PANDIT LAKHMI CHAND
STATE UNIVERSITY OF PERFORMING AND VISUAL ARTS, ROHTAK
(A State University established under Haryana Act No. 24 of 2014)

FACULTY OF DESIGN
DEPARTMENT OF PRODUCT DESIGN
BACHELOR OF PRODUCT DESIGN
SCHEME OF EXAMINATION AND SYLLABUS
PROGRAMME CODE: BPD
DURATION – 4 YEARS FULL TIME
CHOICE BASED CREDIT SYSTEM
ACADEMIC SESSION 2019-20 ONWARDS

SCHEME OF EXAMINATION

SEMESTER-III

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/301	Design Process	CORE	6	45	105	150	
BPD/302	Product Drawing	CORE	6	45	105	150	
BPD/303	Ergonomics	DSE	4	30	70	100	2 Hours
BPD/304	Material & Manufacturing process – I	DSE	4	30	70	100	2 Hours
BPD/305	Intellectual Property Rights	DSE	4	30	70	100	2 Hours
BPD/306	Form Studies	SEC	4	30	70	100	
BPD/307	Technical Drawing & Cad	SEC	4	30	70	100	
BPD/308	Professional Documentation	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	15	35	50	
	Open Elective	OE/SEC	2	15	35	50	
TOTAL			32			800	

 # CORE subjects are mandatory. Students may choose 2 theory-based subjects from DSE, 2 Studio-based subjects from SEC and 2 Open Elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/311	Introduction to Trends & Forecasting	OE/SEC	2	15	35	50	1.5 Hours
OE/L/312	Introduction to Philosophy of Design	OE/SEC	2	15	35	50	1.5 Hours
OE/T/315	Basics of Home Furnishing Products	OE/SEC	2	15	35	50	1.5 Hours
OE/T/316	Introduction to Fiber, Yarn & Fabrics	OE/SEC	2	15	35	50	1.5 Hours
OE/F/317	Fashion Basics	OE/SEC	2	15	35	50	1.5 Hours
OE/F/318	Principles of Management	OE/SEC	2	15	35	50	1.5 Hours

SEMESTER – IV

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/401	Simple Product Design	CORE	6	45	105	150	
BPD/402	Representation Techniques	CORE	6	45	105	150	
BPD/403	Applied Mechanics & Electricity	DSE	4	30	70	100	2 Hours
BPD/404	Material & Manufacturing Process – II	DSE	4	30	70	100	2 Hours
BPD/405	Design, Arts & Aesthetics	DSE	4	30	70	100	2 Hours
BPD/406	Form Generation	SEC	4	30	70	100	
BPD/407	CAD : Computer Application	SEC	4	30	70	100	
BPD/408	3D Model Making	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
		TOTAL	32			800	

 # CORE subjects are mandatory. Students may choose 2 theory-based subjects from DSE, 2 Studio-based subjects from SEC and 2 Open Elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/411	Introduction to Fashion Marketing	OE/SEC	2	15	35	50	1.5 Hours
OE/L/412	Basic of human Factors & Ergonomics	OE/SEC	2	15	35	50	1.5 Hours
OE/T/415	Basics of IPR	OE/SEC	2	15	35	50	1.5 Hours
OE/T/416	Introduction to Consumer Behaviour	OE/SEC	2	15	35	50	1.5 Hours
OE/F/417	Trends & Forecast	OE/SEC	2	15	35	50	Portfolio
OE/F/418	Hand Knitting Techniques	OE/SEC	2	15	35	50	Portfolio

SEMESTER - V

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/501	User Interface Design	CORE	6	45	105	150	
BPD/502	Product Detailing & Styling	CORE	6	45	105	150	
BPD/503	Research Methodology	DSE	4	30	70	100	2 Hours
BPD/504	Design Thinking	DSE	4	30	70	100	
BPD/505 /	Design & Human Evolution	DSE	4	30	70	100	2 Hours
BPD/506	Product Fabrication	SEC	4	30	70	100	
BPD/507	Photography	SEC	4	30	70	100	
BPD/508	Design & Business	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	30	70	50	1.5 Hours
	Open Elective	OE/SEC	z2	15	35	50	1.5 Hours
		TOTAL	32			800	

