

Shri Swami VivekanandShikshanSanstha's
VIVEKANAND COLLEGE, KOLHAPUR
DEPARTMENT OF B. VOC. & COMMUNITY COLLEGE

VIVEKANAND COLLEGE, KOLHAPUR.
(AUTONOMOUS)



ANIMATION
& FILM MAKING

Syllabus

For

B. Voc Part - I

**Diploma in Animation & Film
Making**

To be implemented from Academic Year 2018-2019 onwards

Shri Swami VivekanandShikshanSanstha's
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Sr. No.	Name of the Faculty	Area of Specialization	Name of the College	Experts	Nomination
1.	Dr. Shruti Joshi		Vivekanand College, Kolhapur	Nodal Officer, B.Voc & Community College.	Chairperson
2	Mr. Mahesh B. Mali	Animation & Film Making	Vivekanand College, Kolhapur	---	Member
3	Mr. Rahul P. Ingavale	Printing and Designing	Vivekanand College, Kolhapur	---	Member
4	Mr. Raviraj S Sutar	Photography	Vivekanand College, Kolhapur	---	Member
5	Mr. Suresh B. Pandit	Drawing and Painting	Kalavishwa College, Sangli	Experts from outside the college	Nominated by Academic Council
6	Mr. Kishor S. Karale	2D Animation	Picoso Animation College, Bangalore	Experts from outside the college	Nominated by Academic Council
7	Miss. Surabhi K Gulwelkar	Drawing and Painting	Ass. Pro. D. Y. Patil College Applied Art Pune	Experts	VC Nominee
8	Mr. Vikas N. Patil	Drawing and Painting Animation	Phoebus Private Ltd, Mumbai Branch Kolhapur	Representative from Industry	Member
9	Mr. Prvin s. patil	Art Direction Drawing & Painting	Freelances Art Director	Post Graduate Meritorious Aluminus	Nominated by Principal
10	Mr. Sheetal T.Patil	Drawing and Painting VFX Animation	Prana Animation Pvt Ltd , Mumbai	Experts from outside of the college.	Member
11	Me. Santosh B. Mane	Master in Animation	Film Scope Animation	Experts	Member

List from which one member is to be appointed as 'VC Nominee' from Shivaji University, Kolhapur.

1. Mr. Satyjeet Varekar, Sangli
2. Mr. Pramod Kurlekar, Mumbai
3. Miss. Surabhi Gulwelkar, Pune
4. Mr. Prakash Mohite, Kolhapur
5. Mr. Milind Kadane, Sangli
6. Mr. Ganesh Hire, Mumbai

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STRUCTURE OF SYLLABUS:

To be implemented from the academic year 2018-2019

1. Title of the course: BACHELOR OF VOCATION (Animation & Film Making)

A. INTRODUCTION

B. RATIONALE

C. COURSE OBJECTIVES

By studying animation & film making students will have a wider horizon in the field of art and will

- Students will complete an extensive body of amateur work as writer/directors.
- In addition to training as writer/directors, students will become proficient in other production and postproduction skills (camera, lighting sound, editing) and have the ability to enter careers in the entertainment industry, broadcasting, journalism, art, advertising, and arts management.
- Students will be able to apply theoretical, critical, and historical concepts when making style choices in their own projects and in referencing or analyzing the medium of cinema.
- Students will learn the rudiments of narrative filmmaking in the short form and be able to apply these skills to long-form work.
- Students will learn the fundamentals of documentary filmmaking and forms-direct cinema, cinema verity, re-enactment, the documentary essay, the place film, diary forms-and the documentary of systems and abstract processes-finance, globalization, and the environment. Young people have a healthy sense of outrage; they are inspired by the greater good.
- Students will engage in the use and analysis of emerging technologies.
- Students will be able to research, gather, and synthesize information.
- Students will demonstrate the ability to depart from traditional or comfortable ways of thinking, to explore, to wander, to get lost, to journey down unfamiliar channels and emerge with renewed perceptions in order to innovate and add to cinematic practice.

THE STUDENTS WILL LEARN:

- Students will demonstrate that they understand the pre-production, production, and postproduction filmmaking process
- Students will demonstrate the relationship between film form and aesthetic effect through both film analysis and the creation of motion pictures.
- Students will be able to conduct film research and compose cogent, persuasive, and valid essays about film.
- Students will demonstrate a broad knowledge of film history, national cinemas and models of production.
- Recognize and evaluate critical and aesthetic issues within computer graphics and the mixed media. (Issues)

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- Apply aesthetic judgments and critical thinking skills to art and graphics related issue. (Aesthetics)
- Demonstrate mastery of specific technical, conceptual and critical abilities within computer graphics and the mixed media. (Abilities)
- Demonstrate proficiency with industrial applications to visual communication related technologies. (Proficiency)
- Communicate effectively in written format on research and creative issues. (Written)
- Communicate effectively in oral format on research and creative issues. (Oral)
- Apply critical thinking and aesthetic judgments in critiquing mixed media and computer graphics productions. (Critiquing)
- Function on multi-disciplinary teams. (Teams)
- Work collaboratively and individually with an understanding of the production process utilized in industry-standard studios. (Process)
- Demonstrate professionalism through creative and intellectual independence. (Professionalism)

2. Duration:

The duration of the B.Voc. Course will be of **three years**.

- **B.Voc. Part I - Diploma in Animation & Film Making**
- **B.Voc. Part II - Advanced Diploma in Animation & Film Making**
- **B.Voc. Part III - Bachelor of Vocation in Animation & Film Making**

The final B.Voc degree will be awarded only after completion of three year course. The suggested credits for each of the years are as follows:

Year	Awards	Normal calendar duration	Skill Component Credits	General Education Credits
1	Diploma in Animation & Film Making	Two Semesters	36	24
2	Advanced Diploma in Animation & Film Making	Four Semesters	36	24
3	B.Voc in Animation & Film Making	Six Semesters	36	24
			TOTAL	108

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General Education Component should not exceed 40% of the total curriculum.

Credits can be defined as the workload of a student in

1. Lectures
2. Practical's
3. Seminars
4. Private work in the Library/home
5. Examination
6. Other assessment activities.

The following formula should be used for conversion of time into credit hours.

- a) One Credit would mean equivalent of 15 periods of 60 minutes each, for theory, workshops /labs and tutorials;
- b) For internship/field work, the credit weightage for equivalent hours shall be 50% of that for lectures/workshops;
- c) For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study should be 50% or less of that for lectures/workshops.

3. Eligibility:

The eligibility condition for admission to B.Voc. programme shall be 10+2 or equivalent, in any stream from any recognized board or university.

4. Medium of Instruction:

The medium of instruction of the course will be **Marathi / English**

5. Pattern: Choice based Credit System (CBCS) Semester Pattern.

6. Examination:

A. Scheme of examination:

- The semester examination will be conducted at the end of each term (both theory and practical examination)
- Theory paper will be of 50 marks each. The practical examination will be of 200 marks and industrial practical training/project work is of 50 marks.
- Question papers will be set in the view of the entire syllabus and preferably covering each unit of the syllabus.

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For each semester there will be four theory papers. Practical Examination will be conducted at the end of every semester.

Paper Number	Title of Paper (For Semester I)	Total Marks
I	English for Business Communication	40+10 = 50
II	Fundamentals of Art Design	40+10 = 50
III	Perspective	40+10 = 50
IV	History of Animation	40+10 = 50
TOTAL		200

The practical examination will be of 200 marks.

Sr. No.	Practical examination	Marks	Internal Assessment	Marks
1	Practical	180	Projects/ Industry Visit	50
2	Portfolio	20		
Total		200		50

The total weightage of first term is of 450 marks, the details of which are-

Sr. No.	Title	Marks
1	Theory Examination 50 X 4	200
2	Practical Examination.	200
3	Internal Assessment	50
TOTAL		450

B. Nature of question paper:

For the **papers II, III and IV** there will be in all **SEVEN** questions in each paper of which any **FIVE** should be solved. All questions will carry equal marks i.e. each question will be of 10 marks.

General nature of the question paper will be:

Question Number	Type	
Q.1	Short answer	Any two out of three
Q.2,3,4,5,6	Long answer	No internal options.
Q.7	Short notes	Any two out of three

C. Standard of Passing:

To pass the examination a candidate must obtain at least 35% i.e 14 marks out of 40 for theory examination and 4 marks out of 10 in internal assessment of each paper. Total minimum 14 marks out of 50 for each paper should be obtained.

For practical examination minimum 50% marks should be obtained.

The result will be declared on the basis of theory and practical examination for each semester during the course.

D. External Students: Not applicable as this is a practical oriented course.

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7. University Term: As per academic calendar of the university.

For the first year i.e. Diploma in Animation & Film Making practical examination and theory paper assessment will be done at college level.

