



# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav institute of Architecture

### Choice Based Credit System (CBCS) Scheme in the light of NEP-2020

#### B.Des. Product Design

#### BDNP – 301 N DESIGN STUDIO - II

COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 301 N	STUDIO	DESIGN STUDIO - II	0	0	0	240	160	0	0	8	8

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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):

<b>CEO 1</b>	Design project for student to Re-design project that relooks at an existing problem or situation. The design project is user based of particular typology and functional design
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#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

<b>CO- 1</b>	Learning on design process along with the understanding on form and its functionality
<b>CO- 2</b>	Ability to create innovative feature solutions, by following the design processes.
<b>CO- 3</b>	To redesign a product that is an existing problem or situation. Compare the Qualitative and qualitative research methodology.

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BDNP – 301 N	STUDIO	DESIGN STUDIO - II	0	0	0	240	160	0	0	8	8

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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

#### Syllabus

<b>UNIT 1</b>	<b>DESIGN THINKING</b>	<b>24 HRS</b>
	Design Brief , User Innovation, Introduction to product design, Difference between product development and product design.	
<b>UNIT 2</b>	<b>DESIGN RESEARCH</b>	<b>24 HRS</b>
	Need/Problem Identification, User study by contextual enquiry	
<b>UNIT 3</b>	<b>DESIGN ANALYSIS</b>	<b>24 HRS</b>
	Questionnaire study, Interview techniques, Persona and scenario mapping, Product Study and market study, Importance of Human factors in product design	
<b>UNIT 4</b>	<b>DESIGN PROCESS</b>	<b>24 HRS</b>
	Design Brief Creative techniques and tools for Concept generation	

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BDNP – 301 N	STUDIO	DESIGN STUDIO - II	0	0	0	240	160	0	0	8	8

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UNIT 5	FORM DEVELOPMENT	24 HRS
	Product prototyping/ model making work flow, tools and techniques for model making and prototyping, introduction to prototype driven innovation. Overview of materials and processes; Evaluation tools and techniques.	

#### References:

- Laurene Vaughan – Practice based design research
- Gail Greet Hannah – Elements of Design
- Dopress Books – Product Sketchbook
- S.Balaram – Thinking Design
- Don Norman- The design of Everyday things
- Roozenburg, N. F., & Eekels, J. (1995). Product design: fundamentals and methods (Vol. 2). John Wiley & Sons Inc.

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### Choice Based Credit System (CBCS) Scheme in the light of NEP-2020

#### B.Des. Product Design

#### BDNP – 302 N MATERIAL & PROCESSES - II

COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 302 N	STUDIO + THERO Y	MATERIAL & PROCESSES - II	60	20	20	0	50	2	0	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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):

<b>CEO 1</b>	Understand the relationships between the microstructure, properties, processing, performance, and design of materials and apply the fundamental science and engineering principles that are relevant to materials.
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#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

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

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			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 302 N	STUDIO + THEROY	MATERIAL & PROCESSES - II	60	20	20	0	50	2	0	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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.

#### Syllabus

<b>UNIT 1</b>	<b>INTRODUCTION</b>	<b>12HRS</b>
	Introduction to glass, where it is used, types of glass	
<b>UNIT 2</b>	<b>PROPERTIES</b>	<b>12 HRS</b>
	Solar control, sound insulation, wind control, safety and security, Fire resistance, constituents and classification of glass, physical and mechanical properties	
<b>UNIT 3</b>	<b>PROCESS OF MANUFACTURING</b>	<b>12 HRS</b>
	Stages of manufacturing of glass, fabrication techniques and its processes, For plastics - Plastic Injection Molding ,Rotational (Roto) Molding, Extrusion Blow Molding, Injection Blow Molding, Reaction Injection Molding (RIM) ,Vacuum casting ,Thermoforming ,Compression Molding, What Materials Are Used In Plastic	

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BDNP – 302 N	STUDIO + THERO Y	MATERIAL & PROCESSES - II	60	20	20	0	50	2	0	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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.

