# SANJEEVAGRAWALGLOBALEDUCATIONAL UNIVERSITY, BHOPAL

Proposed Discipline Core Course Syllabus

for

Bachelor of Design (BDES) – Certificate/Diploma/Degree/Honours Degree/Research Degree

In

Fashion Design/Interior Design/UI-UX Design/Product Design wef 2023-24 (According to NEP 2020)



School of Design

#### BDES PROGRAM

## About the program:

Great design begins with an even greater story. Its fruits are in the chair you sit in, the website you scroll, or your favorite brand's logo. Design is always evolving in relation with how humans interact with their creations. Designers are innovators who enhance the way we lead our lives and interact with the world around us.

With in SAGE University (School of Design) B.Des. programs, you would be learning the core concepts of design,gainingexpertiseinhowtoapplycreative,open-endedandinclusiveapproachestodefineand(re-)solve problems. This enables organizations, that you start-up your own or you are employed in, to pursue innovative paths, unlike business-as-usual, and take decisions that create lasting value.

# Program Educational Objectives (PEOs):

The Design program trains students/ designers to use their creativity, design brainstorming, and design process to bring new ideas, products, experiences, and value to companies, communities, and people. The Design's Learning Outcomes are student-centred that include skills, abilities, knowledge, and values.

Students majoring in their respective Design fields learn a wide range of hand skills and processes using softand hard materials, digital design skills in 2-D graphics, and 3-D modelling for rapid prototyping. Industry professionals guide students in achieving the Program Learning Outcomes, developing their creative process, researching user experience, and applying multidisciplinary design skills to create well-conceived and executed objects and products that serve a human need. The program assists each student in developing personal career pathways to success.

PEO-1: To develop a young and confident entrepreneur or designer who applies research and analysis to enhance design process and user experience.

PEO-2: To Use creative techniques to synthesize information, solve problems and think critically.

PEO-3: To train a confident academician, educator or trainer with a strong portfolio who imparts knowledge acquired through an undergraduate design honors program in India or abroad.

PEO-4: To be able to use the Design and Development Process to manage idea generation and benefit the design industry.

PEO-5: To keep up with design trends and practices to improve work performance and professional 27 Allam

development.

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# Program Outcomes(POs):

A graduate who has conferred a BDES degree is expected to have acquired the basics fundamentals of Design, as well as practical and application aspects where he/ she should be able to:

- PO1- To promote understanding of design specialization to meet the needs of various design fields.
- PO2- To explore and idea to new designs and solutions to fulfill the evolving needs and aspirations of an individual and society to produce work of contemporary relevance.
- PO 3- To study art and technology to analyze the progress of human civilization.
- PO4- To develop awareness of current events to understand and study problems at hand.
- PO 5- To explore literature to derive concepts and apply aesthetic principles to design problems.
- PO6- To create a portfolio of finished art, collections, studio work and presentation boards expressing a personal voice, visions and creativity.
- PO7- To articulate the history of concepts using design terminology to create reasoned design solutions.
- PO 8- To Collaborate with various groups to make informed design decisions.
- PO 9-To Perform work ethically and legally while considering social, economic and ecological perspectives.
- PO10- To Apply knowledge of legal and regulatory frame works and codes of practice in establishing and managing.

# Program Specific Outcomes (PSOs):

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- PSO-1: Explain core concepts and practices in functional areas of Design, Materials, Techniques and implementations.
- **PSO-2:** Design and develop the strategies required to manage the industries and also able to solve the real time problems related to the fields.
- PSO-3: Apply theoretical knowledge to analyze problems on-site and identify actionable alternatives.

