Particle System

UNIT V:

Picking - Computing the Picking Ray - Transforming Rays - Ray-Object Intersections -Shaders - High Level Shading Language- Writing an HLSL Shader – Compiling an HLSL Shader - Variable Types – Keywords, Statements and Casting - Operators - User-Defined Functions - Built-in Functions - Vertex Shaders- Vertex Declaration - Vertex Data Usages- Steps to Using a Vertex Shader - Pixel Shaders - Multitexturing Overview - Pixel Shader Input and Output – Steps to using a Pixel Shader - Enabling Multiple Textures

REFERENCES

- Wendy Stahler, Beginning Math and Physics for Game Programmers, New Riders, 2004
- Frank D. Luna, Introduction to 3D Game Programming with DirectX 9.0c: A Shader Approach: A Shader Approach, Wordware Publishing, Inc., 2010
- Allen Sherrod, Ultimate Game Programming with DirectX, Second Edition, Charles River Media, 2009
- Tom Miller, Managed DirectX 9: Graphics and Game Programming : Kick Start, Sams Publishing, 2003
- Frank D. Luna, Introduction to 3D Game Programming With DirectX 10, Jones & Bartlett, 2008

GRAPHICS PROGRAMMING LAB

The students are expected to complete the following exercise and submit the record work

- Write a program to create the Win32 Window.
- Write a program to create the Direct X Window.
- Write a program to drawing triangle, square and rectangle using vertex buffer.
- Write a program to drawing the cube using index buffer.
- Write a program to apply colour for the vertices.
- Write a program to apply the texture for the square or a rectangle.
- Write a program to apply blending for images.
- Write a program to make a sprite using the sprite class.
- Write a program to move the sprites left, right, top and bottom.
- Write a program to find the collision between the sprites and boundaries.
- Write a program to add a sound using multi-threading.
- Write a program to create the Flexible camera using class and objects.
- Write a program to create a cube using mesh.
- Write a program to create a progressive mesh using the X file.
- Write a program to move & rotate the mesh.
- Write a program to make a 3D terrain.
- Write a program to make a character to move on the terrain.
- Write a program to get the particle effects (fire, snow, particle gun).

WEB TECHNOLOGY

UNIT - I :

Web Standards: Web Standards - Overview – History - Standardization Process- standards publications and Bodies – Non – Standard and vendor Proprietary pressures - HTML5 vs W3 Standards, HTML5 comparison

UNIT – II :

Introduction: Introduction to HTML & Dreamweaver, Elements - Basic Tags – Text – Formatting – Attributes – Font – Text Links – Comments – Lists – Tables – BG Color – Color Codes – Color Chart – Background - Web Forms: Forms – Input – Text Fields – Password – Reset – Submit – Checkboxes – Radio – Select – Hidden Fields – Text Areas

UNIT – III :

Special Tags: Body - Music Codes - Video Codes - Meta - Style - Div - Layouts - Frames - Entities - Scripts - Formatting Tags : Bold - Paragraphs - Headings - Line Breaks - Horizontal Rule - Email - Italic - Code - Superscript - Subscript

UNIT – IV :

Image: Adding Graphics in the Web page using image - using Source - control size of Image - ALT content of the image - Inline Image - Floating Image - Border of image - Manage Horizental and Vertical Space of the image -Image as Hyperlink - Creating Image Map - Creating Animated Images.

UNIT – V :

CSS: Introduction to Style Sheet - Id & Class – Styling : Backgrounds – Text – Fonts – Links – Lists – Tables - Box Model – Border – Outline – Margin – Padding - Grouping/Nesting – Dimension – Display – Positioning – Floating – Align - Navigation Bar - Image Gallery

REFERENCES

- Eric T Freeman, Elisabeth Freeman, Elisabeth Robson, Head First HTML with CSS & XHTML, O'Reilly Media; First Edition, 2005
- Elizabeth Castro , HTML, XHTML, and CSS, Peachpit Press; 6 edition . 2006
- Wendy Willard, HTML A Beginner's Guide, McGraw-Hill Osborne Media; 4 Edition, 2009
- Eric A. Meyer, CSS: The Definitive Guide, O'Reilly Media; Third Edition , 2006
- David Sawyer McFarland, CSS3: The Missing Manual (Missing Manuals), O'Reilly Media; Third Edition, 2013

INTRODUCTION TO JAVA

UNIT I :

Introduction to Java - Tools and Explanation of First Program and structure - OOPs Concepts : Class and Objects - Data Abstraction and Encapsulation – Inheritance - Polymorphism - Dynamic Binding - Message Passing - Tokens Of Java: Keywords –Identifiers – Operators - Character set – Separators - Data Types - Primitive and Non Primitive Data Types

UNIT II:

Control Statements : Conditional - Iterative and Jumping Statements – Arrays: Types of Arrays - Operation with arrays - Type Casting and Wrapper classes - Math and String Class - Class and Objects – Constructors - Static and Non Static Members - Intro to this keyword.