8. List of equipment and instruments:

1. Computer Machines
2. Colour Printer
3. Scanner
4. Digital Camera
5. Projector
6. Internet Connectivity
7. CCTV Camera for Animation Laboratory is must.

9. Laboratory Safety Equipments:

Part I: Personal Precautions:

1. Must wear **Lab Aprons / Lab Jacket** and proper shoes.
2. Except in emergency, **over-hurried activities** are forbidden.
3. **Eating, Drinking and Smoking** in the laboratories is strictly forbidden.
4. **Mobile phones, external hard drives, pen drives are not allowed.**

Part II: Use of Safety and Emergency Equipments:

1. First aid Kits
2. Fire extinguishers (dry chemical and carbon dioxide extinguishers)
3. Management of Local exhaust systems.
4. Sign in register if using instruments.

10. Workload:

Each skill based paper (i.e. Paper no. II, III and IV) will have **four theory** periods per week. There are **four practical** per week. Each practical will be of four periods. The practical batch will have maximum 20 students.

The total workload for one batch will be:

1. One Paper on General Education:	=	06 Theory Periods.
2. Three Papers on skill based Education: 3 X 4	=	12 Theory Periods.
3. Four Practical work per week: 4 X 4	=	16 Practical periods.
4. Project Work per batch per week:	=	02 Periods

TOTAL 36 Periods.

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Working hours will be 5 hours (300 minutes) per day i.e. six periods each of 50 minutes.

12. Program Outcomes (POs)

1. B. Voc. Graduates in Animation & Film making will demonstrate that the critical study of cinema informs their filmmaking and that the study and practice of film production enhance their work as film scholar's analysts.
2. B. Voc. Graduates in Animation & Film making will Computer Animation and Game Development graduates will have an understanding of critical and aesthetic issues in computer graphics and mixed-media.
3. B. Voc. Graduates in Animation & Film making will access industry related learning resources.
4. B. Voc. Graduates in Animation & film making will create effective visual animations using the elements of story.
5. B. Voc. Graduates in Animation & film making will identify and apply the 12 principles of animation. List of films featuring clay animation
6. B. Voc. Graduates in Animation & Film making will relate some knowledge of the history of animation.
7. B. Voc. Graduates in Animation & film making will demonstrate entry-level workplace computer competencies using industry standard 2D & 3D animation software.
8. B. Voc. Graduates in Animation & film making will demonstrate industry professional standards within their attitudes, conduct, ethics and work.
9. B. Voc. Graduates in Animation & film making will design layouts and backgrounds that Incorporate principles of composition, perspective and color, with speed accuracy and dexterity, using a variety of media.

Program Educational Outcomes:

1. The graduates will demonstrate that they understand the pre- production, production and post production filmmaking process.
2. The Graduates will produce a finished digital interactive portfolio visually demonstrating, animation storytelling, and technical skills.

Program Specific Outcomes:

1. B. Voc. Graduates in Animation & film making will demonstrate mastery of specific technical, conceptual and critical abilities within computer graphics and the mixed media.
2. B. Voc. Graduates in Animation & film making will create 2D and 3D characters and environments that reflect the integration of graphic clarity, design principles, performance principles and theoretical constructs.

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13. MEMORANDUM OF UNDERSTANDING (MOU):

The purpose of this MOU is to clearly identify the roles and responsibilities of each party (i.e. college and industry partner) as they relate to the implementation of the **B.Voc. Program in Animation & Film Making** at the college.

It is recommended to sign at least **FIVE MOUs** with the industry partners in the related field.

B.Voc. Part - I (Diploma in Animation & Film Making) Course structure

General Structure:

The diploma course has two semesters, each of 450 marks. There will be **four theory** papers for each semester of 50 marks each.

1) Paper-I: English for Business Communication - Theory 40 Marks + Internal 10 Marks.

2) Paper-II: - Theory 40 Marks + Internal 10 Marks.

3) Paper-III: - Theory 40 Marks + Internal 10 Marks.

3) Paper-IV: - Theory 40 Marks + Internal 10 Marks.

There will be practical examination for each semester. The duration of practical examination will be of six hours and it will be of 100 marks of which 20 marks are reserved for Portfolio. The internal assessment includes industry training via internships, handling live projects, visits to Advertising Agency and Graphic Design Studios etc.

SYLLABUS

N. B.

(i) Figures shown in bracket indicate the total lectures required for the respective units.

(ii) The question paper should cover the entire syllabus. Marks allotted to questions should be in proportion to the lectures allotted to respective to units.

(iii) All units should be dealt with S.I. units.

(iv) Project / Industrial visit per semester is compulsory.

(v) Use of recent editions of reference books is essential.

(vi) Use of Output Devise allowed.

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SEMESTER – I
Paper I: FUNDAMENTALS OF FINANCIAL ACCOUNTING-I

AECC– I: Business Communication-I

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	Information about English grammar.
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	04/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	/ /00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	40/10/--/--

Course Objectives:

1. To Inculcate basic communication techniques amongst the students.
2. To train students for representing their credentials professionally.
3. To train students on various effective representation methods.
4. To guide students on various interview processes.

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CF101.1	Use appropriate words and sentences for effective communication.	4
CF102.2	Use appropriate skills for resume writing.	4
CF103.3	Use various data representation techniques.	3,4
CF104.4	Understand skills required for effective interview.	3,4

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
 1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CF101.1	-	-	-	2	-	-	-	-	-	-	-
CF102.2	-	-	-	2	-	-	-	-	-	-	-
CF103.3	-	-	2	2	-	-	-	-	-	-	-
CF104.4	-	-	2	2	-	-	-	-	-	-	-

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Course Content:

Unit 1: Use of English in Business Environment

Topics:

Business Vocabulary: Vocabulary for banking, marketing and for maintaining public relations
What is a sentence?
Elements of a sentence
Types of sentence: Simple, compound, complex

Unit 2: Writing a Letter of Application and CV/ Resume

Topics:

Structure of a letter of application for various posts
CV/ Resume and its essentials

Unit 3: Presenting Information/Data

Topics:

Presenting information/data using graphics like tables, pie charts, tree diagrams, bar diagrams, graphs, flow charts

Unit 4: Interview Technique

Topics:

Dos and don'ts of an interview
Preparing for an interview
Presenting documents
Language used in an interview

Practical: Based on the theory units

10 Marks.

Text Books/Reference Books/ Other Books/E-material/Paper

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Business Communication	Sethi, Anjane & Bhavana Adhikari	Tata McGraw Hill	-	-
2	Writing with a purpose	Tickoo, Champa & Jaya Sasikumar	OUP	-	1979
3	The Art of Effective Business Communication	Sonie, Subhash C. Mastering	Student Aid Publication	-	2008
4	Business Communication	Herekar, Praksh	Mehta Publications	-	2007
5	Principals of Business Communication	Herekar, Praksh	Mehta Publications	-	2003
6	Business Communication	Rai, Urmila & S. M. Rai	Himalaya Publishing House	-	2007
7	Business Communication	Pradhan, N. S	Himalaya Publishing House	-	2005
8	Managerial Communication	Pardeshi, P. C	NiraliPrakashan	-	2008

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Pattern of a Question Paper
Business Communication-I (AECC-I)

Time: 2 hours

Total Marks: 40

Q. 1	Do as directed. Question items on Unit 1 to be asked. (10 out 12)	10
Q. 2	Write a letter of application. OR Draft a CV/ Resume for a particular post.	10
Q. 3	Present a given information or data using a table/ chart/ pie diagram, etc (Any one diagram to be drawn.)	10
Q. 4	Fill in the blanks in the given interview.	10

Practical Evaluation:

10 Marks

Oral and Presentation based on the units prescribed.

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Paper –II:

FUNDAMENTALS OF ART

50Hrs

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	Art & Type of art & Basic Drawing
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO107.1	Students will have demonstrable skills in their area of emphasis. These skills include formal and conceptual applications of foundation principles within their primary media.	4,9
CO107.2	Demonstrate basic practical visual art research skills, techniques and approaches to art making.	4
CO107.3	Demonstrate a clear understanding of art as a language across 2D and 3D studies.	4,7
CO107.4	Create meaningful links between concepts and materials within a contemporary framework, relating to the history and theories of art.	4.,6
CO107.5	Apply such meaningful to their visual art practice and research.	4
CO107.6	Demonstrate skills in academic writing and research & Illustrate independent visual art research and its application to practice and study.	3,4

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)

1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO107.1	-	-	-	3	-	-	-	-	3	-	3
CO107.2	-	-	-	2	-	-	-	-	-	-	3
CO107.3	-	-	-	3	-	-	3	-	-	-	3
CO107.4	-	-	-	2	-	2	-	-	-	-	2
CO107.5	-	-	-	2	-	-	-	-	-	-	2
CO107.6	-	-	1	2	-	-	-	-	-	-	2

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The visual components of color, form, line, shape, space, texture, and value.

