J C Bose University of Science and Technology, YMCA,

Faridabad, Haryana

Department of Computer Applications

(Faculty of Informatics and Computing)

Scheme and Syllabus

B.Sc. Animation and Multimedia

(Semester V – VIII)

J. C. BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA, FARIDABAD
B.Sc. (ANIMATION AND MULTIMEDIA)
Scheme of Studies/Examination
Semester- 5

Sr. No	Category	Course code	Course Title	Course Requirements (hrs)			Sessional Marks/End Term Marks		Total Marks	Credits
				L	P	Total	Sessional	End Term		
1	Discipline Specific-Major	AMU-301-V	Fundamentals of Visual Effects	3	-	3	25	75	100	3
2	Discipline Specific-Major	AMU-303-V	UI Design	3	-	3	25	75	100	3
3	Discipline Specific-Major	AMU-305-V	Python Programming	3	-	3	25	75	100	3
4	Discipline Specific-Major	AMU-307-V	Interior & Exterior Design	-	8	8	15	35	50	4
5	Discipline Specific-Minor	AMU-309-V	Motion Graphics	-	8	8	15	35	50	4
6	Discipline Specific Major Lab	AMU-311-V	UI Design Lab	-	2	2	15	35	50	1
7	Discipline Specific Major Lab	AMU-313-V	Fundamentals of Visual Effects Lab	-	2	2	15	35	50	1
8	Discipline Specific Major Lab	AMU-315-V	Python Programming Lab	-	2	2	15	35	50	1
9	Skill Enhancement Courses	AMU-317-V	Minor Project		4	4	15	35	50	4
			Total	**09**	**26**	**35**	**165**	**435**	**600**	**24**

J. C. BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA, FARIDABAD
B.Sc. (ANIMATION AND MULTIMEDIA)

Scheme of Studies/Examination
Semester- 6

Sr. No	Category	Course code	Course Title	Course Requirements (hrs)			Sessional Marks/End Term Marks		Total Marks	Credits
				L	P	Total	Sessional	End Term		
1	Discipline Specific-Major	AMU-302-V	3D Visual Effects (Dynamics & Particles)	3	-	3	25	75	100	3
2	Discipline Specific-Major	AMU-304-V	User Experience Design	3	-	3	25	75	100	3
3	Discipline Specific-Major	AMU-306-V	3D Animation	3	-	3	25	75	100	3
4	Discipline Specific-Major	AMU-308-V	Game Design-I (3D Asset Development)	-	8	8	15	35	50	4
5	Discipline Specific-Minor	AMU-310-V	3D Rigging and Skinning	-	8	8	15	35	50	4
6	Skill Enhancement Courses	AMU-312-V	Storyboarding & Animatics Lab	-	4	4	15	35	50	2
7	Discipline Specific Major Lab	AMU-314-V	3D Visual Effects (Dynamics & Particles)Lab	-	2	2	15	35	50	1
8	Discipline Specific Major Lab	AMU-316-V	User Experience Design Lab	-	2	2	15	35	50	1
9	Discipline Specific Major Lab	AMU-318-V	3D Animation Lab	-	2	2	15	35	50	1
			Total	**09**	**26**	**35**	**165**	**435**	**600**	**22**

J. C. BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA, FARIDABAD
B.Sc. (ANIMATION AND MULTIMEDIA)

Scheme of Studies/Examination
Semester- 7

Sr. No	Category	Course code	Course Title	Course Requirements (hrs)			Sessional Marks/End Term Marks		Total Marks	Credits
				L	P	Total	Sessional	End Term		
1	Discipline Specific-Major	AMU-401-V	Game Design-II (Game Development)	3	-	3	25	75	100	3
2	Discipline Specific-Major	AMU-403-V	3D Visual Effects (Fluids Effects)	3	-	3	25	75	100	3
3	Discipline Specific-Major	BCG-425-V	Virtual Reality & Augmented Reality	3	-	3	25	75	100	3
4	Discipline Specific-Major	AMU-405-V	INNOVATION AND Start-ups	4	-	4	25	75	100	4
5	Discipline Specific-Major	AMU-407-V	Advance Digital Compositing	-	8	8	15	35	50	4
6	Discipline Specific-Minor	AMU-409-V	Advance 3D Animation	-	8	8	15	35	50	4
7	Discipline Specific Major Lab	AMU-411-V	Game Design-II (Game Development) Lab	-	2	2	15	35	50	1
8	Discipline Specific Major Lab	AMU-413-V	3D Visual Effects (Fluids Effects) Lab	-	2	2	15	35	50	1
9	Discipline Specific Major Lab	BCG-435-V	Virtual Reality and Augmented Reality Lab	-	2	2	15	35	50	1
			Total	**13**	**22**	**35**	**175**	**475**	**650**	**24**

J. C. BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA, FARIDABAD
B.Sc. (ANIMATION AND MULTIMEDIA)

Scheme of Studies/Examination
Semester- 8

Sr. No	Category	Course code	Course Title	Course Requirements (hrs)			Sessional Marks/End Term Marks		Total Marks	Credits
				L	P	Total	Sessional	End Term		
1	Discipline Specific-Major	AMU-402-V	Research Project/Dissertation/ Industrial Internship*				300	200	300	20
2	MOOC*									4
			Total				**200**	**300**	**500**	**24**

1. Major Project: Industrial Internship/Research Project /Dissertation/ Teaching Assistantship in the same or another institution.
2. Students who will opt for Research Project/Dissertation of 6 month will do one Discipline Specific Major Course through MOOC and these will be awarded BSc (A&M) Honors with Research. This MOOC course can be qualified/completed during 5th to 8th semester.
3. Students who will opt for simple industrial internship of 6 month will also do one Discipline Specific Major Course through MOOC and these students will be awarded BSc (A&M) Honors. This MOOC course can be qualified/completed during 5th to 8th semester.
4. The selection of MOOC course in every semester will be done after due permission from the department.

