



Karmaveer Bhaurao Patil University, Satara

**Syllabus for
B. Sc. II Animation Science**

**Under
Faculty of Science and Technology**

(As per NEP 2020)

With effect from Academic Year 2025-2026

Syllabus for Bachelor of Science (B.Sc.) Part – II Animation Science

PREAMBLE:

This syllabus shall be applicable to the Bachelor of Science (B.Sc.) in Animation Science programme for the Second Year, in accordance with the National Education Policy (NEP) 2020 with effect from the academic year 2025–26.

The Bachelor of Science (B.Sc.) in Animation Science programme has been designed to provide students with a comprehensive foundation in animation, multimedia, digital technologies and creative computing. The curriculum integrates the principles of visual arts, design, computer science and emerging technologies to develop the knowledge, technical skills and creative abilities required for the animation and digital media industries.

The programme follows a multidisciplinary and outcome-based approach with an appropriate balance of theoretical concepts, laboratory work, studio practice and project-based learning. It provides learning opportunities in 2D and 3D Animation, Character Design, Motion Graphics, Visual Effects (VFX), Game Design and Development, User Interface and User Experience (UI/UX) Design, Augmented Reality (AR), Virtual Reality (VR), Artificial Intelligence (AI) and digital content creation, while emphasizing the effective use of industry-standard software and production workflows.

The curriculum also promotes experiential learning through practical assignments, internships, On Job Training (OJT), portfolio development, and collaborative projects. It aims to develop professional competence, creativity, ethical values, communication skills and lifelong learning abilities required for employment, entrepreneurship, higher education and research in animation, multimedia, gaming, digital media and allied disciplines.

1. TITLE: Animation Science
2. YEAR OF IMPLEMENTATION : From 2025-2026
3. DURATION: 01 year
4. PATTERN: Semester
5. MEDIUM OF INSTRUCTION : English
6. PRACTICAL BATCH : 16 Students

7. STRUCTURE OF COURSE:

As per NEP-2020 (2.0)

Sem (Level)	Courses					
	Course I	Course II	OE	VSC/ SEC	AEC/ VEC/ IKS	Total Credit
	Major	Minor				
Sem III (5.0)	Major V (2) Major VI (2) Major P III (2)	Minor V (2) Minor VI (2) Minor P III (2)	OE III (2)	VSC I (2) (P) (Major specific) SEC I (2) (P)	AEC I (2) (English) IKS II (2) (Major Specific)	22
Sem IV (5.0)	Major VII (2) Major VIII (2) Major P IV (2)	Minor VII (2) Minor VIII (2) Minor P IV (2)	OE IV (2)	VSC II (2) (P) (Major specific) SEC II (2) (P)	AEC II (2) (English) VEC II (2) (Environmental studies)	22

Abbreviations: **DSC:** Discipline Specific Course; **OE:** Open Elective; **T:** Theory, **P:** Practical; **IKS:** Indian Knowledge System; Discipline Specific Course, **AEC:** Ability Enhancement Course **VSC:** Vocational Skill Course; **SEC:** Skill Enhancement Course, **VEC:** Value Education Course

8. COURSE TITLE

a. Semester III

Sr. No.	Subject	Theory				Practical		
		Course Code	Course	No. of hours per week	Credits	Course No. & Course Code	No. of hours Per week	Credits
1.	Major V	BAST 231	Classical Animation	2	2	Major Practical - III BASP 233 Classical Animation + Vector Graphics (Practical based on BAST 231 + BAST 232 Courses)	4	2
2.	Major VI	BAST 232	Vector Graphics	2	2			
3.	Minor V	BAST 234	Python Programming	2	2	Minor Practical - III BASP 236 Python Programming + Web Development (Practical based on BAST 234 + BAST 235 Courses)	4	2
4.	Minor VI	BAST 235	Web Development	2	2			
6.	VSC I	BASPVSC I	2D Digital Rigging	--	--	BASPVSC I	4	2
7.	SEC I	BASPSEC I	Character Designing	--	--	BASPSEC I	4	2
8.	AEC I	BAST AEC I	English	2	2	--	--	--
9.	IKS II	BAST IKS II	History of Animation Science in India	2	2	--	--	--

b. Semester IV

Sr. No.	Subject	Theory				Practical		
		Course Code	Course	No. of hours per week	Credits	Course No. & Course Code	No. of hours Per week	Credits
1.	Major VII	BAST 241	Digital Animation-II	2	2	Major Practical - IV BASP 243 Digital Animation-II + 3D Blender (Practical based on BAST 241+BAST 242 Courses)	4	2
2.	Major VIII	BAST 242	3D Blender	2	2			
3.	Minor VII	BAST 244	AI for Animation	2	2	Minor Practical - IV BASP 246 AI for Animation + PHP (Practical based on BAST 244+BAST 245 Courses)	4	2
4.	Minor VIII	BAST 245	PHP	2	2			
6.	VSC II	BASPVSC II	3D Max Animation	--	--	BASP VSC II	4	4
7.	SEC II	BASPSEC II	Architectural Modeling	--	--	BASP SEC II	2	2
8.	AEC II	BAST AEC II	English	2	2	--	--	--
9.	VEC II	BAST VEC II	Environmental Studies in Animation Science	2	2	--	--	--

9. EVALUATION STRUCTURE:

B.Sc. II NEP (2.0) Semester III (5.0)

Vertical	Course Category	Course Code	Internal Evaluation			ESE	Total Marks	Credit
			CCE I	CCE II	CCE III			
Major	T	BAST 231	10	10	10	30	50	02
	T	BAST 232	10	10	10	30	50	02
	P	BASP 233	20			30	50	02
Minor	T	BAST 234	10	10	10	30	50	02
	T	BAST 235	10	10	10	30	50	02
	P	BASP 236	20			30	50	02
VSC	P	BASPVSC 1	20			30	50	02
SEC	P	BASPSEC 1	20			30	50	02
OE	T	BASTOE III	10	10	10	30	50	02
AEC I	T	BASTAEC 1	10	10	10	30	50	02
IKS II	T	BASTIKS II	10	10	10	30	50	02
							550	22

Semester IV (5.0)

Vertical	Course Category	Course Code	Internal Evaluation			ESE	Total Marks	Credits
			CCE-I	CCE II	CCE III			
Major	T	BAST 241	10	10	10	30	50	02
	T	BAST 242	10	10	10	30	50	02
	P	BASP 243	20			30	50	02
Minor	T	BAST 244	10	10	10	30	50	02
	T	BAST 245	10	10	10	30	50	02
	P	BASP 246	20			30	50	02
VSC	P	BASPVSC II	20			30	50	02
SEC	P	BASPSEC II	20			30	50	02
OE	P	BASPOE IV	20			30	50	02
AEC II	T	BASTAEC II	10	10	10	30	50	02
VEC II	T	BASTVEC II	10	10	10	30	50	02
Total							550	22

INTERNAL EVALUATION STRUCTURE

- Internal evaluation of theory papers shall carry a weightage of 40%.
- Activity: For the internal evaluation of theory papers following activities will be adopted for CCE I & CCE II: class test/ open book test/ online course/ Industrial review/ Industrial visit/ e learning video creation/ assignment/seminar/ case study/ fieldwork/ project.
- CCE III shall consist of multiple-choice questions.
- Each CCE will carry 10 marks for 2-credit theory papers and 20 marks for 4-credit theory papers, and the best two scores will be considered for final score.
- Internal evaluation of practical papers shall carry a weightage of 40%.
- For practical examinations, internal evaluation will be based on student performance, attendance, journal records, and viva voce.

Abbreviations: CCE: Continuous Comprehensive Examination; T: Theory, P: Practical, ESE: End Semester Examination



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(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - III

Type : Major V

Marks: 50

Credits : 2

From: A. Y. 2025-26

Name of the Course : Classical Animation (BAST 231)

Course Objectives: Student should be able to...

1. summarize the historical evolution of animation techniques.
2. identify and differentiate between various animations techniques.
3. recall the 12 principles of animation and their significance in creating compelling motion.
4. interpret animated sequences by applying the principles of animation.

Course Outcomes: Student will be able to...

