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:

Animation is a lead Course in today's world. It has very good Prospects and it Gives a broad platform to student creativity. The Course has wild scope. By considering the need of different Industries and present scenario in animation industry the syllabus is designed. While designing the syllabus intellectual level of UG Students have been consider. The students who don't know about the Animation will be able to understood and work independently in the Industrial world after completion of his graduate degree. Animation is not only creation of cartoons but also its plays important role in Automobile industry, Mechanical industry, Web development, different coding, Vfx, Graphics designing, Film industry and etc. Bachelor of Animation course is one among the most demanded courses in today's world, in the very recent trend India is emerging in the field of "Animation" and this would create a very huge employment in India, there are many big giant companies who are outsourcing their animation work in India like Disney. Animation as a Profession can be the best decision for those who are computer lovers, who can think different, innovative and keep capacity of presenting what they think. While designing the syllabus, industrial training and latest software's like Adobe Photoshop, Corel draw, Adobe Flash, Dream viewer, Autodesk 3D Max, Autodesk 3D Maya, Adobe after Effect, Mud box are considered. This syllabus is based on basic and applied approach with vigor and depth. At the SASE time precaution is taken to make the syllabus comparable to the syllabi of other universities and the needs of industries and research. The units of the syllabus are well defined, taking into consideration the level and capacity of students.

GENERAL OBJECTIVES OF THE COURSE:

1. To nurture academicians with focus and commitment with their subject.
2. To shape good and informed citizens from the students entering in to the programme.
3. To creates killed work force to match their requirement of the society.
4. To impart knowledge of the science is the basic objective of this programme.
5. To develop scientific attitude is the major objectives as to make the students open minded, critical and curious.
6. To develop skill in practical work, experiment and laboratory materials and equipment's along with the collection and interpretation of scientific data to contribute to science.

PROGRAMME OUTCOMES

After completing the B.Sc. program, graduates will:

1. The student will graduate with proficiency in the subject to their choice.
2. The student will be eligible to continue higher studies in their subject.
3. The student will be eligible to pursue higher studies abroad.
4. The student will be eligible to appear for the examinations for jobs in government organizations.
5. The student will be eligible to apply for jobs with a minimum requirement of B.Sc. Program.

PROGRAMME SPECIFIC OUTCOMES

After completing the B.Sc. (Animation Science) program, students will:

1. Be able to explain, describe, discuss, and ask questions about various aspects of Animation sciences.
2. Design and conduct experiments related to Animation sciences.
3. Apply knowledge of Animation sciences to develop sustainable solutions for both society and industry.
4. Utilize their understanding of Animation sciences to become self-reliant, either by securing a job, establishing an Animation Science setup, or launching a Animation Science-based entrepreneurial venture.
5. Design and manage projects related to Animation sciences.
6. Gain valuable skills in Animation Science-based industries through internships.
7. Enhance research skills through research internships and in-house projects.
8. Present research findings at conferences and in research journals for publication.
9. Critically assess their role in contributing to environmental sustainability goals as responsible citizens.

1. TITLE: **Animation Science**

2. YEAR OF IMPLEMENTATION: **2025-2026**

3. DURATION: **01 year**

4. PATTERN: **Semester examination**

5. MEDIUM OF INSTRUCTION: **English**

6. 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) (T+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) (T+P)	AEC II (2) (English) VEC II (2) (Environmental studies)	22

7. COURSE TITLE

1) Third Semester

Sr. No.	Subject	Theory				Practical		
		Course No. & Course Code	**Title of Paper**	**No. of lectures per week**	**Credits**	**Course No. & Course Code**	**No. of Practical Per week**	**Credits**
1.	Major V	Course V	Classical Animation	2	2	Major P III	4	2
2.	Major VI	Course VI	Vector Graphics	2	2			
3.	Minor V	Course V	Python Programming	2	2	Minor P III	4	2
4.	Minor VI	Course VI	Web Development	2	2			
5.	OE III	--	Business Economics	--	--	--	--	--
6.	--	--	--	--	--	VSC I	4	4
7.	SEC I	--	Character Designing	1	1	SEC I	2	1
8.	AEC I	--	English	2	2			
9.	IKS II	--	History of Animation Science in India	2	2			

2) Fourth Semester

Sr. No.	Subject	Theory				Practical		
		Course No. & Course Code	Title of Paper	No. of lectures per week	Credits	Course No. & Course Code	No. of Practical Per week	Credits
1.	Major VII	Course VII	Digital Animation-II	2	2	Major P IV	4	2
2.	Major VII	Course VIII	3D Blender	2	2			
3.	Minor VII	Course VII	AI for Animation	2	2	Minor P IV	4	2
4.	Minor VIII	Course VIII	PHP	2	2			
5.	OE IV	--	--	--	--	--	--	--
6.	--	--	--	--	--	VSC II	4	4
7.	SEC II	--	Architectural Modeling	1	1	SEC II	2	1
8.	AEC II	--	English	2	2			
9.	VEC II	--	Environmental Studies	2	2			

8. EVALUATION STRUCTURE:

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

Course	Course Category	Course Code	Internal Evaluation			ESE	Total Marks	Credits
			CCE-I	Mid - Semester	CCE-II			
Major	T	B*T 231	05	10	05	30	50	02
	T	B*T 232	05	10	05	30	50	02
	P	B*P 233	--	--	--	50	50	02
Minor	T	B*T 234	05	10	05	30	50	02
	T	B*T 235	05	10	05	30	50	02
	P	B*P 236	--	--	--	50	50	02
OE	T	B*TOE 3 (For IDS Courses)	05	--	05	15	25	01
	P	B*POE 3	--	--	--	25	25	01
OE	T	B*TOE 3	05	10	05	30	50	02

		(For Humanities)						
VSC	P	B*PVSC 1	--	--	--	50	50	02
SEC	P	B*TSEC 1 Theory	05	--	05	15	25	01
	P	B*PSEC 1 Practical	--	--	--	25	25	01
AEC I	T	B*TAEC 1	05	10	05	30	50	02
IKS II	T	B*TIKS 2	05	10	05	30	50	02
Total							**550**	**22**