UNIT III:

Inheritance and Types of Inheritance - Intro to super keyword - Polymorphism : Method Overloading and Overriding - Abstract and Final classes - Introduction to Collections and Generic Classes – ArrayList – Stack – Vectors – Enumerations - Date

UNIT IV :

Thread Management - Main Thread – Creating a Thread - Multithreading – Inte Thread Communication - Synchronization – Join – Yield - Introduction to Interfaces – Virtual Method - Introduction to Exception Handling - Types of Exceptions - Assertions – Try – Catch – Throw – Finally - Throws

UNIT V :

Windows Applications: Introduction to Frames and Applets - Introduction to Java Drawing API - Introduction to AWT Components - Adding Images - Introduction to Threads and Game Loop - Introduction to Layouts - Introduction to Listeners and Input Handling - Introduction to Swing.

REFERENCES

- Herbert Schildt, The Complete Reference, McGraw-Hill Osborne Media, 8th Edition, 2011
- Kathy Sierra, Berd Bates, Head First Java, O'Reilly Media , 2nd Edition, 2003
- Madhusudhan Konda, What's New in Java 7? , O'Reilly Media; 1 Edition, 2011
- Joshua Bloch, Effective Java, Addison-Wesley, 2nd Edition , 2008
- Herbert Schildt, Java, A Beginner's Guide, McGraw-Hill Osborne Media, 5 edition, 2011

WEB GAME USING HTML5

UNIT I :

JavaScript : Introduction to JavaScript - Popup boxes - Data type conversion - Functions in JavaScript - Validation Using JavaScript - Working with Arrays - Events in JavaScript - Image Swaps Graphical Navigational Bar – Rollovers - Pre Caching - Changing Buttons - Interactive Image Maps Using JavaScript

UNIT II :

Java script document object model - Introduction object in HTML - Event handling - Window object - Document object - Browser object - Form object - Navigator object - Screen object - Built in object - User defined object – Cookies - Anchor tables - links - check and radio button - Hyper link - Check box list, radio button list - Dropdown list - List box - Data grid - Request and response object

UNIT III:

JavaScript Links Using JavaScript to Manipulate the Layer Object (hide and show content, positioning) - Dynamic HTML JavaScript Style Sheets - Constructor Custom Objects JavaScript and XML Parsing AJAX Web Services

UNIT IV :

HTML5 : Introducing HTML5 - Discovering new features in HTML5-The benefit of creating HTML5 games - Getting Started with DOM - Based Game Development - Setting Up Your Development Environment - HTML5 and JS essentials

UNIT V :

Video - Video/DOM – Audio - Drag and Drop – Canvas - SVG - Canvas vs. SVG - Geolocation - Form Elements - Form Attributes - Web Storage - App Cache - Web Workers - The benefit of creating HTML5 games

REFERENCES

- David Sawyer McFarland, JavaScript & jQuery: The Missing Manual, Pogue Press, Second Edition, 2011
- Douglas Crockford, JavaScript: The Good Parts, O'Reilly Media; 1st edition, 2008
- Alexis Goldstein, Louis Lazaris, Estelle Weyl, HTML5 & CSS3 For The Real World, SitePoint Pty. Lt, 1st edition, 2011
- Makzan, HTML5 Game Development by Example, Packt Publishing, 2011
- Brian P. Hogan, HTML5 and CSS3, Pragmatic Programmers, LLC., 2010

CONSOLE GAME DEVELOPMENT

UNIT I :

About C# - Variables and Constants - Types of Variables - Data types – Operators - Conditional Constructs – Looping – Constructs – Arrays – Functions - Array List & List – Namespace - Custom Data Types – Enum – Structure – Class – Conversions - Static keyword - OOPS Concepts - Constructors & Destructors – Encapsulation – Inheritance – Polymorphism – Interfaces - Templates

UNIT II :

Introduction on to XBOX 360 - Develop Games for XBOX – Revising XNA and C# - Event Handling - My First XBOX Application - Deployment Menu Tools & Options - Steps involved in deployment process - Building & Deploying your own game in XBOX - Rebuilding XBOX game - Debugging & Optimizing XBOX game - Introduction of XNA 3D - What is Framework - XNA Game Programming Concepts, 2D Graphics - Common Gaming Terms, 2D & Screen Co-ordinate Systems, Drawing Sprites

UNIT III :

Game Screen design - Setting BG Image - Full screen - Screen Size - Window Title – ICON – Timer - Event Handling - Keyboard Events - Mouse Events - Gamepad Events - Player - Movement & Jump – Developing a prototype

UNIT IV:

Game Physics : Basic Physics – Movements, Speed & Velocity - Sprite Movement - Acceleration & De-Acceleration - Angle of Rotation - Basic Trigonometry - Collision Detection - Elastic Collision - Rectangle Collision - Circle Collision - Pixel Collision - Motion & Scrolling - Motion – Vertical – Horizontal – Projectile - Scrolling - Parallax Scrolling - 2D Particle System.