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## BDES - SEM I

Code		TotalLecture:60
DN23DC001	Fine Arts	2-0-4-4
Course Objectives:	Sketching helps develop perceptual skills, sensitivity, association, imagination, observation and creativity through looking at and responding to various works of art and visual phenomena. It is fundamentally about learning to see, and to transport that vision onto paper through a variety of techniques and explore variety of materials that are available.	
Pre-Requisites:	NIL	
UNIT	CONTENT	HOURS
I	Introduction to Fine Arts:  Definition of Fine Arts, classification of arts, nature and scope of Fine Arts - Painting, sculpture, Music, Dance and Literature.  Inter-relationship of Fine Arts, common elements and issues related to study of Fine Arts.  Introduction and exercises of object drawings:  Lines and shapes on different paper  Compositions with basic geometric forms - Lines, shapes, forms, colour, texture.	12
11	<ul> <li>Experiment with different drawing tools such as:         <ul> <li>Introduction to pencil sketching and various shading techniques.</li> <li>Lines and shapes on different paper, grades, tones, lines -straight, curve, long hand, texture on different papers and surfaces.</li> <li>Pencils (HB Pencil &amp; Shading pencil), Pens, Brushes, Charcoal, Staedtler water colour Pencils, Oil Pastels, Water Colours, Acrylic Colours.</li> <li>Compositions with basic geometric forms, shapes, Proportion and Volume.</li> </ul> </li> <li>Outdoor sketching with light and shadow:         <ul> <li>Understanding to light and shadow</li> <li>Free hand sketches of caricatures, line drawing, stick drawing and cartoons.</li> <li>Introduction to various mediums such as - water colour and compatible materials E.g.: water colour paper, conventional and latest mediums in market.</li> </ul> </li> </ul>	12
III	Introduction to still life:  Body postures of human anatomy  Study in a closed composition or outdoor in pencil shading or colours.  Introduction to various colour schemes  Sketching enhancement  Natural and manmade objects.  Impact of light source at various eye levels.  Texture study with different materials like cloth, wood, glass, bronze, mirror, china clay, terracotta, etc.  Understanding depth, light, shade, shadow etc.  Study of foreground and background  Impact of light source at various eye levels.	12.
IV	Landscape and Nature Study: Dry and oil pastel medium Knife painting (Any medium exploration). Outdoor Sketching: Natural Forms/ Built Forms. Different themes, composition of leaves, rocks, flowers etc. Study of variation in sunlight. Study of Cityscape and Seascape. Detail study of different trees, leaves, flowers and animals.	12

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v	Introduction to Perspective views and its types: Brief information  Draw from eye-level, below eye-level, and above eye level.  One-Point Perspective,  Two-Point Perspective,  Ariel Perspective views  Assignments/Activity:  Exploration (10 Assignments) in different colour and surface mediums, E.g.: portrait etc.  Development of own style.  Utilize different styles such as - Coffee painting, nip painting, pixel art.	12
JURY ASSESSMENT	<ol> <li>All topics to be covered and drafted/ presented in A2 cartridge sheet with reg and discussions along with compiled portfolio at the end of the semester in a detheory drafting exams and Jury presentations.</li> <li>Major stylistic movements will be discussed. Class will be conducted on a leformat.</li> <li>In- class team projects and exercises as well as home research assignments will be Presentations, discussions, and projects.</li> <li>Assignments are to be take in PPT form and Hand drafted sheets for portfolio com</li> </ol>	efined format for ecture-discussion e included.
	Course Outcomes as per Bloom's Taxonomy	
After successful c	ompletion of course, the Students will be able to:	
CO 1	To be able to Sketch materials in various media, like Paper, clay, plaster, wood, wire, wax, photography.	
CO 2	To cultivate positive individual and social attitudes through the pursuit of aesthetic and	d artistic values
со з	To Develop competence and understanding in drawing techniques, developing speed, skill sets to quickly sketch ideas.	
CO 4	To Develop and increased understanding of professional needs, responsibilities, and requirements as an art professional.	
CO 5	To Provide training in the practice skills for original and creative visual expression an aesthetic growth and to provide professional responsibility at large.	d to cultivate in
Text Books	<ol> <li>Pauken K.M. (2017) "Quick and lively urban sketching"</li> <li>Kumari D. (2021), "History of Indian Art"</li> <li>"Gods in Color: Painted Sculpture of Classical Antiquity" September 2007 to Jan Arthur M. Sackler Museum Archived 4 January 2009 at the Wayback Machine</li> <li>"Yale University School of Art". Art.yale.edu. Retrieved 13 March 2014.</li> <li>"Fine Art: Definition, Meaning, History". www.visual-arts-cork.com. Retrieved 8 Ju</li> </ol>	
Reference Books	<ol> <li>The Natural Way To Draw Souvenir Press Ltd, 2008</li> <li>Keys to Drawing North Light Books, 1990</li> <li>Art Fundamentals 3dtotal Publishing, 2013</li> <li>Beginner's guide to creating portraits 3dtotal, 2021</li> <li>Draw Great Characters Impact Books, 2019</li> <li>Shiner, Larry. (2003). "The Invention of Art: A Cultural History". Chicago: Universes. ISBN 978-0-226-75342-3</li> <li>Torrey, J. (1874). A theory of fine art. New York: Scribner, Armstrong, and Co.</li> </ol>	