Semester IV (5.0)

Course	**Course Category**	**Course Code**	**Internal Evaluation**			**ESE**	**Total Marks**	**Credits**
			CCE-I	**Mid - Semester**	**CCE-II**			
Major	T	B*T 241	05	10	05	30	50	02
	T	B*T 242	05	10	05	30	50	02
	P	B*P 243	--	--	--	50	50	02
Minor	T	B*T 244	05	10	05	30	50	02
	T	B*T 245	05	10	05	30	50	02
	P	B*P 246	--	--	--	50	50	02
OE	T	B*TOE 4 (For IDS Courses)	05	--	05	15	25	01
	P	B*POE 4	--	--	--	25	25	01
OE	T	B*TOE 4 (For Humanities)	05	10	05	30	50	02
VSC	P	B*PVSC 2	--	--	--	50	50	02
SEC	P	B*TSEC 2 Theory	05	--	05	15	25	01
	P	B*PSEC 2 Practical	--	--	--	25	25	01
AEC II	T	B*TAEC 2	05	10	05	30	50	02
VEC II	T	B*TVEC 2	05	10	05	30	50	02
Total							**550**	**22**

9. OTHER FEATURES:

A) LIBRARY:

Reference books, Textbooks, journals, and Periodicals are available in Institute and Departmental Library. (Separate reference lists are attached along with the respective course syllabus)

B) EQUIPMENT:

a) Computer, LCD projector, smart board.

b) Laboratory Equipment:

1. Pen Tablet 2. Computer. 3. Mic. 4. Speaker 5. Light Box

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 : Major	**Marks:** 50
Credits : 2	**From:** A. Y. 2025-26

Name of the Course: BAST 231: Classical Animation

Course Objectives:

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:

1. summarize history and evolution of animation.
2. demonstrate the ability to apply keyframe animation principles to create motion sequences with fluidity and emotion.
3. apply web compatible animation with graphics and movie clip symbols.
4. create key by key or traditional animation using principle of animation.

Module	Title and Contents	Hrs
Module -1:	**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:	**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:	**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:	**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. Deja, Andreas. The Nine Old Men: Lessons, Techniques, and Inspiration from Disney's Great Animators. Focal Press, 2015.
2. Georgenes, Chris. How to Cheat in Adobe Flash CC: The Art of Design and Animation. 1st ed. Routledge, 2017.
3. Goldberg, Eric. Character Animation Crash Course. Silman-James Press, 2008. Whitaker, Harold, and John Halas. Timing for Animation. Focal Press, 2002.
4. Williams, Richard. The Animator's Survival Kit. Faber & Faber, 2009.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation:	**End Semester Examination:**
• CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) • Mid Sem – 25 Marks (Convert in to 5 Marks) **Total Marks-20 Marks** **CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks** Note: Continuous and Comprehensive Evaluation (CCE)	• Question -1 (2 Marks = 2*5=10 Marks) • Question -2 (10 Marks = 2*2=20 Marks) • Question -3 (5 Marks = 5*4=20 Marks) **Total Marks-50 Marks convert into 30 Marks**

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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc	**Semester** - III
Type : Major	**Marks:** 50
Credits : 2	**From:** A.Y. 2025-26

Name of the Course: BAST 232: Vector Graphics

Course Objectives:

1. navigate Illustrator and where to find all the tools and features.
2. study the landscapes such as buildings and houses with ease using perspective
3. learn the drawings, business cards, brochures, or anything you want using Adobe Illustrator.
4. learn the basics of working with Illustrator CC through a combination of instructor-led demonstration

Course Outcomes:

1. understand the elements that make up the Illustrator workspace.
2. learn the basic and essential techniques to work with objects.
3. understand color and apply color to object fills and strokes.
4. understand how to set up a new document.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Interface** 1.1 Workspace basics ,Customizing the workspace, Tools ,Tool galleries, Improved user interface. 1.2 Art board overview, Rulers, grids, guides, and crop marks, Using multiple art boards Viewing artwork. 1.3 Drawing basics, About Perspective Grid, Perspective drawing.	08
Module -2:	**Module -2: Color & Painting** 2.1 About color , Selecting colors, Using and creating swatches ,Color groups, Adjustin colors. 2.2 About painting, Painting with fills and strokes, Live Paint groups, Brushes, Transparency and blending modes. 2.3 Gradient panel and Gradient tool overview, Meshes, Patterns, selecting objects, Grouping and expanding objects. 2.4 Moving, aligning, and distributing objects, Rotating and reflecting objects	07
Module -3:	**Module -3: Layers & Type** 3.1 About layers, Locking, hiding, and deleting objects, Duplicating objects 3.2 Transforming objects, Scaling, shearing, and distorting objects, 3.3 Reshape object: Crop images, Transform objects, Cut, Divide and trim objects, puppet warp. 3.4 Create text: Font and typography, format type paragraphs, special characters, create a type on a path, character, and paragraph styles.	08
Module -4:	**Module -4: Effects & output, Printing** 4.1 Creating special effects, Appearance attributes, working with effects, create a drop shadow. 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. Becerra, Ryan. The Adobe Illustrator WOW! Book for CS6 and CC. Peachpit Press, 2014.
   Dayley, Brad. Adobe Illustrator CC Bible. Wiley, 2013.
2. Deja, Andreas. The Nine Old Men: Lessons, Techniques, and Inspiration from Disney's Great Animators. Focal Press, 2015.
3. Georgenes, Chris. How to Cheat in Adobe Flash CC: The Art of Design and Animation. 1st ed. Routledge, 2017.
4. Goldberg, Eric. Character Animation Crash Course. Silman-James Press, 2008.
5. Smashing Magazine. Adobe Illustrator: A Complete Course and Compendium of Features. Paperback. June 23, 2020.
6. Adobe Illustrator User Guide. Adobe Systems Incorporated, 2007.
7. VanderLaan, Brian Wood. Adobe Illustrator Classroom in a Book (2020 Release). Adobe Press, 2020.
8. Weinman, Lynda. Designing Web Graphics with Illustrator. New Riders Publishing, 2001.
   Whitaker, Harold, and John Halas. Timing for Animation. Focal Press, 2002.
9. Williams, Richard. The Animator's Survival Kit. Faber & Faber, 2009.