1. summarize history and evolution of animation.
2. analyze and evaluate keyframe animation with precise anatomy and proportions.
3. apply web compatible animation with graphics, movie clip and button symbols.
4. create key by key or traditional animation using principle of animation.

Module	Title and Contents	Hrs.
Module -1:	Overview and History of Animation 1.1 Definition and history of animation, Overview of different animation techniques, Principles of Animation, Understanding the 12 principles of animation. 1.2 Application of principles through analysis of animated sequences, Storyboarding and Storytelling, basics of storyboarding composition, framing, and sequencing, Developing narratives and characters for animation projects. 1.3 Color Theory Introduction to color theory and color palettes in animation.	08
Module -2:	Character Designing and Key frame 2.1 Script writing process, Fundamentals of character design, anatomy, proportions, and expressions, designing original characters, Keyframe Animation. 2.2 Introduction to keyframe animation principles, Creating key poses and breakdowns to define motion, Frame-by-Frame Animation techniques, motion through hand-drawn animation sequences. 2.3 Introduction Storyboard, Storyboard Layout, Art Direction.	07
Module -3:	Timing and Spacing 3.1 Exploring the concepts of timing and spacing in animation, Manipulating timing to convey weight, emotion, and energy, Clean- up and Inking. 3.2 Techniques for cleaning up and inking animation drawings, Maintaining Consistency and clarity in line work, Coloring and Backgrounds, Art Direction, Digital Ink and Paint.	08

Module -4:	Art Direction Acting for Animation 4.1 Introduction to Acting for Animation, Understanding Character Emotions. 4.2 Drop shadows, glows, and feathering, Creating sketches and mosaics, Graphic styles, printing: prepare for Printing, Setup documents for printing. 4.3 Change the page size and orientation, Print with color management, post script printing, print presets.	07
Reference Books:- 1. C. Georgenes, How to Cheat in Adobe Flash CC: The Art of Design and Animation. Routledge, 1st ed., 2017. 2. A. Deja, The Nine Old Men: Lessons, Techniques, and Inspiration from Disney's Great Animators. Focal Press, 2015. 3. R. Williams, The Animator's Survival Kit. Faber & Faber, Rev. ed., 2009. 4. H. Whitaker and J. Halas, Timing for Animation. Focal Press, 2nd ed., 2009. 5. E. Goldberg, Character Animation Crash Course!. Silman-James Press, 2008.		
Evaluation Pattern: 40:60		
Total Marks: 50		
Internal Continuous Evaluation: (20 Marks) • CCE-I : 10 Marks : Activity • CCE-II : 10 Marks : Activity • CCE-III : 10 Marks : MCQ Test (Best of 2 from CCE I,CCE II & CCE III Selected for final score)	End Semester Examination (30 Marks) • Question -1: Solve the following questions (5 questions of 2 marks) • Question -2: Attempt any two out of three questions (3 questions of 10 marks) • Question -3 : Attempt any four out of six questions (6 questions of 5 marks) (50 Marks converted into 30 Marks)	



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Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - III

Type: Major VI

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: Vector Graphics (BAST 232)

Course Objectives: Student should be able to...

1. understand fundamentals of vector graphics and related applications.
2. classify design techniques of professional illustrations.
3. articulate typography, colors theory and design principles in graphic design.
4. categorize professional artwork for print and digital media.

Course Outcomes: Student will be able to...

1. learn the concepts of vector graphics and illustrations workspace.
2. define professional vector illustrations different drawing and editing tools.
3. apply typography, color theory and graphic styles in projects.
4. create professional artwork for branding, print production, digital publishing and animation.

Module	Title and Contents	Hrs
Module -1:	Introduction of Vector Graphics 1.1 Introduction vector graphics applications, raster graphics vs. vector graphics, Principles of composition: balance, proportion, rhythm, emphasis and unity 1.2 Features and Applications of Illustrator, Interface and Workspace, Artboards and Document Setup 1.3 Panels, Toolbars, and Menus, Navigation Tools (Zoom, Hand, Navigator) 1.4 Coordinate systems, grids, guides, rulers, and snapping, Preferences and Workspace Customization	08
Module -2:	Design Techniques 2.1 Drawing and editing basic and complex shapes 2.2 Drawing and editing tools, Pen, Pencil, Shape and Bezier curve techniques. 2.3 Combining, intersecting, subtracting, and dividing shapes. 2.4 Alignment, distribution, grouping, and object arrangement 2.5 Pathfinder Panel, Shape Builder Tool, Grouping, Locking, and Arranging Objects.	07
Module -3:	Typography and Composition 3.1 Working with Text, Character and Paragraph Formatting, Text on Path, Area Type and Threaded text. 3.2 Color Theory in Illustrator, Fill and Stroke, Gradient Tools, Gradient Mesh Basics. 3.3 Pattern Creation Swatches and Global Colors, Transparency and Opacity, Appearance Panel, Graphic Styles, Symbols and Symbol Libraries.	08
Module -4:	Production and post-production 4.1 Layers and Layer Management, Clipping Masks, Compound Paths, Image Trace. 4.2 Live Paint Tools, Perspective Grid, Artboards Management 4.3 Packaging Artwork, Preparing Artwork for Print, Preparing Artwork for Digital Media, 4.4 Exporting for Web and social media. Professional design workflow, file organization, export, and production standards.	07

Reference Books:-

1. T. Cullen, Adobe Illustrator Classroom in a Book. Adobe Press, 2023.
2. T. S. O'Quinn, Adobe Illustrator: The Professional Guide. Peachpit Press, 2020.
3. J. Botello, Adobe Illustrator: A Complete Course and Compendium of Features. Peachpit Press, 2018.
4. S. Caplin, How to Cheat in Adobe Illustrator. Focal Press, 2nd ed., 2013.
5. B. Wood, Adobe Illustrator CC Classroom in a Book. Adobe Press, 2013.

Evaluation Pattern: 40:60**Total Marks: 50****Internal Continuous Evaluation: (20 Marks)**

- CCE-I : 10 Marks : Activity
- CCE-II : 10 Marks : Activity
- CCE-III : 10 Marks : MCQ Test

(Best of 2 from CCE I, CCE II & CCE III Selected for final score)

End Semester Examination (30 Marks)

- Question -1: Solve the following questions (5 questions of 2 marks)
- Question -2: Attempt any two out of three questions (questions of 10 marks)
- Question -3 : Attempt any four out of six questions (6 questions of 5 marks)

(50 Marks converted into 30 Marks)



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Board of Studies in Animation Science

Programme: B. Sc.

Semester - III

Type : Major Practical III

Marks: 50

Credits : 2

From: A. Y. 2025-26

Name of the Course: Major Practical - III BASP 233

Classical Animation + Vector Graphics

(Practical based on BAST 231 + BAST 232 Courses)

Course Objectives: Student should be able to...

1. summarize the historical evolution of animation techniques.
2. identify and differentiate between various animations techniques.
3. classify and categorize business cards, brochures using illustrations application.
4. categorize professional artwork for print and digital media.

Course Outcomes: Student will be able to...

1. summarize articulate history and evolution of animation.
2. demonstrate keyframe animation using graphics principles.
3. define color theory and apply principle in their work.
4. develop professional artwork for print and digital media.

Sr. No.	Title and Contents (Any 15 out of 20 practical's)	Hrs.
Classical Animation		60
1.	Creating a bouncing ball animation using squash and stretch principles.	
2.	Animating a simple character walk cycle.	
3.	Experimenting frame-by-frame animation for fluid movement.	
4.	Creating a character jump animation with anticipation and follow-through.	
5.	Exploring the use of onion skinning for accurate frame referencing.	
6.	Animating a character dialogue scene with lip-syncing.	
7.	Experimenting with different easing options for smoother motion.	
8.	Creating a dynamic action sequence involving multiple characters.	
9.	Using the motion tween feature to animate objects along a path.	
10.	Experimenting with the shape tween feature for morphing animations.	
Vector Graphics		
11.	Create a creative logo design in adobe Illustrator.	
12.	Create a design using the mesh tool in Illustrator.	
13.	Create 3D vector art in adobe Illustrator.	
14.	Create a wristwatch vector illustration in adobe Illustrator.	
15.	Create a vector portrait illustration in adobe Illustrator.	
16.	Create a business card design in Adobe Illustrator.	
17.	Create a web banner design in adobe Illustrator.	
18.	Create a Corporate identity packages Design in Adobe Illustrator.	
19.	Create a creative event poster in abode Illustrator.	
20.	Create a Brochure design in adobe Illustrator.	