UNIT V:

Game Level editor: Introduction - Types of Level Editors in XNA - Class File Level Editor - Creating Class based Level Editor - XML File Level Editor - Introduction about XML - Creating XML based Level Editor - Notepad File Level Editor - Creating Notepad based Level Editor.

REFERENCES:

- Alexandre Santos Lobao, Bruno Pereira Evangelista, Antonio Leal de Farias , Beginning XNA 3.0 Game Programming, Apress, 2008
- Ron Penton, Beginning C-Sharp Game Programming, Premier Press, Course Technology Ptr,2005
- Dan Clark, Beginning C# Object-Oriented Programming, Apress, 2011
- Aaron Reed , Learning XNA 4.0:Game Development for the PC, Xbox 360, and Windows Phone 7, O'Reilly Media, Inc., 2010
- Ian Millington , Artificial Intelligence for Games , CRC press; 2 Edition , 2009

CONSOLE GAME DEVELOPMENT LAB

The students are expected to complete the following exercise and submit the record work

- Create a connection between your PC and Xbox and pair it together using XNA game studio
- Write a C# program to establish connecting of 2 systems.
- Write a C# program for message passing between 2 systems.
- Write a C# program to add audio & video files to XNA project
- Write a C# program which depicts either real time or turn based multiplayer game exercise.
- Write a XBOX sample game exercise using C# & XNA. Also deployment of the same.

MOBILE GAME TECHNOLOGY

UNIT I :

Introduction: Overview of open source - License Issues - MPL – GPL – LGPL etc., -Contrasting and comparing open source vs. traditional development methodologies - Mobile Application Development Overview - Mobile Devices Profiles - Mobile Software - Options for development

UNIT II :

Targeting Android : The Big Picture - Introducing Android - Stacking up Android - Booting Android Development - An Android application - Development Environment - The Android SDK - Building an Android application in Eclipse - The Android Emulator – Debugging

UNIT III :

User interfaces - Activity Life Cycle - Creating the Activity - An Overview of User interfaces
Using XML Layouts - Selection Widgets - Date and Time Tabs - Using Menus - Using Fonts - The Web View and the Web Kit Browser - Dialog Boxes: Alert Dialog & Toast - Using resources - Intents and services - Working with Intent classes - Listening in with broadcast receivers - Building a Service - Performing InterProcess Communication - Storing and retrieving data - Using preferences - Using the File System - Persisting data to a database - Working with Content Provider classes

UNIT IV :

Multiple Activities-Threads-Messages Between Threads- Handlers -Services -App Widgets-Alerts-User Interface Layout -Resource Directories and General Attributes -Text Manipulation-Other Widgets- User Interface Events-Event Handlers and Event Listeners -Advanced User Interface Libraries- Implementing Game Play Components

UNIT V :

Sprite Drawing - Movements- Animation - Score Updation - Life Updation - Setting Timer -Multimedia Techniques - Images - Audio -Video- Hardware Interface – Camera - Other Sensors – Telephony -Bluetooth – Networking - Using SMS - Using Web Content - Social Networking - Data Storage Methods -Shared Preferences - SQLite Database - Content Provider - File Saving and Loading - Location Based Services

REFERENCES:

- J. F. DiMarzio, Practical Android 4 Games Development, Apress, 1st Edition, 2011
- Vladimir Silva, Pro Android Games, Apress; 2nd Edition, 2012
- James Steele, Nelson To, The Android Developer's Cookbook, Addison-Wesley Professional, 1st Edition , 2010
- Jayme Schroeder, AndEngine for Android Game Development Cookbook, Packt Publishing, 2013
- Mark L. Murphy, Beginning Android 2, Apress, 1st Edition, 2010

COMPUTER COMMUNICATION NETWORKS

UNIT I :

Introduction to Computer networks: LAN,WAN, IEEE 802 standards, LLC, MAC layer protocols – CSMA/CD Ethernet, Token Bus, Token Ring, X .25 Protocols, Architecture And Layers of Protocol, Repeater, Bridge, Routes and Gateways, Routing Algorithms. Introduction to wireless and mobile networks: WLAN and its acceptance, History and evolution of mobile radio systems, Types of mobile wireless services/systems – Cellular, WLL, Paging, Satellite systems, Standard, Future trends in personal wireless systems. Architecture of CDMA, GSM and WCDMA

UNIT II :

ISO reference model, Open system standard, Transmission of Digital Data – Electrical Interface, MODEMS, Line Configuration, Encoding and Decoding, Multiplexing, Error Detection and Correction (CRC). Presentation layer – Data Security, Encryption/Decryption, Authentication, Data Composition, Application layer protocols – MHS, File transfer, Virtual terminal,Flow control and error control, stop and wait, Synchronous protocols – Character Oriented and Bit oriented.