 # CORE subjects are mandatory. Students may choose 2 theory-based subjects from DSE, 2 Studio-based subjects from SEC and 2 Open Elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/511	Basic of Packaging Design	OE/SEC	2	15	35	50	1.5 Hours
OE/L/512	Basic of Draping	OE/SEC	2	15	35	50	1.5 Hours
OE/T/515	Introduction to Commercial Printing	OE/SEC	2	15	35	50	1.5 Hours
OE/T/516	Basics of Professional Documentation	OE/SEC	2	15	35	50	1.5 Hours
OE/F/517	Fashion Merchandising	OE/SEC	2	15	35	50	1.5 Hours
OE/F/518	Visual Design Studies	OE/SEC	2	15	35	50	Portfolio

SEMESTER - VI

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/601	Package Design	CORE	6	45	105	150	
BPD/602	Human Comfort Design	CORE	6	45	105	150	
BPD/603	Design Management	DSE	4	30	70	100	2 Hours
BPD/604	Brand Study	DSE	4	30	70	100	2 Hours
BPD/605	Design & Innovations	DSE	4	30	70	100	
BPD/606	Rural Workshop	SEC	4	30	70	100	
BPD/607	Communication Design	SEC	4	30	70	100	
BPD/608	Craft Documentation	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
		Total	32			800		#

#CORE subjects are mandatory. *Craft Documentation is a compulsory subject.* Students may choose 2 theory based subjects from DSE, 1 studio based subjects from SEC and 2 open elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/611	Basic of Production & Control	OE/SEC	2	15	35	50	1.5 Hours
OE/L/612	Introduction to Entrepreneurship Development	OE/SEC	2	15	35	50	1.5 Hours
OE/T/615	Understanding of Home Textiles	OE/SEC	2	15	35	50	1.5 Hours
OE/T/616	Introduction to World Traditional Textiles	OE/SEC	2	15	35	50	1.5 Hours
OE/F/617	Design Strategy	OE/SEC	2	15	35	50	Portfolio
OE/F/618	Info-graphics and Visual Representation	OE/SEC	2	15	35	50	Portfolio

SEMESTER - VII

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/701	Socially Relevant Design Project	CORE	5	75	50	125	-
BPD/702	Technical Complex Project	CORE	7	105	70	175	-
BPD/703	Dissertation	DSE	4	30	70	100	-
BPD/704	Cultural Influences in Design	DSE	4	30	70	100	-
BPD/705	Story Telling & Design	DSE	4	30	70	100	-
BPD/706	Sustainability : System Design	DSE /SEC	4	30	70	100	-
BPD/707	Toy Design	DSE /SEC	4	30	70	100	-
BPD/708	Design & Nature	DSE /SEC	4	30	70	100	-
BPD/709	Universal Design	DSE /SEC	4	30	70	100	-
BPD/710	Summer Internship		4	30	70	100	-
		Total	32			800	

 # CORE subjects are mandatory. Students may choose 4 Elective subjects out of 7 Elective subjects (BPD703 to BPD709) & Summer Internship is a compulsory subject. Summer Internship is to be conducted during summer vacation between 6th and 7th semester.

SEMESTER - VIII

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/801	Graduation Project	CORE	32	240	560	800	-

 # CORE subject is mandatory.

SYLLABUS

SEMESTER-III

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/301	Design Process	CORE	6	45	105	150	
BPD/302	Product Drawing	CORE	6	45	105	150	
BPD/303	Ergonomics	DSE	4	30	70	100	2 Hours
BPD/304	Material & Manufacturing process – I	DSE	4	30	70	100	2 Hours
BPD/305	Intellectual Property Rights	DSE	4	30	70	100	2 Hours
BPD/306	Form Studies	SEC	4	30	70	100	
BPD/307	Technical Drawing & Cad	SEC	4	30	70	100	
BPD/308	Professional Documentation	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	15	35	50	
	Open Elective	OE/SEC	2	15	35	50	
TOTAL			32			800	

 # CORE subjects are mandatory. Students may choose 2 theory-based subjects from DSE, 2 Studio-based subjects from SEC and 2 Open Elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/311	Introduction to Trends & Forecasting	OE/SEC	2	15	35	50	1.5 Hours
OE/L/312	Introduction to Philosophy of Design	OE/SEC	2	15	35	50	1.5 Hours
OE/T/315	Basics of Home Furnishing Products	OE/SEC	2	15	35	50	1.5 Hours
OE/T/316	Introduction to Fiber, Yarn & Fabrics	OE/SEC	2	15	35	50	1.5 Hours
OE/F/317	Fashion Basics	OE/SEC	2	15	35	50	1.5 Hours
OE/F/318	Principles of Management	OE/SEC	2	15	35	50	1.5 Hours

Paper-1 : Design Process

Paper Code : BPD301 **Course Credits : 06**

Course Objectives:

- Developing skills and techniques to identify design opportunities
- Creating Solutions through design intervention
- Understanding of design as a systematic problem solution process.