Reference Books:-

1. B. Wood, Adobe Illustrator Classroom in a Book. Adobe Press, 2024.
2. J. Botello, Adobe Illustrator: A Complete Course and Compendium of Features. Peachpit Press, 2018.
3. S. Caplin, How to Cheat in Adobe Illustrator: 100 Industrial-Strength Tips & Tricks. Focal Press, 2nd ed., 2013.
4. R. Williams, The Animator's Survival Kit. Faber & Faber, Expanded ed., 2009.
5. E. Goldberg, Character Animation Crash Course!. Silman-James Press, 2008.

Evaluation Pattern: 40:60**Total Marks: 50****Internal Evaluation (20 Marks)**

- Journal : 10 Marks
- Student Performance : 05 Marks
- Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



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Board of Studies in Animation Science

Programme: B. Sc.

Semester - III

Type: Minor V

Marks: 50

Credits: 2

From: A.Y. 2025-26

Name of the Course: Python Programming (BAST 234)

Course Objectives: Student should be able to...

1. learn the process of structuring the data using lists, tuples and dictionaries.
2. study python object types and its functions.
3. identify indexing and slicing to access data in python programs.
4. articulate file Handling and Exception handling of python program.

Course Outcomes: Student will be able to...

1. use python programming concepts and syntax in various project and industrial work.
2. develop python programs using control structures, functions and data structures.
3. apply object-oriented programming concepts for solve animation-related problems.
4. create python scripts for automation and workflow in animation software such as autodesk maya.

Module	Title and Contents	Hrs.
Module -1:	Introduction to Python Programming 1.1 Introduction to Python, Features and Applications of Python, Installing Python and IDE Setup (VS Code, Py Charm). 1.2 Python Syntax and Structure, Variables and Data Types, Operators and Expressions, Input and Output Functions 1.3 . Numbers, strings, Boolean values, and type conversion 1.4 Comments and Documentation, Type Conversion, Basic Programming Examples.	08
Module -2:	Control Structures and Functions 2.1 Conditional Statements (if, if-else, nested if), Loops (for, while), Loop Control Statements (break, continue, pass). 2.2 Functions, Function Arguments, Return Statement. 2.3 Modules and Packages, Error Handling (try-except). 2.4 Scope of variables: local and global variables.	07
Module -3:	Data Structures and Modules 3.1 Strings, lists, tuples, dictionaries, Sets file Handling (Reading, Writing, Appending Files), List, dictionary, and Set comprehensions, nested data Structures. 3.2 Basic operations on data Structures (Searching, Sorting, Slicing),exception handling in File Operations. 3.3 Classes and Objects, Constructors, Inheritance, Polymorphism, Encapsulation. 3.4 Modules, packages, importing modules, and using standard Python libraries	08

Module -4:	Object-Oriented Programming and File Handling 4.1 Introduction to Object-Oriented Programming 4.2 Classes, objects, attributes, and methods, Constructors and object initialization. 4.3 inheritance, polymorphism, encapsulation, and abstraction, File handling: reading, writing, and appending files, 4.4 Working with text and structured data files, Exception handling: try, except, else, and finally.	07
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Reference Books:-

1. M. Lutz, Learning Python. O'Reilly Media, 6th ed., 2025.
2. E. Matthes, Python Crash Course. No Starch Press, 3rd ed., 2023.
3. J. Hunt, A Beginner's Guide to Python 3 Programming. Springer, 2nd ed., 2023.
4. K. McMullen, E. Matthews, and J. J. Parsons, Programming with Python. Cengage Learning, 1st ed., 2023.
5. A. Downey, J. Elkner, and C. Meyers, Learning with Python. Dreamtech Press, 1st ed., 2015.

Evaluation Pattern: 40:60

Total Marks: 50

Internal Continuous Evaluation: (20 Marks)

- CCE-I : 10 Marks : Activity
- CCE-II : 10 Marks : Activity
- CCE-III : 10 Marks : MCQ Test

(Best of 2 from CCE I,CCE II & CCE III Selected for final score)

End Semester Examination (50 Marks)

- Question -1: Solve the following questions (5 questions of 2 marks)
 - Question -2: Attempt any two out of three questions (3 questions of 10 marks)
 - Question -3 : Attempt any four out of six questions (6 questions of 5 marks)
- (50 marks converted into 30 Marks)**



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Board of Studies in Animation Science

Programme: B. Sc.

Semester - III

Type: Minor VI

Marks: 50

Credits: 2

From: A.Y. 2025-26

Name of the Course: Web Development (BAST 235)

Course Objectives: Student should be able to...

1. understand fundamentals of web technologies and website development .
2. classify responsive web pages using html5, CSS3 and javascript.
3. prepare interactive and visually appealing user interfaces for digital media.
4. categorize and organize HTML, CSS, Javasript and PHP file .

Course Outcomes: Student will be able to...

1. explain the concepts of web technologies and website architecture.
2. design responsive web pages using html5 and css3.
3. develop interactive web applications using java script.
4. create dynamic, database-driven web applications using php and mysql.

Module	Title and Contents	Hrs.
Module -1:	Fundamentals of Web Development 1.1 Introduction to Web Technologies, Internet, World Wide Web, and Web Browsers, Client-Server Architecture, Website Planning and Design Process 1.2 HTML5 Structure and Semantic Elements, Text Formatting and Lists, Hyperlinks and Navigation, Images, Tables, and Multimedia, Forms and Input Elements. 1.3 Introduction to Web Hosting and Domain Names.	08
Module -2:	CSS3 for Web Design 2.1 Introduction to CSS3, CSS Syntax and Selectors, Inline, Internal, and External CSS, Colors, Fonts, and Typography. 2.2 Backgrounds, Borders, and Shadows, Box Model, CSS Positioning, Flexbox Layout. 2.3 CSS Grid Layout, Responsive Web Design, Media Queries.	07
Module -3:	JavaScript and Interactive Web Pages 3.1 Introduction to JavaScript, Variables and Data Types, Operators and Expressions. 3.2 Conditional Statements, Loops, Functions, Arrays and Objects, DOM Manipulation. 3.3 Events and Event Handling, Form Validation, Introduction to JSON.	08
Module -4:	PHP Programming for Dynamic Web Development 4.1 Introduction to PHP, Features and Advantages of PHP, Installing and Configuring XAMPP/WAMP Server, PHP Syntax and Basic Structure, Variables, Constants, and Data Types. 4.2 Operators and Expressions ,Input and Output Statements, Introduction to MySQL Database, PHP–MySQL Connectivity, Conditional Statements (if, if-else, switch) ,Looping Statements (for, while, do-while, foreach),User-Defined Functions. 4.3 Arrays (Indexed, Associative, Multidimensional),String Handling Functions,	07



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Board of Studies in Animation Science

Programme: B.Sc.

Semester - III

Type : Minor Practical III

Marks: 50

Credits : 2

From: A. Y. 2025-26

**Name of the Course: Minor Practical - III BASP 236
Python Programming + Web Development
(Practical based on BAST 234 + BAST 235 Courses)**

Course Objectives: Student should be able to...

1. learn indexing and slicing to access data in python programs.
2. recognize the structure and components of a python program.
3. apply fundamental programming skills using Python, JavaScript and PHP for solving computational and animation-related problems.
4. interpreting web development using HTML, CSS, JavaScript, PHP and MySQL for creating responsive and dynamic websites.

Course Outcomes: Student will be able to...

1. install python language application and understand its syntax.
2. executing the syntax rules in python programming.
3. design and implement interactive web pages using php.
4. create and validate user inputs through web forms and various web technologies.