Line	An element of art defined by a point moving in space. Line may be two-or three-dimensional, descriptive, implied, or abstract.
Shape	An element of art that is two-dimensional, flat, or limited to height and width.
Form	An element of art that is three-dimensional and encloses volume; includes height, width AND depth (as in a cube, a sphere, a pyramid, or a cylinder). Form may also be free flowing.
Value	The lightness or darkness of tones or colors. White is the lightest value; black is the darkest. The value halfway between these extremes is called middle gray.
Space	An elements of art by which positive and negative areas are defined or a sense of depth achieved in a work of art.
Color	An element of art made up of three properties: hue, value, and intensity. Lightest value; black is the darkest. The value halfway between these extremes is called middle gray. <ul style="list-style-type: none"> • Hue: name of color • Value: hue's lightness and darkness (a color value changes when white or black is added) • Intensity: quality of brightness and purity (high intensity = color is strong and bright: low intensity color is faint and dull)
Texture	An element of art that refers to the way things feel as if they might feel if touched

Text Books/Reference Books/ Other Books/E-material/Paper

Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	Visual of Art	Jayparkhash Jagatap	Jagatap publish, Pune	-	2008
2	Visual Of Art	Shantinath Arwade	-	-	-
3	Colour Theory	Jayparkhash Jagatap	-	-	-

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4	Art Fundamentals: Color, Light, Composition, Antomy, Perspective and Dep	Gilles Beloeil	-	-	-
5	Sketching from the Imagination: Characters	Gilles Beloeil	-	-	-
6			-	-	-

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Paper –III:

PERSPECTIVE

50Hrs.

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	Fundamentals of art
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Up on completion of this course ,students will be able to		Mapping with PO's
CO107.1	They relate to building knowledge and awareness, enhancing critical reflection, developing synthetic, analytical and presentation skills,	7
CO107.2	Perspective-taking is the process by which an individual views a situation from another's point-of-view.	9
CO107.3	the actors and processes involved in law and development, from both an external and an internal perspective	9
CO107.4	Analyze similarities and differences in human experiences and consequent perspectives	9
CO107.5	Being able to analyze a situation from multiple perspectives , apply knowledge to new cases and present work fluently and convincingly	7,9
CO107.6	Interpret and evaluate artistic expression considering the cultural context in which it was created	4,9

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)

1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO107.1	-	-	-	-	-	-	2	-	-	-	2
CO107.2	-	-	-	-	-	-	-	-	3	-	3
CO107.3	-	-	-	-	-	-	-	-	3	-	3
CO107.4	-	-	-	-	-	-	-	-	2	-	2
CO107.5	-	-	-	-	-	-	2	-	3	-	2

CO107.6	-	-	-	2	-	-	-	-	2	-	2
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Meaning of perspective – The art of representing three-dimensional objects on a two dimensional surface so as to give the right impression of their height, width, depth, and position in relation to each other:

Linear perspective always works by representing the light that passes from a scene through an imaginary rectangle to the viewer's eye. It is similar to a viewer looking through a window and painting what is seen directly onto the windowpane. If viewed from the same spot as the windowpane was painted. The painted image would be identical to what was seen through the unpainted window. Each painted object in the scene is a flat, scaled down version of the object on the other side of the window. Because each portion of the painted object lies on the straight line from the viewer's eye to the equivalent portion of the real object it represents, the viewer cannot perceive (sans depth perception) any difference between the painted scene on the windowpane and the view of the real scene. All perspective drawings assume the viewer is a certain distance away from the drawing. Objects are scaled relative to that viewer. Additionally, an object is often not scaled evenly: a circle often appears as an ellipse and a square can appear as trapezoid. This distortion is referred to as foreshortening.

Perspective drawings have a horizon line. Which is often implied. The line, directly opposite the viewer's eye, represents objects infinitely far away. They have shrunk, in the distance, to the infinitesimal thickness of a line. It is analogous to (and named after) the Earth's horizon.

Any perspective representation of a scene that includes parallel lines has one or more vanishing points in a perspective drawing. A one-point perspective drawing means that the drawing has a single vanishing point .usually(though not necessarily) on the horizon line. All lines parallel with the viewer's line of sight recede to the horizon towards this vanishing point .this is the standard “ receding railroad tracks’ phenomenon. A two-point drawing would have lines parallel to two different angles. Any number of vanishing points are possible in a drawing, one for each set of parallel lines that are at an angle relative to the plane of the drawing.

Perspectives consisting of many parallel lines are observed most often when drawing architecture (architecture frequently uses lines parallel to the x,y,and z axes). Because it is rare to have a see perspectives in practice with only one ,two, or three vanishing points; even a simple house frequently has a peaked roof which results in a minimum of six sets of parallel lines, in turn corresponding to up to six vanishing points.

1. One Point Perspective

ORTHOGONAL LINES

Orthogonal lines are parallel to the ground plane and mover back from the picture plane
Orthogonal lines set the varying heights or widths of a rectangular plane as it recedes from view
Orthogonal lines always appear to meet at a vanishing point on the eye level.

TRANSVERSAL LINES

Transversal lines are always at right angles to the orthogonal lines. Transversal lines are parallel to the picture plane and to one another. Transversal lines establish a fixed height or with

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between two orthogonal line. Transversal lines form the nearest and furthest edges of a rectangle as it recedes from view.

VANISHING POINTS

VANISHING POINTS , which we have drawn in BLUE, are dots on the eye-level where parallel lines seem to converge and disappear. Both illustrations on this page use a single vanishing point and demonstrate the simplest form of perspective drawing; One Point Perspective.

ONE POINT PERSPECTIVE is so named because it isles a single vanishing point to draw an Object. It is the simplest form of perspective drawing and is used here to draw a box. In one point perspective. The front and back transversal planes of the box always remain parallel to the picture plane Only their scale changes as they recede into the distance.

2. Two Point Perspective

Two point perspective drawing is a type of linear perspective. Linear perspective is a method using lines to create the illusion of space on a 2D surface. There are three types of linear perspective. One point perspective uses one vanishing point placed on the horizon line. Two point perspective uses two points placed on the horizon line. Three point perspective uses three vanishing points.

Linear perspective is one of the six ways to create the illusion of space on a two-dimensional surface. All forms of linear perspective involve the horizon line, vanishing point(s), and lines of perspective that recede or advance to the vanishing point(s). Each form of linear perspective is named for the number of vanishing points used in the drawing. Therefore, two point perspective uses two vanishing points.

Perspective Drawing - Three Point Perspective

Three Point Perspective is the most complex form of perspective drawing. Three point perspective uses three sets of [orthogonal lines](#) and three [vanishing points](#) to draw each object.

Three Point Perspective from a Low Eye Level

Three Point Perspective is most commonly used when drawing buildings viewed from a low or high eye-level. The low eye level in our illustration above creates the illusion that the box shape is towering above us and that we are looking up. It naturally suggests the scale of a tall building.

Note how the vertical [transversal lines](#), which were parallel in one and two point perspective, now appear to recede. They form a third set of orthogonal lines, which rise from the ground plane and eventually meet at vanishing point 3, high above the picture plane.

In one and two point perspective, the picture plane is fixed at right angles to the ground plane. In three point perspective, the picture plane seems to be set at an angle as the viewer tends to tilt their head back or forward to look up or down from the eye level.

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Three point perspective is also used when drawing an object from a high eye level as in our illustration above. It creates the illusion of looking down from a high viewpoint.

This drawing process is simply a reversal of the method used for Three Point Perspective from a low eye level.

Text Books/ReferenceBooks/ Other Books/E-material/Paper

Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	Viusal Of art	Shantinath Arawade	-	-	-
2	The Art of Perspective: The Ultimate Guide for Artists in Every Medium	Phil Metzger	-	-	-
3	Pencil Magic	Phil Metzger	-	-	-
4	Perspective Made Easy	Ernest R. Norling	-	-	-
5	Perspective Drawing Handbook	Joseph D'Amelio	-	-	-
6	Perspective Drawing for Beginners	Len A. Doust	-	-	-

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PAPER IV -

HISTORY OF ANIMATION

50 Hrs.

Course Teacher:	Mr. Ananda Maruti Sawant
Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	Fundamentals of art & types of art
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Up on completion of this course, students will be able to		Mapping with PO's
CO107.1	Students completing an assignment in Area C (Arts) courses will be able to analyze modes of artistic expression.	6
CO107.2	Students completing an assignment in Humanities Area C will be able to identify the influence of culture on human expression.	6
CO107.3	Students will be able to identify through analysis the role of institutions (religious, political, economic, social, educational, etc.) in the development of all period culture.	6
CO107.4	Students will be able to identify and evaluate major agents of change/reform in area History.	6
CO107.5	Students will be able to assess and explain the repeating patterns of population rushes that characterize the history of area.	6
CO107.6	Through research, students will present a paper showing and evaluating an element of change in history.	4,6