Evaluation Pattern:

Total Marks: 50

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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

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: BASP-233 based on Theory BAST 231+ BAST 232

Course Objectives:

1. summarize the historical evolution of animation techniques.
2. identify and differentiate between various animations techniques.
3. learn the drawings, business cards, brochures, or anything you want using Adobe Illustrator.
4. learn the basics of working with Illustrator CC through a combination of instructor-led demonstration

Course Outcomes:

1. summarize history and evolution of animation.
2. demonstrate the ability to apply keyframe animation principles to create motion sequences with fluidity and emotion.
3. understand color and apply color to object fills and strokes.
4. understand how to set up a new document.

Course Lab III	Title and Contents	Hrs
BASP 233	**Classical Animation**	30
	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	30
	11. Create a creative logo design in adobe illustrator.	
	12. Create a 3D Mango using the mesh tool in illustrator.	
	13. Create 3D Vector Cola Bottle Design 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. Deja, Andreas. The Nine Old Men: Lessons, Techniques, and Inspiration from Disney's Great Animators. Focal Press, 2015.
2. Georgenes, Chris. How to Cheat in Adobe Flash CC: The Art of Design and Animation. 1st ed. Routledge, 2017.
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9. Smashing Magazine. Adobe Illustrator: A Complete Course and Compendium of Features. Paperback. June 23, 2020.

Evaluation Pattern:

Total Marks: 50

End Semester Examination:

- Question -1 (20 Marks)
- Question -2 (20 Marks)
- Question -3 (5+5=10 Marks)

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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc	**Semester** - III
Type : Minor	**Marks:** 50
Credits : 2	**From:** A. Y. 2025-26

Name of the Course: BAST 234: Python Programming

Course Objectives:

1. learn the process of structuring the data using lists, tuples, and dictionaries.
2. study Python object types.
3. identify indexing and slicing to access data in Python programs.
4. recognize the structure and components of a Python program.

Course Outcomes:

1. successfully install Python and understand its syntax.
2. identify the syntax rules in Python programming.
3. apply programming concepts like loop, control structure in Python.
4. create and manipulate Python programs.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Python Basics, Datatype** 1.1 Introduction to python Language, Download and install Python, Syntax, Variables. 1.2 Data Types, Built in data types (Numeric, Boolean, Text, Sequence, Set, Mapping, None)	08
Module -2:	**Module -2: Numpy** 2.1 Introduction, Installation of Numpy, NdArray, NdArray Attributes. 2.2 Indexing and Slicing, Mathematical Functions, Arithmetic Operators, String Functions, Matrix Library, Linear Algebra	07
Module -3:	**Module -3: Pandas** 3.1 Introduction, Installation of pandas, Data structure(Series, Data frames). 3.2 Basic functionality, Descriptive statistics,Function applications, Pandas indexing	08
Module -4:	**Module -4: Loop and Matplotlib** 4.1 For loop, While loop , Nested loop, Loop control statements(If statement, Break statement, Continue statement, Pass statement) 4.2 Function(Built in function, User defined function), Lambda function, Pyplot, Plotting, Markers, Line, Lables, Grid, Subplot, Scatter, Bars, Histogram, Pie chart.	07

Reference Books:-

1. Chun, Wesley J. Core Python Applications Programming. 3rd ed. Pearson Education India, 2015.
2. Dierbach, Charles. Introduction to Computer Science Using Python. 1st ed. Wiley India Pvt Ltd. ISBN-13: 978-8126556014.
3. Downey, Allen B. Think Python: How to Think Like a Computer Scientist. 2nd ed. Green Te Press, 2015.
4. Downey, Allen, Jeffrey Elkner, and Chris Meyers. Learning with Python. 1st ed. Dreamtech Press, 2015.
5. Tamassia, Roberto, Michael H. Goldwasser, and Michael T. Goodrich. Data Structures and Algorithms in Python. 1st ed. Wiley India Pvt Ltd, 2016.

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• CCE-I – 10 Marks (Convert in to 5 Marks)
• CCE-II – 10 Marks (Convert in to 5 Marks)
• Mid Sem – 25 Marks (Convert in to 5 Marks)

Total Marks-20 Marks

CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks
Note: Continuous and Comprehensive Evaluation (CCE)</td><td>End Semester Examination:
• Question -1 (2 Marks = 2*5=10 Marks)
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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc	**Semester** - III
Type : Minor	**Marks:** 50
Credits : 2	**From:** A. Y. 2025-26

Name of the Course: BAST 235: Web Development

Course Objectives:

1. provide foundational knowledge of web technologies including HTML, CSS, and JavaScript.
2. develop the ability to design and build responsive and interactive websites using front-end frameworks.
3. introduce server-side programming concepts and database integration for dynamic web applications.
4. foster skills in deploying and managing websites and web applications using modern development tools and best practices.