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# BDES - SEM II

Code		Total Lecture:60
DN23DC002	Design Fundamentals	2-0-4-4
Course Objectives:	This will provide a foundational overview of design activities. It will provide an introduction to the essential elements of design, fundamental principles, processes, and practices that currently shape and define the field. Students will learn the processes used to put principles into practice in a variety of learning environments and understand the practical application of design that transcends any model or approach. Determine appropriate design strategies for a variety of scenarios.	
Pre-Requisites:	NIL	
UNIT	CONTENT	HOURS
1	Introduction to: Introduction to Design and its impact, role and function. Difference between an Art and Design, Designer and Artist. Impact and function of Design Elements of Design. Principles of Design	12
п	<ul> <li>Principal of Design:</li> <li>Balance, Types of Balance: Symmetrical and Asymmetrical.</li> <li>Emphasis, Radial, Rhythm, Unity and Harmony, Contrast, Scale and Proportion.</li> <li>Difference between Elements and Principle of Design.</li> <li>Colour Schemes:</li> <li>Primary, Secondary, Tertiary and Pastel.</li> <li>Monochromatic, Analogous, Achromatic, Warm and cool.</li> <li>Complementary, Split complimentary.</li> <li>Tried colour schemes.</li> <li>Activity 1 -</li> <li>Sheet making and compilation of portfolio on A2 cartridge sheet for Principle of Design Divide the sheet after creating the format in three parts.</li> <li>The design will be taken from the principles and the colours would be utilized from colour schemes respectively.</li> </ul>	12
ш	Colour Theory and its explorations:  Visible spectrum.  Colour temperature.  Colour blindness.  Colour wheel - Following and illustrate the steps.  Tints, Tones, Shades, hues chart  Colour value and colour intensity chart (brightness of the pigment).432ec	12
IV	Colour Psychology:  Study and Understanding.  Meaning of colours.  Impact of specific hues.  Usage of warm, cool and neutral colours according to psychology.  Design composition	12
v	Gestalt Theory:  History of Gestalt psychology and its impact.  Principles and Uses of Gestalt psychology.  Golden ratio/ Fibonacci series.	12
JURY ASSESSMENT	<ol> <li>All topics to be covered and drafted/ presented in A2 cartridge sheet with rand discussions along with compiled portfolio at the end of the semester in a theory drafting exams and Jury presentations.</li> <li>Major stylistic movements will be discussed. Class will be conducted on a format.</li> <li>In- class team projects and exercises as well as home research assignments will Presentations, discussions, and projects.</li> <li>Assignments are to be take in PPT form and Hand drafted sheets for portfolio or the projects.</li> </ol>	defined format for lecture-discussion l be included.
	A Reginso Outcomes as per Bloom's Taxonomy Iniversity B	