Procedure for Annual Examination and continuous Assessment of:

A. Annual Exams Marks

Evaluation	50 Marks
Seminar	50 Marks
Viva	100 Marks

B. Continuous Assessment Marks

Assessment by Institute Faculty	100 Marks
Assessment by Guide	150 Marks
Conduct Marks	50 Marks
TOTAL	500 Marks

Semester -V

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER
CODE: AMU-301-V
SUBJECT NAME: Fundamentals of Visual Effects

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To study about different about basic knowledge of visual effects, compositing.
2. Toanalyzeandapplydifferenttypesofmethodsanddifferenttypesofsoftware.
3. To create motion graphics using different types animation.
4. To acquire the knowledge visual development for films.

Unit-01
Introduction to visual development. What is a role of a visual artist and what is his/her work profile? What are the basics of visual development? Visual development artists work with creative departments to develop backgrounds, colors, lighting, environments, and props for films, animated pieces and more. They use animation, illustration, drawing, and design skills to create visuals that convey ideas about how they envision the look in the final outcome.
Unit-02
History of visual development. What were the early stages of visual development? The artist who pioneered in the field. Milestones in the field visual development.How to develop a concept? How to gather the set of references in order to develop a concept? How to create a pipeline for the project? What is the importance of concept in visual development?
Unit-03
How to create mood and tone for a visual development? The importance of selecting a colour palette and its utilization. How to use lighting to make a visually appealing the work?How to set tone for various scenes, settings, landscapes and building? How to develop a colour script?
Unit-04
How to make a mind map? How to brainstorm for a character, environment or prop? What is the importance of making a mind map and what all details should be included? How to strengthen ones imagination? What is the importance of observation? How to combine imagination.
Unit-05
How to strengthen ones imagination? What is the importance of observation? How to combine imagination and observation to create surreal visuals? What should be the level of interactivity?How to create an environment? The things to keep in mind while creating environment. How to make impactful visually developed environment?

Course outcome:

A. Students will be able know about visual effects compositing and motion graphics.

B. Students will be able know about different styles and treatment of content in visual effects, compositing.
C. Students will be able to analyze the importance of cognitive in visual effects, compositing and motion graphics in films and videos.
D. Students will be able to apply to create effective visual effects, compositing films and videos.

	CourseOutcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5					✓

Learning Recourses:

1. VISUAL EFFECTS IN A DIGITAL WORLD BY KAREN E. GOULEKAS
2. VFX FUNDAMENTALS: VISUAL SPECIAL EFFECTS USING FUSION 8.0 BY WALLACE JACKSON
3. (DIGITAL] VISUAL EFFECTS AND COMPOSITING BY MARTIN WATT AND ERWIN COUMANS

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER

CODE: AMU-303-V

SUBJECT NAME: UI Design

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To understand the basics of web application interface design,
2. To inculcate the design-centric approach,
3. To understand the skill-based instruction centered around a visual communications perspective
4. To understand the different theories, tools, and techniques.

Unit-01
Introduction to Figma - Raster graphics - Performance Optimization - Color Calibration Workspace overview –Figma controls - Interface.
Unit-02
Color Scheme - Primary Color - Secondary colors - Neutral colors - Brainstorm - Typography - Web Safe Fonts - Font Themes - Size - Color and Contrast - Tracking - Leading - Soft Buttons - 3D Buttons - Realistic Buttons - Web Template Design - Components of a Web Page.
Unit-03
Logo Design Principles - Purpose - Target audience - Planning essentials - Web Layout Design - Rule of third - Rule of odds - Poster Design Principles - F shaped pattern - Visual Hierarchy - User friendly - Photoshop Etiquette - Stretching text and images – ProofreadMake easy to find.
Unit-04
UI Illustrations - Creating visual triggers - Creative storytelling - Emotional appeal - Aesthitic satisfaction - Mobile GUI Design - Mobile GUI Guidelines - Android UI Design - Screen Components - IOS UI Design - Animations - UI Animations in Photoshop - UI Animation in Illustrator.
Unit-05
Mockup Design - Responsive Web Design - Setting the stage - Basic mechanics - Typography and Layout - Navigation patterns - Advanced Enhancement -Performance - Page Designs - Metro UI Design - Mascot Design - Characters Purpose - Unique features - Exporting for Web, Mobile, Print - Design Optimization

Course outcome:

A. Students would be able to understand details a company's set of standards for writing, editing, formatting, and designing documents
B. Students would be able to understand brand awareness. Make yourself known and build awareness of your product or service.
C. Students would be able to implement the understanding of basic color theory to create an impactful composition to express or influence certain feelings or emotions through visual art.
D. Students would be able to design hi-fi prototypes that look and function as close to the final product.

	Course Outcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5					✓

Text Books/ Reference Books:

1. Diana MacDonald, "Practical UI Patterns for Design Systems: Fast- Track Interaction Design for a Seamless User Experience", Apress, 2019.

2. Jenifer Tidwell, "Designing Interfaces: Patterns for Effective Interaction Design" Second Edition, O'Reilly Media, Inc., 2010

3. R. Moore "UI design with Adobe Illustrator", Berkely, California: Adobe Press, 2013.

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER

CODE: AMU-305-V
SUBJECT NAME: Python Programming

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. Learn the syntax and semantics of Python Programming Language.
2. Write Python functions to facilitate code reuse and manipulate strings.
3. Illustrate the process of structuring the data using lists, tuplesand dictionaries.
4. Demonstrate the use of built-in functions to navigate the file system.