UNIT III :

Network security and firewalls - client server network security - firewalls and network security - data and message security - encrypted documents and electronic mail. The internet as a network infrastructure. Security over wireless and Bluetooth, Private key and public key, PIN based handshaking protocol, WEP, WPA and WPA2

UNIT IV :

Electronic Commerce Framework, Traditional vs. Electronic business applications, the anatomy of E-commerce applications. Network infrastructure for E-Commerce - components of the I-way - Global information distribution networks - public policy issues shaping the I-way. The Business of the internet commercialization. Electronic Commerce and world wide web, consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI),EDI applications in business ,EDI and E-commerce EDI implementation. Intraorganizational Electronic Commerce supply chain management. Electronic Commerce catalogs, Document Management and digital libraries.

UNIT V :

Types of Network Multi-player Games - Popular Network Multi-player Games - Connecting & Communicating - Sign-In & Creating(Hosting) session - Finding & Joining session - Host Starting Game - Handling Messages - Multi Player Games - Developing Real-time Network Games - Developing Turn-Based Network Games

REFERENCES

- R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley, 1996.
- Behrus A. Forouzan etal, "Data Communication and Networking", 2nd Edition, Tata McGraw-Hill, 2000.
- K. Feher, Wireless Digital Communication, Prentice Hall of India, New Delhi, 1995.
- Doug Lowe, Networking All-in-One For Dummies, For Dummies, 5th Edition, 2012
- Andrew S. Tanenbaum, Computer Networks, Prentice Hall, 4th Edition, 2002

MOBILE GAME DEVELOPMENT USING IOS

UNIT I:

Introduction of C Programming - Introduction to Objective-C: Tools and Explanation of First Program and structure - Tokens Of Objective-C: Keywords –Identifiers – Operators - Character set – Separators - Data Types: Primitive and Non Primitive Data Types

UNIT II :

Control Statements: Conditional - Iterative and Jumping Statements – Arrays: Types of Arrays - Advantage of Array Objects - Using C Arrays - Expanding to multidimensional arrays - Operation with arrays - Structures and Unions

UNIT II :

Introduction to Classes - Objects and Methods - Introduction to Properties: static and non static fields and methods – Constructors : Overloading Constructors - Introduction To self Keyword - Introduction to Inheritance - Method Overloading and Overriding

UNIT III :

Introduction to Categories and Protocols - Introduction to Exception handling - Introduction to Macros and Preprocessor statements - Introduction to selectors - Introduction to Collections and generic class - Introduction to Wrapper Classes - Introduction to Math - String – Array – Classes - Introduction to Memory Management - Copying Objects

UNIT V :

Introduction to IOS - Introduction to XCode - Templates and coding habits - Introduction to cocos2D setup - Sprites - Actions and Touch input handling - Scenes – Layers - Menus and Font handling - Sprite sheet animation and sound - Making a Game

REFERENCES

- Neal goldstein, Objective – C For Dummies, Wiley Publishing, Inc. 2009
- Aaron Hillegass, Objective-C Programming: The Big Nerd Ranch Guide, Big Nerd Ranch Guides, 1st Edition, 2011
- Stephen G. Kochan, Programming in Objective-C, Addison-Wesley Professional, 5th Edition, 2012
- Rod Strougo, Ray Wenderlich, Learning Cocos2D: A Hands-On Guide to Building iOS Games with Cocos2D, Box2D, and Chipmunk, Addison-Wesley Professional, 1st Edition, 2011
- Roger Engelbert , Cocos2d-X by Example Beginner's Guide, Packt Publishing, 2013

GAME ENGINES

UNIT I:

Kismet and Matinee : Beginning with Visual Scripting and Animation - Unreal Script : Variables - Actions - Events - Conditions -Kismet and Unreal Script - The Unreal Kismet Editor Interface - Unreal Matinee : Key Frames and Interpolation, User Interface - Scale form and Flash - Creating Menu User Interface -

Unit II :

The need for a Particle System - The Anatomy of the Particle System : Emitters , Particles - The Cascade Editor : The Main Menu and Toolbar , The Preview Pane , The emitter Pane - The Properties Pane - The Curve Editor Pane - Scripting with Unreal Script, UDK Scripting: Integrating ide: nfringe – Visual studio – Classes and actors – WorldInfo class – gameino class – Actor class

Unit III:

Building a project: Designing and planning – Creating third person camera – Player controller, spawn and pawn, camera – implementing Third Person camera – Pawn class, GameInfo class, Camera. Finishing Amending gameInfo: Time limit, functions and timers- Triggers, Extending triggers – Obstacle course