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CO 1	To Develop visual sensibilities, perceptual skills, analytical skills and representational skills.		
CO 2	Utilize design practices to demonstrate understanding of key concepts. Be able to communicate design concepts in collaboration with others.		
CO 3	To be able to execute the design concepts using elements and principles of Design.		
CO 4	To be able to understand and execute the different concepts inspire in their Design projects.		
CO 5	To communicate design concepts in collaboration with others and utilize design practices to demonstrate understanding of key concepts.		
Text Books:	<ol> <li>Charlotte Jirousek. Art, Design, and Visual Thinking. An online, interactive textbook. Cornell.edu 1995.</li> <li>E, Malloy, Kaoime (2014-09-26). The art of theatrical design: elements of visual composition methods, and practice. New York. ISBN 9781138021501. OCLC 882620042</li> <li>Lovett, John. "Design and Colour". Retrieved 3 April 2012.</li> <li>Luo, Ming Ronnier (2006-06-01). "Applying colour science in colour design". Optics &amp; Laser Technology. 38 (4-6): 392-398. Bibcode:20060ptLT38392L doi:10.1016/j.optlastec.2005.06.025. ISSN 0030-3992.</li> </ol>		
Reference Books:	<ol> <li>Principles of Form and Design by Wucius Wong John Wiley &amp; Sons, New York, ISBN-10 0471285528, ISBN-13: 978-0471285526.</li> <li>Principles of Color Design by Wucius Wong, Publisher: Wiley, ISBN-10: 0471287083 ISBN-13 978-0471287087.</li> <li>Principles of Two-Dimensional Design, Wucius Wong, and Publisher: Wiley, ISBN-10 0471289604 ISBN-13: 978-047128960.</li> <li>Basic Design Principles and Practice by Kenneth F Bates.</li> <li>Pile, J.F. (1995; fourth edition, 2007). Interior Design. New York: Harry N. Abrams, Inc. ISBN 978-0-13-232103-7</li> <li>Kilmer, R., &amp; Kilmer, W. O. (1992). Designing Interiors. Orland, FL: Holt, Rinehart and Winston Inc. ISBN 978-0-03-032233-4.</li> <li>Nielson, K. J., &amp; Taylor, D. A. (2002). Interiors: An Introduction. New York: McGraw-Hil Companies, Inc. ISBN 978-0-07-296520-9</li> <li>Sully, Anthony (2012). Interior Design: Theory and Process. London: Bloomsbury. ISBN 978-1-4081-5202-7.</li> </ol>		

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# BDES - SEM III

Code		Total Lecture:60
DN23DC003	Visual Representation	2-0-4-4
Course Objectives:	<ul> <li>Generate more complex perspective views including use of Pens &amp; Rendering Te</li> <li>Develop proficiency in a communication and technical skills from hand drawing:</li> <li>Learning drawing skill for design thinking, visualization and representation.</li> <li>Facilitate visualization and 3D perception and put them on paper in form of (plans and sections).</li> </ul>	5,
Pre-	NIL	
Requisites: UNIT	CONTENT	HOURS
1	Lines:  History of visual arts in different civilization  Name of different civilizations  Visual arts in folk, tribal, art form, craft and clusters.  Significance of lines w.r.t tribal, folks and popular art forms in India or Globally.  Meaning of point, line, and shape  The Meaning of Different Kinds of Lines.  Connection of lines with ancient or tribal art forms.  Uses of lines.  Activity 1 - Make ppt on chosen form (E.g.: Art/ textile/ artifacts/ architecture, etc.)  Activity 2 - Sketch and draft lines, shapes & lettering in different sizes	12
п	Typography:  The space between the letters to be of equal distance between each alphabet.  General rules for lettering  Different family of fonts and its type  Serif, San serif, hand writing, script  Calligraphy workshop.  Activity 1 - Design your own fonts, its presentation techniques (e.g.: poster making)  Activity 2 - Design Visiting cards, letter heads	- 12
Ш	Geometry in Design:  Scales on drawings Rule of Third. Rule of odds. Tessellations - Regular, semi regular, 3D construction. Types of scales, graphical scale Introduction to form and its study. Addition and subtraction Form journey Surface development of cube, prism, cylinders, pyramids, cone Activity 1 - Five Geometrical bisects drawing, form generation and scale models.	12
IV	Views and Projections:  Projections of Points and Lines: Line parallel to one or both the planes Line contained by one or both the planes Line perpendicular to one of the planes Projections of Planes: Perpendicular planes Projection of planes parallel to one of the reference planes Projections of Solids Projections of Solids with axis inclined to one of the reference planes and parallel to the other Projections of solids with axes inclined to both the H.P. and V.P. Activity 1 -Draw line projection on sheet Activity 2 -Draw Plane projection on sheet (Minimum four) Activity 3 -Draw Solid projection on sheet (Minimum four)	12
v	Introduction to Industrial design.     Basic of orthographic projections  HOS  ACTIVE STATE OF THE PROPERTY BHOPALISCHOOL OF THE CORE  THE STATE OF THE PROPERTY BHOPALISCHOOL OF THE CORE  THE STATE OF THE PROPERTY BHOPALISCHOOL OF THE CORE  THE STATE OF THE PROPERTY BHOPALISCHOOL OF THE CORE  THE STATE OF THE PROPERTY BHOPALISCHOOL OF THE CORE  THE STATE OF THE PROPERTY BHOPALISCHOOL OF T	opai 12