<b>UNIT 4</b>	<b>FINISHING PROCESSES</b>	<b>12 HRS</b>
	Types of special glass, finishing and its use, types of special plastics, its finishing and its use	
<b>UNIT 5</b>	<b>DETAILING OF DESIGN</b>	<b>12 HRS</b>
	Working in detail at product level for glass and plastic	

#### References:

- Vijay K. Jain, Advanced Machining Processes. Allied Publishers, New Delhi, 2007
- P. C. Pandey and H.S. Shan, Modern Machining Processes, Tata McGrawHill, New Delhi, 2007
- G.F. Benedict, Nontraditional Manufacturing Processes, Marcel Dekker Inc., New York, 1987
- McGeough, Advanced Methods of Machining, Chapman and Hall, London, 1998
- Paul De Garmo, J.T. Black, and Ronald A. Kohser, Material and Processes in Manufacturing, Prentice Hall India, 2001

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#### B.Des. Product Design

#### BDNP – 303 N DIGITAL STUDIO - II

COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 303 N	LAB	DIGITAL STUDIO - II	0	0	0	60	40	0	2	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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):

<b>CEO 1</b>	Understand the fundamentals of 3D modeling and animation using Blender. Learn basic navigation and interface of Blender. Create simple 3D models, textures, and materials. Understand lighting and rendering concepts. Animate objects and scenes.
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#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

<b>CO- 1</b>	It supports the entirety of the 3D pipeline—modeling, rigging, animation, simulation, rendering,
<b>CO- 2</b>	Basics of Blender are modeling tools and how to create basic 3D models. Learn how to enhance the visual appeal of 3D models by applying colors and textures
<b>CO- 3</b>	Learn the principles of animation in Blender and how to animate simple sequences, to create custom textures for use in 3D modeling projects

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BDNP – 303 N	LAB	DIGITAL STUDIO - II	0	0	0	60	40	0	2	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; C - Credit;

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#### Syllabus

<b>UNIT 1</b>	<b>INTRODUCTION TO INTERFACE OF BLENDER</b>	<b>6 HRS</b>
	Basic movements, rotation, modeling basics, Selecting Objects	
<b>UNIT 2</b>	<b>BASIC PROCESSING</b>	<b>6 HRS</b>
	Edit Mode, Extrude , Inset, Cursor, Separate, Join , Snapping UV Editing, Adding Materials Modifiers, Cast Modifier, Curves	
<b>UNIT 3</b>	<b>FINISHING TOOLS</b>	<b>6 HRS</b>
	Light , texture, material, rendering	
<b>UNIT 4</b>	<b>OBJECT MAKING</b>	<b>6 HRS</b>
	Developing a object using all the blender techniques	
<b>UNIT 5</b>	<b>PRESENTATION</b>	<b>6 HRS</b>
	Animation techniques regarding the product views	

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### Choice Based Credit System (CBCS) Scheme in the light of NEP-2020

#### B.Des. Product Design

#### BDNP – 304 N ERGONOMICS - II

COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 304 N	THEORY	ERGONOMICS - II	60	20	20	0	50	2	0	1	3

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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):

<b>CEO 1</b>	Ergonomics courses aim to teach students how to create a safe, efficient, and comfortable work environment by adjusting the workspace to fit the worker's body.
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#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

<b>CO- 1</b>	Study of people in different built environment as well as interaction with different products.
<b>CO- 2</b>	Designs or modifications to the task based to fit the person The goal is to eliminate discomfort and risk of injury due to work.
<b>CO- 3</b>	To increase and conserve human health and contentment and to optimize the human performance in a system standpoint.