Sr. No.	Title and Contents (Any 15 out of 20 practical's)	Hrs.
	Python Programming	60
1.	Write Python programs using variables, data types, operators, and input/output statements.	
2.	Develop programs using conditional statements (if, if-else, and nested if) to solve animation-related problems.	
3.	Implement for and while loops to generate patterns, sequences, and repetitive animation calculations.	
4.	Create user-defined functions to perform mathematical operations and reusable animation utility tasks.	
5.	Perform operations on Python data structures (Lists, Tuples, Dictionaries, and Sets) for managing animation assets.	
6.	Develop a program for file handling to read, write, and update animation project data or asset information.	
7.	Implement Object-Oriented Programming concepts by creating classes and objects for characters, cameras, or scene objects.	
8.	Write Python scripts to automate simple tasks in Autodesk Maya using the maya. cmds module (e.g., create objects, move, scale, rename).	
9.	Design a basic graphical user interface (GUI) using Tkinter for an animation utility such as a batch renaming or object creation tool.	
10.	Mini Project: Develop a Python-based animation automation tool, such as a scene organizer, asset manager, object generator, or animation helper utility.	
	Web Development	
11.	Create a basic HTML webpage with text, images, and hyperlinks.	
12.	Design an HTML form using different input elements.	
13.	Apply CSS styles to format a webpage.	
14.	Create a responsive webpage using CSS Flexbox and Media Queries.	
15.	Write JavaScript programs using variables, operators, and functions.	
16.	Develop a webpage using JavaScript events and DOM manipulation.	

17.	Write PHP programs using variables, operators, loops, and functions.	
18.	Create a PHP program to process HTML forms using GET and POST methods.	
19.	Connect PHP with MySQL and perform simple database operations.	
20.	Develop a simple dynamic website using HTML, CSS, JavaScript, PHP, and MySQL.	

Reference Books:-

1. A. Sweigart, Automate the Boring Stuff with Python: Practical Programming for Total Beginners. No Starch Press, 3rd ed., 2025.
2. E. Matthes, Python Crash Course: A Hands-On, Project-Based Introduction to Programming. No Starch Press, 3rd ed., 2023.
3. R. Nixon, Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5. O'Reilly Media, 6th ed., 2021.
4. L. Beighley and M. Morrison, Head First PHP & MySQL. O'Reilly Media, 2nd ed., 2017.
5. W. J. Chun, Core Python Applications Programming. Pearson Education India, 3rd ed., 2015.

Evaluation Pattern: 40:60

Total Marks: 50

Internal Evaluation (20 Marks)

- Journal : 10 Marks
- Student Performance : 05 Marks
- Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



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Faculty of Science and Technology

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Board of Studies in Animation Science

Programme: B.Sc.

Semester - III

Type : VSC I Practical

Marks: 50

Credits : 2

From: A. Y. 2025-26

Name of the Course: (BASPVS I)

Course Objectives: Student should be able to...

1. understand character anatomy and rigging and its types.
2. study of procedure of implement inverse kinematics (Ik) constraints to rig character joints.
3. analyze and categorized procedure of rigging character joints using forward kinematics (Fk) constraints.
4. explain rigging visual impact and clarity of different naming graphic styles and attributes for diverse applications.

Course Outcomes: Student will be able to...

1. utilize symbol creation tools to design and customize naming graphics with relevant attributes for visual communication.
2. apply anatomical knowledge and facial rigging techniques to create a realistic and expressive rig for a human face.
3. classify and categorize advanced scene management techniques to compile and organize complex scenes with multiple elements, layers, and staging setups.
4. create 2D flash organic and inorganic rigging.

Lab	Title and Contents	Hrs.
	2D Digital Rigging	
1.	Rigging a character for basic walk and run cycles.	
2.	Experimenting with facial rigging for expressions like smiles, frowns, and blinks.	
3.	Rigging a character for lip-syncing with dialogue.	
4.	Creating a rig for a character with interchangeable clothing options.	
5.	Rigging a character for different body types (slim, muscular, chubby).	
6.	Experimenting with inverse kinematics (IK) for more natural limb movements.	
7.	Rigging a character with dynamic hair and cloth physics.	
8.	Creating a rig for a quadruped character like a dog or cat.	
9.	Experimenting with rigging for special effects like fire or water simulations.	
10.	Rigging a character with customizable accessories like hats, glasses, or jewellery.	
11.	Creating a rig for a non-human character like a robot or alien.	
12.	Experimenting with rigging for secondary animations like tail wagging or ear twitching.	
13.	Rigging a character with modular parts for easy customization.	
14.	Creating a rig for a multi-limbed character like an insect or spider.	
15.	Experimenting with rigging for exaggerated cartoon movements.	
16.	Rigging a character with multiple facial expressions controlled by sliders.	
17.	Creating a rig for a character with wings for flying animations	
18.	Experimenting with rigging for background elements like trees or vehicles.	
19.	Rigging a character with special abilities like shape-shifting or stretching.	
		60

20.	Creating a rig for a character with interchangeable weapons or tools.	
Reference Books:- 1. R. Chun, Adobe Animate Classroom in a Book (2024 Release). Adobe Press, 2023. 2. C. Georgenes, Flash Character Animation Applied: Making Things Move!. Focal Press, 2014. 3. K. Ulrich, Flash Professional CS6: Visual QuickStart Guide. Peachpit Press, 2014. 4. J. Fulton and S. Fulton, The Essential Guide to Flash Games: Building Interactive Entertainment with ActionScript. Friends of ED, 2010. 5. B. Kelly and T. Jones, Foundation Flash Cartoon Animation. Friends of ED, 2007.		
Evaluation Pattern: 40:60		
Total Marks: 50		
Internal Evaluation (20 Marks) • Journal : 10 Marks • Student Performance : 05 Marks • Viva : 05 Marks		Practical Exam Paper (30 Marks) • ESE:30 Marks



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - III

Type: SEC I Practical

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: (BASPSEC I)

Course Objectives: Student should be able to...

1. understand fundamental principles of line of action and proportions in character design.
2. memorize basic prop shapes used in character creation.
3. identify the key components of traditional tribal human characters.
4. define fundamental principles of character design.

Course Outcomes: Student will be able to...

1. classify different character development techniques.
2. demonstrate and sketch traditional character construction.
3. create inorganic & organic character.
4. develop different facial expressions & character key poses.

Sr.No.	Title and Contents	Hrs.
	Character Designing	
1.	Line of Action and proportions.	60
2.	Create basic props shape.	
3.	Create traditional Tribal Human character.	
4.	Construction of Cartoon character head.	
5.	Construction of semi -Cartoon character head.	
6.	Skeleton foundation of realistic character.	
7.	Skeleton foundation of Cartoon character.	
8.	Skeleton foundation of semi -Cartoon character.	
9.	Cartoon human character.	
10.	Cartoon Animal character.	
11.	Create goofy characters.	
12.	Heavy pugnacious character	
13.	Cute children character	
14.	Create (inorganic) Robot character.	
15.	Create (organic) Tree character.	
16.	Create Anime character.	
17.	Create cartoon character facial expression.	
18.	Create semi- cartoon character facial expression.	
19.	Create realistic character facial expression.	
20.	Character Key poses.	

Reference Books:-

1. C. Mellor, Anime Coloring Book: Cute Anime Characters to Color for All Ages. Loredana Loson, 2021.
2. K. Crossley, Character Design from the Ground Up. Design Studio Press, 2014.

3. W. Eisner, Expressive Anatomy for Comics and Narrative: Principles and Practices from the Legendary Cartoonist. W. W. Norton & Company, Reprint ed., 2010.
4. M. Hampton, Figure Drawing: Design and Invention. Michael Hampton, 2010.
5. J. Gurney, Color and Light: A Guide for the Realist Painter. Andrews McMeel Publishing, 2010.

Evaluation Pattern: 40:60

Total Marks: 50

Internal Evaluation (20 Marks)

- Journal : 10 Marks
- Student Performance : 05 Marks
- Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashwantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - III

Type: IKS II

Marks: 50

Credits: 2

From: A.Y. 2025-26

Name of the Course : BASTIKS II : History of Animation Science in India

Course Objectives: Student should be able to...

1. understand history of animation and Indian traditional storytelling.
2. memorizing early Indian Pioneers and Early Animated Films and perception.
3. trace the evolution of Indian animation from indigenous methods to modern digital forms.
4. integrate Indian knowledge systems (IKS) into creative and practical animation work.

Course Outcomes: Student will be able to...

