

Deccan Education Society's
FERGUSSON COLLEGE, PUNE
(AUTONOMOUS)

SYLLABUS UNDER AUTONOMY

THIRD YEAR B.SC.ANIMATION
SEMESTER - V

SYLLABUS FOR T.Y. B.Sc. ANIMATION

Academic Year 2018-2019

**Deccan Education Society's
FERGUSSON COLLEGE (AUTONOMOUS), PUNE 411004
Scheme of Course Structure (Faculty of Science)**

2018-2019

T. Y. B. Sc. - Animation

| Semester | Course Code | Title | Paper No. | Credits | Exam (I / E) | Marks (50 / 50) |
|-----------------|--------------------|----------------------------|------------------------|----------------|---------------------|------------------------|
| V | ANI3501 | Mudbox | I | 3 | (I / E) | 50+50 |
| | ANI3502 | Web Technology | II | 3 | (I / E) | 50+50 |
| | ANI3503 | Game Design | III | 3 | (I / E) | 50+50 |
| | ANI3504 | Digital Editing | IV | 3 | (I / E) | 50+50 |
| | ANI3505 | VFX - I | V | 3 | (I / E) | 50+50 |
| | ANI3506 | Creative Writing | VI | 3 | (I / E) | 50+50 |
| | ANI3511 | Animation Practical - I | Practical - I | 2 | (I / E) | 50+50 |
| | ANI3512 | Animation Practical - II | Practical - II | 2 | (I / E) | 50+50 |
| | ANI3513 | Animation Practical - III | Practical - III | 2 | (I / E) | 50+50 |
| | ANI3514 | Animation Project - I | Project - I | 3 | (I / E) | 50+50 |
| | VI | ANI3601 | IPR and Cyber Security | I | 3 | (I / E) |
| ANI3602 | | User Interface (UI) Design | II | 3 | (I / E) | 50+50 |
| ANI3603 | | Game Production | III | 3 | (I / E) | 50+50 |
| ANI3604 | | Motion Graphics | IV | 3 | (I / E) | 50+50 |
| ANI 3605 | | VFX - II | V | 3 | (I / E) | 50+50 |
| ANI3606 | | Animation in New Media | VI | 3 | (I / E) | 50+50 |
| ANI3611 | | Animation Practical - IV | Practical - IV | 2 | (I / E) | 50+50 |
| ANI3612 | | Animation Practical - V | Practical - V | 2 | (I / E) | 50+50 |
| ANI3613 | | Animation Practical - VI | Practical - VI | 2 | (I / E) | 50+50 |
| ANI 3614 | | Animation Project - II | Project - II | 3 | (I / E) | 50+50 |

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - I
TITLE: MUDBOX
PAPER CODE: ANI3501

[CREDITS - 3]

Learning Objectives:

Mudbox is a professional digital sculpting and production-level texture painting program. While this may be true in practicality, Mudbox is something different to everyone. To the character or creature designer, Mudbox could be a tool to quickly explore ghoulish variations on the human form. To the professional 3D modeller, Mudbox may be one of many tools used to build models for the film, games, or broadcasting industries. To the fine art sculptor, Mudbox may be a starting point for a one-of-a-kind sculpture that may be eventually be printed in resin or cast in metal. The possibilities are endless. However, no matter who is using Mudbox, they will all be sculpting with the best digital sculpting technology available, and this is where Mudbox is unmatched by any other program.

| | Title and Contents | No. of Lectures |
|------------------|---|------------------------|
| Unit - I | <p>Sculpting Concepts</p> <p>1.1 Comparing Traditional and Digital Sculpting</p> <ul style="list-style-type: none"> • Workspace • Armatures • Lighting • Sculpting Tools <p>1.2 Anatomy for Sculptors</p> <ul style="list-style-type: none"> • Skeleton • Muscles • Skin and Fat <p>1.3 Proportions and Measurements</p> <ul style="list-style-type: none"> • Proportions • Measurements <p>1.4 Form, Negative Space, and Gesture</p> <ul style="list-style-type: none"> • Form • Negative Space • Gesture | 7 |
| Unit - II | <p>Introduction to Mudbox</p> <p>2.1 Interface Overview</p> <p>2.2 What you will need to work in Mudbox</p> <p>2.3 A 3D Primer</p> <ul style="list-style-type: none"> • Understanding 3D Space • Polygon Basics • Resolution • UV Mapping • Digital Images <p>2.4 Mudbox Hotkeys</p> <p>2.5 Quickstart Tutorial: Sculpting a Bell Pepper</p> <ul style="list-style-type: none"> • Setting Up the Scene • Selecting and Scaling a Model • Creating a Layer and Subdividing • Roughing In the Shape | 8 |

| | | |
|-------------------|---|---|
| | <ul style="list-style-type: none"> • Sculpting Details • Adding Texture with a Stencil | |
| Unit - III | <p>Sculpting a Portrait Bust</p> <p>3.1 Collecting Reference Material</p> <p>3.2 Facial Expressions</p> <p>3.3 Measurements</p> <p>3.4 Getting Started</p> <ul style="list-style-type: none"> • Sculpting In the Neutral Position • Loading the Basic Head Model • Setting up Reference Sketches • Adding a Camera Bookmark <p>3.5 Refining the Shape of the Face</p> <ul style="list-style-type: none"> • Roughing In the Eye Sockets • Shaping the Face <p>3.6 Sculpting the Nose</p> <ul style="list-style-type: none"> • Widening the Bridge of the Nose • Sculpting the Alae and Tip of the Nose • Refining the Tip of the Nose • Adding Nostrils • Refining the Alae • Sculpting with Negative Space • Sculpting the Philtrum <p>3.7 Sculpting the Mouth</p> <ul style="list-style-type: none"> • Hiding Part of the Model • Marking the Location of the Lips • The Upper Lip • The Lower Lip • Refining the Mouth <p>3.8 Sculpting the Eyes</p> <ul style="list-style-type: none"> • Sculpting the Eyeball • Sculpting the Lower Eyelid • Sculpting the Upper Eyelid • Refining the Eye • Creating the 'Sculpture' Look <p>3.9 Sculpting the Ears</p> <ul style="list-style-type: none"> • Shaping the Back of the Head and Positioning the Ears • Sculpting the Back of the Ear • Sculpting the Ear • Adding Hair | 8 |
| Unit - IV | <p>Sculpting a Figure</p> <p>4.1 Anatomy Primer</p> <ul style="list-style-type: none"> • Navigating Anatomical Space • Quick Overview of Muscle Anatomy • Character Proportions <p>4.2 Subdividing and Adding a New Layer</p> <p>4.3 Sculpting Muscle Masses</p> <p>4.4 The Torso</p> | 7 |