Unit-01
Basics of Python and Structure Types and mutability Python Installation and Working of it, get familiar with Python variables and data types, Operator understanding and its usage, detail study of Python blocks, conditional blocks using if, else and elif, looping with range, list and dictionaries. Hands-on organizing python code with function, modular approach in Python.
Unit-02
Exception, Testing and Debugging Handling if exceptions to handle the code cracks, handling and helping file operations, coding with the exceptional handling, and testing Anonymous method, Properties, Indexers, Exception Handling.
Unit-03
Classes and OOP Concepts Procedural and Object-Oriented Programming, Classes and working with instances, Method overloading, Polymorphism, importing internal module as well as external modules in the code Packages understanding and their usage, hands on with Lambda function in python coding with the use of functions, modules and external packages.
Unit-04
Algorithm and Data Structure Stack, Queue, Tree, ordered list, Introduction to Recursion, Divide and Conquer Strategy, Greedy Strategy, Graph Algorithms.

Course outcome:

A. Students would be able to apply various fundamentals for problem solving using python..

B. Students would be able to Implement modular programming and differentiate the mutability of various data types.
C. Students would be able to implement Create object-oriented solutions by applying various concepts like polymorphism, inheritance, and package with python programming.
D. Students would be able to Implement multithreading and manage security in Linux operating system.

		CourseOutcomes			
Course Objectives		A	B	C	D
	1	✓			
	2		✓		
	3			✓	
	4				✓
	5	✓			

Text Books/ Reference Books:

1. Starting Out with Python (2009) Pearson , Tonny Gaddis
2. Beginning PyhtonWrox Publication Peter Norton, Alex Samuel
3. Python Algorithms Apress, Magnus LietHetland,
4. Python Object Oriented Programming PACKT Press, Dusty Phillips
5. Python for Unix and Linux System Administration O'Relly, Noad Gift

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER

CODE: AMU-307-V
SUBJECT NAME: Interior & Exterior Design

No. of Credits: 4

L	**0**		**Internal Practical**	**15**
P	**8**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	History of interior furniture, Introduction to different structures layouts.
2.	Basic modeling, polygon and spiline, texturing and shaders.
3.	Interior design, layout design.
4.	Living room. Bed room design
5.	Kitchen, bathroom interior design.
6.	Exterior building design
7.	High-rays building exterior design.
8.	Lighting and rendering
	Mini-Projects/CaseStudy
9.	**Create interior and exterior walkthrough.**

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER
CODE: AMU-309-V
SUBJECT NAME: Motion Graphics

No. of Credits: 4

L	**0**		**Internal Practical**	**15**
P	**8**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	ADOBE AFTER EFFECTS. A basic introduction to the software. The software mostly used for. The key factors of software.
2.	SET UP A PROJECT IN AFTER EFFECTS. After effects interface, work area, timeline, the importance of various transition effects, set up a project and to import/ export files, edit parameters, menus and tools in after effects.
3.	VIDEO EDITING AND AFTER EFFECTS. add special effects to the videos, difference between After Effects and Premier, audio editing work in after effects.
4.	The various properties of layers, The different options in hiding and un-hiding layers. The different options in editing the parameters.
5.	ANIMATION AND KEY FRAMES. Title animation, create and edit text, text controls, other style features that can be used to enhance the characters types of texts available in After Effects, the differences between text layers and other layers.
6.	TIME CONTROL IN AFTER EFFECTS. time stretching, time remapping, Strobe, animate the value of Frame rate slider, apply the Time Difference effect to locate color Difference, Time Displacement.
7.	Character animation in after effects,To crate effects using shape layer,
8.	To crate effects using shape layer,
	Mini-Projects/CaseStudy
9.	**Create motion graphics explainer video.**

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER
CODE: AMU-311-V
SUBJECT NAME:UI Design Lab

No. of Credits: 1

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Design a UI for a Game website
2.	Design a UI for a user centric website
3.	Design a UI suitable for both mobile and PC
4.	Design a UI for a horror themed website
5.	Design a one pager UI for a website
6.	DevelopasimpleUI(Userinterface)menuwithimages,canvassprites and button.
7.	Design a one pager UI for a mobile, Design a mascot for an imaginary brand
8.	Design a UI compatible for IOS, Design a mock-up website for a service sector company
	Mini-Projects/CaseStudy
9.	**Create a mobile app layout design**

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER
CODE: AMU-313-V
SUBJECT NAME: Fundamentals of Visual Effects Lab

No. of Credits: 1

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Develop a concept. Gather some references such as photograph or a sketch.
2.	Create a mind map of an environment.
3.	Build a proper personality of a character and design the clothing or props the character.
4.	Select couple of blockbuster vexes films and write up a vfx film analysis.
5.	Create a project in after effects.
6.	Rotoscopy
7.	Rotopaint
8.	Matte painting
	Mini-Projects/CaseStudy
9.	**Create a visual effects Project.**

B.SC. (ANIMATION AND MULTIMEDIA) 5th SEMESTER
CODE: AMU-315-V
SUBJECT NAME: Python Programming Lab