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COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 304 N	THEOR Y	ERGONOMICS - II	60	20	20	0	50	2	0	1	3

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; C - Credit;

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#### Syllabus

<b>UNIT 1</b>	<b>COGNITIVE ERGONOMICS</b>	<b>9 HRS</b>
	Introduction to Cognitive Ergonomics, Human Cognitive Abilities and Skills, Human-Computer Interaction, Usability Human Error Theory Cognitive Safety and Risk Management	
<b>UNIT 2</b>	<b>PHYSICAL ENVIRONMENT AND ITS IMPORTANCE</b>	<b>9 HRS</b>
	Relation between physical environment and ergonomics, types of physical environment, factors of physical environment, inner and outer environment.	
<b>UNIT 3</b>	<b>BIOMECHANICS</b>	<b>9 HRS</b>
	What Is Biomechanics , Why to study biomechanics, Nine Principles for Application of Biomechanics, key terminology	

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BDNP – 304 N	THEOR Y	ERGONOMICS - II	60	20	20	0	50	2	0	1	3

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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.

<b>UNIT 4</b>	<b>OCCUPATIONAL ERGONOMICS AND USE OF ERGONOMIC</b>	<b>9 HRS</b>
	What is occupational ergonomics, its importance, the hazards and safety measures to be taken	
<b>UNIT 5</b>	<b>UNIVERSAL DESIGN</b>	<b>9 HRS</b>
	What is universal design, its importance, when it is used, how it is used, the innovative measures to be taken for smooth execution of the same	

#### References:

- R. S. Bridger, "Introduction to Ergonomics", CRC Press.
- Work Systems and the Methods, Measurement, and Management of Work, by Mikell P. Groover, ISBN 0-13-140650-7.
- An Introduction to Human Factors Engineering by Christopher D. Wickens

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### Choice Based Credit System (CBCS) Scheme in the light of NEP-2020

#### B.Des. Product Design

#### BDNP – 305 N EVOLUTION OF PRODUCT

COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 305 N	STUDIO	EVOLUTION OF PRODUCT	0	0	0	60	40	0	0	4	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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):

<b>CEO 1</b>	Understanding product development processes: Students learn about the modern processes involved in product development
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#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

<b>CO- 1</b>	The product life cycle: Learning about the product life cycle and the product design process
<b>CO- 2</b>	Understanding the relationship between design and society: Learning how designers respond to and cause changes in society through their products
<b>CO- 3</b>	Understanding the role of innovation and new product development: Learning how to describe the nature of innovation and new product development, and how to apply theories of innovation to solve problems.

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#### BDNP – 305 N EVOLUTION OF PRODUCT

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			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 305 N	STUDIO	EVOLUTION OF PRODUCT	0	0	0	60	40	0	0	4	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; C - Credit;

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#### Syllabus

<b>UNIT 1</b>	<b>DESIGN THINKING</b>	<b>24 HRS</b>
	Investigate and think creatively about design problems and opportunities. Initiate an attitude of playfulness to aid design thinking. Develop visual literacy and articulation to explain design decisions.	
<b>UNIT 2</b>	<b>DESIGN RESEARCH</b>	<b>24 HRS</b>
	Research on the past and present of the product , keeping the main focus on evolution of design, its reason and consequences for the same, process of evolution , technological evolution.	
<b>UNIT 3</b>	<b>DESIGN ANALYSIS</b>	<b>24 HRS</b>
	Determine performance capability of each alternative solution. It is gathering, defining, and analyzing data about a product including technology.	

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## Shri Vaishnav institute of Architecture

### Choice Based Credit System (CBCS) Scheme in the light of NEP-2020

#### B.Des. Product Design

#### BDNP – 305 N EVOLUTION OF PRODUCT

COURSE CODE	Course Typology	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			STUDIO		L	T	S	CREDIT S
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BDNP – 305 N	STUDIO	EVOLUTION OF PRODUCT	0	0	0	60	40	0	0	4	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio ; 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.

<b>UNIT 4</b>	<b>DESIGN PROCESS FOR FUTURE</b>	<b>24HRS</b>
	The objectives of the design need to match the performance objectives of the operation (quality, speed, dependability, flexibility, cost and sustainability)	
<b>UNIT 5</b>	<b>COMPILATION OF THE WORK</b>	<b>24HRS</b>
	Presentation techniques for the process of evolution	

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Controller of Examination

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Vice Chancellor

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