

Shri Vaishnav Institute of Architecture

B.DES (PRODUCT DESIGN)

BDNP 301 - DESIGN STUDIO - I

			EACHI IEME/\	NG WEEK			EX	XAMINATION S	СНЕМЕ		
							THEORY	7	PRAC	CTICAL	RKS
Course Code	Course Name	L	T	s	CREDITS	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL MA)
BDNP 301	DESIGN STUDIO 1 - PRODUCT DESIGN PROCESS BASED	-	-	8	8	-	1	-	240	160	400

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

CEO 1-Lectures on simplicity; Complex nature of simple products; Single Function Products; Material Property as function; Form as function. Student will follow the process based product design.

Course Outcomes (COs):

- **CO 1-** Learning on design process along with the understanding on form and its functionality.
- **CO 2-** Ability to create innovative single component single feature solution.
- **CO 3-** Compare the Qualitative and qualitative research methodology,

Syllabus

UNIT - I

DESIGN THINKING- Consolidation of fundamentals of form based design & lateral thinking will be emphasized. Considerable research will be involved to recognize the virtue of design processes.

24HRS

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					S S		THEORY	<i>I</i>	PRAC	CTICAL	RKS
Course Code	Course Name	L	Т	S	CREDIT	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL MA
BDNP 301	DESIGN STUDIO 1- PRODUCT DESIGN PROCESS BASED	-	-	8	8	-	-	-	240	160	400

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UNIT - II

The objectives are to encourage students to extend their viewpoint beyond conventional solutions, to create a deep sense of details and materials. Various exercises such as brainstorming, mind mapping, key words generation etc.

24HRS

UNIT - III

DESIGN RESEARCH -Qualitative and qualitative research methodology, Questionnaire design, validation, repeatability testing, psychophysical scales.

24HRS

UNIT - IV

DESIGN PROCESS- Importance of Human factors in product design; Creative techniques and tools for Concept generation, concept evaluation; Product prototyping, tools and techniques for model making and prototyping, introduction to prototype driven innovation.

24HRS

UNIT - V

DESIGN TECHNOLOGY -Design technology related to product design

24HRS

Suggested Reference Books

- 1. J.Christopher Jones- Design Methods
- 2. Jennifer Hudson 1000 new designs 2 and where to find them
- 3. Manfred Maier Basic principles of Design

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BDNP 302 – NATURE OF MATERIALS AND PROCESSESS I

			EACHII EME/W				EX	XAMINATION S	СНЕМЕ		
					S S		THEORY	•	PRA	CTICAL	RKS
Course Code	Course Name	L	Т	s	CREDITS	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL MAI
BDNP 302	NATURE OF MATERIALS AND PROCESSES-I	2	1	1	4	60	20	20	-	100	200

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

CEO 1- To understand how the properties of materials influence the welding methods of within and between different types of materials.

Course Outcomes (COs):

- **CO 1-** Understand basic knowledge of materials and techniques of different materials
- **CO 2-** Learning on Materials and its manufacturing processes along with machinery involved in it.
- **CO 3-** To understand the influence of economical, ethical and environmental aspects when choosing a method for production.

Syllabus

UNIT - I

INTRODUCTION - Machining workshop, tools and standards; Machining workshop: Lathe, shaper, drilling

12HRS

UNIT - II

Manufacturing of Materials; Material Formation; Shaping and Joining, Emerging Materials; Sustainable Materials and Processes; Material Experience in Design 12HRS

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Board of Studies Faculty of Studies

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		l	EACHII EME/W				EX	KAMINATION S	СНЕМЕ		
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Course Code	Course Name	L	Т	S	CREDIT	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL M
BDNP302	NATURE OF MATERIALS AND PROCESSES-I	2	1	1	4	60	20	20	-	100	200

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT - III

SHEET METAL AND TUBE PROCESSES -Shearing, bending, punching, blanking, rolling, edge rolling, pipe bending; 12HRS

UNIT - IV

Introduction to casting, welding and joinery processes

12HRS

UNIT - V

JOINING AND FORMING PROCESSES -Casting, welding and forging; Fasteners: screws, threads, rivets, gaskets, drilling, boring and tapping; Surface finishing: grinding, polishing, buffing, electroplating, sandblasting, knurling;

12HRS

Suggested Book References

- 1. Murr, Lawrence E, Handbook of Materials Structures, Properties, Processing and Performance.
- 2. Ashby, M. F., & Johnson, K. (2013). Materials and design: the art and science of material selection in product design. Butterworth-Heinemann.
- 3. Lefteri, C. (2007). Making it: Manufacturing techniques for product design. Laurence King.
- 4. Ulrich, K. T. (2003). Product design and development. Tata McGraw-Hill Education.