No. of Credits: 1

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
	Aim: IntroducethePythonfundamentals,datatypes,operators,flowcontrolandexceptionhandlingin Python a) Writeapythonprogramtofindthebestoftwotestaveragemarksoutofthreetest'smarksacceptedfromthe user. b) DevelopaPythonprogramtocheckwhetheragivennumberispalindromeornotandalsocountthenumberof occurrencesofeachdigitintheinputnumber.
	Aim: Demonstratingcreationoffunctions,passingparametersandreturnvalues a) Defined as a function F as Fn = Fn-1 + Fn-2. Write a Python program which accepts avalue for N (where N >0) as input and pass this value to the function. Display suitableerrormessageiftheconditionforinputvalueisnotfollowed. b) Develop a python program to convert binary to decimal, octal to hexadecimal usingfunctions.
	Aim: Demonstrationofmanipulationofstringsusingstringmethods a) Write a Python program that accepts a sentence and find the number of words, digits,uppercaselettersandlowercaseletters. b)WriteaPythonprogramtofindthestringsimilaritybetweentwogivenstrings **SampleOutput:** Originalstring: PythonExercises PythonExercises Similaritybetweentwosaidstrings: **SampleOutput:** Originalstring: PythonExercises PythonExercise Similaritybetweentwosaidstrings:1.0 0.967741935483871
	Aim: Discussdifferentcollectionslikelist,tupleanddictionary a) Writeapythonprogramtoimplementinsertionsortandmergesortusinglists b) Writeaprogramtoconvertromannumbersintointegervaluesusingdictionaries.
	Aim: Demonstrationofpatternrecognitionwithandwithoutusingregularexpressions a) Writeafunctioncalledisphonenumber()torecognizeapattern415-555-4242withoutusingregularexpressionandalsowritethecodetorecognizethesamepatternusing regular expression.

	b) Develop a python program that could search the text in a file for phone numbers(+91……000000)andemail addresses(sample@gmail.com)
	Aim: Demonstrationofreading,writingandorganizingfiles. a) Writeapythonprogramtoacceptafilenamefromtheuserandperformthefollowing operations 1. DisplaythefirstNlineofthefile 2. Findthefrequencyofoccurrenceofthewordacceptedfromtheuserinthefile Writeapythonprogramtocreate aZIPfileofaparticularfolderwhichcontainsseveralfilesinsideit.
	Aim: Demonstrationoftheconceptsofclasses,methods,objectsandinheritance a) Byusingtheconceptofinheritancewriteapythonprogramtofindtheareaoftriangle,circleandrectangle. b) Write a python program by creating a class called Employee to store the details ofName,Employee_ID,DepartmentandSalary,andimplementamethodtoupdatesalaryofemployeesbelonging toagivendepartment.
	a)Write apython programtofindthewhetherthe given inputispalindrome ornot(forbothstringand integer)usingtheconceptofpolymorphismandinheritance.
	Aim: Demonstrationofworkingwithexcelspreadsheetsandwebscraping a) Writeapythonprogramtodownloadtheall XKCDcomics b) Demonstratepythonprogramtoreadthedatafromthespreadsheetandwritethedataintothespreadsheet
	Aim: DemonstrationofworkingwithPDF,wordandJSONfiles a) WriteapythonprogramtocombineselectpagesfrommanyPDFs b) WriteapythonprogramtofetchcurrentweatherdatafromtheJSONfile

Semester -VI

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-302-V
SUBJECT NAME: 3D Visual Effects (Dynamics & Particles)

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To understand uses of particles dynamics in visual effects.
2. To inculcate particles system in maya
3. To understand the nparticles and fields
4. To understand the Bullet Rigid and Soft Body Dynamics.
5. To develop effects according to the natural laws of dynamics

Unit-01
Introduction 3D Visual Effects (Dynamics & Particles).
Unit-02
Use emitters to generate moving or stationary particles in your simulations. Legacy particle system in maya. Workflow of particle system
Unit-03
nparticle system in maya. Workflow of nparticle system, different fields, uses of fields
Unit-04
Bullet Rigid and Soft Body Dynamics.
Unit-05
Use the Dynamic Relationships Editor to connect and disconnect dynamic relationships between dynamic objects, such as particles, nParticles, emitters, and collision objects. The Sprite Wizard simplifies the process for displaying a texture image or image sequences on nParticles.

Course outcome:

A. Students would be able to create particles dynamics effects for visual effects
B. Students would be able to implement Particles generation system
C. Students would be able to simulate large realistic particles dynamics effects.
D. Students would be able to create realistic dynamic simulation by using soft and rigid bodies
E. Students would be able to develop particle effects for movies.

	CourseOutcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5					✓

Text Books/ Reference Books:
• Fluid Simulation for Computer Graphics • Autodesk Maya 2023 Basics Guide

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-304-V
SUBJECT NAME: User Experience Design

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To Understand User Experience design
2. To learn User-Centered Focus in Design
3. To create Persona & Empathy Mapping
4. To integrate UX Research methodology
5. To develop Usability Testing in UX Design and Prototyping

Unit-01
What is User Experience, Dynamic Nature of UX, Differences between UX and UI, Factors that Influence User Experience, Different Roles related to UX in Industry and Tools used for each role (Photoshop, Sketch, Illustrator, Flash, Figma)
Unit-02
What is User-Centered Design? The process of User Centered Design (UCD) and Analysis (UCA) allows us as designers to understand the user problems and provide satisfying solutions to the users. We map the user's frustrations, likes, dislikes, environment and create a fulfilling solution. UCD Process Personas Scenario Map Customer Journey Story Board Use Case.
Unit-03
In design we interact with various users to understand the user problems. Persona's helps us to define an ideal user for our solution. This fictional user is culmination of all the User Research we performed on our target User. Empathy Mapping is the next step after creating Persona. We identify what the user thinks, feels, sees or hear. This gives us an in-depth analysis of users' behavior and environment.
Unit-04
What is UX Research? Why is UX Research Important? Qualitative Data and Quantitative Data used in UX Research Types of Research Methods, Expert Review User Interview Surveys and E-mail Surveys Few more methods covered
Unit-05
What is Usability Testing in UX Design, How is Usability Testing carried out by UX designer?Case Study on Google Maps As designs get finalized, we move to prototyping phase to create tap-able and clickable interactive prototypes to present to our stakeholders, customers and developers

Course outcome:

A. Understood User Experience design
B. Design User-Centered Focus in Design
C. Implement Persona & Empathy Mapping
D. Integrate UX Research methodology
E. AcquaintUsability Testing in UX Design and Prototyping

	CourseOutcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5					✓

Text Books/ Reference Books:

- The Design of Everyday Things Don Norman, 1988
- The User Experience Team of One: A Research and Design Survival Guide Leah Buley, 2013
- 100 Things Every Designer Needs to Know About People
- The Elements of User Experience: User-centered Design for the Web Book by Jesse James Garrett

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-306-V
SUBJECT NAME: 3D Animation

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To know about animation principles, different tools for 3d animation
2. To understand the deformers, blend shape, clusters, jiggle.
3. To understand the difference constrains: parent, point, orient, scale, Aim, pole vector, motion path.
4. To learn 3D character animation, and understand Curve Editor, time editor,
5. To learn trax editor, pose editor and Expression editor.