Unit IV:

Introduction to Unity Scripting Basics Fundamentals of Scripting in Unity - Variable - Operators and comparisons - Conditional Statements - Loopings - Functions - Naming Conventions **Controller scripts** Controller variables - Unity's MonoBehaviour class - Widget Move - Setting up Unity's Input Manager - Hooking up the camera - Graphical User Interface : Unity Triggers, Raycasting, Perfabs and instantiation,

UNIT V:

Unity: Assembling the Status Controller - Coroutines - Updating the Character Controller. Creating Inventory System, Health Systems, Winning, and Losing the Game, Unity Debugging, Optimization, and Builds

REFERENCES

- Alan Thorn, UDK Game Development, Course technology, 2012
- Thomas Mooney, Unreal Development Kit Game Design Cookbook, Packt Publishing Ltd, 2012
- Michelle Menard, Game Development with Unity, Course technology, 2012
- Adam Watkins, Creating Games with Unity and Maya, Taylor & Francis, 2012

GAME ENGINES LAB

The students are expected to complete the following exercise and submit the record work

- Design and build a planned level for UDK using BSP brushes and apply various materials with lights for interior
- Design and build a planned level for UDK using terrain and apply various materials with lights for exterior
- Write visual scripts and unreal script to implement a score system and trigger based doors in your levels
- Write a GUI and integrate to the existing level and check level linking between them
- Develop an simple terrain based level with custom textures in Unity
- Write a simple GUI for operating your level mechanics and script the game rules for a custom character in Unity
- Develop a 3D game prototype using unity or UDK with rules, levels, sounds and game play

SOCIAL APPLICATION

UNIT I :

Flash Games in Face book -Social Channels - Requests : Invites - Notifications in Turn-based games - Match Making - Social Trading - Feed stories - Open Graph - User Generated Content- Scores & Achievements APIs -Best Practices on Canvas - Monetization Strategies - Vanity Items - Functional Items and Buffs - Session Extensions

UNIT II:

Creating a Facebook Account - Understanding Facebook Layout and Terms - Setting Up Your Server - Adding the Developer Application - Understanding How Facebook Applications Work - Creating a New Application - Facebook Terms of Service Highlights - Using Facebook Tools - API Tab – XML – JSON - PHP - FBML Tab - Feed Preview Console Tab - Using Programming Tools

UNIT III :

Events – FBML – Feed – FQL - Friends – Groups - Marketplace - Notifications - Photos - Profile – Users - Error Codes - Data Store API

UNIT IV :

Facebook Markup Language Primer - Valid HTML Tags - FBML Tags – Conditionals - User/Group Information - Profile Specific - Embedded Media - Visibility on Profile - Tools - Forms - Other - Editor Display - Page Navigation - Dialog Boxes

UNIT V:

Layout Out the Project - Creating the Database - Designing the Database - Working with SQL - Jumping In - External Web Services - Game Review - Add Game - Publishing Feeds - Testing – Debugging - Scaling - Launching Your Application - Creating the About Page - Creating a Logo - Submitting for Approval - Publicizing Your Application

REFERENCES

- Wayne Graham, Facebook API Developers Guide, Apress, 1st Edition , 2008
- Jay Goldman, Facebook Cookbook, O'Reilly Media, 1st Edition, 2008
- Shashwat Srivastava, Apeksha Singh, Facebook Application Development with Graph API Cookbook, Packt Publishing, 2011
- Mark D. Hawker, Developer's Guide to Social Programming: Building Social Context Using Facebook, Google Friend Connect, and the Twitter API , Addison-Wesley Professional; 1st Edition, 2010

SOCIAL APPLICATION LAB

The students are expected to complete the following exercise and submit the record work

- Register your facebook account and generate the necessary steps for the same
- Create a Basic Application with necessary fields to collect user details
- Create a simple Facebook App and set up the server and display the message server running
- Develop basic database manipulations with Data Store API
- Test the FBML application for connectivity and attach your logo to the application

SOCIAL GAME DEVELOPMENT

UNIT I :

Introduction: The origin of php - How php better then other language? - How php works with the web server - Php tags – Web Development - Requirement of php web development - Web architecture: MVC model - API - URL

UNIT II :

Basic Development concepts : How Php script work? - Php Syntax – Datatype – Operator - Variable - Dynamic variable - String - Displaying information - Control Structure : If else statement - Switch case - Ternary operator - Looping statement - Nested control structure - Function Arrays String : String manipulation - Changing string to array Changing array to string - Games and Graphics

UNIT III :

OOPs Concept - Class and object - Access modifier - Properties of object - Encapsulation and abstraction – Inheritance – Polymorphism - Abstract class - Function overriding - State Management : Cookies Session - Destroying cookies and session Http management.