Course Contents:

- Understanding the change
- Scenarios in terms of local/global
- Study of Business Models
- Design Opportunities of the given/chosen product/problem
- Introduction of brain storming
- Creative thinking experience in multiple mode of experience
- Understanding the User, Environment and Artefacts.
- Research/Investigation Techniques
- Clustering the ideas for concept development and final Concept

Deliverables:

- A document explaining the process of problem solved preferably supported by a model.

Paper-2 : Product Drawing

Paper Code : BPD302 **Course Credits : 06**

Course Objectives:

- To develop the understanding in details of proportion, Perspective drawing, isometric drawing
- To develop skills to demonstrate the inner parts of a product with the help of exploded/ section drawings.

Course Contents:

- Line drawings of sketches of small, medium and large size objects, from varying distances and angles.
- Isometric drawing
- Explain the interiors/ assembly of a selected small /medium product through free hand sketches.

Deliverables:

- Around 250 sketches for practice. Final document consisting of 7-8 sketches in each category.

Paper-3 : Ergonomics

Paper Code : BPD303 **Course Credits : 04**

Course Objectives:

- Understand the relationship between a product and the user
- How ergonomics affects the design of the product.
- Implement the knowledge to redesign any existing products

Course Contents:

- Definition of Ergonomics
- Its application and overview
- Study average dimensional limits of human beings e.g limits of vision, angle, and limits of knee, elbow, and joint etc.
- Basic Study of Anthropometry
- Applications and limitations of Anthropometry in design
- Study of work posture, physical environment and its impact on human performance
- Analyse a case study related to ergonomic.

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-4 : Material & Manufacturing Process - I

Paper Code : BPD304 **Course Credits : 04**

Course Objectives:

- To learn about the importance of materials in design
- To learn about the conventional materials in design
- To learn about basic production/manufacturing process of products made by that material

Course Contents:

- Theoretical exposure about the materials like - Steel, Copper, Iron, Aluminium, Brass,
- Basic production/manufacturing process like cutting, shaping, trimming, casting, stamping, molding etc.
- Types of welding
- Process of - Sand casting, industrial casting,

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-5 : Intellectual Property Rights

Paper Code : BPD305 **Course Credits : 04**

Course Objectives:

- To gain basic guidelines for working a product and intellectual property rights.
- Giving insight to the basic rules and laws.

Course Contents:

- What is Intellectual Property Rights
- Why we need it?
- Fundamentals of IPR.
- Basic strategies for marketing industrial & FMCC products.
- Basic Export formalities.
- Professionalism and Ethics
- Patent and Design Registration laws / procedure

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-6 : Form Studies

Paper Code : BPD306 **Course Credits : 04**

Course Objectives:

- Study of forms
- Learn to appreciate and articulate the language of form
- Sensitize the students towards manipulation of forms

Course Contents:

- focused on developing new forms through 1) additive, subtractive 2) curved edge treatments
- Form studies and aesthetics
- Language of form
- Simple geometrical forms, space and forms
- Identity and form – creating family of forms
- understanding of proportion & create forms that are both visually inviting and informative
- Develop models in paper/pop/polystyrene etc

Deliverables:

- A document explaining the development of final form with model.

Paper-7 : Technical Drawing & CAD

Paper Code : BPD307 **Course Credits : 04**

Course Objective:

- To learn orthographic projection
- Learn to make multi- axial section views and exploded views
- Learn to use CAD software to draw 3d models using Rhinoceros software.

Course Contents:

- What is orthographic drawing, why we need it?
- First & Third angle projection and its features (Hand Drawing)
- Hidden & Section lines and hatching (Hand Drawing)
- Projections of Points, lines, planes and solids
- Conversion of Pictorial view (isometric view) into orthographic view and vice versa (Hand Drawing and CAD)
- Sections of basic geometrical solids – Types of section planes, section by a plane perpendicular to VP & HP ((Hand Drawing)
- Draw orthographic projection of components (Hand Drawing and CAD)
- Drawing of Sub- assembly and assembly of a selected product (CAD)
- Explain the inner details and exploded views to locate the placement of components. (CAD)
- 3D modelling - drawings/model, Rendering in various material finishes Evolve drawing of a product with rendered finish by using software.