Unit-01
Animation principles, 12 Principles of Animation: Squash and stretch anticipation staging straight ahead action and pose to pose follow through and overlapping action slow in and slow out, arc, secondary action, timing, exaggeration, solid drawing, appeal.
Unit-02
Animation tools in 3d software, deformers, blend shape, clusters, jiggle.
Unit-03
Animation tools in 3d software, deformers, blend shape, clusters, jiggle.Constrains: parent, point, orient, scale, Aim, pole vector, motion path.
Unit-04
Curve Editor, time editor, trex editor,
Unit-05
Pose editor, Expression editor.

Course outcome:

A. Students will be able to learn 3D animation.
B. Students will be able to understand different styles and tools to create 3D animation.
C. Students will be able to analyze the important of 3D animation tools to create animation for films and videos.
D. Students will be able to apply animation tools to create 3D animation for films and videos
E. Students will create a animation Demo reel as a project.

	Course Outcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5					✓

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-308-V
SUBJECT NAME: Game Design-I(3D Asset Development)

No. of Credits: 4

L	**0**		**Internal Practical**	**15**
P	**8**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Intro/Blocking
2.	Different "styles" of artwork
3.	Low Poly Modeling.
4.	Learn the fundamental of character creation,
5.	High poly modeling, Assets designing, UV mapping
6.	Game Props design
7.	Game environment design
8.	Character Design
	Mini-Projects/Case Study
9.	Game scenedesign

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-310-V
SUBJECT NAME: 3D Rigging and Skinning

No. of Credits: 4

L	**0**		**Internal Practical**	**15**
P	**8**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Introduction to use of rigging and animation in films.
2.	Explain basic fundamentals of rigging and animation. Brief explain Joints/bones, hierarchy, and basic tools.
3.	Rigging Skeletons components (Joints/bones, Joints chains, Skeleton hierarchy),
4.	Building Skeleton (setting up joints for posing and animation) posing skeletons
5.	IK handles, IK solvers, IK/FK blending. Setup joint chain.
6.	Pose with forward or inverse kinematics (pose and animate with FK, setup a IK handle, use single chain IK, use rotate plane IK, use multi chain IK, use Spine IK and use 2 bone IK). Blend FK and IK, Skeletons and IK nodes.
7.	Skinning understanding skinning, deformable objects and skin objects, direct and indirect skin methods, bind poses,
8.	Double transformation effects, editing skin point set membership, point tweaking skinned objects. Smooth skinning, rigged skinning, and rigged objects and points, rigged skin pointsweights and sets, flexors binding rigid skin, deformers, constraints, character sets.
	Mini-Projects/CaseStudy:
9.	Create Mechanical rig, character rig in details.

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-312-V
SUBJECT NAME: Storyboarding& Animatics Lab

No. of Credits: 2

L	**0**		**Internal Practical**	**15**
P	**4**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Application of art principles–Understanding Balance, Proportion, Contrast, Rhythm, Movement, etc.
2.	Composition – scene planning & staging, tools and techniques, Field division, Perspective and camera angles, Picture composition.
3.	Understanding movement and action, capturing quick gestures in drawing, importance of gesture drawing.
4.	Description and visual development, formats for storyboarding
5.	How to describe and develop a shot visually, storyboard elements and guidelines.
6.	Transitions, Cuts, Editing styles Pacing – Story beats, thinking for a camera, speeding up and slowing down a scene.
7.	SELECT ONE OF THE ANIMATED FILMS AND STUDY THE SHOT DIVISION AND WRITE THE LOGING BEHIND THE SHOT DIVISION
8.	CREATE A STORY BOARD FOR A SEQUENCE IN ANY OF THE RELEASED ANIMATED FILMS OR LIVE ACTION FILMS. AND COMPARE YOUR STORY BOARD WITH FINAL MOVIE.
	Mini-Projects/CaseStudy
9.	**Create movie animatics**

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-314-V
SUBJECT NAME:3D Visual Effects (Dynamics & Particles) Lab

No. of Credits: 1

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Particle system
2.	Fields
3.	nparticle system
4.	Collision
5.	Rigid bodies, Soft bodies
6.	Create particle effects like spark snow, rain splash etc
7.	Create effects like pendulum animation, flag animation, falling object etc
8.	Rendering dynamics and particles.
	Mini-Projects/CaseStudy
9.	Create project by using dynamics and particles.