| | | |
|--|---|---|
| | 4.5 The Upper Limb 4.6 The Lower Limb 4.7 Sculpting the Head and Face <ul style="list-style-type: none"> • Refining the Face and Ear 4.8 Final Details | |
| Unit - V | Painting Sculptures 5.1 UV Mapping 5.2 The Paint Tools <ul style="list-style-type: none"> • Paint Layers • Painting the Creature • Getting Started • Creating Basic Skin • Adding Depth and Color to Skin • Adding Details 5.3 Viewport Rendering | 7 |
| Unit - VI | Creating Displacement Maps 6.1 Normal Maps 6.2 Displacement Maps 6.3 Extracting Displacement Maps 6.4 Exporting a Low-Resolution Model 6.5 Applying Mudbox Displacement Maps <ul style="list-style-type: none"> • 3ds Max • Maya and Mental Ray • Modo • Cinema 4D | 8 |
| Reference: | | |
| 1. Digital Sculpting with Mudbox - Essential Tools and Techniques for Artists by Mike de la Flor Bridgette Mongeon | | |

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - II
TITLE: WEB-TECHNOLOGY
PAPER CODE: ANI3502

[CREDITS - 3]

Learning Objectives:

1. To understand web technologies and the issues involved in web designing.
2. By the end of the course the student will be familiarized with the design of the web page and create an interactive and dynamic web page.

| | Title and Contents | No. of Lectures |
|-------------------|--|------------------------|
| Unit - I | Introduction 1.1 Concept of WWW 1.2 Internet and WWW 1.3 HTTP Protocol: Request and Response 1.4 Web browser and Web servers 1.5 Features of Web | 6 |
| Unit - II | HTML5 2.1 Structuring an HTML Document - Elements and Attributes, Tags, The DOCTYPE Element 2.2 Creating and Saving an HTML Document, Validating an HTML Document, Viewing an HTML Document, Hosting Web Pages. 2.3 Understanding Elements 2.4 Working with Text 2.5 Defining the DIV Element and SPAN Element 2.6 Working with Links The target Attribute, The id Attribute 2.7 Creating Tables 2.8 Working with Images, Colors and Canvas 2.9 Working with Forms 2.10 Working with Multimedia | 8 |
| Unit - III | CSS 3.1 Evolution, Syntax 3.2 CSS Selectors, Inserting CSS in an HTML Document 3.3 Backgrounds and Color Gradients in CSS 3.4 Font Properties 3.5 Creating Boxes and Columns Using CSS 3.6 Displaying, Positioning, and Floating an Element 3.7 Effects, Frames and Controls in CSS | 8 |
| Unit - IV | JavaScript 4.1 Features, Using JavaScript in an HTML Document, Fundamentals of JavaScript 4.2 JavaScript Functions, Events, Image Maps and Animations 4.3 JavaScript Objects - The Standard / Built-in | 8 |

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|--|---|---|
| | JavaScript Objects 4.4 Working with Browser Objects - Window Object, History Object, Location Object 4.5 Describing the Document Object 4.6 Understanding DOM Nodes, DOM Levels, DOM Interfaces | |
| Unit - V | Dreamweaver 5.1 Introduction 5.2 Adobe Dreamweaver CS3 5.3 Text Styles 5.4 Images and Links 5.5 Symbols and Lines 5.6 Tables 5.7 Forms | 8 |
| Unit - VI | Server Side Technology 6.1 HTTP Transactions 6.2 Multitier Application Architecture 6.3 Client-Side Scripting versus Server-Side Scripting 6.4 Accessing Web Servers 6.5 PHP - Introduction, Basics | 8 |
| Reference Books: 1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India 2. Web Technologies, Black Book, Dreamtech Press 3. HTML 5, Black Book, Dreamtech Press 4. Web Design, Joel Sklar, Cengage Learning 5. Internet and World Wide Web How to program, P. J. Deitel & H. M. Deitel, Pearson | | |
| Reference Links: 1. http://www.w3schools.com 2. http://www.php.net | | |

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - III
TITLE: GAME DESIGN
PAPER CODE: ANI3503

[CREDITS - 3]

Learning Objectives:

1. In this subject student will learn about gaming industry and pipeline for the game production.
2. The complete pre production work of any game will be done in this semester.
3. Student will also design their own game concept and will work on it throughout the Semester.
4. A common 3d platform i.e. Blender is also included here for making 3D content which will be required for the game.

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit - I | Introduction to Gaming 1.1 Origin and growth of gaming industry 1.2 Gaming: meaning and defining 1.3 Gaming as modern entertainment 1.4 Game Development Process | 5 |
| Unit - II | Introduction to Blender 2.1 Introducing Blender 3D 2.2 Interface & Modelling tools 2.3 Texturing with UV Unwrapping 2.4 Basic Animation | 12 |
| Unit - III | Classification and Pre-production of Gaming 3.1 Classification of games 3.2 Pre-production - concept and idea 3.3. Script Writing for Game Production 3.4. A simple Game Design Document (GDD) for a Game. | 10 |
| Unit - IV | Production and Logic Implementation 4.1 Production - Scene Building from Above GDD 4.2 Blender Game Engine-Game Logic Implementation with Programmatic movements and Actions. 4.3 Game Testing and Building EXE | 12 |
| Unit - V | Structure and functioning 5.1 Structure and functioning of gaming company 5.2 Classification of games based on Genre 5.3 Other Game Engines 5.4 Game production team members and responsibilities | 6 |

Reference Books :