Deliverables:

- Submission of 2 products by hand drawing and by software both.

Paper-8 : Professional Documentation

Paper Code : BPD308 **Course Credits : 04**

Course Objective:

- To learn documentation by using graphic software (e.g. In Design, Corel Draw etc.)

Course Contents:

- Important components of documents
- Exposure to grid and its importance in page layout.
- Develop a story of a selected topic supported by picture.

Deliverables:

- A document revealing the sense of visual layout.

Paper-13 : Material & Process-I

Paper Code : OE//P/313 **Course Credits : 02**

Course Objectives:

- To learn about the importance of materials in design
- To learn about the conventional materials in design
- To learn about basic production/manufacturing process of products made by that material

Course Contents:

- Theoretical exposure about the materials like - Steel, Copper, Iron, Aluminium, Brass,
- Basic production/manufacturing process like cutting, shaping, trimming, casting, stamping, molding etc.

Note:

- The paper setter will set questions in two parts (A & B).
- In part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

Paper-14 : Basics of Ergonomics

Paper Code : OE//P/314 **Course Credits : 02**

Objective:

- Understand the relationship between a product and the user
- How ergonomics affects the design of the product.
- Implement the knowledge to redesign any existing products

Contents:

- Definition of Ergonomics
- Its application and overview
- Study average dimensional limits of human beings e.g limits of vision, angle, and limits of knee, elbow, and joint etc.
- Study of work posture, physical environment and its impact on human performance

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

SEMESTER – IV

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/401	Simple Product Design	CORE	6	45	105	150	
BPD/402	Representation Techniques	CORE	6	45	105	150	
BPD/403	Applied Mechanics & Electricity	DSE	4	30	70	100	2 Hours
BPD/404	Material & Manufacturing Process – II	DSE	4	30	70	100	2 Hours
BPD/405	Design, Arts & Aesthetics	DSE	4	30	70	100	2 Hours
BPD/406	Form Generation	SEC	4	30	70	100	
BPD/407	CAD : Computer Application	SEC	4	30	70	100	
BPD/408	3D Model Making	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
		TOTAL	32			800	

 # CORE subjects are mandatory. Students may choose 2 theory-based subjects from DSE, 2 Studio-based subjects from SEC and 2 Open Elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/411	Introduction to Fashion Marketing	OE/SEC	2	15	35	50	1.5 Hours
OE/L/412	Basic of human Factors & Ergonomics	OE/SEC	2	15	35	50	1.5 Hours
OE/T/415	Basics of IPR	OE/SEC	2	15	35	50	1.5 Hours
OE/T/416	Introduction to Consumer Behaviour	OE/SEC	2	15	35	50	1.5 Hours
OE/F/417	Trends & Forecast	OE/SEC	2	15	35	50	Portfolio
OE/F/418	Hand Knitting Techniques	OE/SEC	2	15	35	50	Portfolio

Paper-1 : Simple Product Design

Paper Code : BPD401 **Course Credits : 06**

Course Objectives:

- To understand and able to find the solution of simple problems faced in day to day life
- To design/redesign a Simple Product which doesn't have function complexity

Course Contents:

- Analyse the problem faced in day to day life and solve it
- Utilize the skills and knowledge gained from other subject for example applied mechanics, form generation, Design methodology etc
- Analyse the selected product/problem from various angles.
- Derive scope of improvement/ enhancement and evolve a new design.
- Design/Redesign a simple product which does not have functional complexity

Deliverables:

- A document demonstrating the process of Design, supported by illustrative drawing/Model.

Paper-2 : Representation Techniques

Paper Code : BPD402 **Course Credits : 06**

Course Objectives:

- Understand behaviour of light on flat surface.
- Learn to create the 3 dimensional effects through grey tones in accordance with behaviour of light.
- To develop skills to demonstrate various types of material finishes

Course Contents:

- Subject an isometric sketch of a cube to varied lighting conditions. These could be imaginary also.
- Draw line drawings and differentiate the surface with various grey tones.
- Render isometric/ perspective drawing of selected products in different material with different media, methods and techniques
- **Digital Representation**
  - Shading – how the colour and brightness of a surface varies with lighting
  - Shadows – the effect of obstructing light
  - Soft shadows – varying darkness caused by partially obscured light sources
  - Texture-mapping – a method of applying detail to surfaces
  - Fogging/participating medium – how light dims when passing through non-clear atmosphere or air
  - Reflection – mirror-like or highly glossy reflection
  - Transparency (optics), transparency (graphic) or opacity – sharp transmission of light through solid objects
  - Translucency – highly scattered transmission of light through solid objects
  - Depth of field – objects appear blurry or out of focus when too far in front of or behind the object in focus

Deliverables:

- 3 final product rendering in each category with 3 different finishes.