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Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
 1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO107.1	-	-	-	-	-	3	-	-	-	-	2
CO107.2	-	-	-	-	-	3	-	-	-	-	2
CO107.3	-	-	-	-	-	3	-	-	-	-	2
CO107.4	-	-	-	-	-	3	-	-	-	-	2
CO107.5	-	-	-	-	-	3	-	-	-	-	2
CO107.6	-	-	-	2	-	3	-	-	-	-	2

- [1 Early approaches to motion in art](#)
- [2 Shadow play](#)
- [3 The Magic Lantern](#)
- [4 Animation before film](#)
 - [4.1 Prelude](#)
 - [4.2 Thaumatrope \(1825\)](#)
 - [4.3 Phénakisticope \(1833\)](#)
 - [4.4 Zoetrope \(1866\)](#)
 - [4.5 Flip book \(1868\)](#)
 - [4.6 Praxinoscope \(1877\)](#)
 - [4.7 Zoopraxiscope \(1879\)](#)
- [5 1888-1908: Earliest animations on film](#)
 - [5.1 Théâtre Optique](#)
 - [5.2 Standard picture film](#)
 - [5.2.1 Printed animation film](#)
 - [5.2.2 J. Stuart Blackton](#)
 - [5.2.3 Edwin S. Porter](#)
 - [5.2.4 Segundo de Chomón](#)
 - [5.2.5 Arthur Melbourne-Cooper](#)
- [6 Traditional animation](#)
 - [6.1 The silent era](#)
 - [6.2 Walt Disney & Warner Bros.](#)
 - [6.3 Snow White and the Seven Dwarfs](#)
 - [6.4 The television era](#)
- [7 Animation techniques](#)
 - [7.1 Stop motion](#)
 - [7.2 CGI animation](#)
- [8 Firsts in animation](#)
- [9 Americas](#)
 - [9.1 History of Argentinian animation](#)
 - [9.2 History of Brazilian animation](#)
 - [9.3 History of Canadian animation](#)
 - [9.4 History of Cuban animation](#)
 - [9.5 History of Mexican animation](#)
 - [9.6 History of United States animation](#)
- [10 Europe](#)

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- [10.1 History of British animation](#)
- [10.2 History of Czech animation](#)
- [10.3 History of Estonian animation](#)
- [10.4 History of French animation](#)
- [10.5 History of Hungarian animation](#)
- [10.6 History of Italian animation](#)
- [10.7 History of Russian animation](#)
- [10.8 History of animation in Croatia \(in former Yugoslavia\)](#)
- [11 Asia](#)
 - [11.1 History of Chinese animation](#)
 - [11.2 History of Indian animation](#)
 - [11.3 History of Iranian animation](#)
 - [11.4 History of Japanese animation \(anime\)](#)
 - [11.5 History of Malaysian Animation](#)
- [12 Oceania](#)
 - [12.1 History of Australian animation](#)

Text Books/Reference Books/ Other Books/E-material/Paper

Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	The World History of Animation	Stephen Cavalier	-	-	-
2	The World History of Animation	Tod Polson	-	-	-
3	American Animation in Its Golden Age	Michael Barrier	-	-	-
4	Disney's Grand Tour	Didier Ghez	-	-	-
5	The History of Animation: Enchanted Drawings	Charles Solomon	-	-	-
6	History of animation	From Wikipedia	-	-	-

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Paper Number	Title of Paper (For Semester II)	Total Marks
V	English for Business Communication - II	40 + 10 = 50
VI	Colour Theory	40 + 10 = 50
VII	Classical Animation	40 + 10 = 50
VIII	Digital Animation	40 + 10 = 50
TOTAL		200

The practical examination will be of 200 marks.

Sr. No.	Practical examination	Marks	Internal Assessment	Marks
1	Practical	180	Projects/ Industry Visit	50
2	Portfolio	20		
Total		200		50

The total weightage of second term is of 450 marks, the details of which are-

Sr. No.	Title	Marks
1	Theory Examination 50 X 4	200
2	Practical Examination.	200
3	Internal Assessment	50
TOTAL		450

B. Nature of question paper:

For the **papers VI to VIII** there will be in all **SEVEN** questions in each paper of which any **FIVE** should be solved. All questions will carry equal marks i.e. each question will be of 10 marks.

General nature of the question paper will be:

Question Number	Type	
Q.1	Short answer	Any two out of three
Q.2,3,4,5,6	Long answer	No internal options.
Q.7	Short notes	Any two out of three

SYLLABUS:

N. B.

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- (i) Figures shown in bracket indicate the total lectures required for the respective units.
- (ii) The question paper should cover the entire syllabus. Marks allotted to questions should be in proportion to the lectures allotted to respective to units.
- (iii) All units should be dealt with S.I. units.
- (iv) Project / Industrial visit per semester is compulsory.
- (v) Use of recent editions of reference books is essential.
- (vi) Use of Output Devise allowed.

SEMESTER II

GENERAL EDUCATION PAPER:

B. Voc. Part-I (Diploma)
Business Communication-II

Semester –II

Paper: VI

Total Workload: 06 lectures per week of 60 mins.

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Distribution of Workload:

Theory: 04 lectures per week
Practical: 02 lectures per week per batch of 20 students

Units Prescribed for Theory:

Unit 5: Group Discussion

Topics:

Preparing for a Group Discussion
Initiating a Discussion
Eliciting Opinions, Views, etc.
Expressing Agreement/ Disagreement
Making Suggestions; Accepting and Declining Suggestions
Summing up.

Unit 6: Business Correspondence

Topics:

Writing Memos, e-mails, complaints, inquiries, etc.
Inviting Quotations
Placing Orders, Tenders, etc.

Unit 7: English for Negotiation

Topics:

Business Negotiations
Agenda for Negotiation
Stages of Negotiation

Unit 8: English for Marketing

Topics:

Describing/ Explaining a Product/ Service
Promotion of a Product
Dealing/ bargaining with Customers
Marketing a Product/ Service: Using Pamphlets, Hoardings, Advertisement,
Public Function/ Festival

Practical: Based on the theory units

Reference Books:

Herekar, Praksh. *Business Communication*. Pune: Mehta Publications, 2007.
Herekar, Praksh. *Principals of Business Communication*. Pune: Mehta Publications, 2003.
John, David. *Group Discussions*. New Delhi: Arihant Publications.
Kumar, Varinder. *Business Communication*. New Delhi: Kalyani Publishers, 2000.
Pardeshi, P. C. *Managerial Communication*. Pune: NiraliPrakashan, 2008.
Pradhan, N. S. *Business Communication*. Mumbai: Himalaya Publishing House, 2005

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Rai, Urmila& S. M. Rai.*Business Communication*. Mumbai: Himalaya Publishing House, 2007.

Sethi, Anjane&BhavanaAdhikari.*Business Communication*. New Delhi: Tata McGraw Hill.

Sonie, Subhash C. *Mastering the Art of Effective Business Communication*. New Delhi: Student Aid Publication, 2008.

Tickoo, Champa& Jaya Sasikumar.*Writing with a Purpose*. New York: OUP, 1979.

Whitehead, Jeffrey & David H. Whitehead. *Business Correspondence*. Allahabad: Wheeler Publishing, 1996.

Pattern of a Question Paper
B. Voc. Part-I
Business Communication-II

Semester –II

Paper: VI

Time: 2 hours

Total Marks: 40

- Q. 1 Fill in the blanks in the following Group Discussion. 10
(On Unit 5) (10 out 12)
- Q. 2 Attempt ANY ONE of the following (A or B): 10
(On Unit 6)
- Q. 3 Fill in the blanks with appropriate responses: 10
(On Unit 7)
- Q. 4 Attempt ANY ONE of the following (A or B): 10
(On Unit 8) (10 out 12)

Practical Evaluation:

10 Marks

Oral and Presentation based on the units prescribed.

Paper –VI : Colour Theory (Part II)

50Hrs.

Course Teacher:	Mr. Ananda Maruti Sawant
Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	Fundamentals of art & design principles

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Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Up on completion of this course, students will be able to		Mapping with PO's
1	Recognize color as a quality in the physical world, including natural phenomena. Be able to describe a variety of uses of color	4
CO107.2	Distinguish principles of subtractive and additive color phenomena	4
CO107.3	Apply color principles to 2 and 3 Dimensional design problems	4,5
CO107.4	Study of the additive and subtractive principles of color theory as they apply to the visual communication design process.	4
CO107.5	Color Theory is a Animation course that develops a student's understanding of the complex nature of color.	4
CO107.6	The student will demonstrate skills in designing with color, while developing sensitivity through hue, value, intensity, proportion and placement in a composition.	4

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Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
 1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO107.1	-	-	-	2	-	-	-	-	-	-	2
CO107.2	-	-	-	2	-	-	-	-	-	-	2
CO107.3	-	-	-	2	3	-	-	-	-	-	3
CO107.4	-	-	-	-	3	-	-	-	-	-	2
CO107.5	-	-	-	2	-	-	-	-	-	-	2
CO107.6	-	-	-	3	-	-	-	-	-	-	2

COLOUR AND COLOUR IDENTIFICATION

50Hrs.