Course Outcomes:

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:	**Module -1: PHP Basics** 1.1 Overview of Web Architecture: Client-Server Model, HTTP/ HTTPS, Introduction to HTML5 and CSS3. 1.2 Introduction to PHP: Features, Setup (XAMPP/WAMP), Syntax, Variables, Constants, Control Structures: if, else, switch, loops (for, while, foreach). 1.3 Functions in PHP: Built-in and User-defined, Forms and User Input Handling.	08
Module -2:	**Module -2: PHP and Web Forms** 2.1 Form Handling with POST and GET Methods, Server-side Validation, File Uploads. 2.2 Session Management: Cookies and Sessions, Error and Exception Handling in PHP, PHP with Java Script, and AJAX Basics	07
Module -3:	**Module -3: PHP with MySQL Database** 3.1 Introduction to MySQL, Connecting to MySQL using MySQLi/PDO. 3.2 Executing Queries (SELECT, INSERT, UPDATE, DELETE). 3.3 Fetching Data and Displaying Results, Form-based Data Entry, Database Security (SQL Injection Prevention)	08
Module -4:	**Module -4: Web Application Development** 4.1 Mini Project Planning: Requirements and Design, Creating 4.2 Pagination, File Handling, and Email Sending, Deploying a PHP Application on Web Server. 4.3 Introduction to MVC Architecture (Laravel Overview – Optional)	07

Reference Books:-

1. Beighley, Lynn, and Michael Morrison. Head First PHP & MySQL. O'Reilly
2. Media. Gilmore, W. Jason. Beginning PHP and MySQL: From Novice to
3. Professional. Apress. Nixon, Robin. Learning PHP, MySQL & JavaScript. 6th ed. O'Reilly Media.
4. Welling, Luke, and Laura Thomson. PHP and MySQL Web Development. 5th ed. Addison-Wesley.

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CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks
Note: Continuous and Comprehensive Evaluation (CCE)</td><td>End Semester Examination:
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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

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: BASP-236 based on Theory BAST 234+ BAST 235

Course Objectives:

1. identify indexing and slicing to access data in Python programs.
2. recognize the structure and components of a Python program.
3. provide foundational knowledge of web technologies including HTML, CSS, and JavaScript.
4. develop the ability to design and build responsive and interactive websites using front-end frameworks.

Course Outcomes:

1. successfully install Python and understand its syntax.
2. identify the syntax rules in Python programming.
3. design and implement interactive web pages using PHP.
4. manage and validate user inputs through web forms.

Course Lab III	Title and Contents	Hrs
BASP 236	**Python Programming**	30
	1. Write python program to Hello World using string variable.	
	2. Python basic programming questions to calculate the square of a number.	
	3. Python program to calculate the cube of a number.	
	4. Python program to check given character is a vowel or consonant.	
	5. Python program to count vowels and consonants in the string.	
	6. Python program to remove spaces from string without inbuilt function.	
	7. Python program to find L.C.M. of two numbers.	
	8. Python program to find the smallest number among the three.	
	9. Write a python program to store data in the list and then try to print them.	
	10. Write a python program to do basic trim and slice on string.	
	Web Development	30
	11. Write a simple "Hello World" PHP script.	
	12. Create a script to perform arithmetic operations and display results using variables.	
	13. Develop a PHP program that checks whether a number is even or odd.	
	14. Write user-defined functions for common operations (e.g., factorial, string reverse).	
	15. Create a user input form (name, age, email) and display submitted data on another page using `POST`.	
	16. Validate a registration form (required fields, valid email, password confirmation).	
	17. Upload an image using a web form and display it on the server.	
	18. Build a login/logout system using sessions.	

	19. Create a student record management system using MySQL and PHP (Add/View/Edit/Delete).	
	20. Create a blog or task manager app with authentication, session handling, and database interaction.	

Reference Books:-

1. Chun, Wesley J. Core Python Applications Programming. 3rd ed. Pearson Education India, 2015. Dierbach, Charles. Introduction to Computer Science Using Python. 1st ed. Wiley India Pvt Ltd.ISBN-13: 978-8126556014.
2. Downey, Allen B. Think Python: How to Think Like a Computer Scientist. 2nd ed. Green Te Press, 2015.
3. Downey, Allen, Jeffrey Elkner, and Chris Meyers. Learning with Python. 1st ed. Dreamtech Press, 2015.
4. Tamassia, Roberto, Michael H. Goldwasser, and Michael T. Goodrich. Data Structures and Algorithms in Python. 1st ed. Wiley India Pvt Ltd, 2016.
5. Beighley, Lynn, and Michael Morrison. Head First PHP & MySQL. O'Reilly Media. Gilmore, W. Jason. Beginning PHP and MySQL: From Novice to Professional. Apress. Nixon, Robin. Learning PHP, MySQL & JavaScript. 6th ed. O'Reilly Media.
6. Welling, Luke, and Laura Thomson. PHP and MySQL Web Development. 5th ed. Addison-Wesley.

Evaluation Pattern:

Total Marks: 50

End Semester Examination:

- Question -1 (20 Marks)
- Question -2 (20 Marks)
- Question -3 (5+5=10 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 : VEC Practical	**Marks:** 50
Credits : 2	**From:** A. Y. 2025-26

Name of the Course: BASPVEC 1: 2D Digital Rigging

Course Objectives:

1. know Synthesize knowledge of character anatomy and environmental aesthetics to design a visually appealing and believable tree character.
2. lean procedure of Implement inverse kinematics (IK) constraints to rig character joints.
3. define procedure of rig 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:

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 facial rigging

Lab	Title and Contents	Hrs
BASP VEC 1	**2D Digital Rigging**	**60**
	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.	
	20. Creating a rig for a character with interchangeable weapons or tools.	

Reference Books:-

1. Adobe. Adobe Flash Professional CC Classroom in a Book. 1st ed. Pearson Education India, 2014.
2. Fulton, Jeff, and Steve Fulton. The Essential Guide to Flash Games: Building Interactive Entertainment with ActionScript. Friends of ED, 2010.
3. Georgenes, Chris. Flash Character Animation Applied: Making Things Move!. Focal Press, 2014. Kelly, Barry, and Tim Jones. Foundation Flash Cartoon Animation. Friends of ED, 2007.
4. Ulrich, Katherine. Flash Professional CS6: Visual QuickStart Guide. 2014.

Evaluation Pattern:

Total Marks: 50

End Semester Examination:

- Question -1 (20 Marks)
- Question -2 (20 Marks)
- Question -3 (5+5=10 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc	**Semester** - III
Type: SEC	**Marks:** 25
Credits: 1	**From:** A. Y. 2025-26

Name of the Course: BASTSEC -1: Character Designing

Course Objectives:

1. understand the fundamentals of 2D character design, including anatomy, proportions, and stylization.
2. learn the principles of shape language, gesture, and expression in character design.
3. explore different styles of character design used in animation, games, and comics.
4. build a professional character design portfolio.