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JURY ASSESSMENT	<ul> <li>Information on Isometric sheets and process.</li> <li>Introduction to orthographic projections and its techniques.</li> <li>Activity 1 - Research work and submissions, study on movies based on history</li> <li>All topics to be covered and drafted/ presented in A2 cartridge sheet with regular submissions and discussions along with compiled portfolio at the end of the semester in a defined format for theory drafting exams and Jury presentations.</li> <li>Major stylistic movements will be discussed. Class will be conducted on a lecture-discussion format.</li> <li>In- class team projects and exercises as well as home research assignments will be included.</li> <li>Presentations, discussions, and projects.</li> <li>Assignments are to be take in PPT form and Hand drafted sheets for portfolio compilation.</li> </ul>	
	Course Outcomes as per Bloom's Taxonomy	
After successful	completion of course, the Students will be able to:	
CO 1	To understand drawing skill for design thinking. Visualization and representation.	
CO 2	To develop proficiency in a communication and technical skills from hand drawings	
CO 3	To understand how to observe, analyze, represent and communicate the elements on paper.	
CO 4	To understand development of surface, their visualization and representation of ideas on a 2D surface.	
CO 5	To understand Section of solids, their visualization and representation of ideas on a 2D surface.	
Text Books:	<ol> <li>Cindy Kovalik, Ph.D. and Peggy King, M.Ed. "Visual Literacy". Retrieved 2010-03-27.</li> <li>Kumu, Ka. "Using Visual Aids Effectively". University of Hawai'i Maui College Speech Department. Retrieved 2012-03-19</li> <li>Meggs, Philip (1998). A History of Graphic Design. New York: John Wiley &amp; Sons, Inc. pp. 229-230. ISBN 0-471-29198-6.</li> <li>Aakhus, Mark (2007-03-01). "Communication as Design". Communication Monographs. 74 (1): 112-117. doi:10.1080/03637750701196383. ISSN 0363-7751. S2CID 143543646.</li> <li>Visual Communication Design". Department of Art, Art History &amp; Design. University of Notre Dame. Retrieved 4 April 2019</li> </ol>	
Reference Books:	<ol> <li>Design Drawing by Francis D. K. Ching and Steven P. Juroszek, Wiley</li> <li>Color Drawing.3rd Edition. Doyle, Michael, E. (1999). New York: John Wiley and Sons. ISBN: 0-471-29245-1</li> <li>Interior Design Illustrated. Scalise, Christina (2008) New York: Fairchild Books. ISBN: 13: 978-1-56376-531-7</li> <li>Bhatt.N.D.53rd Edition (2014). Engineering Drawing.Charotar Publishing House. Anand. Gujrat.</li> <li>Clois E. Kicklighter Ed D.W. Scott Thomas. (2016) Architecture: Residential Drafting and Design. Goodheart-Willcox. Illinois. United States</li> </ol>	