Paper-3 : Applied Mechanics & Electronics

Paper Code : BPD403 **Course Credits : 04**

Objective:

- Learn about the basic ways in which motion is transferred
- Learn about basics of electronics – ARDUINO

Contents:

- Types of Linkages
- Types of gears
- Levers, bearings, pulley
- Cams, racks and pinion
- Use of mechanics in product design industries
- Definitions of electronics and working of it through ARDUINO SET
-

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-4 : Material Manufacturing & Process-II

Paper Code : BPD404 **Course Credits : 04**

Course Objective:

- To learn about the understanding of materials and the processes that are involved in manufacturing process

Course Contents:

- Properties and usage of thermoplastics and thermosetting plastics
- Manufacturing process of products made of plastics
- Injection molding,
- Blow molding,
- Rotational molding
- Properties and usage of Ceramic and Glass
- Manufacturing process of Ceramic and Glass

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-5 : Design Art & Aesthetics

Paper Code : BPD405 **Course Credits : 04**

Course Objective:

- To learn about the design, arts and aesthetics.

Course Contents:

- Origin of aesthetics
- Contribution of aesthetics in arts & design
- Introductions of arts movements
- Introduction of design movements
- Design history of Bauhaus, Scandinavian design
- Design and arts in post modernism
- Contribution of Indian arts and design

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-6 : Form Generation

Paper Code : BPD406 **Course Credits : 04**

Course Objectives:

- To explore and experiment the forms
- To learn how to generate forms through taking inspiration
- To learn how to generate forms of desirable objects

Course Contents:

- Take inspiration from nature and create inspiration board
- focused on developing new forms through 1) additive, subtractive 2) curved edge treatments
- Manipulation and transition and their application to generate forms of desirable objects.
- Material explorations using different materials paper/pop/polystyrene/wood/metal
- Develop models in paper/pop/polystyrene/wood/metal

Deliverables:

- A document explaining the development of final form with model.

Paper-7 : CAD : Computer Applications

Paper Code : BPD407 **Course Credits : 04**

Objective:

- Learn to use CAD software for 3d modeling with Solidworks software.

Contents:

- Gain acquaintance with features of software.
- Understand the features and limitation of the software and demonstrate it.
- Extension of CAD learning in terms of 3 dimension drawings/model by using the software.
- Rendering in various material finishes by using the software.
- Evolve drawing of a product with rendered finish.

Deliverables:

- Submission of 5 product concepts with rendering and orthographic drawing.

Paper-8 : 3D Model Making

Paper Code : BPD408 **Course Credits : 04**

Course Objective:

- To understand and different techniques of learn 3D model making

Course Contents:

- Achieve perfection in model making
- Develop Model of different products/object using various tools and materials like : Paper/wood/MDF/POP/Clay etc

Deliverables:

- Submission of modes developed during course

Paper-13 : Material & Process-II

Paper Code : OE/P/413 **Course Credits : 02**

Course Objective:

- To learn about the understanding of materials and the processes that are involved in manufacturing process

Course Contents:

- Properties and usage of thermoplastics and thermosetting plastics
- Manufacturing process of products made of plastics
- Injection moulding,
- Blow moulding,

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

Paper-14 : Basic Mechanics & Basic Electricity

Paper Code : OE/P/414 **Course Credits : 02**

Course Objectives:

- Learn about the basic ways in which motion is transferred
- Learn about basics of electricity – circuits, voltage, current

Course Contents:

- Types of Linkages
- Types of gears
- Use of mechanics in product design industries
- Definitions of circuits, voltage, current, units, working of electric gadgets,

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

SEMESTER - V

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/501	User Interface Design	CORE	6	45	105	150	
BPD/502	Product Detailing & Styling	CORE	6	45	105	150	
BPD/503	Research Methodology	DSE	4	30	70	100	2 Hours
BPD/504	Design Thinking	DSE	4	30	70	100	
BPD/505 /	Design & Human Evolution	DSE	4	30	70	100	2 Hours
BPD/506	Product Fabrication	SEC	4	30	70	100	
BPD/507	Photography	SEC	4	30	70	100	
BPD/508	Design & Business	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	30	70	50	1.5 Hours
	Open Elective	OE/SEC	z2	15	35	50	1.5 Hours
		TOTAL	32			800	