1. identify and describe Indian storytelling forms and their visual dynamics.
2. explain indigenous theories of motion, rhythm and narrative.
3. critically analyze the evolution of Indian animation from tradition to technology.
4. apply traditional storytelling forms in contemporary animation projects.

Module	Title and Contents	Hrs
Module -1:	Early Animation Techniques in India 1.1 Animation, emergence of animation, father of Indian Animation, Ram Mohan's contributions, traditional storytelling methods: Shadow puppetry and hand-painted slide shows. 1.2 Influence of folk tales and epics like the Ramayana and Mahabharata in visual storytelling. 1.3 The role of magic lanterns and their impact on early visual narratives, Use of perspective, movement, and illusion in temple murals and scrolls, stop motion animation.	08
Module -2:	Pioneers and Early Animated Films 2.1 Contributions of Dadasaheb Phalke, classical animation, Gunamoy Banerjee's The Pea Brothers (1934) and its significance in Indian animation history, K.S. Gupte and G.K. Gokhle's self- taught animation experiments. 2.2 Concept of time, motion, and perception in ancient Indian texts, Use of optical toys and devices, Indian cosmology's influence on visual cycles and movement.	07
Module -3:	Post-Independence Growth and Institutionalization 3.1 Establishment of the Cartoon Films Unit in the Films Division of India. 3.2 Growth of animation studios like Graphiti Multimedia and their impact on the industry. 3.3 Transition from indigenous to industrial modes of storytelling, Integration of Indian stories with western technology – a hybrid model. 3.4 Role of Films Division of India, educational institutions, and global exposure.	08
Module -4:	Contemporary Animation Industry in India 4.1 Rise of animation studios and educational institutions. 4.2 Integration of animation in Indian media, films based on social and educational themes, advertising, and entertainment. 4.3 Challenges, and opportunities in the global animation market.	07

Reference Books:-

1. R. Williams, The Animator's Survival Kit. Faber & Faber, Expanded ed., 2024.
2. G. Bendazzi, Animation: A World History. CRC Press, Revised ed., 2021.
3. J. Hollander, Indian Folk Theatres. Routledge, 2019.
4. D. Whitley, The Idea of Nature in Disney Animation. Ashgate Publishing, 2008.
5. S. Rajadhyaksha and P. Willemen. Encyclopaedia of Indian Cinema. 2nd ed. New Delhi: Oxford University Press, 1999.

Evaluation Pattern: 40:60**Total Marks: 50****Internal Continuous Evaluation: (20 Marks)**

- CCE-I : 10 Marks : Activity
- CCE-II : 10 Marks : Activity
- CCE-III : 10 Marks : MCQ Test

(Best of 2 from CCE I, CCE II & CCE III Selected for final score)

End Semester Examination (30 Marks)

- Question -1: Solve the following questions (5 questions of 2 marks)
 - Question -2: Attempt any two out of three questions (3 questions of 10 marks)
 - Question -3 : Attempt any four out of six questions (6 questions of 5 marks)
- (50 marks converted into 30 Marks)**



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: Major VII

Marks: 50

Credits: 2

From: A.Y. 2025-26

Name of the Course : Digital Animation-II (BAST 241)

Course Objectives: Student should be able to...

1. understand the workspace and overview of adobe animate cc.
2. classify rigging and motion tween for character animation.
3. articulate and analyze principles of animation in their work.
4. reframe rig object and character with animation.

Course Outcomes: Student will be able to...

1. analyze the process of 2d animation using a digital platform.
2. rig the character with bone and grouping techniques.
3. apply principles of animation for 2d digital animation.
4. developed object and character animation.

Module	Title and Contents	Hrs
Module -1:	Workspace and overview 1.1 Understanding Animate & Workspace, Document types & creation, Workspace overview (Library, Timeline, Layers, Properties, Tools panels). 1.2 Working with Graphics & Effects, Strokes, fills, shapes, selections, and editing, Brushes, curves, gradients, transparency for depth, Layer effects, filters, and special effects, Symbols & Text. 1.3 Creating, managing symbols & instances, Adding, and editing text, Aligning & distributing objects, Project Workflow & Exporting, Undoing, modifying content & Stage, Previewing, saving, exporting, Collaboration & sharing (Assets panel).	08
Module -2:	Fundamentals 2.1 Animation Basics, Animating position, transparency, filters, and transformations, Pacing, timing, easing, and frame-by-frame animation. Motion paths nested animations, swapping tween targets, Advanced Motion & Tweens. 2.2 Motion Editor: property curves, viewing options, copying/pasting curves, Motion & Classic tweens, complex easing, layer parenting, Rigging & Character Animation. 2.3 Puppet warping & Asset Warp tool, Editing & animating rigs, branching joints, warp options, Inverse kinematics, posing, constraints, and physics simulation. 2.4 Finalizing & Exporting, Lip-syncing with graphic symbols, Pedaling cycles, automatic rotations, rig mapping, Exporting the final animation.	07
Module -3:	Principles 3.1 Definition and Importance of Animation Principles, Historical	

	Overview: Disney’s 12 Principles of Animation. 3.2 Squash and Stretch, Anticipation, Staging, Straight Ahead & Pose-to-Pose, Follow-Through & Overlapping, Slow In & Slow Out, Arcs, Secondary Action, Timing, Exaggeration, Solid Drawing. 3.3 Appeal, Using the camera, attaching layers to the camera for fixed graphics, exporting your final movie.	08
Module -4:	4.1 Animating shapes, Understanding the project file, creating a shape tween, Changing the pace, adding more shape tweens, creating a looping animation, using shape hints ,Previewing animations with onion skinning. 4.2 Animating color, Creating and using masks, Animating the mask and masked layers, easing a shape tween, ActionScript and JavaScript, creating buttons, Preparing the timeline, creating destination keyframes. 4.3 Navigating the Actions panel, Adding JavaScript interactivity, with the Actions panel wizard, reacting the “Shop now” button, 4.4 Playing animation at the destination, Animated buttons.	07
Reference Books:- 1. J. Labrecque. Mastering Adobe Animate 2023: Build Rich Motion Graphics and Interactive Content Using Adobe Animate. Birmingham, UK: Packt Publishing, 2023. 2. Adobe Press. Adobe Animate Classroom in a Book (2024 Release). San Francisco, CA: Adobe Press, 2023. 3. P. Design Tools. Learn Adobe Animate Free! Download 59-Page Guidebook + Assets. October 30, 2022. 4. J. Labrecque. Mastering Adobe Animate 2021: Explore Professional Techniques and Best Practices to Design Vivid Animations and Interactive Content. Birmingham, UK: Packt Publishing, 2021. 5. A. G. Lee. Adobe Animate CC Classroom in a Book. San Francisco, CA: Adobe Press, 2020.		
Evaluation Pattern: 40:60		
Total Marks: 50		
Internal Continuous Evaluation: (20 Marks) • CCE-I : 10 Marks : Activity • CCE-II : 10 Marks : Activity • CCE-III : 10 Marks : MCQ Test (Best of 2 from CCE I,CCE II & CCE III Selected for final score)		End Semester Examination (30 Marks) • Question -1: Solve the following questions (5 questions of 2 marks) • Question -2: Attempt any two out of three questions (3 questions of 10 marks) • Question -3 : Attempt any four out of six questions (6 questions of 5 marks) (50 marks converted into 30 marks)



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: Major VIII

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: 3D Blender (BAST 242)

Course Objectives: Student should be able to...

1. understand the process and methods of 3d object creation and software's.
2. identify various facilities required to set up a 3d character model and animation.
3. comprehend various factors to create 3d objects.
4. articulate and analyzed rigging and animation with rendering.

Course Outcomes: Student will be able to...

1. classify navigation bar with different properties.
2. develop animations for your objects and characters.
3. create animations for your objects & characters.
4. generate photo realistic renders.