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BDNP 303 - PRODUCT ERGONOMICS - I

		TEACHING SCHEME/WEEK									
					s		THEORY	,	PRAC	TICAL	MARKS
Course Code	Course Name	L	Т	S	CREDIT	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL MA
BDNP303	PRODUCT ERGONOMICS - I	2	-	1	3	60	20	20	-	50	150

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

CEO 1- Introduction about human to machine interaction. Understanding how humans physically interact with products industrial design.

Course Outcomes (COs):

- CO 1- Study of basic human measurements, in terms of scale and proportions
- CO 2- Study data's on Anthropometry and different functional anthropometrics
- **CO 3-** Observation and analysis of different human activities and requirements of spatial design.

Syllabus

UNIT - I

INTRODUCTION - Introduction to the concept of ergonomics in design

9HRS

UNIT - II

HUMAN APPROACHES TO DESIGN -Discipline Approach; Human Physical Dimension Concern; Posture and Movement;

9HRS

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		TEACHING SCHEME/WEEK					EX	KAMINATION S	СНЕМЕ		
					×		THEORY	7	PRAC	CTICAL	MARKS
Course Code	Course Name	L	Т	s	CREDIT	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL MA
BDNP 303	PRODUCT ERGONOMICS - I	2	-	1	3	60	20	20	-	50	150

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

UNIT - III

Man-Machine Interaction Definition of Ergonomics and its application and overview, Concept of Man Machine Environment System

9HRS

UNIT - IV

About Anthropometry human measurements, need of it Anthropometrics. Understanding and applications of anthropometry; Posture, reach, grip and movement. 9HRS

UNIT - V

Overview of Human body and its sub systems, Understanding musculoskeletal system and its function in terms of manual activities, ASPECTS OF DESIGN - Environments Factors and Ergonomic Design Process; Performance Support and Design Intervention. Behavior, Perception And Visual Issues.

9HRS

Suggested Reference Books

- 1. M. S. Sanders and Ernest J. Mc Cormick: Human Factors in engineering and Design, McGraw-Hill Education;7 edition (January 1, 1993)
- 2. Ken Parsons: Human thermal environment, 2nd Edi., Taylor and Francis, 2003.
- 3. Human Dimension & Interior Space, Whitney Library of Design, New York, 1979.



BDNP 304 - PHOTOGRAPHY

		1	EACHII EME/W			EXAMINATION SCHEME					×
					LS		THEORY	7	PRAC	CTICAL	ARK
Course Code	Course Name	L	Т	S	CREDI	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL M
BDNP 304	PHOTOGRAPHY	-	-	2	2	-	-	-	-	100	100

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

CEO 1- To explore the unique experience of ingenuity & creativity. The essence of creative domain can be achieved by exploring different technology, techniques, processes, concepts, compositions.

Course Outcomes (COs):

- **CO 1-** Understand the basics of photography
- **CO 2-** Study how to incorporate photography in different sectors and understanding its technically
- **CO 3-** Demonstrate and explore different technology, techniques, processes, concepts, compositions.

Syllabus

UNIT - I

1. Photography- Introduction to Photography: History and Evolution, Camera Principles, Techniques and Applications. Introduction to Moving pictures: History and Evolution of Cinema 6HRS

UNIT II-

Video and Animation; Principles Techniques and Applications. Visual Identity Design 6HRS

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			EACHII EME/V				EX	XAMINATION S	СНЕМЕ		
					LS		THEORY	7	PRAC	CTICAL	ARKS
Course Code	Course Name	L	Т	s	CREDI	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL M
BDNP 304	PHOTOGRAPHY	-	-	2	2	-	-	-	-	100	100

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT III-

Photography Basics and Digital Imaging Introduction to Photography: Subject, Background and foreground relationships.

6HRS

UNIT IV-

Photography techniques; Introduction to Image processing software, color correction, exposure correction, frame correction; Expression and Imagery, Time and space in Image; 6HRS

UNIT V-

Interaction with Light Highlights, shadow and reflection study of objects; Direct and indirect illumination 6HRS

Suggested Reference Books:

- 1. Alex W. White, Advertising Design and Typography, **ISBN-10**: 1621534812
- 2. Ellen Lupton, Thinking with Type, 2nd revised and expanded edition



BDNP 305 - DESIGN RESEARCH

			EACHII EME/W				EX	XAMINATION S	СНЕМЕ		×
					LS		THEORY	7	PRAC	CTICAL	ARKS
Course Code	Course Name	L	Т	S	CREDI	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL M
BDNP 305	DESIGN RESEARCH	-	-	3	3	-	-	-	100	50	150

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs):

CEO1 -To introduce the basics of research in product designing and to develop skills required for the same.

Course Outcomes (COs):

- **CO 1-** The emphasis of the course is on design projects. Selection of the projects is based on the possibility of user interaction leading to innovation.
- **CO 2-** Projects end with a comprehensive presentation through design drawing, sketching and a report.
- **CO 3-** In this design studio students have to analyze various parameters, derive inferences for the possible solution.