1. The Art of Game Design: A Book of Lenses by Jesse Schell Publisher: CRC Press (12th September 2008) ISBN-10: 0123694965 ISBN-13: 978-0123694966
2. Game Mechanics: Advanced Game Design (Voices That Matter) Ernest Adams (Author), Joris Dormans (Author) Publisher: New Riders; 1st edition (15th June 2012) ISBN-10: 0321820274 ISBN-13: 978-0321820273

3. Game Coding Complete, Fourth Edition Paperback Mike McShaffry (Author), David Graham (Author) Publisher: Cengage Learning PTR; 4th edition (March 5th, 2012) ISBN-10: 1133776574 ISBN-13: 978-1133776574
4. Game Development Essentials: Game Story & Character Development Paperback Marianne Krawczyk (Author), Jeannie Novak (Author) Publisher: Cengage Learning; 1st edition (March 23rd, 2006) ISBN-10: 1401878857 ISBN-13: 978-1401878856

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - IV
TITLE: DIGITAL EDITING
PAPER CODE: ANI3504

[CREDITS - 3]

Objectives:

The student will study of terminology and concepts. Use digital video capture and output methods; utilize appropriate compression schemes for various output; integrate and composite still graphics and animation into a production; summarize and apply principles of video production; and identify the components of a digital video system.

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit - I | Introduction to Modern Non-Linear Editing 1.1 The Evolution of Modern Non-Linear Editing 1.2 The Evolution of Digital Non-Linear Editing 1.3 Principal of Video Editing 1.4 Analysis of Film sequences from editing point of view. | 8 |
| Unit - II | Introduction to Principles of Video Editing 2.1 Principles of Video Editing http://lornamediabna.blogspot.in/2011/03/when-editing-theseprinciples-are.html 2.2 Aspect Ratio 2.3 Various Techniques - Jump Cut, Match Action, Cut Away, Continuity https://en.wikipedia.org/wiki/Jump_cut https://en.wikipedia.org/wiki/Match_cut https://en.wikipedia.org/wiki/Cutaway_(filmmaking) https://en.wikipedia.org/wiki/Continuity_editing 2.4 Rule of 180 Degree 2.5 Camera Angle and Shots | 8 |
| Unit - III | Non-Linear Editing 3.1 Introduction to Adobe Premiere Pro 3.2 Interface 3.3 Importing Videos 3.4 Story Board Techniques 3.5 Tools 3.6 Editing and adding Effects | 9 |
| Unit - IV | Introduction to Video Transitions 4.1 Video Transitions 4.2 Video Effects 4.3 Incorporating transitions into the editing process 4.4 Recognizing various standard transitions | 8 |
| Unit - V | Introduction to Audio 5.1 Introduction to Audio 5.2 Synchronizing Audio 5.3 Editing Audio | 6 |

| | | |
|--|---|---|
| | 5.4 Audio Transitions | |
| Unit - VI | Introduction to Titles 6.1 Titles and still graphics 6.2 Creating titles for video 6.3 Incorporating titles into video production 6.4 Incorporating still graphics into video production 6.5 Templates 6.6 Output 6.7 Various Types of Output | 6 |
| Reference Book: Premiere Pro CS6 Digital Classroom. Author: Jerron Smith, AGI Creative Team. | | |

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - V
TITLE: VFX - I
PAPER CODE: ANI3505

[CREDITS - 3]

Learning Objectives:

Student will learn the various methods of Visual Special Effects for live action & Animation Films and to create Environments which looks realistic with the help of different techniques used for VFX. Student will also know the different tools of VFX which are currently used in industry.

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit - I | Introduction to VFX 1.1 Concept & Terminology 1.2 Different methods & tools used for VFX 1.3 Comparative study of various tools used for VFX 1.4 Interface of node based VFX tool [NATRON] | 8 |
| Unit - II | Digital Representation of Visual Information 2.1 Image Generation 2.2 Digital image file Formats 2.3 Digital Video file Formats 2.4 Geometric Transformation | 10 |
| Unit - III | Rotoscopy 3.1 Introduction to Roto 3.2 Types of Roto 3.3 Masking 3.4 Video Tracking & Stabilizing | 12 |
| Unit - IV | Compositing 4.1 Matte Image 4.2 Multisource Operators (tools) 4.3 Compositing with Pre-multiplied images | 10 |
| Unit - V | Node based Tool [NATRON] 5.1 Color correction, Color Grading, 5.2 Day to Night Conversion 5.3 Paint, Frame Range, Append Clip 5.4 Chroma setup 5.5 Film Colorization, Retime 5.6 Rendering | 10 |

Reference Books:

1. ISBN-10: 1480157090 Digital Stereoscopy Scene to Screen 3D Production Workflows
2. ISBN-10: 111835205X Match moving: The Invisible Art of Camera Tracking
3. ISBN-10: 0240817818 Compositing Visual Effects: Essentials for the Aspiring Artist 2nd Edition
4. ISBN-10: 0415812291 Production Pipeline Fundamentals for Film and Games
5. Natron Documentation Release 3.0 The Natron documentation authors
6. **Reference Link:** <https://opensource.com/life/15/7/getting-started-with-natron>

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - VI
TITLE: CREATIVE WRITING
PAPER CODE: ANI3506

[CREDITS - 3]

Learning Objectives:

The main objective of this course is to enhance the creative writing skills. Basic literary concepts and the short stories have been introduced to help students to get an exposure to different forms of writing. This course will provide means to polish writing skills. It will help students to apply the theory in the field of animation through their writing.