Colour knowledge, Colour pigment (Definition) Newton's Theory of Hight

COLOUR THEORY

Artist colour theory, Light colour theory Psychologist's colour theory

COLOUR CHARACTERISTICS AND VALUE

Colour Definition, Dimensions, Symbolic meaning of colour, Perception of colours, gray scale Prepartion of Dr. Ross's Gray Scale, Key and contrast, Tint, Tone, shade, colour Gradation

VISUAL EFFECTS OF COLOURS

Illusion, After Image, Colour Simultaneous, Contrast, Visibility, Attention Powar, Focussing Fast and Fugitive colours, Normal colour, Advancing colour, Reliving colours, Natural colours, The visual effect of the dimensions of colours, High key and lowkey, colour wash.

COLOUR MIXTURES

colour classification 12 part Colour-wheel and colour Scheme, 18 part colour wheel

Importance and uses of Colours in our life

Text Books/Reference Books/ Other Books/E-material/Paper

Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	Visual of art	Jayprakash Jagatap	-	-	2008
2	Visual of art	Jayprakash Jagatap	-	-	2008
3	Colour theory	Jayprakash Jagatap	-	-	2008

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PAPER VII -

Classic Animation

50Hrs.

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	Fundamentals of art & Type of perspective & Cartoon
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO107.1	Delve into the fundamentals of drawing, animation, and basic art direction.	4,9
CO107.2	Enhance your drawing skills with storyboard and background design exercises.	4,7
CO107.3	Explore more complex animation concepts like animating a character's thoughts and emotions through acting principles.	5,7
CO107.4	Create storyboards for an animated film, character model sheets, layouts, and final artwork for rendering.	5
CO107.5	Progress to the art direction, digital ink and paint phase of production on your final project.	2,9
CO107.6	Assemble a traditional animation portfolio in preparation for graduation.	1,2,7

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)

1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO107.1	-	-	-	3	-	-	-	-	2	-	2
CO107.2	-	-	-	3	-	-	2	-	-	-	2
CO107.3	-	-	-	-	3	-	2	-	-	-	2
CO107.4	-	-	-	-	3	-	-	-	-	-	2
CO107.5	-	2	-	-	-	-	-	-	2	-	2
CO107.6	1	2	-	-	-	-	2	-	-	-	2

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Traditional animation (or **classical animation**, **cel animation** or **hand-drawn animation**) is an [animation](#) technique in which each frame is [drawn](#) by hand on a physical medium. The technique was the dominant form of animation in cinema until the advent of [computer animation](#).



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 - [1.2 Animatic](#)
 - [1.3 Design and timing](#)
 - [1.4 Layout](#)
 - [1.5 Animation](#)
 - [1.6 Pencil test](#)
 - [1.7 Backgrounds](#)
 - [1.8 Traditional ink-and-paint and camera](#)
 - [1.9 Digital ink and paint](#)
 - [1.10 Computers and digital video cameras](#)
- [2 Techniques](#)
 - [2.1 Cels](#)
 - [2.2 Limited animation](#)
 - [2.3 "Shooting on twos"](#)
 - [2.4 Animation loops](#)
 - [2.5 Multiplane camera](#)
 - [2.6 Xerography](#)
 - [2.7 The APT process](#)
 - [2.8 Cel overlay](#)
 - [2.9 Computers and traditional animation](#)
 - [2.10 Rotoscoping](#)
 - [2.11 Live-action hybrids](#)
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- [3 See also](#)
- [4 References](#)
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Process

Animation productions begin by deciding on a story. The oral or literary source material must then be converted into an animation film script, from which the [storyboard](#) is derived. The storyboard has an appearance somewhat similar to a comic book, and it shows the sequence of shots as consecutive sketches that also indicate transitions, camera angles, and framing. The images allow the animation team to plan the flow of the [plot](#) and the composition of the

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imagery. The *storyboard artists* will have regular meetings with the [director](#) and may have to redraw or "re-board" a sequence many times before it meets final approval.

Voice recording

Before true animation begins, a preliminary [soundtrack](#) or "scratch track" is recorded, so that the animation may be more precisely [synchronized](#) to the soundtrack. Given the slow, methodical manner in which traditional animation is produced, it is almost always easier to synchronize animation to a pre-existing soundtrack than it is to synchronize a soundtrack to pre-existing animation. A completed cartoon soundtrack will feature [music](#), [sound effects](#), and dialogue performed by [voice actors](#). However, the scratch track used during animation typically contains only the voices, any vocal songs to which characters must sing along, and temporary musical score tracks; the final score and sound effects are added during [post-production](#).

In the case of Japanese [anime](#), as well as most pre-1930 sound animated cartoons, the sound was *post-synched*; that is, the soundtrack was recorded after the film elements were finished by watching the film and performing the dialogue, music, and sound effects required. Some studios, most notably [Fleischer Studios](#), continued to post-synch their cartoons through most of the 1930s, which allowed for the presence of the "muttered ad-libs" present in many [Popeye the Sailor](#) and [Betty Boop](#) cartoons.

Animatic

Often, an *animatic* or *story reel* is made after the soundtrack is created, but before full animation begins. An animatic typically consists of pictures of the storyboard synchronized with the soundtrack. This allows the animators and directors to work out any script and timing issues that may exist with the current storyboard. The storyboard and soundtrack are amended if necessary, and a new animatic may be created and reviewed with the director until the storyboard is perfected. Editing the film at the animatic stage prevents the animation of scenes that would be edited out of the film; as traditional animation is a very expensive and time-consuming process, creating scenes that will eventually be edited out of the completed cartoon is strictly avoided.

Advertising agencies today employ the use of animatics to test their commercials before they are made into full up spots. Animatics use drawn artwork, with moving pieces (for example, an arm that reaches for a product, or a head that turns). Video storyboards are similar to animatics but do not have moving pieces. [Photomatics](#) are another option when creating test spots, but instead of using drawn artwork, there is a shoot in which hundreds of digital photographs are taken. The large number of images to choose from may make the process of creating a test commercial a bit easier, as opposed to creating an animatic, because changes to drawn art take time and money. Photomatics generally cost more than animatics, as they may require a shoot and on-camera talent. However, the emergence of affordable [stock photography](#) and [image editing software](#) permits the inexpensive creation of photomatics using stock elements and photo composites.

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Design and timing

Once the animatic has been approved, it and the storyboards are sent to the design departments. [Character designers](#) prepare [model sheets](#) for all important characters and props in the film; these are used to help standardize appearance, poses, and gestures. These model sheets will show how a character or object looks from a variety of angles with a variety of poses and expressions so that all artists working on the project can deliver consistent work. Sometimes, small [statues](#) known as [maquettes](#) may be produced, so that an animator can see what a character looks like in three dimensions. At the same time, the *background stylists* will do similar work for the settings and locations in the project, and the [art directors](#) and *color stylists* will determine the art style and color schemes to be used.

While design is going on, the *timing director* (who in many cases will be the main director) takes the animatic and analyzes exactly what poses, drawings, and lip movements will be needed on what frames. An [exposure sheet](#) (or *X-sheet* for short) is created; this is a printed table that breaks down the action, dialogue, and sound frame-by-frame as a guide for the animators. If a film is based more strongly in music, a *bar sheet* may be prepared in addition to or instead of an X-sheet.^[1] Bar sheets show the relationship between the on-screen action, the dialogue, and the actual [musical notation](#) used in the score.

Layout

Layout begins after the designs are completed and approved by the director. The layout process is the same as the blocking out of shots by a [cinematographer](#) on a live-action film. It is here that the background layout artists determine the camera angles, camera paths, lighting, and shading of the scene. Character layout artists will determine the major poses for the characters in the scene and will make a drawing to indicate each pose. For short films, character layouts are often the responsibility of the director.

The layout drawings and storyboards are then spliced, along with the audio and an animatic is formed (not to be confused with its predecessor, the [leica reel](#)). The term "animatic" was originally coined by [Walt Disney Animation Studios](#).

Animation

Once the [animatic](#) is finally approved by the director, animation begins.

In the traditional animation process, animators will begin by drawing sequences of animation on sheets of transparent paper perforated to fit the peg bars in their desks, often using colored [pencils](#), one picture or "frame" at a time.^[2] A peg bar is an animation tool used in traditional (cel) animation to keep the drawings in place. The pins in the peg bar match the holes in the paper. It is attached to the animation desk or light table, depending on which is being used. A *key animator* or *lead animator* will draw the [key drawings](#) in a scene, using the character layouts as a guide. The key animator draws enough of the frames to get across the major points of the action; in a sequence of a [character](#) jumping across a gap, the key animator may draw a frame of the character as he is about to leap, two or more frames as the character is flying through the air and the frame for the character landing on the other side of the gap.