Syllabus

UNIT - I

Intention - Understanding Empathy; User stories; interpretive research;

9HRS

UNIT - II

Problem Definition -Visual representation of problem statements; contextualization and validation of a problem set; Heat maps; polar maps; Data visualization methods;

9HRS

UNIT - III

Scenario Building -Mapping solutions; partial solutions; incremental solutions

9HRS

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UNIT - IV

Ideation -Brainstorming; Differential Discussion; group methods to generate ideas; solitary methods to generate ideas; Lateral thinking 9HRS

UNIT - V

Concept Detailing -User Journey maps; User stories; activity mapping; feature matrix 9HRS

Suggested Reference Books

- 1. J. Christopher Jones- Design Methods
- 2. Jennifer Hudson 1000 new designs 2 and where to find them
- 3. Manfred Maier Basic principles of Design



BDNP 306 - DIGITAL STUDIO - I

		1	EACHI EME/V	NG VEEK				s			
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Course Code	Course Name	L	Т	s	CREDI	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL M
BDNP 306	DIGITAL STUDIO – I (PHOTOSHOP AND ILLUSTRATOR)	0	0	2	2				-	100	

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

CEO 1- Understanding and exploring the generation product design through computer aided design.

Course Outcomes (COs):

- **CO1-** To help the student understand the technology of computer and its terminology.
- **CO2-** To enable the student to understand the applications of the software and graphic system.
- **CO3-** Maximize the understanding of digital three-dimensional modeling by further exploring computer as a tool for product design.

Syllabus

UNIT-I

AUTOCAD – 2D /3D -Drawing tools, drawing objects , shapes , editing , setting limits , scales. Lettering, Dimensioning, its editing Transparent overlays , Hatching and rendering , symbol library , Layers . Concept of viewport, concept of object linking and editing session $\bf 6HRS$

UNIT - II

INTRODUCTION TO 3-D MODELLING -Settings for the drawings, limits, creating objects, transforming objects, modifiers & modifier stack, Compound objects, hand on viewports, setting of viewports etc. Lathing, displacement, Boolean Application of colors and texture Using material editor, material browser, settings of library ,mapping textures, editing of texture files etc.

6HRS

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Course Code	Course Name	L	Т	S	CRED	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL N
BDNP 306	DIGITAL STUDIO – I (PHOTOSHOP AND ILLUSTRATOR)	0	0	2	2	-	-	-	-	100	100

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT-III

INTRODUCTION TO PHOTOSHOP – Photography image post processing and rendering techniques. **6HRS**

UNIT-IV

FUNDAMENTAL CONCEPTS BASIC TECHNIQUES, RE-TOUCHING TECHNIQUES and SELECTION TECHNIQUES- Using brushes, choosing colors, Sampling colors from an image, Using Pantone colors. Using the History palette, Cropping and rotating images, Changing image size and resolution, Retouching Fixing images using the Clone Stamp Tool and the Healing tools **6HRS**

UNIT-V

COMPOSITION AND DESIGN TECHNIQUES COLOR CORRECTION-Working with layers, Transformation-Scaling and rotating, Using colour fill layers Using gradients and patterns, Applying a Mask to an Adjustments layer, Color correction, Using the levels command histogram, Curves and exposure, Using the Color balance command to modify Color casts, Adjusting vibrancy, Hue and Saturation: general and specific color range adjustment, Colorizing, Working with type layers. Formatting type, Converting type to pixels Effects.

6HRS

Suggested Reference Books

- 1. V. Rajaraman, principles of Computer Programming Prentice Hall of India
- **2.** Byron S.Gottfried, Theory and Problems of Programming with C.Schaum's outline series, McGraw Hill Publishing Co.

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BDNP 307 - ELECTIVE-I

			TEACHING SCHEME/WEEK				EX	KAMINATION S	СНЕМЕ		8
					LS		THEORY	7	PRAC	CTICAL	ARKS
Course Code	Course Name	L	Т	s	CREDI	End Sem University Exam (60%)	Two Term Exam (20%)	Teachers Assessment (20%)	End Sem University Exam (60%)	Teachers Assessment (40%)	TOTAL M
BDNP 307	ELECTIVE-I	0	0	2	2	-	-	-	_	100	100

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs):

CEO 1- The students have to choose one elective in this semester to detail out. A separate report to be submitted for the elective.

Course Outcomes (COs):

- **CO 1-** At the end of the course, students will be able to overall nurturing of the student with issues in practice and field outside
- CO 2- Understand better grooming than just books and theories .
- **CO 3-** Analyze and research on the selected topics

Elective 1 – Sustainable Design

Elective 2 – Furniture and Interior Design (Craft based)

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