Module	Title and Contents	Hrs.
Module -1:	Blender overview 1.1 Overview of Blender, History and evolution, Key features and applications, Navigating the Blender interface. 1.2 Understanding workspaces (Layout, Modeling, Animation, etc.), Viewports and navigation controls, Object manipulation (move, rotate, scale). 1.3 Using the toolbar and menus, Setting up projects and saving files, Understanding 1.4 3D Space, Essential Shortcuts.	08
Module -2:	Modeling and Texturing 2.1 3D Modeling Basics, Types of modeling (box modeling, sculpting, etc.), Creating basic shapes (primitives). 2.2 Modifiers: Mirror, Subdivision Surface, etc. Editing Meshes, Edit mode: vertices, edges, and faces Extrusion, loop cuts, beveling, and snapping, Using proportional editing UV Mapping and Texturing. 2.3 Introduction to UV mapping, Unwrapping techniques, applying textures and materials, Understanding shaders and nodes.	07
Module -3:	Animation and Rigging 3.1 Animation Basics , Keyframe animation, Timeline and Dope Sheet, Graph Editor for smooth transitions, Character Rigging, Adding armatures, Weight painting. 3.2 Bone constraints and IK rigging, Physics Simulations, Basic physics: rigid body, cloth, and fluid, Using particle systems, Rendering Animations, Camera setup and movement, Output settings for animation.	08
Module -4:	Lighting, Rendering 4.1 Lighting in Blender, Types of lights: point, area, sun, etc., HDRI lighting for realistic scenes, Light linking and shadow settings. 4.2 Rendering with Cycles and Eevee, Differences between Cycles and Eevee Render settings for quality and speed, Post-processing with the Compositor.	07

Reference Books:-

1. J. M. Blain. The Complete Guide to Blender Graphics: Computer Modelling and Animation. 8th ed. Boca Raton, FL: CRC Press, 2024.
2. J. M. Blain. The Complete Guide to Blender Graphics: Computer Modeling and Animation. 8th ed. Boca Raton, FL: CRC Press, 2024.
3. S. J. Thompson. Blender 3D Basics: Modeling, Animation, and Rendering. Packt Publishing, 2021.
4. J. van Gumster. Blender For Dummies. 4th ed. Hoboken, NJ: John Wiley & Sons, 2020.
5. T. T. Mullen. Mastering Blender. 2nd ed. Indianapolis, IN: Sybex, 2019.

Evaluation Pattern : 40:60

Total Marks: 50

Internal Continuous Evaluation: (20 Marks)

- CCE-I : 10 Marks : Activity
 - CCE-II : 10 Marks : Activity
 - CCE-III : 10 Marks : MCQ Test
- (Best of 2 from CCE I, CCE II & CCE III Selected for final score)

End Semester Examination (30 Marks)

- Question -1: Solve the following questions (5 questions of 2 marks)
 - Question -2: Attempt any two out of three questions (3 questions of 10 marks)
 - Question -3 : Attempt any four out of six questions (6 questions of 5 marks)
- (50 marks converted into 30 marks)**



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: Major Practical IV

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: Major Practical - IV BASP 243

Digital Animation-II + 3D Blender

(Practical based on BAST 241+BAST 242 Courses)

Course Objectives: Student should be able to...

1. understand the workspace and overview of adobe animate cc.
2. study on rigging and motion tween for character animation.
3. comprehend various factors to create 3d objects.
4. learn skills related to demonstrating the 3d works.

Course Outcomes: Student will be able to...

1. recognize the professional animation pipeline for production.
2. developed their own character animation styles.
3. knowledge of texture mapping, lighting & rendering output using cycles.
4. explore camera and geometry animation, basic particle systems, and physics.

Sr. No.	Title and Contents (Any 15 out of 20 practical's)	Hrs.
	Digital Animation-II	60
1.	Create a Bouncing ball using Layer effects.	
2.	Create a background using Tress Techniques.	
3.	Create stick figure Character frame by frame animation.	
4.	Create reginal and national flag using wave principles	
5.	Create rigging for character Animation	
6.	Create semirealistic human character walk cycle	
7.	Create semirealistic animal character walk cycle.	
8.	Create action scenes with face expressions.	
9.	Character Jump Animation with Anticipation	
10.	Create lips synchronization with dialog and action.	
	3D Blender	
11.	Create model of coffee mug.	
12.	Modelling – dinner table fork using extruding and fill.	
13.	Modelling ice man using 3d blender.	
14.	Modelling a cup with a wood texture.	
15.	Texturing wooden table in blender.	
16.	Modelling a treasure box using 3d blender.	
17.	Modeling Indian Flag and applying flag texture using 3d blender.	
18.	Create Fuzzy Stuffed in 3D software	
19.	Create Photorealistic Ring in 3D software	
20.	Create Full Character Male/Female Model in 3D software.	

Reference Books:-

1. J. M. Blain. The Complete Guide to Blender Graphics: Computer Modeling and Animation. 8th ed. Boca Raton, FL: CRC Press, 2024.
2. J. van Gumster. Blender For Dummies. 4th ed. Hoboken, NJ: John Wiley & Sons, 2020.

3. R. Caudron, P.-A. Nicq, and E. Valenza. Blender 3D: Designing Objects. Birmingham, UK: Packt Publishing, 2016.
4. T. Mullen. Mastering Blender. 2nd ed. Indianapolis, IN: Sybex, 2011.
5. D. H. Eberly. 3D Game Engine Design: A Practical Approach to Real-Time Computer Graphics. 2nd ed. Burlington, MA: Morgan Kaufmann, 2006.

Evaluation Pattern:40:60

Total Marks: 50

Internal Evaluation (20 Marks)

- Journal : 10 Marks
- Student Performance : 05 Marks
- Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: Minor VII

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course : AI for Animation (BAST 244)

Course Objectives: Student should be able to...

1. learn basics of artificial intelligence.
2. recognize applications of ai in animation.
3. classify ai prompts and generation of scenes with AI.
4. discuss challenges in ai-driven animation.

Course Outcomes: Student will be able to...

1. categorize examples of ai-driven animation projects.
2. relate environments and backgrounds development with ai.
3. develop ai-generated elements into the animation pipeline.
4. create ai-driven storytelling videos.

Module	Title and Contents	Hrs.
Module -1:	Introduction to AI in Animation 1.1 Introduction to Artificial Intelligence (AI), History and evolution of AI, Applications of AI 1.2 AI concepts: Machine Learning, Deep Learning, Generative AI 1.3 The difference between strong AI and weak AI, Types of AI 1.4 Role of AI in the Animation Industry	08
Module -2:	Machine Learning and Deep Learning 2.1 Introduction to Machine Learning and its relationship with AI, Types of Machine Learning 2.2 Basic Machine Learning algorithms and their applications 2.3 Neural Networks: Concept, structure and working, Deep Learning and its applications 2.4 Introduction to Generative AI and Large Language Models (LLMs)	07
Module -3:	Generative AI and AI Tools 3.1 Concept and working principles of Generative AI 3.2 Text, Image, Audio, Video and 3D content generation 3.3 Prompt Engineering: prompts, instructions, context, constraints and refinement 3.4 AI tools for text generation, image generation, audio generation and video generation	08
Module -4:	Prompt Engineering 4.1 Introduction to Prompt Engineering, Meaning and importance of prompts, Types of prompts, Basic prompt structure 4.2 Writing clear and specific prompts, Giving role, task, context, and instructions 4.3 Text prompts for character generation, prompts for backgrounds and environments, Prompts for animation and video generation 4.4 Prompt refinement and improvement, Evaluating AI-generated results, Responsible and ethical use of AI	07

Reference Books:-

1. K. P. Murphy. Probabilistic Machine Learning: An Introduction. Cambridge, MA: MIT Press, 2022.
2. S. J. Russell and P. Norvig. Artificial Intelligence: A Modern Approach. 4th ed. Hoboken, NJ: Pearson, 2021.
3. M. T. Jones. Artificial Intelligence: A Systems Approach. 2nd ed. New Delhi: Dreamtech Press, 2008.
4. D. W. Patterson. Introduction to Artificial Intelligence and Expert Systems. New Delhi: PHI Learning Pvt. Ltd., 2007.
5. E. Rich and K. Knight. Artificial Intelligence. 2nd ed. New Delhi: Tata McGraw-Hill Publishing Company, 1991.