UNIT IV :

MYSQL – Introduction about Database - Data Types – DML – DDL - Aggregate functions - Data Time functions - Stored Procedure - Sub query and join - Playing with chess and databases - File System : Creating and deleting file - Reading and writing file - Working with file - Creating and deleting folder

UNIT V :

Non-Relational Databases - Creating and Opening a Database - Looping through the Database - Inserting an Entry into Your Database - Updating an Entry in Your Database - Deleting an Entry from Your Database - Chess Programming: A Quick Overview - Starting the Chess Game - Working with the Pieces - Getting the User Input and Modifying the Database -Working with regular Expression Basic regular expression - Matching patterns - Finding match - Replace match

REFERENCES

- Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre, Programming PHP, O'Reilly Media, 2nd Edition, 2009
- Lynn Beighley, Michael Morrison, Head First PHP & MySQL, O'Reilly Media, 1st Edition, 29, 2008
- Sergey Skudaev, Learn PHP Programming by Examples, Amazon Digital Services, Inc.
- George Schlossnagle, Advanced PHP Programming, Sams Publishing, 1st Edition , 2004
- Matt Rudledge, PHP Game Programming, Course Technology

ARTIFICIAL INTELLIGENCE

UNIT – I:

Introduction to Artificial Intelligence - The AI Problems - AI Technique - The Level of the Model - Criteria for success - Problems, Problem Spaces and Search : Defining the problem as a State Space Search - Production System Characteristics - Issues in the Design of Search Programs.

UNIT II:

Game Artificial Intelligence: Types of AI - Roaming AI - Patterned Roaming , Chasing & Evading - Backtracking - Creating Grid Based Canvas - Behavioral AI - State change - Strategically AI - How to Create Strategically AI in Games -

UNIT III:

The importance of good Game AI. The differences between Game AI and so called 'real' or Academic AI and their relative advantages and disadvantages. Deterministic & Non deterministic, consideration for Game AI, & AI systems

UNIT IV :

Pathfinding, including A* and its derivatives, Flocking and Stearing, Rule Based Systems, Finite State Machines. Patterning & Way point, Chasing & Evading Fuzzy Logic and Fuzzy State Machines, Genetic Algorithms, Artificial Neural Networks. Rule based AI

Unit V:

Applied AI : Combining AI techniques to produce A-life and Intelligent Agents - Strategical AI : The Future for AI in games - Create Strategical AI in Games

REFERENCES

- Elaine Rich , Kevin Knight , Shivashankar B Nair , Artificial Intelligence Tata McGraw-Hill publishing, 2009
- Alan Garnham , Artificial Intelligence: An Introduction, Taylor & Francis, 1988
- David L. Poole, Alan K. Mackworth , Artificial Intelligence: Foundations of Computational Agents, Cambridge University Press, 2010
- Rich , Artificial Intelligence 3E (Sie), Tata McGraw-Hill Education, 2004

GAME TESTING LAB

The students are expected to complete the following exercise and submit the record work

- Test the given 3 games and list the 10 Art and graphics errors in it and also post the nature of the bug, your points of consideration and steps to recreate them
- Test the given 3 games and list the 10 game play and game mechanics errors in it and also post the nature of the bug, your points of consideration and steps to recreate them
- Test the given 3 games and list the 10 performance and quality errors in it and also post the nature of the bug, your points of consideration and steps to recreate them
- Test the given 3 games and list the 10 functionality and flow errors in it and also post the nature of the bug, your points of consideration and steps to recreate them
- Test the given 3 games and list the 10 user control and user experience bugs in it and also post the nature of the bug, your points of consideration and steps to recreate them
- Test the given 3 games and list the 10 sound and packaging error in it and also post the nature of the bug, your points of consideration and steps to recreate them

INTERNSHIP

- Report/Presentation and viva voice

ELECTIVE - I

WORLD DESIGN USING GAME ENGINE

UNIT I:
UDK Fundamentals: Introduction to UDK - Project Setup and Test Environment - UDK and Project Setup - Directory Overview - IDE Overview - Menus - Panels - Tools - Viewports - World Actors - Content Browser .

Unit II:
BSP Brushes , CSG and Textures: BSP Brushes - The Builder Brush - CSG - Components of Geometry - Modeling in Geometry Mode - Creating a CSG Environment Using BSP Brushes - Materials and Textures - Material Channels - Materials and Algorithms - UV Mapping - Project: Material and Mapping.

Unit III:
Static Mesh Actors: The Anatomy of a static Mesh : The Mesh Component , The Collision Mesh Component , The UV Sets Component , static Mesh Versus CSG , static Mesh Actors : static Mesh for Discrete Objects , static Mesh Actors for Composite Objects - Using Static Meshes

UNIT IV:
Audio in Video Game - Wave Sound and Sound cues - Adding Audio to the bridge Level Lighting: The Addictive Color Space - Illumination: Direct and Indirect - Normal Mapping - Unreal Light mass - Static, Dynamic, and Composite Dynamic Lighting - UDK Light Types.