Course Outcomes:

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.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Character Design, Fundamentals of Anatomy & Proportions** 1.1 Understanding the role of a character designer, Importance of storytelling in design, Analyzing iconic character designs. 1.2 Basic human anatomy for character design, Proportions and stylization (cartoon vs. realistic), Gesture drawing and silhouette studies. 1.3 Drawing facial expressions and emotions, Body language and dynamic posing, Character archetypes and personality design	08
Module -2:	**Module -2: Accessory Design & Model Sheets** 2.1 Understanding the role of clothing in storytelling, Designing outfits based on personality and setting. 2.2 Adding props and accessories, Creating front, side, and back views, Expression sheets and pose variations.	07

Reference Books:-

1. Bancroft, Tom. Creating Characters with Personality. Watson-Guptill.
2. Brunetti, Ivan. Cartooning: Character Design. Yale University Press.
3. Holmes, Marc Taro. Designing Creatures and Characters. Impact Books.
4. Robertson, Scott, Khang Le, and Mike Yamada. The Skillful Huntsman.
5. Design Studio Press. Online Resources: ArtStation, Pinterest, Behance, and CGSociety.
6. Software Tutorials: Adobe Photoshop, Procreate, Clip Studio Paint, Krita.

Evaluation Pattern:	
Total Marks: 25	
Internal Continuous Evaluation: • CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) **CCE-I+ CCE-II = Internal Marks** • Note: Continuous and Comprehensive Evaluation (CCE) **Total Marks- 10 Marks**	**End Semester Examination:** **Total Marks- 15 Marks**

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Yashavantrao Chavan Institute of science, Satara

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Programme: B. Sc	**Semester** - III
Type: SEC Practical	**Marks:** 25
Credits: 1	**From:** A. Y. 2025-26

Name of the Course: BASPSEC 1: Character Designing

Course Objectives:

1. know the 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:

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.

Lab	Title and Contents	Hrs
BASPSEC 1	**Character Designing**	30
	1. Line of Action and proportions	
	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.	

Reference Books: -

1. Bancroft, Tom. Creating Characters with Personality: For Film, TV, Animation, Video Games, and Graphic Novels. Revised ed. Watson-Guptill, 2006.
2. Crossley, Kevin. Character Design from the Ground Up. Design Studio Press, 2014.
3. Eisner, Will. Expressive Anatomy for Comics and Narrative: Principles and Practices from the Legendary Cartoonist. Reprint ed. W. W. Norton & Company, 2010.
4. Hampton, Michael. Figure Drawing: Design and Invention. Michael Hampton, 2010.
5. Mellor, Cathrine. Anime Coloring Book: Cute Anime Characters to Color for All Ages. Loredana Loson, 2021.

Evaluation Pattern:
Total Marks: 25
End Semester Examination: • **25 Marks**

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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: IKS	**Marks:** 50
Credits: 2	**From:** A.Y. 2025-26

Name of the Course: BASTIKS 2 : History of Animation Science in India

Course Objectives:

1. understand animation as an extension of Indian traditional storytelling and performing arts.
2. explore early Indian scientific understanding of movement 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:

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:	**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, Influence of folk tales and epics like the Ramayana and Mahabharata in visual storytelling. 1.2 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:	**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:	**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:	**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. Bendazzi, Giannalberto. Animation: A World History. CRC Press.
2. Bharata Muni. Natya Shastra. Abridged translations.
3. Hollander, Julia. Indian Folk Theatres. Routledge.
4. Smith, Vincent A. Art of India. Parkstone International.
5. Vatsyayan, Kapila. Indian Aesthetics. Publications Division, Government of India.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation:	**End Semester Examination:**
• CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) • Mid Sem – 25 Marks (Convert in to 5 Marks) **Total Marks-20 Marks** **CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks** Note: Continuous and Comprehensive Evaluation (CCE)	• Question -1 (2 Marks = 2*5=10 Marks) • Question -2 (10 Marks = 2*2=20 Marks) • Question -3 (5 Marks = 5*4=20 Marks) **Total Marks-50 Marks convert into 30 Marks**

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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc	**Semester** - IV
Type: Major	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

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

Course Objectives:

1. understand the workspace and overview of Adobe Animate cc.
2. earn rigging and motion tween for Character Animation.
3. apply and analyze Principles of Animation.
4. rig object and character with animation.

Course Outcomes:

1. understand the process of 2D Animation using 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:	**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:	**Module -2:** 2.1 Animation Basics, Animating position, transparency, filters, and transformations, Pacing, timing, easing, and frame-by-frame animation. 2.2 Motion paths, nested animations, swapping tween targets, Advanced Motion & Tweens. 2.3 Motion Editor: property curves, viewing options, copying/pasting curves, Motion & Classic tweens, complex easing, layer parenting, Rigging & Character Animation. 2.4 Puppet warping & Asset Warp tool, Editing & animating rigs, branching joints, warp options, Inverse kinematics, posing, constraints, and physics simulation. 2.5 Finalizing & Exporting, Lip-syncing with graphic symbols, Pedaling cycles, automatic rotations, rig mapping, Exporting the final animation.	07
Module -3:	**Module -3:** 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:	**Module -4: Animation** 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, Playing animation at the destination, Animated buttons.	07

Reference Books:-

1. Adobe Inc. Adobe Animate CC User Guide. Adobe Systems Incorporated, 2022.
2. Labrecque, Joseph. Mastering Adobe Animate 2022: A Comprehensive Guide to Designing Modern, Animated, and Interactive Content Using Animate. Packt Publishing, 2022.
3. Pro Design Tools. "Learn Adobe Animate Free! Download 59-Page Guidebook + Assets." Pro DesignTools, October 30, 2022.
4. Waekisa, Ousiane. Adobe Animate 2022 Guide for Beginners: A Step-By-Step Guide to Mastering Digital Animation and Interactive Media Creation, from Essential Techniques to Advanced Features. Independently published, 2022.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation:	**End Semester Examination:**
• CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) • Mid Sem – 25 Marks (Convert in to 5 Marks) **Total Marks-20 Marks** **CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks** Note: Continuous and Comprehensive Evaluation (CCE)	• Question -1 (2 Marks = 2*5=10 Marks) • Question -2 (10 Marks = 2*2=20 Marks) • Question -3 (5 Marks = 5*4=20 Marks) **Total Marks-50 Marks: convert into 30 Marks**

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashavantrao Chavan Institute of science, Satara

Board of Studies in Animation Science

Programme: B. Sc	**Semester** - IV
Type: Major	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BAST 242: 3D Blender

Course Objectives:

1. understand the process and methods of 3D 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. learn skills related to demonstrating the 3D works.