Evaluation Pattern: 40:60**Total Marks: 50**

Internal Continuous Evaluation: (20 Marks)	End Semester Examination (30 Marks)
• CCE-I : 10 Marks : Activity • CCE-II : 10 Marks : Activity • CCE-III : 10 Marks : MCQ Test (Best of 2 from CCE I, CCE II & CCE III Selected for final score)	• Question -1: Solve the following questions (5 questions of 2 marks) • Question -2: Attempt any two out of three questions (3 questions of 10 marks) • Question -3 : Attempt any four out of six questions (6 questions of 5 marks) (50 marks converted into 30 marks)



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: Minor VIII

Marks: 50

Credits: 2

From: A.Y. 2025-26

Name of the Course : PHP (BAST 245)

Course Objectives: Student should be able to...

1. understand procedure of website development using php.
2. study on dynamic aspects pages and related things.
3. explore basic programming constructs of other languages.
4. learn difference between get and post requests method.

Course Outcomes: Student will be able to...

1. design and implement interactive web pages using php.
2. manage and validate user inputs through web forms.
3. perform crud operations with mysql using php.
4. build and deploy full-fledged dynamic web applications.

Module	Title and Contents	Hrs.
Module -1:	Introduction to PHP 1.1 Introduction to PHP, installation XAMPP/WAMP, PHP Syntax, clients-server architecture. 1.2 PHP Fundamentals, Features and advantages of PHP, history and version of PHP, 1.3 Control Structures, Comment in PHP, create and running first PHP programme.	08
Module -2:	Functions, Arrays and String Handling 2.1 functions in PHP, Arrays, String Handling, File Handling and Error Handling, Variables, Strings, Constants, Operators. 2.2 If statement, If –Else statement, nested if, switch statement, loops, break and continue 2.3 While Functions, string functions, user defined functions, Date and Time function, Arrays.	07
Module -3:	HTML Forms and PHP 3.1 HTML Forms and PHP Indexed Arrays, Super global Variables, State Management, File Uploading and Basic Web Security 3.2 Associative Arrays, Multidimensional Arrays, Array Functions, Sorting Arrays, Searching Arrays. 3.3 String Functions, String Manipulation, Date and Time Functions, Mathematical Functions. 3.4 HTML Forms, GET Method, POST Method, Form Validation, File Uploading, Error Handling	08

Module -4:	PHP with MySQL and Dynamic Web Applications 4.1 Introduction to Database Introduction of and MySQL, PHP–MySQL Connectivity, Database Operations, Developing Dynamic Web Applications, DBMS and RDBMS, what is SQL? Features and Advantages of SQL Data Types in SQL SQL Command (DDL,DML, DQL,DCL,TCL). 4.2 Creating Database, Creating Tables, Inserting Data, Retrieving Data using SELECT, WHERE Clause, ORDER BY Clause, GROUP BY and HAVING. 4.3 Aggregate Functions (COUNT, SUM, AVG, MAX, MIN), UPDATE and DELETE Records, Primary Key and Foreign Key, Basic Joins (INNER JOIN, LEFT JOIN), Simple SQL Queries.	07
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Reference Books:-

1. C. Wenz and T. Hauser. PHP and MySQL. Rheinwerk Publishing, 2026.
2. M. Smith. PHP Crash Course: The Complete, Modern, Hands-On Guide. No Starch Press, 2024.
3. M. Simon. An Introduction to PHP: Learn PHP 8 to Create Dynamic Websites. Apress, 2024.
4. C. Wenz and T. Hauser. PHP 8 und MySQL: Das umfassende Handbuch. 5th updated ed. Rheinwerk Computing, 2024.
5. J. Duckett. PHP & MySQL: Server-Side Web Development. Wiley, 2022.

Evaluation Pattern: 40:60

Total Marks: 50

Internal Continuous Evaluation: (20 Marks) • CCE-I : 10 Marks : Activity • CCE-II : 10 Marks : Activity • CCE-III : 10 Marks : MCQ Test (Best of 2 from CCE I,CCE II & CCE III Selected for final score)	End Semester Examination (30 Marks) • Question -1: Solve the following questions (5 questions of 2 marks) • Question -2: Attempt any two out of three questions (3 questions of 10 marks) • Question -3 : Attempt any four out of six questions (6 questions of 5 marks) (50 marks converted into 30 marks)
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Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: Minor Practical IV

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: Minor Practical - IV BASP 246
AI for Animation + PHP
(Practical based on BAST 244+BAST 245 Courses)

Course Objectives: Student should be able to...

1. understand the workspace and overview of Multimedia animation software.
2. study on rigging and motion tween for character animation.
3. comprehend fundamentals of server-side web programming and the role of PHP in web development.
4. apply basic security practices and error-handling techniques in PHP web development.

Course Outcomes: Student will be able to...

1. analyze the professional animation pipeline for production.
2. developed their own character animation styles.
3. develop PHP programs using variables, data types, operators, control structures, functions, arrays and string operations.
4. design dynamic and database-driven web applications by integrating PHP with MySQL and performing CRUD operations.

Sr. No.	Title and Contents	Hrs.
	AI for Animation	
1.	Generate an AI image from a text prompt	60
2.	Sound based Animation.	
3.	Create a simple AI-generated video	
4.	Convert an image into a short animation	
5.	Create a cartoon character using an AI tool	
6.	Create a background for an animated scene	
7.	Create a prompt to generate a movie poster concept.	
8.	Create a prompt to generate a image about environmental awareness.	
9.	Write a prompt to generate a short story about a cartoon character.	
10.	Create a prompt to generate a short dialogue between two characters.	
	PHP	
11.	Write a program by using If-Else control structure in PHP.	60
12.	Write a program by using Do-While control structure in PHP.	
13.	Write a program by using For, For each Switch control structure in PHP.	
14.	Write a program by using Array in PHP.	
15.	Write a program for creating Web page and its data BAST connectivity using PHP.	
16.	Write a program to Insert employee details in employee table.	
17.	Write a program to Select and Delete employee details.	
18.	Write a program to show current date, time and convert a string to a date.	
19.	Write a program for Create, Read, Write File using PHP.	
20.	Create College Website using PHP.	

Reference Books:-

1. M. Smith. PHP Crash Course: Learn PHP in Easy Steps. Birmingham, UK: Packt Publishing, 2024.
2. R. Nixon. Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5. 7th ed. Sebastopol, CA: O'Reilly Media, 2024.

3. E. Mann and A. Trachtenberg. PHP Cookbook: Solutions & Examples for PHP Programmers. 3rd ed. Sebastopol, CA: O'Reilly Media, 2023.
4. Lynn and M. Morrison. Head First PHP & MySQL. 2nd ed. Sebastopol, CA: O'Reilly Media, 2018.
5. L. Welling and L. Thomson. PHP and MySQL Web Development. 5th ed. Boston, MA: Addison-Wesley Professional, 2017.

Evaluation Pattern: 40:60

Total Marks: 50

Internal Evaluation (20 Marks)

- Journal : 10 Marks
- Student Performance : 05 Marks
- Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: VSC Practical

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: (BASPVSC II)

Course Objectives: Student should be able to...

1. understand various workspace and interface 3D software.
2. learn materials, adjust basic lighting and animate builds with effective environments.
3. identify 3D array and feature tools.
4. study on mesh flow, tricks and techniques for building organic and inorganic objects.

Course Outcomes: Student will be able to...

1. develop crowd animation using the Populate Tool.
2. create Animation of crowd using Populate Tool.
3. generate walk-through HD architectural renders using various renderers.
4. apply and modify procedural modelling techniques.