Unit V:
Unity Fundamentals: Introduction to Unity - Overview of Unity: The Project View - The Hierarchy View - The Inspector - The Toolbar - The Scene View - The Game View - The Animation View - Assembling the Game Assets: Setting the stage with Terrain- Unity's Terrain Engine - Customizing Terrain - Lighting and Shadows. Unity sky fog and atmospheric effects

REFERENCES

- Alan Thorn, UDK Game Development, Course technology, 2012
- Thomas Mooney, Unreal Development Kit Game Design Cookbook, Packt Publishing Ltd, 2012
- Michelle Menard, Game Development with Unity, Course technology, 2012
- Adam Watkins, Creating Games with Unity and Maya, Taylor & Francis, 2012

SCIENCE FOR GAMING

Unit-1:

Game Physics : Basic Physics – Movements, Speed & Velocity , Sprite Movement, Acceleration & De-acceleration ; Angle of Rotation; Basic Trigonometry;

Unit-2:

Collision Detection - Elastic Collision , Rectangle Collision , Circle Collision , Pixel Collision ; Motion & Scrolling - Motion, Vertical, Horizontal, Projectile, Scrolling , Parallax Scrolling ; 2D Particle System.

Unit-3:

Game Artificial Intelligence: What is AI ; Types of AI ; Roaming AI - Patterned Roaming , Chasing & Evading , Backtracking , Creating Grid Based Canvas ; Behavioral AI - State change ; Strategical AI - How to Create Strategical AI in Games .

Unit -4:

Game Level editor: Introduction ; What is a Level , What is Level Editor , Where & Why we use a Level Editor , How to Create Different Types of Level Editors in XNA ; Class File Level Editor - Creating Class based Level Editor ; XML File Level Editor - Introduction about XML , Creating XML based Level Editor ; Notepad File Level Editor - Creating Notepad based Level Editor.

Unit -5:

Game Networking: Introduction Network Topology ; Choosing Network Topology; Types of Network Multi-player Games ; Popular Network Multi-player Games; Connecting & Communicating - Sign-In & Creating(Hosting) session , Finding & Joining session , Host Starting Game , Handling Messages ; Multi Player Games - Developing Real-time Network Games , Developing Turn-Based Network Games.

REFERENCES:

- Wendy Stahler Beginning Math and Physics for Game Programmers , New Riders , 2004
- Ian Millington , Artificial Intelligence for Games , CRC press; 2 Edition , 2009
- Jouni Smed ,Harri Hakonen Algorithms and Networking for Computer Games , Wiley; 1 edition , 2006

ELECTIVE - II

RESEARCH METHODS

UNIT I:

The meaning of research – objectives of research – motivation in research – types of research –research approaches – significance of research – Research methods versus methodology – Research and scientific method – Importance –research process – criteria of good research – Problems faced

Unit II:

Define research problem – selecting a problem – defining the problem – Techniques in defining a problem – Designing research – Meaning of research design – need for research design – features of good design - features – concepts of research design – different research designs – Basic principle of experimental designs

Unit III:

Sampling design – Census and sample survey - steps in sampling design – select a sampling procedure – Good sample design – Types of sample design – Random sample design – Complex random sample design. Measurement in research: Scales – Scaling – Scale classifications – important scaling techniques

Unit IV:

Data collection: Collection of primary data – observation method – Interview method – Collection through questionnaires – Collection through schedules – Difference between questionnaires and schedules – Other methods of data collection – Collection of secondary data – Selection of appropriate method for data collection

Unit V:

Processing data – Elements and types of analysis – statistics in research – simple analysis – Interpretation and report writing: - Meaning of interpretation – why interpretation? – Techniques of interpretation – precaution in interpretation – Report writing – significance – different steps of report writing – layout of research report – types of report – Oral presentation – Mechanics of research report writing – Final presentation

REFERENCES:

- C.R. Kothari, research methodology: Methods and techniques, second edition, new age international LTD, 2004
- Kenneth S. Bordens, Research design and Methods : A process approach, Tata McGraw-Hill, 2006
- John Kuada, Research Methodology: A Project Guide for University Students, Sam funds literature, 2012
- Wayne Goddard, Stuart Melville , Research Methodology: An Introduction, Juta and Company Ltd,2004

DISSERTATION

UNIT I:
Introduction to Research – Meaning of Research – Objectives of Research – Characteristics of research - Types of Research – Research Approaches – Significance of Research – Research process – criteria of good Research – Research methods Vs Methodology – research and scientific methods – how research is done

UNIT II :
Reviewing the literature – search for existing literature – review the literature selected – develop a theoretical framework – develop a conceptual framework - Research Problem – Selecting the Problem – Defining the Problem – Research Design – Need for Research Design – Different Research Design – Research Proposal – Formats of research proposal.