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit - I | Introduction 1.1 Creative Thinking 1.2 Techniques of Creative Thinking 1.3 Creative Writing 1.4 Power of Ideas and Writing 1.5 Understanding the Target Audience | 10 |
| Unit - II | Tools of Writing 2.1 Accuracy, Brevity and Clarity 2.2 Cohesion and Coherence in Paragraph Writing 2.3 Figures of Speech 2.4 Types of Writing | 10 |
| Unit - III | Literary Aspects: 3.1 Subjectivity and Objectivity 3.2 Theme 3.3 Story and Plot 3.4 Characters and Character Development 3.5 Point of View 3.6 Fiction 3.7 Genre 3.8 Dialogues | 8 |
| Unit - IV | Analysis 4.1 Reader Response Theory 4.2 Editing for structured writing 4.3 Proofreading | 5 |
| Unit - V | Sources of Creativity: 5.1 'The Happy Prince' by Oscar Wilde 5.2 'The Eyes Have It' by Ruskin Bond 5.3 'The Tell-Tale Heart' by E.A. Poe | 7 |
| Unit - VI | Application of creative writing: 6.1 Online Blogs 6.2 Literary Magazine 6.3 Advertisements | 5 |

Reference Book:

Premiere Pro CS6 Digital Classroom. Author: Jerron Smith, AGI Creative Team.

| T.Y. B.Sc. (ANIMATION) SEMESTER - V ANIMATION PAPER - VII TITLE: PRACTICAL IN WEB TECHNOLOGY PAPER CODE: ANI3507 [CREDITS - 2] | |
|---|------------------------------------|
| Sr. No. | Name of Practical |
| 1. | HTML List |
| 2. | HTML Link |
| 3. | HTML Form |
| 4. | CSS properties - I |
| 5. | CSS properties - II |
| 6. | CSS properties - III |
| 7. | JavaScript Alert Box |
| 8. | JavaScript Array |
| 9. | JavaScript Functions |
| 10. | Table design using Dreamweaver |
| 11. | Form design using Dreamweaver - I |
| 12. | Form design using Dreamweaver - II |
| 13. | PHP Form Processing - I |
| 14. | PHP Form Processing - II |
| 15. | PHP Form Validation |

| T.Y. B.Sc. (ANIMATION) SEMESTER - V ANIMATION PAPER - VIII TITLE: PRACTICAL IN GAME DESIGN AND VFX - I PAPER CODE: ANI3508 [CREDITS -2] | |
|--|---|
| Sr. No. | Name of Practical |
| 1. | Blur - Blurring any part of a video |
| 2. | VFX Roto - Extracting the main object / character from background |
| 3. | Film Colorization - Coloring a black and white footage |
| 4. | Chroma Keying - Removal of Green / Blue screen chroma |
| 5. | Wire Removal / Plate Cleaning - Roto Paint-Clone Stamp Tool |
| 6. | Changing Color of eye / Object |
| 7. | Color Correction - of composed FG and BG |
| 8. | Day to Night Conversion |
| 9. | Color Grading - Sepia, Night look, Retro Look, Horror look, etc. |
| 10. | Retime - Making a video footage fast / slow. |
| 11. | Stabilization - Stabilizing a shaky footage. |
| 12. | Corner Pin |
| 13. | 2D - Tracking |
| 14. | Submit a 3d Puzzle game along with GDD - Each |
| 15. | Submit a 3D Coin Counting Game / Shooting Game along with GDD - Group |

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - IX
TITLE: PRACTICAL IN DIGITAL EDITING
PAPER CODE: ANI3509

[CREDITS - 2]

| Sr. No. | Name of Practical |
|----------------|---|
| 1. | Create a trailer of an existing movie. See to it that is different than the original trailer of the movie. |
| 2. | Create a music video using any mps3 song and video footage belonging to another movie or video. Create meaningful content. |
| 3. | Create a meaningful video using an mp3 song and suitable images (Use transitions, effects etc.) |
| 4. | Synchronize and animate the lyrics of any song within the limits of premiere-pro (using transitions, video effects and title options) |
| 5. | Draw a storyboard of your own story. Create an animatics video using premiere-pro |
| 6. | Take any movie. Recognize and submit the individual clips of following examples: Jump cut Hard cut Match cut Cutting on action Cut away |
| 7. | Take 5 minutes footage of any film and change the texture / feel of the movie color correction techniques. (use different effects for different scenes) |
| 8. | Shoot your own 1 minute film with a proper script. (edit on premiere-pro, add titles and credits as well) |
| 9. | Create hard subtitles for 1 minute footage of any film. |
| 10. | Create an informative video of 5 minutes using videos, images text etc. on any topic. |

T.Y. B.Sc. (ANIMATION) SEMESTER - V
ANIMATION PAPER - X
TITLE: PROJECT (PRE-PRODUCTION)
PAPER CODE: ANI3510

[CREDITS - 3]

Guidelines for Project

1. A) Animation Show reel Guideline

1. Show reel should be short - maximum 5 minutes.
2. Best work throughout the academic year should be included.
3. Students should showcase their Involvement.
4. Process should be highlighted.
5. Copyrighted Music should not be used.
6. Proper transition should be added.
7. No repetition of Footage.
8. Quality Control should be maintained.
9. Student should show their Own Style.
10. Show reel should contain credit line at the end.

B) Animation Project Guideline

1. Two Students in One group for group project.
2. Pre-Production work should include story, script, story board, concept art, character bible, props design & background design etc. Hard copy of pre-production should be submitted before starting actual production work in Semester V.
3. There should be a Originality in Concept & Content.
4. Duration of project minimum 2 minutes.
5. Project should be a core Animation project including VFX & Compositing with Audio Effect.
6. Project may not contain unnecessary violence, obscenity, nudity or racially disparaging material.
7. Project may not contain trademarks, logos or trade dress owned by others without their permission; or any commercial content that promotes any product or service.
8. Project should not promote smoking or drinking habits in any forms.
9. Project may not content copyrighted material owned by others including photographs, sculptures, paintings and other works of arts or images published on internet.
10. Project should not promote any political activity.

Deccan Education Society's
FERGUSSON COLLEGE, PUNE
(AUTONOMOUS)

SYLLABUS UNDER AUTONOMY

THIRD YEAR B.SC.ANIMATION
SEMESTER - VI

SYLLABUS FOR T.Y. B.Sc. ANIMATION

Academic Year 2018-2019

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - I
TITLE: IPR AND CYBER SECURITY
PAPER CODE: ANI3601

[CREDITS - 3]

Learning Objectives:

1. Animation is a creative field, and every day new ideas innovations, practices can come up. The students while entering the industry must be fully aware about how to protect their work and also what would be the consequences if things are done in a wrong way, which Intellectual Property Rights provides them with. It gives them an idea about what they should do and what not to do.
2. The second part of this subject, Cyber Security tries to provide the students fundamental knowledge about information security to take on a career in this challenging and ever changing IT world, where data or information which we create / process / store / transmit is at a risk always.
3. Both the topics help to create awareness and teach the students about what to protect and how to protect information / systems and our rights.