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER
CODE: AMU-316-V
SUBJECT NAME: User Experience Design Lab

No. of Credits: 1

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	**A/B Testing on Website Layout:** Create two versions of a website with different layouts and track user interactions, such as click-through rates and time spent on page, to determine which layout provides a better user experience.
2.	**User Testing on Mobile App Navigation:** Recruit participants to test the navigation of a mobile app prototype. Observe how easily they can find certain features or complete specific tasks, and gather feedback on their experience.
3.	**Eye Tracking Study on Website Design:** Use eye-tracking technology to analyze where users focus their attention on a website. This can help optimize design elements such as placement of buttons, images, and text for better user engagement.
4.	**Usability Testing on E-commerce Checkout Process:** Recruit participants to attempt making a purchase on an e-commerce website. Observe any difficulties or frustrations they encounter during the checkout process and identify areas for improvement.
5.	**Surveys on User Preferences:** Create a survey to gather insights into user preferences, habits, and pain points related to a specific product or service. Use the survey data to inform design decisions and prioritize features.
6.	**Prototype Testing with Wireframes:** Develop low-fidelity wireframes of a digital product and test them with users to gather early feedback on usability and functionality. Iterate on the wireframes based on user input before investing in high-fidelity designs.
7.	**Accessibility Audit of Website**: Conduct an accessibility audit to evaluate how well a website complies with web accessibility standards (e.g., WCAG). Identify barriers that may prevent users with disabilities from accessing and using the site effectively.
8.	**Remote User Observation with Screen Sharing:** Use screen-sharing software to remotely observe users as they interact with a website or app in their natural environment. Gain insights into real-world usage patterns and behaviors to inform design decisions.
	Mini-Projects/CaseStudy
9.	**Redesign a Popular App:** Choose a popular mobile or web app and redesign its user interface (UI) to improve usability and user satisfaction. Conduct user research, create wireframes and prototypes, and present your redesign along with a rationale for your design decisions.

B.SC. (ANIMATION AND MULTIMEDIA) 6th SEMESTER

CODE: AMU-318-V

SUBJECT NAME:3D Animation Lab

No. of Credits: 1

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Bouncing ball
2.	Pendulum animation
3.	Human Walk cycle
4.	Human Run cycle
5.	Animal Walk cycle
6.	Animal Run cycle
7.	Fighting Scene
8.	Combine mechanical and human animation
	Mini-Projects/CaseStudy
9.	**Create a 3D animation scene**

Semester -VII

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-401-V
SUBJECT NAME: Game Design-II (Game Development)

No. of Credits: 3

L	**3**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To understand the basic elements of visual Art and Design
2. To inculcate the basic principles of visual Art and Design.
3. To understand the colour theory and the psychological, culture and other association with colour.
4. To understand the shading techniques using light and shadow.
5. To develop a basic understanding of using shapes in object drawing and nature.

Unit-01
Principles of game design, Game Design Theory,MDA,8 type of Fun in Game, Visual style, Gameplay
Unit-02
Idea Development Process, Stimulus, Genre Market Research, Target platform.Creating physical Games: Board Game, Card Game, Party Games and etc....
Unit-03
Intro to Tools & navigation, Terrain system in Unity, Camera control in Unity, Scene Navigation, Project setting / Player setting, Game publishing using Unity
Unit-04
Constants and variables, Integers, Floats and Strings, Arrays and Lists, Arithmetical operators, Using if statements, Writing while statements, Writing for statements, & all Other Basic C# Concept in Unity
Unit-05
Intro to 2D Game system in unity, Sprite Editor in Unity, Sprite Animation in Unity, 2D Physics in Unity, 2D Components, UI system in Unity, 2D Game Project

Course outcome:

A. Students would be able to create visual designs or artwork using visual art elements.
B. Students would be able to implement the acquired knowledge of the principles of design to create art composition.
C. Students would be able to implement the understanding of basic color theory to create an impactful composition to express or influence certain feelings or emotions through visual art.
D. Students would be able to draw light and shadow on objects with appropriate assessment and representation of the impact of light on simple forms and objects.
E. Students would be able to develop a basic understanding of using shapes in object drawing and nature study.

	Course Outcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5	✓				✓

Text Books/ Reference Books:
1. Game Programming Patterns 2. Unity in Action: Multiplatform Game Development in C# 3. The Art of Game Design 4. Programming Game AI By Example

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-403-V
SUBJECT NAME: 3D Visual Effects (Fluids Effects)

No. of Credits: 4

L	**1**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To understand the basic 3D Visual Effects (Fluids Effects)
2. To inculcate the basic principles of fluids effects.
3. To understand shading and lighting in fluids effects
4. To understand bifrost effects for visual effects
5. To develop effects for Visual effects scenes.

Unit-01
Introduction 3D Visual Effects (Fluids Effects). Types of fluids effects.
Unit-02
Maya fluids. To use fluid containers, to create a reaction,
Unit-03
To create fluid and particle interactions, to create an ocean.
Unit-04
Bifrost Effects in autodesk maya, Emitter, collision, foam, motion field, fill plane, initial state.
Unit-05
Rendering fluid effect for post production

Course outcome:

A. Students would be able to create visual the basic 3D Visual Effects (Fluids Effects).
B. Students would be able to implement the acquired knowledge of the principles of fluids effects.
C. Students would be able to implement the understanding of basic shading and lighting in fluids effects.
D. Students would be able to bifrost effects for visual effects.
E. Students would be able to develop effects for Visual effects scenes.

	Course Outcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5	✓				✓

Text Books/ Reference Books:	
1.	MAYA VISUAL EFFECTS THE INNOVATOR'S GUIDE: AUTODESK OFFICIAL PRESS, 2 EDITION BY ERIC KELLER

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: BCG-425-V
SUBJECT NAME: Virtual Reality & Augmented Reality

No. of Credits: 4

L	**1**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. To understand VR/AR systems work and list the applications of vr
2. To learn the design and implementation of the hardware that enables VR/ AR systems to be built.
3. To create the system of human vision and its implication on perception and rendering.
4. To integrate concepts of motion and tracking I VR/AR systems.
5. To develop interaction and audio inVR/AR systems