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Timing is important for the animators drawing these frames; each frame must match exactly what is going on in the soundtrack at the moment the frame will appear, or else the discrepancy between sound and visual will be distracting to the audience. For example, in high-budget productions, extensive effort is given in making sure a speaking character's mouth matches in shape the sound that character's actor is producing as he or she speaks.

While working on a scene, a key animator will usually prepare a *pencil test* of the scene. A pencil test is a preliminary version of the final animated scene; the pencil drawings are quickly photographed or scanned and synced with the necessary soundtracks. This allows the animation to be reviewed and improved upon before passing the work on to his *assistant animators*, who will add details and some of the missing frames in the scene. The work of the assistant animators is reviewed, pencil-tested, and corrected until the lead animator is ready to meet with the director and have his scene *sweatboxed*, or reviewed by the director, producer, and other key creative team members. Similar to the storyboarding stage, an animator may be required to redo a scene many times before the director will approve it.

In high-budget animated productions, often each major character will have an animator or group of animators solely dedicated to drawing that character. The group will be made up of one supervising animator, a small group of key animators, and a larger group of assistant animators. For scenes where two characters interact, the key animators for both characters will decide which character is "leading" the scene, and that character will be drawn first. The second character will be animated to react to and support the actions of the "leading" character.

Once the key animation is approved, the lead animator forwards the scene on to the *clean-up department*, made up of the *clean-up animators* and the *inbetweeners*. The clean-up animators take the lead and assistant animators' drawings and trace them onto a new sheet of paper, taking care in including all of the details present on the original model sheets, so that it appears that 1 person animated the entire film. The *inbetweeners* will draw in whatever frames are still missing *in between* the other animators' drawings. This procedure is called *tweening*. The resulting drawings are again pencil-tested and sweatboxed until they meet approval.

At each stage during pencil animation, approved artwork is spliced into the [Leica reel](#).^[3]

This process is the same for both *character animation* and *special effects animation*, which on most high-budget productions are done in separate departments. Effects animators animate anything that moves and is not a character, including props, vehicles, [machinery](#) and phenomena such as [fire](#), [rain](#), and [explosions](#). Sometimes, instead of drawings, a number of special processes are used to produce special effects in animated films; rain, for example, has been created in [Disney animated](#) films since the late 1930s by filming [slow-motion](#) footage of water in front of a black background, with the resulting film superimposed over the animation.

Pencil test

After all the drawings are cleaned up, they are then photographed on an [animation camera](#), usually on black and white [film stock](#).^[4] Nowadays, pencil tests can be made using a [video camera](#) and computer software.

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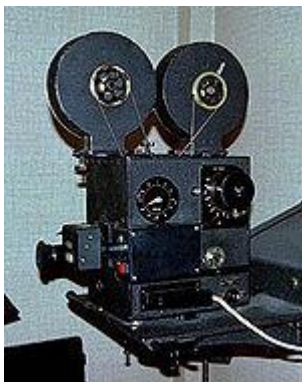
Backgrounds

While the animation is being done, the [background artists](#) will [paint](#) the sets over which the action of each animated sequence will take place. These backgrounds are generally done in [gouache](#) or [acrylic paint](#), although some animated productions have used backgrounds done in [watercolor](#) or [oil paint](#). Background artists follow very closely the work of the background layout artists and color stylists (which is usually compiled into a workbook for their use) so that the resulting backgrounds are harmonious in tone with the character designs.

Traditional ink-and-paint and camera

Once the clean-ups and in-between drawings for a sequence are completed, they are prepared for photography, a process known as *ink-and-paint*. Each drawing is then transferred from paper to a thin, clear sheet of plastic called a [cel](#), a contraction of the material name [celluloid](#) (the original flammable [cellulose nitrate](#) was later replaced with the more stable [cellulose acetate](#)). The outline of the drawing is inked or [photocopied](#) onto the cel, and [gouache](#), [acrylic](#) or a similar type of paint is used on the reverse sides of the cels to add colors in the appropriate shades. In many cases, characters will have more than one color palette assigned to them; the usage of each one depends upon the mood and lighting of each scene. The transparent quality of the cel allows for each character or object in a frame to be animated on different cels, as the cel of one character can be seen underneath the cel of another; and the opaque background will be seen beneath all of the cels.

When an entire sequence has been transferred to cels, the photography process begins. Each cel involved in a frame of a sequence is laid on top of each other, with the background at the bottom of the stack. A piece of glass is lowered onto the artwork in order to flatten any irregularities, and the composite image is then photographed by a special [animation camera](#), also called [rostrum camera](#).^[5] The cels are removed, and the process repeats for the next frame until each frame in the sequence has been photographed. Each cel has *registration holes*, small holes along the top or bottom edge of the cel, which allow the cel to be placed on corresponding peg bars^[6] before the camera to ensure that each cel aligns with the one before it; if the cels are not aligned in such a manner, the animation, when played at full speed, will appear "jittery." Sometimes, frames may need to be photographed more than once, in order to implement superimpositions and other camera effects. Pans are created by either moving the cels or backgrounds 1 step at a time over a succession of frames (the camera does not pan; it only zooms in and out).



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A camera used for shooting traditional animation. See also [Aerial image](#).

As the scenes come out of final photography, they are spliced into the Leica reel, taking the place of the pencil animation. Once every sequence in the production has been photographed, the final film is sent for development and processing, while the final music and sound effects are added to the soundtrack. Again, editing in the traditional live-action sense is generally not done in animation, but if it is required it is done at this time, before the final print of the film is ready for duplication or broadcast.

Among the most common types of animation rostrum cameras was the Oxberry. Such cameras were always made of black anodized aluminum, and commonly had 2 pegbars, 1 at the top and 1 at the bottom of the lightbox. The Oxberry Master Series had 4 pegbars, 2 above and 2 below, and sometimes used a "floating pegbar" as well. The height of the column on which the camera was mounted determined the amount of zoom achievable on a piece of artwork. Such cameras were massive mechanical affairs which might weigh close to a ton and take hours to break down or set up.

In the later years of the animation rostrum camera, stepper motors controlled by computers were attached to the various axes of movement of the camera, thus saving many hours of hand cranking by human operators. Gradually, motion control techniques were adopted throughout the industry.

Digital ink and paint processes gradually made these traditional animation techniques and equipment obsolete.

Digital ink and paint

The current process, termed "digital ink and paint", is the same as traditional ink and paint until after the animation drawings are completed;^[7] instead of being transferred to cels, the animators' drawings are either [scanned](#) into a [computer](#) or drawn directly onto a computer monitor (such as a [Wacom Cintiq](#) tablet), where they are colored and processed using one or more of a variety of software packages. The resulting drawings are composited in the computer over their respective backgrounds, which have also been scanned into the computer (if not digitally painted), and the computer outputs the final film by either exporting a digital [video](#) file, using a [video cassette recorder](#), or printing to [film](#) using a high-resolution output device. Use of computers allows for easier exchange of artwork between departments, studios, and even countries and continents (in most low-budget American animated productions, the bulk of the animation is actually done by animators working in other countries, including [South Korea](#), [China](#), [Japan](#), [Singapore](#), [Mexico](#), and [India](#)). As the cost of both inking and painting new cels for animated films and TV programs and the repeated usage of older cels for newer animated TV programs and films went up and the cost of doing the same thing digitally went down, eventually, the digital ink-and-paint process became the standard for future animated movies and TV programs. Digital ink and paint has been in use at [Walt Disney Feature Animation](#) since 1989, where it was used for the final rainbow shot in [The Little Mermaid](#). All subsequent Disney animated features were digitally inked-and-painted (starting with [The Rescuers Down Under](#), which was also the first major feature film to

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entirely use digital ink and paint), using Disney's proprietary [CAPS](#) (Computer Animation Production System) technology, developed primarily by [Pixar](#).