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit - I | Introduction to Intellectual Property Rights (Book-3) 1.1 Introduction to IPR 1.2 Need of Intellectual Property Protection 1.3. Introduction to Patents & Copyright 1.4 History of IPR 1.5 Trade and Investment | 4 |
| Unit - II | Introduction to Copyright, Software and Internet (Book-3) 2.1 Introduction 2.2 Copyright as a Stimulus To Creation 2.3 Copyright And Access 2.4 Copyright and Computer Software | 5 |
| Unit - III | The Patent System (Book-3) 3.1 Introduction 3.2 Scope of Patentability 3.3 Patentability Standards 3.4 Exceptions to Patent Rights 3.5 Patenting in India 3.6. Process of Patenting in India | 5 |
| Unit - IV | Overview of Networking Concepts (Book-3) 4.1 Basics of Communication Systems 4.2 Transmission Media 4.3 Network Topologies 4.4 Network Types 4.5 ISO / OSI and TCP / IP Protocol Stacks 4.6 Internetworking 4.7 Packet Formats 4.8 Wireless Networks 4.9 Internet 4.10 Basics of Information Security: Book-2, Book-3 • Overview of Information Security | 15 |

| | | |
|------------------------|---|-----------|
| | <ul style="list-style-type: none"> • Information Security Services • Types of Attacks • Goals for Security • E-commerce Security • Computer Forensics • Steganography <p>4.11 Security Threats and Vulnerabilities Book-2, Book-3</p> <ul style="list-style-type: none"> • Overview of Security threats • Hacking Techniques • Password Cracking • Insecure Network connections • Malicious Code • Programming Bugs • Cybercrime and Cyber terrorism • Information Warfare and Surveillance <p>4.12 Basics of Cryptography Book-2, Book-3</p> <ul style="list-style-type: none"> • Introduction to Cryptography • Symmetric key Cryptography • Asymmetric key Cryptography • Mechanisms of Cryptography • Message Authentication and Hash functions • Digital Signatures • Public Key infrastructure • Applications of Cryptography • Tools and Techniques of Cryptography | |
| <p>Unit - V</p> | <p>Security Management (Book-3)</p> <p>5.1 Security Management Practices</p> <ul style="list-style-type: none"> • Overview of Security Management • Information Classification Process • Security Policy • Risk Management • Security Procedures and Guidelines • Business Continuity Planning (BCP), Disaster Recovery Planning <p>5.2 Security Laws and Standards</p> <ul style="list-style-type: none"> • Security Assurance • Security Laws • International Standards • Security Audit • OCTAVE approach • Introduction to SSE-CMM • IT Act 2000 – Key Provisions <p>5.3 Access Control and Intrusion Detection</p> <ul style="list-style-type: none"> • Overview of Identification and Authorization | <p>12</p> |

| | | |
|------------------|---|---|
| | <ul style="list-style-type: none"> • Intrusion Detection Systems • Intrusion Prevention Systems <p>5.4 Server Management and Firewalls</p> <ul style="list-style-type: none"> • Introduction to Firewalls • Overview of Firewalls • Types of Firewalls • DMZ and firewall features <p>5.5 Security for VPN</p> <ul style="list-style-type: none"> • VPN Security • Security in Multimedia Networks <p>5.6 System and Application Security (Book-3 and Book-4)</p> <ul style="list-style-type: none"> • Desktop Security • Operating System security • Mobile security • email security • Web Security: web authentication, SSL and SET • Database Security | |
| Unit - VI | Cases of Security Systems (Book-3) | 4 |
| | <p>6.1 Cases of Security Systems in e-Banking</p> <p>6.2 Cases of Security Systems in e-Commerce</p> <p>6.3 Cases of Security Systems in e-business</p> <p>6.4 Cases of Security Systems in ICT devices in Business</p> | |

References:

1. Book-1 - Laws Relating to Intellectual Property by Dr. B. L. Wadehra, Fourth Edition, Universal Law Publishing Co.
2. Book-2 - Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sunit Belpure and Nina Godbole, Wiley India Pvt. Ltd.
3. Book-3 - Information Systems Security: Security Management, Metrics, Framework and Best Practices by Nina Godbole, Wiley India Pvt. Ltd.
4. Book-4 - Network Security Essentials, Applications and Standards By William Stallings, Pearson Education.

Additional References:

1. Introduction to Computer Security, Matt Bishop, Pearson Education
2. Information Security: Principles and Practices, Pearson Education
3. Principles of Information Security Fourth Edition by Michael Whitman, Herbert J. Mattord, Cengage Learning
4. Intellectual Property Rights by M. M. Karki, Atlantic Publication (2009)
5. Intellectual Property Rights in India: General Issues and Implications by Prankrishna Pal, Regal Publications
6. Intellectual Property Issues and Cyberspace, The Indian Perspective, by Rohas Nagpal, Published 2009, Asian School of Cyber Laws

Important Links:

1. <https://en.wikipedia.org/wiki/Watermark>
2. <https://www.cl.cam.ac.uk/teaching/0910/R08/work/essay-ma485-watermarking.pdf>
3. <http://www.ijaiem.org/volume3issue2/IJAIEM-2014-02-27-062.pdf>
4. <https://en.wikipedia.org/wiki/Steganograph>

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - II
TITLE: USER INTERFACE (IU) DESIGN
PAPER CODE: ANI3602

[CREDITS - 3]

Learning Objective:

The course covers Students capabilities, Design principles, Prototyping Techniques, Evaluation Techniques, and the Implementation of Graphical User Interfaces.