Unit-01
Defining virtual reality, history of VR, human physiology and perception, key elements of virtual reality experience, virtual reality system, interface to the virtual world-input & output- visual , aural & haptic displays, applications of virtual reality.
Unit-02
Defining augmented reality, the history of augmented reality, the relationship between Augmented Reality and Other technologies-media, technologies, other ideas related to the spectrum between real and virtual worlds, applications of augmented reality, concepts related to augmented reality, ingredients of an augmented reality, and experience.
Unit-03
Representation of the virtual world, visual representation in VR, aural representation in VR and haptic representation in VR, geometric models, axis-angle representations of rotation, viewing Transformations, chaining the transformations, Human Eye, eye movements & implications for VR.
Unit-04
Visual perception-perception of depth, perception of motion, perception of colour, combining sources of information, visual rendering ray-tracing and shading models, rasterization, correcting optical distortions, improving latency and frame rates
Unit-05
Marker tracking, multiple-camera infrared tracking, natural feature tracking by detection, simultaneous localization and mapping, outdoor tracking, major software components or augmented reality systems,

Course outcome:

A. Understood VR/AR systems work and list the applications of VR.
B. Design and implement the hardware enabling VR/AR systems to be built.
C. Implement and understand the system of human vision and its implication on perception and rendering.
D. Integrate concepts of motion and tracking in VR/AR systems.

E. Acquaint the importance of interaction and audio in VR/AR systems.

	Course Outcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5					✓

Text Books/ Reference Books:

1. Augmented Reality and Virtual Reality: Empowering Human, Place and Business
2. Augmented Reality and Virtual Reality: Empowering Human, Place and BusinessTimothy H. Jung, 2017
3. Practical Augmented Reality: A Guide to the Technologies, Applications, and Human Factors for AR and VRSteve Aukstakalnis, 2016
4. Virtual Reality and Augmented Reality: Myths and Realities
5. Virtual & Augmented Reality For Dummies

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-405-V
SUBJECT NAME: Innovation and Start-ups

No. of Credits: 4

L	**4**		**Sessional**	**25**
P	**0**		**Theory Exam**	**75**
			Total	**100**

Course objectives:

1. Understand the Entrepreneurial Opportunities.
2. Learning Step by step procedure for Traditional Animation.
3. To know about Crafting business models and Lean Start-ups.
4. Understand Organizing Business and Entrepreneurial Finance.
5. To work according to organizational structures.

Unit-01
Introduction to Entrepreneurship: Entrepreneurs; entrepreneurial personality and intentions characteristics, traits and behavioral; entrepreneurial challenges. Government Initiatives.
Unit-02
Entrepreneurial Opportunities: Opportunities. Discovery/ creation, Pattern identification and recognition for venture creation: prototype and exemplar model, reverse engineering.
Unit-03
Entrepreneurial Process and Decision Making: Entrepreneurial ecosystem, Ideation, development and exploitation of opportunities; Negotiation, decision making process and approaches, Effectuation and Causation.
Unit-04
Crafting business models and Lean Start-ups: Introduction to business models; Creating value propositions-conventional industry logic, value innovation logic; customer focused innovation; building and analyzing business models; Business model canvas, Introduction to lean startups, Business Pitching.
Unit-05
Organizing Business and Entrepreneurial Finance: Forms of business organizations; organizational structures; Evolution of Organization, sources and selection of venture finance options and its managerial implications. Policy Initiatives and focus; role of institutions in promoting entrepreneurship.

Course outcome:

A. Students will be able to comprehend the role of bounded rationality, framing, causation andeffectuation in entrepreneurial decision making, Equipments, development, animationstudios, and projects.
B. Students will be able to demonstrate an ability to design a business model canvas.
C. Students will be able to evaluate the various sources of raising finance for startup ventures.
D. Students will be able to Understand the fundamentals of developing and presenting a bussiness pitching to potential investors.
E. Students will be able to learn role of institutions in promoting entrepreneurship.

	Course Outcomes					
Course Objectives		A	B	C	D	E
	1	✓				
	2		✓			
	3			✓		
	4				✓	
	5	✓				✓

Text Books/ Reference Books:	
1.	The Lean Startup
2.	Zero to One
3.	The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company
4.	Innovation and Entrepreneurship
5.	Value Proposition Design
6.	The Innovator's DNA

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-407-V
SUBJECT NAME: Advance Digital Compositing

No. of Credits: 4

L	**0**		**Sessional**	**15**
P	**8**		**Theory Exam**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Introduction node based composting, Introduction to basic compositing in node base software import sequence, timeline.
2.	Compositing and visual effects - Learn how to integrate 3D animation and live motion video, and composite multiple video sources to create fantastic visual effects.
3.	Camera Tracking - 2d and 3d tracking using different type of tracking software.
4.	Rope removal
5.	Set extension, rig removal
6.	Film Techniques - add/remove film grain
7.	Environment Creation - In this structure you will understand the use of matte painting using industries top digital environment creation software to bring your imagination to reality
8.	Stereo Scoping - learn to convert 2d to 3d tricks using much software.
	Mini-Projects/CaseStudy
9.	Create a visual effects project.

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-409-V
SUBJECT NAME: Advance 3D Animation

No. of Credits: 4

L	**0**		**Sessional**	**15**
P	**8**		**Theory Exam**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Introduction to animation in 3D software (Autodesk Maya), animation principles : Slow In and, Slow Out, Arc, Secondary Action, Timing, Exaggeration, Solid drawing, Appeal
2.	Squash and Stretch, Anticipation, Staging, Straight Ahead Action and Pose to Pose, Follow Through and Overlapping Action,
3.	Using animation feature (edit animation preferences and animation control), window and editors setting, timeline, animation, sound, key frame animation. (key, auto key, key in attribute editor,, channel box, graph editor and dope sheet.), cutting, coping and pasting key.
4.	Nonlinear animation tools in Maya, Nonlinear animation components in Trax editor. Path animation, position object on the path curve, orienting object on path, manipulating object, path markers, motion capture animation.
5.	Character animation human walk, run
6.	Four leg character animation, run , walk
7.	Fight scene animation
8.	Lip syncing in 3d charecter
	Mini-Projects/CaseStudy
9.	Create a 3D animation project.