Sr.No.	Title and Contents	Hrs.
3D Max Animation		60
1.	Create a realistic mug using primitive objects, Editable Poly, Extrude, Inset, Bevel, and TurboSmooth.	
2.	Model a decorative flower vase using spline/lathe techniques, Editable Poly, and surface refinement.	
3.	Create an orange/fruit model and apply realistic materials, texture maps, bump and roughness.	
4.	Create and apply custom textures using Viewport Canvas and texture-mapping techniques.	
5.	Create procedural textures using maps, modifiers, and node-based material workflows.	
6.	Model a stylized/realistic human character from basic primitives to detailed polygon modeling.	
7.	Create a high-poly character using sculpting tools and refine facial and anatomical details.	
8.	Create a manual bone hierarchy, apply Skin modifier, and establish basic character controls.	
9.	Rig a character and animate basic movements such as walking, running, jumping, and hand movement.	
10.	Create a detailed vehicle body using polygon modeling, symmetry, chamfering, and smoothing techniques.	
11.	Model seats, dashboard, steering wheel, controls, panels, and other interior components.	
12.	Rig a robot or mechanical vehicle using bones, helpers, constraints, and controllers.	
13.	Model a complex mechanical assembly and animate interconnected moving parts.	
14.	Generate repeated and complex geometries using modifiers, arrays, instancing, and procedural workflows.	
15.	Create a complete environment containing terrain, rocks, vegetation, and water using procedural techniques.	
16.	Create effects such as smoke, sparks, rain, snow, dust, or explosions using particle systems.	
17.	Create and simulate clothing on a character using cloth dynamics and collision objects.	
18.	reate different lighting setups such as daylight, night, studio, cinematic, and dramatic lighting.	
19.	Set up camera, materials, lighting, GI, image sampling, environment, and render elements for a realistic scene.	
20.	Create a complete production-ready scene integrating modeling, UV/texturing, materials, lighting, camera, animation, and final V-Ray rendering.	

Reference Books:-

1. K. L. Murdock. Autodesk 3ds Max 2023 Bible. Indianapolis, IN: Wiley, 2022.
2. D. A. K. Choi. 3ds Max Modeling for Beginners: A Practical Guide to 3D Modeling and Animation. Packt Publishing, 2020.
3. J. M. Harper. Mastering Autodesk 3ds Max. Indianapolis, IN: Sybex, 2014.
4. N. Boughen. 3ds Max Lighting. Burlington, MA: Focal Press, 2007.
5. K. L. Murdock. 3ds Max Bible. Indianapolis, IN: Wiley Publishing, 2006.

Evaluation Pattern: 40:60**Total Marks: 50****Internal Evaluation (20 Marks)**

- Journal : 10 Marks
- Student Performance : 05 Marks
- Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B.Sc.

Semester - IV

Type: SEC Practical

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of the Course: (BASPSEC II)

Course Objectives: Student should be able to...

1. understand and classify various workspace and interface
2. study types and techniques of interior and exterior modelling.
3. analyze style of customization architectural mesh flow .
4. classify and categorized 3d architectural walkthrough designs.

Course Outcomes: Student will be able to...

1. analyze lights and texturing.
2. apply animation of crowd using populate tool.
3. develop compound objects modelling.
4. create HD architectural walk – through renders with 3 types.

Sr. No.	Title and Contents	Hrs.
Architectural Modeling		60
1.	Model a basic architectural structure using Editable Poly, Extrude, Inset, Boolean and other modeling tools.	
2.	Design different roof structures such as flat, sloped and tiled roofs.	
3.	Model basic furniture such as tables, chairs, cupboards and beds using polygon modeling techniques.	
4.	Model a realistic sofa with cushions, upholstery details and appropriate smoothing.	
5.	Apply materials to architectural models and control properties such as color, reflection, glossiness and roughness.	
6.	Create wood textures using bitmap/procedural maps and adjust bump, reflection and roughness.	
7.	Create and apply V-Ray materials to architectural objects and experiment with realistic surface properties.	
8.	Create suitable backgrounds, ground surfaces, skies and environmental elements for architectural visualization.	
9.	Add and arrange trees, plants, grass and other vegetation using appropriate 3ds Max techniques.	
10.	Create and configure natural and artificial lighting for an interior or exterior scene.	
11.	Create a complete kitchen interior including cabinets, counters, appliances, lighting and materials.	
12.	Create a complete living-room scene with furniture, wall treatments, lighting, materials and decorative elements.	
13.	Design an outdoor playground including play equipment, landscaping, pathways, vegetation and lighting.	
14.	Create curtains, tablecloths, cushions or other fabric elements using cloth simulation.	
15.	Import a .DWG architectural plan and convert it into a detailed 3D architectural model.	
16.	Create camera paths and animate a camera for an architectural walkthrough.	
17.	Set up camera, lighting, materials, environment and render parameters to produce a photorealistic architectural image.	
18.	Produce a professional architectural render using V-Ray materials, lighting, GI, camera and rendering controls.	
19.	Create a realistic architectural render using Arnold lighting and the Standard Surface shader.	
20.	Create a complete interior or exterior architectural Visualization project	

Reference Books:-

1. K. L. Murdock. Autodesk 3ds Max 2024 Basics Guide. Mission, KS: SDC Publications, 2023.
2. S. Tickoo. 3ds Max 2023 for Beginners: A Tutorial Approach. Purdue University, 2023.
3. N. Boughen. Mastering Autodesk 3ds Max 2023. New York: Autodesk Press, 2022.
4. S. Tickoo. Autodesk 3ds Max 2021 for 3D Designers. New Delhi: BPB Publications, 2020.
5. J. van der Steen. Lighting and Rendering with 3ds Max. New York: Routledge, 2020.

Evaluation Pattern:40:60**Total Marks: 50****Internal Evaluation (20 Marks)**

- Journal : 10 Marks
- Student Performance : 05 Marks

Viva : 05 Marks

Practical Exam Paper (30 Marks)

- ESE:30 Marks



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc.

Semester - IV

Type: VEC

Marks: 50

Credits: 2

From: A.Y. 2025-26

Name of the Course: Environmental Studies in Animation Science (BASTVEC I)

Course Objectives: Student should be able to...

1. understand environmental issues and their solutions.
2. learn animation skills to raise awareness about environmental issues.
3. illustrate their ideas, emotions and concerns about the environment.
4. classify existing animated content related to environmental themes.

Course Outcomes: Student will be able to...

1. explain importance of environmental awareness in animation
2. calculate and predict impact of animation on environment.
3. analyze animated work with environmental themes critically.
4. create storytelling techniques that promotes environmental awareness.

Module	Title and Contents	Hrs.
Module -1:	Environmental issue 1.1 Pollution (Air, Water and Land), Fresh-water overuse, Natural disasters, Fuel and Energy shortage due to overuse. 1.2 Increase in wasteland, Biodiversity loss, Global warming and climate change (Causes and intensity of the problem), role of animation in creation.	08
Module -2:	Environmental laws and ethics 2.1 Prevention and Control of Pollution Act (Air, water and Land) from unsustainable to sustainable development, 2.2 Responsibilities of an environmentally aware citizen of environmental issues Environmental Protection Act. 2.3 Wildlife Protection Act, Forest Conservation Act.	07
Module -3:	Sustainable Development Goals 3.1 Understanding climate change, impact of animation industry, storytelling for climate awareness. 3.2 promoting sustainable lifestyles, measuring impact	08
Module -4:	Role of Animation in meeting the sustainable development goals 4.1 Awareness and education, cultural sensitivity and diversity, behavior, change and empowerment. 4.2 Data visualization and communication, partnership and collaboration.	07

Reference Books:-

1. B. C. Fredriksen and C. Groth. Expanding Environmental Awareness in Education Through the Arts: Crafting-with the Environment. 1st ed. Singapore: Springer, 2022.
2. S. M. Haseloff. Animation and Environmental Sustainability: Creative Approaches to Ecological Awareness. Routledge, 2021.
3. L. Unsworth. Learning from Animations in Science Education: Innovating in Semiotic and Educational Research. 1st ed. Cham, Switzerland: Springer, 2020.
4. S. L. Ferrari and L. Peres. The Hidden Spaceship: An Adventure into Environmental Awareness. Serena Ferrari, 2019.
5. D. S. Whitley. The Idea of Nature in Disney Animation. 1st ed. Ashgate Publishing, Ltd., 2008.

Evaluation Pattern:40:60

Total Marks: 50

Internal Continuous Evaluation: (20 Marks)

- CCE-I : 10 Marks : Activity
- CCE-II : 10 Marks : Activity
- CCE-III :10 Marks : MCQ Test

(Best of 2 from CCE I,CCE II & CCE III Selected for final score)S

End Semester Examination (30 Marks)

- Question -1: Solve the following questions (5 questions of 2 marks)
- Question -2: Attempt any two out of three questions (3 questions of 10 marks)
- Question -3 : Attempt any four out of six questions (6 questions of 5 marks)
- **(50 marks out of 30 marks)**