Deliverables include short programming assignments and a semester-long group project. Students taking the graduate version also have readings from current literature and Additional Assignments.

| | Title and Contents | No. of Lectures |
|-----------------|---|------------------------|
| Unit - I | 1.1 Design: Good User Interface, covering important Design principles and the Human capabilities. How to design good user interfaces, covering important design principles (learn ability, visibility, error prevention, efficiency, and graphic design) and the human capabilities that motivate them (including perception, motor skills, color vision, attention, and human error). 1.2 Implementation: Techniques for building user interfaces. Techniques for building user interfaces, including low-fidelity prototypes, Wizard of Oz, and other prototyping tools; input models, output models, model-view-controller, layout, constraints, and toolkits. 1.3 Evaluation: Techniques for evaluating and measuring interface usability. We will learn techniques for evaluating and measuring interface usability, including heuristic evaluation, predictive evaluation and user testing. 1.4 Research: Research Involving Novel User Interface. How to conduct empirical research involving novel user interfaces (graduate level only). 1.5 Efficiency and Measurements <ul style="list-style-type: none"> • User interface Design and implementation • Human information Processing • Point Efficiency • Fitts's Law & steering Law • Design Principles <ul style="list-style-type: none"> ▪ Shortcuts ▪ Defaults, history and anticipation ▪ Anticipation | 9 |

| | | |
|-------------------|---|---|
| | <ul style="list-style-type: none"> • Predicating efficiency <ul style="list-style-type: none"> ▪ Keystroke - level model (KLM) ▪ Heuristics Rules | |
| Unit - II | 2.1 Errors and User Controls 2.2 Human Error 2.3 Error Prevention 2.4 Error Messages 2.5 User Control & Freedom 2.6 Task Analysis 2.7 User Analysis 2.8 Task Analysis 2.9 Domain Analysis 2.10 Requirements Analysis 2.11 Creating Designs 2.12 Sketching 2.13 Scenarios 2.14 Storyboards 2.15 Design Patterns 2.15 Simplicity | 9 |
| Unit - III | 3.1 UI Software Architecture 3.2 Design Patterns for GUIs <ul style="list-style-type: none"> ▪ View Tree ▪ Listener ▪ Widgets ▪ Model-View-Controller 3.3 Approaches to GUI Programming <ul style="list-style-type: none"> ▪ Procedural ▪ Declarative ▪ Direct manipulation 3.4 Web UI at Lightning Speed <ul style="list-style-type: none"> ▪ HTML ▪ JavaScript 3.5 Layout <ul style="list-style-type: none"> ▪ CSS ▪ Automatic Layout ▪ Constraints 3.6 Input <ul style="list-style-type: none"> ▪ Input Events ▪ State Machines ▪ Event Dispatch and Propagation 3.7 jQuery 3.8 Bootstrap | 9 |
| Unit - IV | 4.1 Prototyping & user Interface <ul style="list-style-type: none"> ▪ Paper Prototypes ▪ Computer Prototypes ▪ Wizard of OZ Prototypes 4.2 Graphics Design <ul style="list-style-type: none"> ▪ Human Perception <ul style="list-style-type: none"> - Chunking - Visual variables | 9 |

| | | |
|-----------------|---|---|
| | <ul style="list-style-type: none"> - Gestalt Principles ▪ Graphic Design Guideline <ul style="list-style-type: none"> - Simplicity - Contrast - White Space - Balance - Alignment | |
| | <p>4.3 Information Visualization</p> <ul style="list-style-type: none"> ▪ Motivation ▪ Using space well ▪ Interactivity ▪ Toolkits for Visualization | |
| | <p>4.4 Color Design and Typography</p> <ul style="list-style-type: none"> ▪ Color <ul style="list-style-type: none"> - Human Vision - Color Models - Design Guidelines ▪ Typography <ul style="list-style-type: none"> - Readability - Font metrics - Spacing - Typefaces | |
| Unit - V | <p>5.1 Animation</p> <ul style="list-style-type: none"> ▪ Design principles ▪ Frame Animation ▪ Property Animation ▪ Pacing and Path <p>5.2 Input and output Technology</p> <ul style="list-style-type: none"> ▪ Display ▪ Pointing Devices ▪ Touch Panel <p>5.3 Mobile user interfaces</p> <ul style="list-style-type: none"> ▪ Symbian ▪ Android | 9 |

Reference Link:

- <http://web.mit.edu/6.813/www/sp17/>
- Designing with the Mind in Mind (By Jeff Johnson).
- Evil by Design (By Chris Nodder).
- Simple and Usable Web, Mobile, and Interaction Design (By Giles Colborne).
- Designing Interfaces (By Jenifer Tidwell).
- The Best Interface Is No Interface (By Golden Krishna).
- About Face: The Essentials of Interaction Design (By Alan Cooper, Robert Reimann, David Cronin, Christopher Noessel).

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - III
TITLE: GAME PRODUCTION
PAPER CODE: ANI3603

[CREDITS -3]

Learning Objectives :

1. In this semester students will learn the game engine Unity.
2. Unity is software which is widely used in gaming industry for developing various games. We can use this software for creating art as well as developing codes for games.
3. Student will also complete their game project which they have started in semester V. Production & post production of the game will conclude in this semester.

| | Title and Contents | No. of Lectures |
|-------------------|--|------------------------|
| Unit - I | Introduction to UNITY: 1.1 Introduction to gaming and game development process 1.2 Unity Basics, Interface, Hierarchy & Inspector 1.3 Creating Projects | 3 |
| Unit - II | Project Management and Importing Assets: 2.1 Importing Geometry 2.2 Importing Textures 2.3 Creating Materials - Bump and Specular | 2 |
| Unit - III | Programming and Game Building: 3.1 Basics of programming using c# scripts 3.2 Monodevelop editor 3.3 Variables and Functions | 5 |
| Unit - IV | Creating our first 2D Game: 4.1 Creating Assets 4.2 Importing and Setting up scene 4.3 Creating Menu, Level and Credits Scene 4.4 Basic Animation 4.5 Linking Scenes 4.6 Basic Script for Bg Scroll, Movement, Opponent collision, and Score. 4.7 Adding Sound 4.8 Exporting to a EXE | 10 |
| Unit - V | Unity 3D: 5.1 Terrains 5.2 Character Controller 5.3 Importing Animations from 3D Software 5.4 Physics and Rigid body in Unity 5.5 Lighting and Baking Lights in the Scene | 5 |
| Unit - VI | Creating Our first 3D Game: 6.1 Creating Assets in Blender 6.2 Importing and Setting up scene 6.3 Creating Menu, Level and Credits Scenes 6.4 Linking Scenes 6.5 Basic Script for Rigid body, Movement, collision and Score. | 12 |

| | | |
|--------------------|---|---|
| | 6.6 Adding Sound 6.7 Exporting to a EXE | |
| Unit - VII | Particle System: 7.1 Shuriken Particle System 7.2 Creating basic effects | 3 |
| Unit - VIII | Setting up Android Environment: Optimizing our Game for Android Smartphones | 5 |