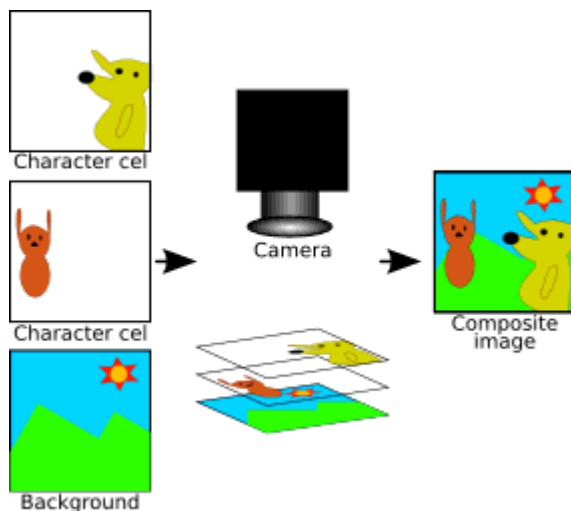
While Disney was the first to switch to digital inking and painting, it took the rest of the industry longer to adapt. Many filmmakers and studios did not want to shift to the digital ink-and-paint process because they felt that the digitally-colored animation would look too synthetic and would lose the aesthetic appeal of the non-computerized cel for their projects. Many animated television series were still animated in other countries by using the traditionally inked-and-painted cel process as late as 2004; though most of them switched over to the digital process at some point during their run. The last major feature film to use traditional ink and paint was [Studio Ghibli's *Princess Mononoke*](#) (1997); the last major animation production to use the traditional process was [Cartoon Network's *Ed, Edd n Eddy*](#), which switched to digital paint in 2004.^[8] Minor productions such as [Hair High](#) (2004) by [Bill Plympton](#) have used traditional cels long after the introduction of digital techniques. Most studios today use one of a number of other high-end software packages, such as [Toon Boom Harmony](#), Toonz Bravo!, Animo, and [RETAS](#), or even consumer-level applications such as [Adobe Flash](#), [Toon Boom Studio](#), [UbiArt Framework](#) TVPaint, and Toonz Harlequin.

Computers and digital video cameras

Computers and digital video cameras can also be used as tools in traditional cel animation without affecting the film directly, assisting the animators in their work and making the whole process faster and easier. Doing the layouts on a computer is much more effective than doing it by traditional methods.^[9] Additionally, video cameras give the opportunity to see a "preview" of the scenes and how they will look when finished, enabling the animators to correct and improve upon them without having to complete them first. This can be considered a digital form of *pencil testing*.

Techniques

Cels



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This image shows how two transparent cels, each with a different character drawn on them, and an opaque background are photographed together to form the composite image.

The [cel](#) is an important innovation to traditional animation, as it allows some parts of each frame to be repeated from frame to frame, thus saving labor. A simple example would be a scene with two characters on screen, one of which is talking and the other standing silently. Since the latter character is not moving, it can be displayed in this scene using only one drawing, on one cel, while multiple drawings on multiple cels are used to animate the speaking character.

For a more complex example, consider a sequence in which a boy sets a plate upon a table. The table stays still for the entire sequence, so it can be drawn as part of the background. The plate can be drawn along with the character as the character places it on the table. However, after the plate is on the table, the plate no longer moves, although the boy continues to move as he draws his arm away from the plate. In this example, after the boy puts the plate down, the plate can then be drawn on a separate cel from the boy. Further frames feature new cels of the boy, but the plate does not have to be redrawn as it is not moving; the same cel of the plate can be used in each remaining frame that it is still upon the table. The cel paints were actually manufactured in shaded versions of each color to compensate for the extra layer of cel added between the image and the camera; in this example, the still plate would be painted slightly brighter to compensate for being moved one layer down. In TV and other low-budget productions, cels were often "cycled" (i.e., a sequence of cels was repeated several times), and even archived and reused in other episodes. After the film was completed, the cels were either thrown out or, especially in the early days of animation, washed clean and reused for the next film. Also, after the completion of the film, some of the cels were put into the "archive" to be used again and again for future purposes in order to save money. Some studios saved a portion of the cels and either sold them in studio stores or presented them as gifts to visitors.



[Play media](#)

How Animated Cartoons Are Made (1919), showing characters made from cut-out paper

In very early cartoons made before the use of the cel, such as [Gertie the Dinosaur](#) (1914), the entire frame, including the background and all characters and items, were drawn on a single sheet of paper, then photographed. Everything had to be redrawn for each frame containing movements. This led to a "jittery" appearance; imagine seeing a sequence of drawings of a mountain, each one slightly different from the one preceding it. The pre-cel animation was later improved by using techniques like the slash and tear system invented by [Raoul Barre](#); the background and the animated objects were drawn on separate papers.^[10] A frame was made by

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removing all the blank parts of the papers where the objects were drawn before being placed on top of the backgrounds and finally photographed. The cel animation process was invented by [Earl Hurd](#) and [John Bray](#) in 1915.

Limited animation

In lower-budget productions, shortcuts available through the cel technique are used extensively. For example, in a scene in which a man is sitting in a chair and talking, the chair and the body of the man may be the same in every frame; only his head is redrawn, or perhaps even his head stays the same while only his mouth moves. This is known as *limited animation*.^[11] The process was popularized in theatrical cartoons by [United Productions of America](#) and used in most [television](#) animation, especially that of [Hanna-Barbera](#). The end result does not look very lifelike, but is inexpensive to produce, and therefore allows cartoons to be made on small television budgets.

"Shooting on twos"

Moving characters are often shot "on twos", that is to say, one drawing is shown for every two frames of film (which usually runs at 24 frames per second), meaning there are only 12 drawings per second.^[12] Even though the image update rate is low, the fluidity is satisfactory for most subjects. However, when a character is required to perform a quick movement, it is usually necessary to revert to animating "on ones", as "twos" are too slow to convey the motion adequately. A blend of the two techniques keeps the eye fooled without unnecessary production cost.

[Academy Award](#)-nominated animator [Bill Plympton](#) is noted for his style of animation that uses very few in-betweens and sequences that are done on 3s or on 4s, holding each drawing on the screen from 1/8 to 1/6 of a second.^[13] While Plympton uses near-constant three-frame holds, sometimes animation that simply averages eight drawings per second is also termed "on threes" and is usually done to meet budget constraints, along with other cost-cutting measures like holding the same drawing of a character for a prolonged time or panning over a still image,^[14] techniques often used in low-budget TV productions.^[15] It is also common in [anime](#), where fluidity is sacrificed in lieu of a shift towards complexity in the designs and shading (in contrast with the more functional and optimized designs in the western tradition); even high-budget theatrical features such as [Studio Ghibli](#)'s employ the full range: from smooth animation "on ones" in selected shots (usually quick action accents) to common animation "on threes" for regular dialogue and slow-paced shots.

Animation loops



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A horse animated by [rotoscoping](#) from [Eadweard Muybridge](#)'s 19th-century photos. The animation consists of 8 drawings which are "looped", i.e. repeated over and over. This example is also "shot on twos", i.e. shown at 12 drawings per second.

Creating *animation loops* or *animation cycles* is a labor-saving technique for animating repetitive motions, such as a character walking or a breeze blowing through the trees. In the case of walking, the character is animated taking a step with its right foot, then a step with its left foot. The loop is created so that, when the sequence repeats, the motion is seamless. However, because an animation loop essentially uses the same bit of animation over and over again, it is easily detected and can, in fact, become distracting to an audience. In general, they are used only sparingly by productions with moderate or high budgets.

[Ryan Larkin](#)'s 1969 [Academy Award](#)-nominated [National Film Board of Canada](#) short *Walking* makes creative use of loops. In addition, a promotional music video from [Cartoon Network](#)'s Groovies featuring the [Soul Coughing](#) song "Circles" poked fun at animation loops as they are often seen in *The Flintstones*, in which Fred and Barney (along with various Hanna-Barbera characters that aired on Cartoon Network), supposedly walking in a house, wonder why they keep passing the same table and vase over and over again.

Multiplane camera

Main article: [Multiplane camera](#)

The multiplane camera is a tool used to add depth to scenes in 2D animated movies, called the multiplane effect or the parallax process. The art is placed on different layers of glass plates, and as the camera moves vertically towards or away from the artwork levels, the camera's viewpoint appears to move through the various layers of artwork in 3D space. The panorama views in *Pinocchio* are examples of the effects a multiplane camera can achieve. Different versions of the camera have been made through time, but the most famous is the one developed by the Walt Disney studio beginning with their 1937 short *The Old Mill*. Another one, the "Tabletop", was developed by Fleischer Studios. The Tabletop, first used in 1934's *Poor Cinderella*, used miniature sets made of paper cutouts placed in front of the camera on a rotating platform, with the cels between them. By rotating the entire setup one frame at a time in accordance with the cel animation, realistic panoramas could be created. [Ub Iwerks](#) and [Don Bluth](#) also built multiplane cameras for their studios.

Xerography

Applied to animation by Ub Iwerks at the Walt Disney studio during the late 1950s, the [electrostatic](#) copying technique called [xerography](#) allowed the drawings to be copied directly onto the cels, eliminating much of the "inking" portion of the ink-and-paint process.^[16] This saved time and money, and it also made it possible to put in more details and to control the size of the xeroxed objects and characters (this replaced the little known, and seldom used, photographic lines technique at Disney, used to reduce the size of animation when needed). At first, it resulted in a more sketchy look, but the technique was improved upon over time.