Course Outcomes:

1. learn to easily navigate through blender.
2. create your own imagination into reality by modelling, texturing and animating 3D objects in real time.
3. create animations for your objects & characters.
4. create photo realistic renders.

Module	Title and Contents	Hrs
Module -1:	**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 3D Space, Essential Shortcuts	08
Module -2:	**Module -2: Modeling and Texturing** 2.1 3D Modeling Basics, Types of modeling (box modeling, sculpting, etc.), Creating basic shapes (primitives), Modifiers: Mirror, Subdivision Surface, etc. Editing Meshes, Edit mode: vertices, edges, and faces 2.2 Extrusion, loop cuts, beveling, and snapping, Using proportional editing UV Mapping and Texturing, Introduction to UV mapping, Unwrapping techniques, applying textures and materials, Understanding shaders and nodes.	07
Module -3:	**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:	**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. Blender 3D: Designing Objects", by Romain Caudron, Pierre-Armand Nicq, Enrico Valenza, Published by Packt Publishing Ltd., Published on: September 2016.
2. 'Blender For Dummies', 3rd Edition, by Jason van Gumster, Published by: John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030-54.
3. 'Blender User Manual' Release 2.78, Blender Community, Published by Mar 08, 2017
4. 'Mastering Blender' Second Edition by Tony Mullen, Publisher: Neil Edde

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation:	**End Semester Examination:**
• CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) • Mid Sem – 25 Marks (Convert in to 5 Marks) **Total Marks-20 Marks** **CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks** Note: Continuous and Comprehensive Evaluation (CCE)	• Question -1 (2 Marks = 2*5=10 Marks) • Question -2 (10 Marks = 2*2=20 Marks) • Question -3 (5 Marks = 5*4=20 Marks) **Total Marks-50 Marks convert into 30 Marks**

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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: BASP-243 based on Theory BAST 241+ BAST 242

Course Objectives:

1. understand the workspace and overview of Adobe Animate cc.
2. earn 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:

1. understand the professional animation pipeline for production.
2. developed their own character animation styles.
3. knowledge of texture mapping, lighting & rendering output using Cycles
4. knowledge on camera & geometries animation, basic particles systems and physics.

Course Lab IV	Title and Contents	Hrs
BASP 243	**Digital Animation-II** 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.	30
	3D Blender 11. Blender tutorial for beginner -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. Blender Tutorial: Fuzzy Stuffed. 19. Blender Tutorial: Photorealistic Ring. 20. Blender Character Creation: Modelling.	30

Reference Books:-

1. Donaldson, Bruce. Dutch: A Comprehensive Grammar. 3rd ed. Routledge, 2022.
2. Mithrandirself. "Reference Books." Adobe Community, December 28, 2022.
3. 'Blender User Manual' Release 2.78, Blender Community, Published by Mar 08, 2017
4. 'Mastering Blender' Second Edition by Tony Mullen, Publisher: Neil Edde

Evaluation Pattern:

Total Marks: 50

End Semester Examination:

- Question -1 (20 Marks)
- Question -2 (20 Marks)
- Question -3 (5+5=10 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

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Board of Studies in Animation Science

Programme: B. Sc	**Semester** - IV
Type: Minor	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BAST 244: AI for Animation

Course Objectives:

1. explain 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:

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

Module	Title and Contents	Hrs
Module -1:	**Module -1: History and foundation of AI** 1.1 Introduction, History of AI, foundations of AI, sub Areas of AI, Application of AI, Building AI Systems. 1.2 The difference between strong AI and weak AI.AI problems.	08
Module -2:	**Module -2: AI for graphic designs.** 2.1 Graphic design with AI, The power of machine learning. The introduction of generative AI 2.2 Three major benefits of AI in, graphic design, How to use AI for graphic design Photoshop, Illustrator, Adobe Firefly web app, Adobe Fresco.	07
Module -3:	**Module -3: AI Prompts, Scene Generation and Environment Design** 3.1 AI prompts, AI prompts for content generation, Generating environments and backgrounds with AI, Procedural generation of landscapes, cities, and natural elements. 3.2 Scene composition and layout optimization using AI algorithms, Incorporating AI-generated elements into the animation pipeline.	08
Module -4:	**Module -4: Advanced Topics and Future Directions** 4.1 Cutting-edge AI techniques in animation production, Generative adversarial networks (GANs) for animation synthesis. 4.2 AI-driven storytelling and narrative generation, Ethical considerations and challenges in AI-driven animation.	07

Reference Books:-

1. Rich, E/ Knight, K.," Artificial Intelligence by Rich", 2nd edition, Tata McGraw Hill publication (TMH)
2. Russell, S/ Norvig, P.," Artificial Intelligence: A Modern Approach by Russell", Pearson Education
3. Jones, M.," Artificial Intelligence application Programming by Jones", 2nd edition, Dreamtech

<table>
<tr><td colspan="2">Publication
4. Patterson, Dan W.,” Introduction to Artificial Intelligence & Expert Systems by Patterson “, PHI Education.</td></tr>
<tr><td colspan="2">Evaluation Pattern:</td></tr>
<tr><td colspan="2">Total Marks: 50</td></tr>
<tr><td>Internal Continuous Evaluation:
• CCE-I – 10 Marks (Convert in to 5 Marks)
• CCE-II – 10 Marks (Convert in to 5 Marks)
• Mid Sem – 25 Marks (Convert in to 5 Marks)
Total Marks-20 Marks
CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks
Note: Continuous and Comprehensive Evaluation (CCE)</td><td>End Semester Examination:
• Question -1 (2 Marks = 2*5=10 Marks)
• Question -2 (10 Marks = 2*2=20 Marks)
• Question -3 (5 Marks = 5*4=20 Marks)
Total Marks-50 Marks convert into 30 Marks</td></tr>
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Programme: B. Sc	**Semester** - IV
Type: Minor	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BAST 245: PHP

Course Objectives:

1. understand procedure of website development using PHP.
2. how to use PHP to add some dynamic aspects to our pages.
3. understand basic programming construction of other languages.
4. understands difference between GET and POST requests method.