Reference Books:

1. The Art of Game Design: A Book of Lenses - Jesse Schell. Publisher: CRC Press (12th September 2008). ISBN-10: 0123694965 ISBN-13: 978-0123694966.
2. Game Mechanics: Advanced Game Design (Voices That Matter), Ernest Adams (Author), Joris Dormans (Author). Publisher: New Riders; 1 edition (15th June 2012). ISBN-10: 0321820274 ISBN-13: 978-0321820273.
3. Game Coding Complete, Fourth Edition Paperback Mike McShaffry (Author), David Graham (Author). Publisher: Cengage Learning PTR; 4 edition (March 5th, 2012) ISBN-10: 1133776574 ISBN-13: 978-1133776574.
4. Game Development Essentials: Game Story & Character Development Paperback Marianne Krawczyk (Author), Jeannie Novak (Author). Publisher: Cengage Learning; 1 edition (March 23rd, 2006). ISBN-10: 1401878857 ISBN-13: 978-1401878856.

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - IV
TITLE: MOTION GRAPHICS
PAPER CODE: ANI3604

[CREDITS - 3]

Learning Objectives:

Upon completion of the motion graphics track will be able to:

1. Employ the terminology of motion graphic design when presenting, critiquing, or discussing, motion graphic design ideas and solutions.
2. Analyze motion graphics in contemporary and historical contexts.
3. Apply graphic design principles to time-based works.
4. Produce motion graphics in a range of professionally-recognized forms.
5. Utilize appropriate content and techniques to tell a story.
6. Compile a portfolio of motion graphic design.

| | Title and Contents | No. of Lectures |
|-------------------|--|------------------------|
| Unit - I | Motion Graphics: A Perspective: 1.1 History of Motion Graphics 1.2 Motion Graphics in Film and Television 1.3 The Pictorial Composition 1.4 Space and Composition: An Overview 1.5 Principles of Composition 1.6 Constructing Space | 8 |
| Unit - II | The Sequential Composition: 2.1 Overview 2.2 Forms of continuity 2.3 Forms of Discontinuity 2.4 Montage | 8 |
| Unit - III | Conceptualization: 3.1 Assessment 3.2 Formulation 3.3 Cultivation 3.4 Storyboards 3.5 Animatics | 9 |
| Unit - IV | Animation Processes: 4.1 Frame-by-frame Animation 4.2 Interpolation 4.3 Spatial Interpolation 4.4 Visual Interpolation 4.5 Temporal Interpolation 4.6 Coordinating Movement | 10 |
| Unit - V | Motion Graphics Compositing: 5.1 Compositing: An Overview 5.2 Blend Operations 5.3 Keying 5.4 Alpha Channels 5.5 Mattes 5.6 Masks | 10 |

| | | |
|--|----------------------|--|
| | 5.7 Nesting | |
| | 5.8 Color Correction | |

Reference Books:

1. Motion Graphic Design: Applied History and Aesthetics. Author: Jon Krasner. ISBN: 9780240809892. Publisher: Focal Press.
2. Design for Motion: Fundamentals and techniques of motion design. Author: Austin Shaw, Focus Press, 2015, ISBN 10-1138812099.

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - V
TITLE: VFX-II
PAPER CODE: ANI3605

[CREDITS - 3]

Learning Objectives:

Student will learn in this Semester to composing 3d objects in video footage. Match-Moving process and various methods of Visual Special Effects for live action & Animation Films and to create Environments which looks realistic with the help of Different techniques used for VFX. Student will also know the different tools of VFX which are currently used in industry.

| | Title and Contents | No. of Lectures |
|-------------------|--|------------------------|
| Unit - I | Stereoscopic 3d Conversion and VFX: 1.1 Stereoscopy and psychological aspect of 3D 1.2 Stereoscopy types 1.3 HUD Effect. 1.4 Stereoscopic Shooting (Using 3Ds Max or Maya Camera tool) 1.5 Narrative Grammar, 2D to 3D Conversion | 8 |
| Unit - II | 3D Objects and Match Moving: 2.1 Exploring a typical Match movie 2.2 Moving From 2D to 3D and Back again 2.3 Understanding the match moving process 2.4 Adding Rough Geometry and Refining the Camera 2.5 Creating a Camera Rig | 9 |
| Unit - III | VFX Compositing: 3.1 Digital Compositing with CGI 3.2 Compositing Visual Effects 3.3 Particles 3.4 3D Compositing, Stereo Compositing | 10 |
| Unit - IV | VFX pipeline and project report: 4.1 What is a pipeline? 4.2 An overview of film production 4.3 The Economics of film production 4.4 Pre-production in the film pipeline 4.5 Production in the film pipeline 4.6 Post production in the film pipeline | 10 |
| Unit - V | VFX Show Reel: 5.1 Artist Profile 5.2 Work Presentation 5.3 Interview Skill 5.4 Show reel | 8 |

Reference Books:

1. ISBN-10: 1480157090 Digital Stereoscopy Scene to Screen 3D Production Workflows.
2. ISBN-10: 111835205X Match Moving: The Invisible Art of Camera Tracking.
3. ISBN-10: 0240817818 Compositing Visual Effects: Essentials for the Aspiring Artist 2nd Edition.
4. ISBN-10: 0415812291 Production Pipeline Fundamentals for Film and Games.