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Disney animator and engineer [Bill Justice](#) had patented a forerunner of the Xerox process in 1944, where drawings made with a special pencil would be transferred to a cel by pressure, and then fixing it. It is not known if the process was ever used in animation.^[17]

The xerographic method was first tested by Disney in a few scenes of [Sleeping Beauty](#) and was first fully used in the short film [Goliath II](#), while the first feature entirely using this process was [One Hundred and One Dalmatians](#) (1961). The graphic style of this film was strongly influenced by the process. Some hand inking was still used together with xerography in this and subsequent films when distinct colored lines were needed. Later, colored [toners](#) became available, and several distinct line colors could be used, even simultaneously. For instance, in [The Rescuers](#) the characters' outlines are gray. White and blue toners were used for special effects, such as snow and water.

The APT process

Main article: [APT process](#)

Invented by Dave Spencer for the 1985 Disney film [The Black Cauldron](#), the APT (Animation Photo Transfer) process was a technique for transferring the animators' art onto cels. Basically, the process was a modification of a repro-photographic process; the artists' work were photographed on high-contrast "litho" film, and the image on the resulting negative was then transferred to a [cel](#) covered with a layer of light-sensitive dye. The cel was exposed through the negative. Chemicals were then used to remove the unexposed portion. Small and delicate details were still inked by hand if needed. Spencer received an [Academy Award for Technical Achievement](#) for developing this process.

Cel overlay

A *cel overlay* is a cel with inanimate objects used to give the impression of a foreground when laid on top of a ready frame.^[18] This creates the illusion of depth, but not as much as a multiplane camera would. A special version of cel overlay is called *line overlay*, made to complete the background instead of making the foreground, and was invented to deal with the sketchy appearance of xeroxed drawings. The background was first painted as shapes and figures in flat colors, containing rather few details. Next, a cel with detailed black lines was laid directly over it, each line drawn to add more information to the underlying shape or figure and give the background the complexity it needed. In this way, the visual style of the background will match that of the xeroxed character cels. As the xerographic process evolved, line overlay was left behind.

Computers and traditional animation

The methods mentioned above describe the techniques of an animation process that originally depended on cels in its final stages, but painted cels are rare today as the [computer](#) moves into the animation studio, and the outline drawings are usually scanned into the computer and filled with digital paint instead of being transferred to cels and then colored by hand.^[19] The drawings are composited in a computer program on many transparent "layers" much the same way as they are with cels,^[20] and made into a sequence of images which may then be transferred onto film or converted to a [digital video](#) format.^[21]

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It is now also possible for animators to draw directly into a computer using a [graphics tablet](#), [Cintiq](#) or a similar device, where the outline drawings are done in a similar manner as they would be on paper. The [Goofy](#) short [How To Hook Up Your Home Theater](#) (2007) represented Disney's first project based on the paperless technology available today. Some of the advantages are the possibility and potential of controlling the size of the drawings while working on them, drawing directly on a multiplane background and eliminating the need of photographing line tests and scanning.

Though traditional animation is now commonly done with computers, it is important to differentiate computer-assisted traditional animation from [3D computer animation](#), such as [Toy Story](#) and [Ice Age](#). However, often traditional animation and 3D computer animation will be used together, as in [Don Bluth's Titan A.E.](#) and [Disney's Tarzan](#) and [Treasure Planet](#). Most [anime](#) and many western animated series still use traditional animation today. [DreamWorks](#) executive [Jeffrey Katzenberg](#) coined the term "tradigital animation" to describe animated films produced by his studio which incorporated elements of traditional and computer animation equally, such as [Spirit: Stallion of the Cimarron](#) and [Sinbad: Legend of the Seven Seas](#).

Many [video games](#) such as [Viewtiful Joe](#), [The Legend of Zelda: The Wind Waker](#) and [others](#) use "[cel-shading](#)" animation filters or lighting systems to make their full 3D animation appear as though it were drawn in a traditional cel-style. This technique was also used in the animated movie [Appleseed](#), and cel-shaded 3D animation is typically integrated with cel animation in Disney films and in many television shows, such as the [Fox](#) animated series [Futurama](#). In one scene of the 2007 Pixar movie [Ratatouille](#), an illustration of Gusteau (in his cookbook), speaks to Remy (who, in that scene, was lost in the sewers of Paris) as a figment of Remy's imagination; this scene is also considered an example of cel-shading in an animated feature. More recently, animated shorts such as [Paperman](#), [Feast](#), and [The Dam Keeper](#) have used a more distinctive style of cel-shaded 3D animation, capturing a look and feel similar to a 'moving painting'.

Rotoscoping

[Rotoscoping](#) is a method of traditional animation invented by [Max Fleischer](#) in 1915, in which animation is "traced" over actual film footage of actors and scenery.^[22] Traditionally, the live action will be printed out frame by frame and registered. Another piece of paper is then placed over the live action printouts and the action is traced frame by frame using a lightbox. The end result still looks hand drawn but the motion will be remarkably lifelike. The films [Waking Life](#) and [American Pop](#) are full-length rotoscoped films. Rotoscoped animation also appears in the music videos for [A-ha's](#) song "[Take On Me](#)" and [Kanye West's](#) "[Heartless](#)". In most cases, rotoscoping is mainly used to aid the animation of realistically rendered human beings, as in [Snow White and the Seven Dwarfs](#), [Peter Pan](#), and [Sleeping Beauty](#).

A method related to conventional rotoscoping was later invented for the animation of solid inanimate objects, such as cars, boats, or doors. A small live action model of the required object was built and painted white, while the edges of the model were painted with thin black lines. The object was then filmed as required for the animated scene by moving the model, the camera, or a combination of both, in real time or using stop-motion animation. The film

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frames were then printed on paper, showing a model made up of the painted black lines. After the artists had added details to the object not present in the live-action photography of the model, it was xeroxed onto cels. A notable example is Cruella de Vil's car in Disney's *One Hundred and One Dalmatians*. The process of transferring 3D objects to cels was greatly improved in the 1980s when computer graphics advanced enough to allow the creation of 3D computer generated objects that could be manipulated in any way the animators wanted, and then printed as outlines on paper before being copied onto cels using Xerography or the APT process. This technique was used in Disney films such as [Oliver and Company](#) (1988) and [The Little Mermaid](#) (1989). This process has more or less been superseded by the use of cel-shading.

Related to rotoscoping are the methods of [vectorizing](#) live-action footage, in order to achieve a very graphical look, like in [Richard Linklater's](#) film [A Scanner Darkly](#).

Live-action hybrids

Main article: [Live-action animated film](#)

Similar to the computer animation and traditional animation hybrids described above, occasionally a production will combine both live-action and animated footage. The live-action parts of these productions are usually filmed first, the actors pretending that they are interacting with the animated characters, props, or scenery; animation will then be added into the footage later to make it appear as if it has always been there. Like rotoscoping, this method is rarely used, but when it is, it can be done to terrific effect, immersing the audience in a fantasy world where [humans](#) and cartoons co-exist. Early examples include the silent [Out of the Inkwell](#) (begun in 1919) cartoons by [Max Fleischer](#) and [Walt Disney's](#) [Alice Comedies](#) (begun in 1923). Live-action and animation were later combined in features such as [Mary Poppins](#) (1964), [Who Framed Roger Rabbit](#) (1988), [Space Jam](#) (1996), and [Enchanted](#) (2007), among many others. The technique has also seen significant use in television commercials, especially for breakfast [cereals](#) marketed to children.

Special effects animation

Besides traditional animated characters, objects, and backgrounds, many other techniques are used to create special elements such as smoke, lightning and "magic", and to give the animation, in general, a distinct visual appearance. Today [special effects](#) are mostly done with computers, but earlier they had to be done by hand. To produce these effects, the animators used different techniques, such as [drybrush](#), [airbrush](#), charcoal, [grease pencil](#), backlit animation, diffusing screens, [filters](#), or [gels](#). For instance, the [Nutcracker Suite](#) segment in *Fantasia* has a fairy sequence where [stippled](#) cels are used, creating a soft pastel look.

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Sr.No	Title	Author	Publisher	Edition	Year of Edition
1	The Animator's Survival Kit	Richard Williams	-	-	-
2	Timing for Animation	John Halas	-	-	-
3	Sketching for Animation	Peter Parr	-	-	-
4	The Illusion of Life	Frank Thomas	-	-	-
5	character Animation Crash Course	Eric Goldberg	-	-	-
6	Producing Independent 2D Character Animation	Mark Simon	-	-	-

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B) Practical

- A) Colour** **50 Hrs.**
- | | |
|-----------------|--------------------|
| 1) Colour Wheel | 2) Colour Scheme |
| 3) Colour Shade | 4) Colour Contrast |
| 5) Colour Wash | |

B) Photoshop Syllabus **100 Hrs.**

- | | | |
|-------------------------------------|--|---------------|
| 1. Photoshop all Tools introduction | 2 . Photo cropping | |
| 3.Lighting study | 4. Nature & Objects | 5. Caricature |
| 6. Cartoon Character coloring | 7. Matt painting & Background coloring | |

C) Project Work **50 Hrs.**

1. Animation Drawing
- 2.Outdoor