UNIT III :
Variables – definition of variables – difference between a constant and variable – types of variable – Hypothesis- definition of a hypothesis – functions of hypothesis – Characteristics of hypothesis – types of hypothesis - Sampling Design – Implications of Sampling Design – Steps in Sampling Design – Criteria of selecting a sampling procedure – Types of Sampling Design.

UNIT IV:
Methods of Data collection – Collection of Primary Data – Observation Method, Interview Method , Questionnaires Method , Other methods of data collection – Collection of secondary data – selection of Appropriate Method for data collection - Processing and Analysis of Data – Processing Operations – Elements and types of analysis – statistics in research

UNIT V :
Interpretation and Report Writing – Meaning of Interpretation , Technique of Interpretation – significance of Report Writing - Different steps in writing report – layout of the research report – types of research report – Evaluation – intervention – development – evaluation process , types of evaluation from a focus perspective.

REFERENCES

- Richard Rickitt and Ray Harryhausen, “Special Effects - The History and Technique,
- Billboard Books”, Second edition, 2007
- Colin Dempsey, “The Ultimate Encyclopaedia of Mythical Creatures, Barnes and
- Noble Books”, 2006
- Steve Katz , “Film Directing Shot by Shot”, Michael Wiese, 2004
- Mitch Mitchell ,”Visual Effects For Film and Television”, Focal Press, First Edition

ELECTIVE - III

PROJECT MANAGEMENT

UNIT I :

Project - Project Management - Concept and characteristics of a project - importance of project management - types of project - project life cycle - Stages of Project - Statement of Work - Work Breakdown Structure

UNIT II :

Project Planning - Project Planning and Scheduling techniques - developing the project network - Limitations - Flow chart – Gantt Chart - budgeting – preparing estimates - Resource Scheduling - Resource allocation method - splitting and multitasking - Multi project resources scheduling

UNIT III :

Project performance Measurement and Control - Monitor and assess project performance - schedule - and cost – performance measurement. methods to monitor - evaluate - and control planned cost and schedule performance

UNIT IV :

Managing Project Teams - Team development process - team building process - stages in developing a high performance project team - project team pitfalls – team role – team dynamics – communicating with Team – working within the organization

UNIT V :

Project Quality Management - Concept of project quality - responsibility for quality in projects - quality management at different stages of project - tools and techniques - Quality Management Systems - TQM in projects

REFERENCES

- Clifford F Gray, Erik W Larson, “Project Management-The Managerial Process” Tata Mcgraw-Hill Publishing Co Ltd
- Jack Meredith, Samuel J. Mantel Jr. “Project Management- A Managerial Approach” John Wiley and Sons
- John M Nicholas “Project Management For Business And Technology” Prentice Hall Of India Pvt Ltd
- James P Lewis “Project Planning, Scheduling And Control” Tata Mcgraw-Hill Publishing Co Ltd

PROFESSIONAL PRACTICE

UNIT I:

Soft skills development : Soft Skill vs Hard Skill - Importance of soft skill - Communication – Assertive Communication – Inter-personal Communication – Corporate Communication - Listening Skill – Writing Skill – Presentation Skill – Public Speaking – Body Language - Professional Ethics

UNIT II:

Motivate yourself – Motivate Others – Constructive feedback - Sandwich feedback - Team Management – How to be a team player - Leadership qualities - Enhancing Creativity - Time & Stress Management - Enhancing Employability – What is the expectation of any organisation - Employee Engagement

UNIT III:

Types of Business Organisation, Private Sector and Public Sector – Firms in the Private sector – Key Differences – Co-operatives – Franchises – Not for Profit Businesses - Writing Resume for different kind of organisation – Types of resumes

UNIT IV:

Group Discussion - Definition of Group Discussion - Prerequisites of a Group - Benefits in Group Discussion - Salient features – Effective communication – Non verbal Cues/Communication – How to take control of the discussion - Do's and Don'ts in Group Discussion - Important points in Group Discussion

UNIT V:

Interview Techniques - Interviewing Methods – In-person Interview - Phone Interview – Panel Interview - Interview Problems – Interview Questions – Problem solving skill - How to give sensible and creative solutions for the questions - Interview Tips & Tricks - Panel Interviews - Confidence – Professional/Corporate Etiquette - Dress Code for a Job Interview

REFERENCES

- M.S. Rao, "Soft Skills: Enhancing Employability: Connecting Campus with Corporate", I.K. International Publishing House PVT. Limited, 2010
- Beverly Amer, "New Perspective: Portfolio Projects for Soft Skills", Cengage Learning, 2011
- Beverly Amer, "Soft Skills at Work: Technology for Career Success", Cengage Learning, 2008