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-411-V
SUBJECT NAME:Game Design-II (Game Development) Lab

No. of Credits: 2

L	**0**		**Internal Practical**	**30**
P	**4**		**External Practical**	**70**
			Total	**100**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Lighting & Shading in unity Material & texturing in Unity, Physics Lighting and Rendering in Unity
2.	Particle system & Sky box in Unity Working with Particle system, Working with Sky box , Working with different effects in Unity
3.	Developing 3D Game using Unity Engine Exporting Assets from 3D Software , Different Types of camera in Unity , Character Navigation, 3rd Person Camera movement.
4.	Creating Enemy characters runtime, Animation control in Unity , Graphic User Interface in Unity , Assigning Properties & Methods for player, Build Simple Artificial Intelligence for enemy character
5.	Prepare game design documentation Purpose of design documents Document layout Level Design Document Technical Design Document Production Document, Present a game concept to stakeholders
6.	Introduction to Cocos2D-X, Adding Scenes Creating new scenes, Manipulating scenes
7.	Scene workflow in Cocos2d Splash Scene , Game Scene , Game Over Scene,
8.	Developing Game using C++ in Cocos2D Navigation of characters, Collision detection, Physics in Cocos2D (Box2D), Scene Navigation , Understanding Retina / non-retina image creation, Adding Sound effect , Loading & Playing Background Music, Setting up the accelerometer, create custom Cocos2d actions, Publishing Game for Mobile platforms.
	Mini-Projects/Case Study
9.	Create a basic game in unity.

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: AMU-413-V
SUBJECT NAME: 3D Visual Effects (Fluids Effects) Lab

No. of Credits: 2

L	**0**		**Internal Practical**	**30**
P	**4**		**External Practical**	**70**
			Total	**100**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Creating Fluid Effects,Defining the contents of a fluid container,Create dynamic fluid effects.
2.	Modifying Fluids,Import Fluid examples
3.	Object Interaction with Dynamic Fluids,Make fluids collide with geometry, Move geometry with the force of a fluid
4.	Playing Fluids,Fluids initial state, nCaching fluids, Set the initial state of a fluid
5.	Open Water Effects,Create ocean effects using example oceans or ponds, Create new oceans, Preview a patch of ocean
6.	Texturing and Shading Fluids
7.	Rendering fluids
8.	Create a ocean, water effect
	Mini-Projects/CaseStudy
9.	Create fluids effects for VFX project.

B.SC. (ANIMATION AND MULTIMEDIA) 7th SEMESTER
CODE: BCG-435-V
SUBJECT NAME: Virtual Reality and Augmented Reality Lab

No. of Credits: 2

L	**0**		**Internal Practical**	**15**
P	**2**		**External Practical**	**35**
			Total	**50**

List of Lab Experiments/Assignments (Implementation of each problem statement is mandatory)	
Sr. No.	**Group A**
1.	Installation of Unity and Visual Studio, setting up Unity for VR development, understanding documentation of the same.
2.	Demonstration of the working of HTC Vive, Google Cardboard, Google Day dream and Samsung gear VR. Demonstration of the working of Oculus Quest devices.
3.	Develop a scene in Unity that include sphere and plane. Apply rigid body component, material and Box collider to the game Objects.
4.	Develop a scene in Unity that includes a cube, plane and sphere. Create a new material and texture separately for three Game objects. Change the colour, material and texture of each Game object separately in the scene
5.	3DgameobjectscanbecreatedusingBlenderoruseavailable 3D models.
6.	Include animation and interaction in the immersive environment created in Assignment.
7.	Marker-based Tracking, Marker less Tracking (SLAM), Environmental Understanding and Spatial Mapping, Object Recognition and Tracking.
8.	User Interaction in AR, Designing and Implementing AR User Interfaces, 3D Modeling and Asset Creation for AR, Animation and Effects in AR, Project Development and Iteration
	Mini-Projects/Case Study
9.	Create a game in unity.

Semester -VIII

J. C. BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA, FARIDABAD

B.Sc. (ANIMATION AND MULTIMEDIA)

Scheme of Studies/Examination
Semester- 8

Sr. No	Category	Course code	Course Title	Course Requirements (hrs)			Sessional Marks/End Term Marks		Total Marks	Credits
				L	P	Total	Sessional	End Term		
1	Discipline Specific-Major	AMU-402-V	Research Project/Dissertation/ Industrial Internship*				300	200	300	20
2	MOOC*									4
			Total				**200**	**300**	**500**	**24**

5. Major Project: Industrial Internship/Research Project /Dissertation/ Teaching Assistantship in the same or another institution.
6. Students who will opt for Research Project/Dissertation of 6 month will do one Discipline Specific Major Course through MOOC and these will be awarded BSc (A&M)Honors with Research. This MOOC course can be qualified/completed during 5th to 8th semester.
7. Students who will opt for simple industrial internship of 6 month will also do one Discipline Specific Major Course through MOOC and these students will be awarded BSc (A&M) Honors. This MOOC course can be qualified/completed during 5th to 8th semester.
8. The selection of MOOC course in every semester will be done after due permission from the department.

Procedure for Annual Examination and continuous Assessment of:

C. Annual Exams Marks

Evaluation	50 Marks
Seminar	50 Marks
Viva	100 Marks

D. Continuous Assessment Marks

Assessment by Institute Faculty	100 Marks
Assessment by Guide	150 Marks
Conduct Marks	50 Marks
TOTAL	500 Marks