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# **BDES - SEM IV**

Code		Total Lecture:60
DN23DC004	Material Exploration	2-0-4-4
Course Objectives:	An overall understanding of this course would provide basic understanding of the and related processes; it will also provide insights into the various possibilities an material. This understanding will reflect on the concepts while one is visualizing at the products. The inputs will consist of direct exposure to inherent qualities of material working properties.	d limitations of thand conceptualizing
Pre- Requisites:	NIL	
UNIT	CONTENT	HOURS
1	Introduction:  Understanding of raw materials and machinery. Introduction of modern tools and techniques. Up-cycle and Recycle and Pricing. History, creation, collection book, sample, research (minimum 15 types). Paper: Basic information on Hand Made Paper (HMP) industry and their importance. Different types of raw materials & techniques used in HMP industries. Exploring Newspaper. Specifications and process of making different types of Tissue Papers. Understanding the uses and properties of Sand Papers. Digestion process and Preparation of Paper Mache. Cardboard: Different types of packaging Cardboard and its uses. Manufacturing process, its application, durability and classification of Corrugated Sheets. Understanding and preparation of Egg Cartons. Application and installation process of Cork-boards defining it. Cork-board's durability and safety along with advantages and disadvantages. Activity 1 - Activities and assignments based on Kirigami, origami, crushing, quilling	12
II	<ul> <li>Clay: <ul> <li>Playing with Clay and their processes and exploration.</li> <li>Basic information on Pottery &amp; Ceramic Formation and there importance</li> <li>Types and specifications of Ceramic</li> <li>Introduction, application, its advantages, disadvantages and strengths of Fly Ash Blocks.</li> <li>Specifications, manufacturing and uses of Fly Ash Blocks.</li> <li>Key elements and SWOT analysis for Terracotta.</li> <li>The material resources flow in Terrazzo making and its benefits of installing.</li> <li>Tools and methods in Terrazzo making process.</li> </ul> </li> <li>P.O.P: <ul> <li>Introduction and information about Plaster of Paris(P.O.P).</li> </ul> </li> <li>Process of making P.O.P and its formula.</li> <li>Properties of P.O.P and its uses.</li> <li>Types of P.O.P - Gypsum Plaster, Cement Plaster, Lime Plaster, Clay Plaster and Heat Resistant Plaster.</li> <li>Mould a P.O.P cube using carving.</li> </ul>	12
111 Agh	Wood: General introduction about wood. Types of wood used in field. (Shisham, Sagwan, Pine wood, Babul, Bamboo, etc). Wood journey from timber to end product. Seasoning of wood. Properties of Wood. Advantage and Disadvantages of wood. Wooden by products.  SAGE University B	12 hopal