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - VI
TITLE: NEW MEDIA
PAPER CODE: ANI3606

[CREDITS - 3]

Learning Objectives:

1. Introduce the notion of globalization and understand how it impacts multilingual and multicultural communication in new media.
2. Introduce the purpose, nature and language specific to a variety of new media communication in different corporate and professional environment.
3. Examine the intersection of new media and professional communication practice to enhance the success of corporate and professional communication and the quality of human life.

| | Title and Contents | No. of Lectures |
|-------------------|--|------------------------|
| Unit - I | Introduction to Internet: 1.1 Spread of Internet: What is internet?, Salient features and advantage over traditional media, History and spread of internet in India, reach and problem of access. 1.2 Internet and Knowledge Society: Convergence and Multi-media: Print, Radio, TV, Internet and Mobile | 8 |
| Unit - II | Online Journalism: 2.1 What is online journalism?: Earlier websites of newspapers, E-books and E-publishing 2.2 Introduction to content management system Hyper-textuality, Multi-mediality and interactivity 2.3 Use of various online tools to manage text, links, photos, maps, audio, video, etc. 2.4 Status of online journalism today | 10 |
| Unit - III | New Media I: 3.1 Digital storytelling: Tools of multimedia journalists, learn to report, write and produce in a manner that is appropriate for online media. 3.2 Feature writing for online media: Story idea, development and news updates, Podcast and Webcast | 12 |
| Unit - IV | New Media II: 4.1 Open source journalism: Responding to the audience, Annotative reporting Citizen Journalists. 4.2 Problem of verification, accuracy and fairness, use of blogs, tweets, etc. for story generation and development. 4.3 Protecting copyright, exploring cyberspace | 10 |
| Unit - V | Internal Assessment: | 10 |

| | | |
|--|---|--|
| | 5.1 Individual Blog: News stories, features, opinion pieces, pictures and video. | |
| | 5.2 Group weblog: Working on different themes and issues and posting it on a team's blog. | |
| | 5.3 Contribution to a Group or Community on any of the Social Network Sites. | |
| | 5.4 Bring out a web edition of the experimental journal | |

Reference Books:

1. Nath, Shyam. Assessing the State of Web Journalism. Authors Press, New Delhi, 2002.
2. Chakravarthy, Jagdish. Net, Media and the Mass Communication. Authors Press, New Delhi, 2004.
3. Bhargava, Gopal. Mass Media and Information Revolution. Isha Books, New Delhi, 2004.
4. Menon, Narayana. The Communication Revolution. National Book Trust.
5. Pavlik J. V. Media in the Digital Age. Columbia University Press.
6. Newspaper and magazine articles about New Media.

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - VII
TITLE: PRACTICAL IN UI DESIGN
PAPER CODE: ANI3607

[CREDITS - 2]

| Sr. No. | Name of Practical |
|----------------|---|
| 1. | Setup the barebones of the website |
| 2. | Setup the 'About me' section |
| 3. | Adding and style a table of courses |
| 4. | Making a creative web page using different fonts, a cool background |
| 5. | Usage of the Javascript Console |
| 6. | Selecting Elements, Getting and Setting Values |
| 7. | Attributes, Classes and CSS Manipulation |
| 8. | jQuery UI |
| 9. | Canvas Manipulation |
| 10. | Using a jQuery Plugin |

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - VIII
TITLE: PRACTICAL IN GAME PRODUCTION AND VFX - II
PAPER CODE: ANI3608

[CREDITS - 2]

| Sr. No. | Name of Practical |
|----------------|---|
| 1. | Stereo Roto - Sorting an object / character / Scene based on Depth. |
| 2. | 3D Compositing - A 3D object in live action footage. |
| 3. | Matchmoving - 3D Tracking, placing an object in Scene, Plate |
| 4. | Cleaning & Color Correction, Grading. |
| 5. | 2D to 3D conversion - Roto, Paint and Depth |
| 6. | 3D to 2D conversion. |
| 7. | Composing Fire / Snow / Rain / Smoke in live action footage. |
| 8. | Stereo Compositing - CC |
| 9. | Heads Up Display (HUD) Effect. |
| 10. | i. Submit a 2D Car Racing Game - Each (Windows) ii. Submit a 3D Running Game - Group (Windows) |

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - IX
TITLE: PRACTICAL IN MOTION GRAPHICS
PAPER CODE: ANI3609

[CREDITS - 2]

| Sr. No. | Name of Practical |
|---------|--------------------------------------|
| 1. | Black money (Medium - 2D) |
| 2. | Save girl child (Medium - 2D) |
| 3. | Demonetization (Medium - 2D) |
| 4. | Corporate Company (Medium - 3D) |
| 5. | Graphics Design (Medium - 3D) |
| 6. | College Life (Medium - 3D) |
| 7. | Corruption (Medium - 3D) |
| 8. | Working Women (Medium-mixed) |
| 9. | Health Related Issues (Medium-mixed) |
| 10. | Exercise / Workout (Medium-mixed) |

T.Y. B.Sc. (ANIMATION) SEMESTER - VI
ANIMATION PAPER - X
TITLE: PROJECT (PRODUCTION, POST-PRODUCTION)
PAPER CODE: ANI3610

[CREDITS - 3]

| Guidelines for Project | |
|------------------------|---|
| 1. | <p>A) Animation Project Guidelines:</p> <ol style="list-style-type: none"> 1. Two Students in one group for group project. 2. Pre-Production work should include story, script, story board, concept art, character bible, props design & background design etc. Hard copy of pre-production should be submitted before starting actual production work in Semester VI. 3. There should be a Originality in Concept & Content. 4. Duration of project minimum 2 minutes. 5. Project should be a core Animation project including VFX & Compositing with Audio Effect. 6. Project may not contain unnecessary violence, obscenity, nudity or racially disparaging material. 7. Project may not contain trademarks, logos or trade dress owned by others without their permission; or any commercial content that promotes any product or service. 8. Project should not promote smoking or drinking habits in any forms. 9. Project may not content copyrighted material owned by others including photographs, sculptures, paintings and other works of arts or images published on internet. 10. Project should not promote any political activity. |