Course Outcomes:

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:	**Module -1: Introduction to PHP** 1.1 Introduction,XAMPP,PHP Syntax, 1.2 Variables, Strings,Constants, 1.3 Operators, 1.4 Echo / Print statements.	08
Module -2:	**Module -2: Decision making and looping** 2.1 If....Else..... Else if, 2.2 Switch, 2.3 Loops, For, For each, While, 2.4 Functions, string functions, user defined functions, Date and Time_ function, Arrays.	07
Module -3:	**Module -3: Array** 3.1 Anatomy of an Array, Creating index based and Associative arrayAccessing array, 3.2 Element Looping with Index based array, 3.3 Looping with associative array using each () and foreach(), Some useful Library function.	08
Module -4:	**Module -4: Database Connectivity & SQL** 4.1 Introduction to RDBMS, Connection with My Sql Database, 4.2 performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query- Join (Cross joins, Inner joins, Outer Joins, Self joins.)	07

Reference Books:-

1. Beighley, Lynn, and Michael Morrison. Head First PHP & MySQL. O'Reilly
2. Media. Gilmore, W. Jason. Beginning PHP and MySQL: From Novice to Professional. Apress.
3. Nixon, Robin. Learning PHP, MySQL & JavaScript. 6th ed. O'Reilly Media.
4. Welling, Luke, and Laura Thomson. PHP and MySQL Web Development. 5th ed. Addison-Wesley.

Evaluation Pattern:	
Total Marks: 50	
Internal Continuous Evaluation: • CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) • Mid Sem – 25 Marks (Convert in to 5 Marks) **Total Marks-20 Marks** **CCE-I+ CCE-II+ Mid Sem Exam = Internal Marks** Note: Continuous and Comprehensive Evaluation (CCE)	**End Semester Examination:** • Question -1 (2 Marks = 2*5=10 Marks) • Question -2 (10 Marks = 2*2=20 Marks) • Question -3 (5 Marks = 5*4=20 Marks) **Total Marks-50 Marks convert 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 Practical IV	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BASP-246 based on Theory BAST 244+ BAST 245

Course Objectives:

1. explain Artificial Intelligence.
2. recognize applications of AI in animation.
3. provide foundational knowledge of web technologies including HTML, CSS, and JavaScript.
4. develop the ability to design and build responsive and interactive websites using front-end frameworks.

Course Outcomes:

1. design and implement interactive web pages using PHP.
2. manage and validate user inputs through web forms.
3. develop AI-generated elements into the animation pipeline.
4. create AI-driven storytelling.

Course Lab IV	Title and Contents	Hrs
BASP 246	**AI for Animation** 1. Emotion-based Emoji Animation. 2. Character Movement Prediction. 3. Character Motion Capture. 4. Gesture-based Animation. 5. Facial Expression Recognition 6. Pattern based Animation. 7. Sound based Animation. 8. Voice-controlled Animation 9. Animal movement Animation. 10. Image-based Animation.	30
	PHP 11. Write a program by using If-Else control structure in PHP. 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.	30

	20. Create College Website using PHP.	

Reference Books:-

1. Beighley, Lynn, and Michael Morrison. Head First PHP & MySQL. O'Reilly Media.
2. Gilmore, W. Jason. Beginning PHP and MySQL: From Novice to Professional. Apress.
3. Nixon, Robin. Learning PHP, MySQL & JavaScript. 6th ed. O'Reilly Media.
4. Welling, Luke, and Laura Thomson. PHP and MySQL Web Development. 5th ed. Addison-Wesley.
5. Rich, E/ Knight, K.," Artificial Intelligence by Rich", 2nd edition, Tata McGraw Hill publication (TMH) Russell, S/ Norvig, P.," Artificial Intelligence: A Modern Approach by
6. Russell", Pearson Education
7. Jones, M.," Artificial Intelligence application Programming by Jones", 2nd edition, Dreamtech Publication
8. Patterson, Dan W.," Introduction to Artificial Intelligence & Expert Systems by Patterson ", PHI Education.

Evaluation Pattern:

Total Marks: 50

End Semester Examination:

- Question -1 (20 Marks)
- Question -2 (20 Marks)
- Question -3 (5+5=10 Marks)

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Programme: B. Sc	**Semester** - III
Type: VSC Practical	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BASPVSC 2: 3D Max Animation

Course Objectives:

1. understand connections between theory and applications.
2. understand materials, Adjust basic lighting and Animate build with effective environments.
3. understand 3D array and features tools.
4. study fundamental programming construction and functions.

Course Outcomes:

1. understand compound objects Modelling
2. create Animation of crowd using Populate Tool.
3. create Walk – through HD Architectural Renders
4. create and develop programs.