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	Activity 1 – Market Survey of wood and sample collection. Activity 2 – PPT presentation of survey report. Stone:	
	<ul> <li>Classification of Rock (Igneous rock, Sedimentary rock, metamorphic rock).</li> <li>Source of rock.</li> <li>Types of stones (Granite, Limestone, Marble, Sandstone, etc.).</li> <li>Artificial Stone and procedure for making an artificial stones.</li> <li>Texture and structure of a stone.</li> <li>Uses of stone.</li> <li>Qualities of a good stone.</li> <li>Activity 1 - Market Survey of stone and sample collection.</li> <li>Activity 2 - PPT presentation of survey report.</li> </ul>	
IV	Glass: General introduction about Glass. Classification of Glass. (Soda- lime glass, Potash- lime glass, Common glass, Borosilicate glass etc). Properties of glass Treatment of glass (Bending, Opaque making, Cutting, Silvering). Coloured Glass Special varieties of glass. Activity 1 - Market Survey of glass and sample collection. Activity 2 - PPT presentation of survey report.  Metal: Introduction about Metal. Sheet form to manipulate it through various exercises by learning cutting, beating, forming. Properties of metal. Types of metal (Stainless Steel, Steel, Brass, Aluminum, Copper, Iron, etc). Uses of metal. Activity 1 - Market Survey of metal and sample collection. Activity 2 - PPT presentation of survey report.	12
v	Textile:  Textile fibre.  Yarn Formation.  Fabric Formation.  Chemical processing of Textile.  Computer Application in Textiles.  Different types of Fabric.  Design and Structure of Fabric,  Activity 1 – Market Survey of metal and sample collection.  Activity 2 – PPT presentation of survey report.	12
JURY ASSESSMENT	<ol> <li>Activity 3- Create toys using fabrics.</li> <li>All topics to be covered and drafted/ presented in A2 cartridge sheet with regular discussions along with compiled portfolio at the end of the semester in a defined drafting exams and Jury presentations.</li> <li>Major stylistic movements will be discussed. Class will be conducted on a format.</li> <li>In- class team projects and exercises as well as home research assignments will be Presentations, discussions, and projects.</li> <li>Assignments are to be take in PPT form and Hand drafted sheets for portfolio contents.</li> </ol>	d format for theory lecture-discussion be included.
	Course Outcomes as per Bloom's Taxonomy	•
After successful	completion of course, the Students will be able to:	
CO 1	To demonstrate problem-solving skills by providing a step-by-step approach to specific issues.	
CO 2	To explore through different conventional and unconventional techniques.	
CO 3	To Understand its limitations through practical explorations and identification of uniqueness of the materials.	
CO 4	To deconstruct and reconstruct material into new, unique forms.	
CO 5	To be able to apply knowledge of different types of materials and its application Ver	sity Bhopai
	To be able to apply knowledge of different types of materials and its application. Ver HOS GOVERNMENTY BIOPALISCHOOL OF DESIGN IN SCHOOL OF DESIGN SCHOOL OF DE	E S C S C S C S C S C S C S C S C S C S

Text Books:	<ol> <li>"Materials &amp; Design". 2021 Journal Citation Reports. Web of Science (Science ed.). Clarivate. 2022.</li> <li>George E. Dieter (1997). "Overview of the Materials Selection Process", ASM Handbook Volume 20: Materials Selection and Design.</li> <li>Li, He (1996). Chinese ceramics: the new standard guide. London: Thames and Hudson. ISBN 978-0-500-23727-4.</li> <li>Henderson, Julian (2013-01-31). Ancient Glass: An Interdisciplinary Exploration. ProQuest: Cambridge University Press. p. 235. ISBN 9781139611930.</li> </ol>
Reference Books:	<ol> <li>Hummel, Rolf E. (2005). Understanding Materials Science History, Properties, Applications (2nd ed.). New York, NY: Springer-Verlag New York, LLC. ISBN 978-0-387-26691-6.</li> <li>Tylecote, R.F. History of Metallurgy, Second Edition. London: Manley Publishing, for the institute of metals.</li> <li>Geller, Tom (2 June 2016). "Aluminum: Common Metal, Uncommon Past". Science History Institute. Retrieved 4 May 2018.</li> <li>Mason, Robert B. (1995). New Looks at Old Pots: Results of Recent Multidisciplinary Studies of Glazed Ceramics from the Islamic World. Muqarnas: Annual on Islamic Art and Architecture. Vol. XII. p. 5. ISBN 978-9004103146.</li> <li>pp. 86-87, Ten thousand years of pottery, Emmanuel Cooper, University of Pennsylvania Press, 4th ed., 2000, ISBN 0-8122-3554-1.</li> <li>shby, Mike (September 2008). "Materials-A Brief History". Philosophical Magazine Letters. 88 (9): 749-755. Bibcode:2008PMagL88749A.</li> <li>Gnesin, G. G. (24 February 2016). "Revisiting the History of Materials Science Glass, Glaze, and Enamel over the Millennia I. Glass". Powder Metallurgy and Metal Ceramics. 54: 624-630. doi:10.1007/s11106-016-9756-5. S2CID 138110010 - via SpringerLink</li> </ol>

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