Lab	Title and Contents	Hrs
BASPVEC 2	**3D Max Animation** 1. How to Model a Mug in 3DS Max. 2. Modelling Flower Vase using various tools in 3d max. 3. Orange fruit modelling and texturing tutorial 3ds max. 4. Creating Textures with the Viewport Canvas. 5. Human Character Rigging on Max /Manual Bone Setup +Controls. 6. Creating a detailed vehicle model with interior and exterior components. 7. How to Render Realistic Scene. 8. Very Basic V Ray Render Settings for 3ds max. 9. Modeling a realistic human character from scratch. 10. Experimenting with creating procedural textures using nodes. 11. Rigging and animating a bipedal character for basic movements. 12. Creating a realistic environment with terrain, foliage, and water using procedural techniques. 13. Experimenting with particle systems for effects like smoke, fire, or sparks. 14. Sculpting a high-poly model using the sculpting tools in 3ds Max. 15. Simulating cloth dynamics on a character's clothing. 16. Creating a detailed vehicle model with interior and exterior components. 17. Experimenting with lighting setups to achieve different moods and atmospheres. 18. Rigging a mechanical character like a robot or vehicle for animation. 19. Designing and animating a complex machinery assembly with moving parts. 20. Exploring procedural modelling techniques to generate complex geometries.	**60**

Reference Books:-

1. Mastering Autodesk 3ds Max-by Jeffrey M. Harper
2. 3Ds Max Lighting- by Boughen, Nicholas
3. 3Ds Max Bible –by Kelly L. Murdock 3Ds
4. Max Lighting- by Boughen, Nicholas
5. T. Budd, Exploring Python, TMH, 1st Ed, 2011 Python
6. Tutorial/Documentation www.python.or 2010
7. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python, Freely available online.2012

Evaluation Pattern:

Total Marks: 50

End Semester Examination:

- Question -1 (20 Marks)
- Question -2 (20 Marks)
- Question -3 (5+5=10 Marks)

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Programme: B. Sc	**Semester** - IV
Type: SEC	**Marks:** 25
Credits: 1	**From:** A. Y. 2025-26

Name of the Course: BASTSEC 2: Architectural Modeling

Course Objectives:

1. understand the connections between theory and applications.
2. learn 3ds max materials, textures, and dynamics.
3. apply 3D array and features tools.
4. design 3D Architectural walkthrough.

Course Outcomes:

1. apply Animation of crowd using Populate Tool.
2. analyze develop programs.
3. develop compound objects Modelling.
4. create Walk – through HD Architectural Renders.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Character Design, Fundamentals of Anatomy & Proportions** 1.1 Creating Geometry, Primitive objects, modifiers, Cloning, Alignment, array, Boolean. 1.2 Containers, viewing and navigating 3D Space, using create panel, basic building blocks. 1.3 Standard primitives, Extended Primitives, assigning colors to object, adjusting normal and Smoothing, geometric primitives, Architectural Objects, Shapes, Compound objects, Point Cloud Object.	08
Module -2:	**Module -2: Accessory Design & Model Sheets** 2.1 Working at the Sub-Object Level, Subdivision Surfaces, Soft Selection Rollout, Collapse Utility, Graphite Modeling Tools, Editable Mesh Surface. 2.2 Editable Poly Surface, Patch Objects, NURBS Modeling, Tools for Low Polygon Modeling, Autodesk Civil View, 2.3 Retopology Tools for 3ds Max, Lighting and Shading, Material Editor, Materials, and Maps, Arnold for 3DS Max.	07

Reference Books:-

1. Prof. Sham Tickoo Purdue "3ds Max 2023 for Beginners: A Tutorial Approach" Univ. - Published in 2023.
2. Nicholas Boughen "Mastering Autodesk 3ds Max 2023" Published in 2022.
3. Joep van der Steen “Lighting and Rendering with 3ds Max" Published in 2020.
4. David S. Ebert, F. Kenton Musgrave, Darwyn Peachey, Ken Perlin, and Steven Worley "Texturing and Modeling: A Procedural Approach" Published in 1998.
5. Prof. Sham Tickoo, “Autodesk 3Ds Max 2021 for 3D Designers”, BPB Publications (27 December 2020), SBN-13 : 978-9389898897

Evaluation Pattern:	
Total Marks: 25	
Internal Continuous Evaluation: • CCE-I – 10 Marks (Convert in to 5 Marks) • CCE-II – 10 Marks (Convert in to 5 Marks) **CCE-I+ CCE-II = Internal Marks** • Note: Continuous and Comprehensive Evaluation (CCE) **Total Marks- 10 Marks**	**End Semester Examination:** **Total Marks- 15 Marks**

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Programme: B. Sc	**Semester** - IV
Type: SEC Practical	**Marks:** 25
Credits: 1	**From:** A. Y. 2025-26

Name of the Course: BASPSEC 2: Architectural Modeling

Course Objectives:

1. understand the connections between theory and applications.
2. learn 3ds max materials, textures, and dynamics.
3. apply 3D array and features tools.
4. design 3D Architectural walkthrough.

Course Outcomes:

1. apply Animation of crowd using Populate Tool.
2. analyze develop programs.
3. develop compound objects Modelling.
4. create Walk – through HD Architectural Renders.

Lab	Title and Contents	Hrs
BASPSEC 2	**Architectural Modeling** 1. Creating walls windows and Doors in 3Ds Max. 2. Creating roofs in 3Ds Max 3. Creating furniture in 3Ds Max 4. Creating Sofa model in 3Ds Max. 5. Texturing model in 3Ds Max. 6. Creating wood texture in 3Ds Max. 7. Adding V ray texture in 3Ds Max software. 8. Creating background for model in 3Ds Max. 9. Creating Vegetation in 3Ds Max. 10. Creating light in scene in 3Ds Max	**30**

Reference Books:-

1. Prof. Sham Tickoo Purdue "3ds Max 2023 for Beginners: A Tutorial Approach" Univ. - Published in 2023.
2. Nicholas Boughen "Mastering Autodesk 3ds Max 2023" Published in 2022.
3. Joep van der Steen “Lighting and Rendering with 3ds Max" Published in 2020.
4. David S. Ebert, F. Kenton Musgrave, Darwyn Peachey, Ken Perlin, and Steven Worley "Texturing and Modeling: A Procedural Approach" Published in 1998.
5. Prof. Sham Tickoo, “Autodesk 3Ds Max 2021 for 3D Designers”, BPB Publications (27 December 2020), SBN-13 : 978-9389898897

Evaluation Pattern:

Total Marks: 25

End Semester Examination:

- 25 Marks