 # CORE subjects are mandatory. Students may choose 2 theory-based subjects from DSE, 2 Studio-based subjects from SEC and 2 Open Elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/511	Basic of Packaging Design	OE/SEC	2	15	35	50	1.5 Hours
OE/L/512	Basic of Draping	OE/SEC	2	15	35	50	1.5 Hours
OE/T/515	Introduction to Commercial Printing	OE/SEC	2	15	35	50	1.5 Hours
OE/T/516	Basics of Professional Documentation	OE/SEC	2	15	35	50	1.5 Hours
OE/F/517	Fashion Merchandising	OE/SEC	2	15	35	50	1.5 Hours
OE/F/518	Visual Design Studies	OE/SEC	2	15	35	50	Portfolio

Paper-1 : User Interface Design

Paper Code : BPD501 **Course Credits : 06**

Course Objective:

- To learn about the importance of communication in digital devices with focus on computer and mobile phones at an introductory

Course Contents:

- What is user interface design
- Basics of Interface design
- Exposure to Good and Bad communication in digital devices
- Interface and interaction components
- Usability principles
- Application of Interface design in products

Deliverables:

- A working model/prototype of user interface design

Paper-2 : Product Detailing & Styling

Paper Code : BPD502 **Course Credits : 06**

Course Objective:

- To understand and demonstrate the importance of detailing in enhancement of the overall use/design of the product.
- Learn the importance of styling by analysing how styling was executed in a selected product and documenting it through a self-styled product

Course Contents:

- Why detailing is required?
- Why styling is required?
- Introduction supported by visuals.
- Select a product and improve the design by redesign the details.
- Introduction of various methods of styling
- Analysis a case study
- Develop a styled product.
- Use of software is recommended.

Deliverables:

- A document visually demonstrating the process of re-detailing and re-styling

Paper-3 : Research Methodology

Paper Code : BPD503 **Course Credits : 04**

Course Objective:

- To understand and demonstrate how research work is carried out.

Course Contents:

- Prepare the objective of a research proposal.
- Various methods of information collection and its analysis.
- Synthesis of information collection into a conclusion.
- Ethical practice in research.
- Data representation and interpretation.
- Conclusion and scope of further research.

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-4 : Design Thinking

Paper Code : BPD504 **Course Credits : 04**

Objective:

- To understand and apply critical and creative thinking (Lateral Thinking)

Contents:

- Introduction about Design thinking
- Significance , Role and Application of design thinking
- Process or steps of Design thinking.
- Application of design thinking on a selected brief.

Deliverables:

- Documentation and presentation over application and outcome of design solution achieved through design thinking on a selected brief.

Paper-5 : Design & Human Evolution

Paper Code : BPD505 **Course Credits : 04**

Course Objective:

- To understand the development of design in context of human evolution

Course Contents:

- The evolution of design as a discipline and its relationship to the environment
- Study of pre historic times, Ages
- Evolution of Product design after world war I
- Design and Designers that have made a difference

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-6 : Product Fabrication

Paper Code : BPD506 **Course Credits : 04**

Objective:

- To learn the working and handling of workshop machines and making a simple object

Contents:

- Learn about the CNC lathe machine and Milling machine and its limitations
- Learn the process of programming of CNC lathe machine
- Learn the process of drilling, bending, facing, turning, step turning, threading
- Learn the process of slot cutting, surface finishing, resizing & reshaping, nut making
- Model making through machine.

Deliverables:

- A product/device, self made in the workshop

Paper-7 : Photography

Paper Code : BPD507 **Course Credits : 04**

Course Objectives:

- To understand the use of camera for professional documentation, ads, product shoot
- To understand visual communication of a product in best possible way by still photographs.

Course Contents:

- Understanding of camera
- Understanding and use of lenses
- Studio photography
- Documentation photography
- Derive the communication needs of a selected product.

Deliverables:

- A document commutating the features of the products

Paper-8 : Design & Business

Paper Code : BPD508 **Course Credits : 04**

Objective:

- To impart basic knowledge and skills in the areas of entrepreneurship and Small Business Management.
- Preparing the students to set up own enterprise and manage it successfully in the post quota regime.

Contents:

- Concept of entrepreneurship and traits of an entrepreneur
- Product/Project Identification and type of ownership
- Steps for launching a small enterprise
- Assessing commercial viability of a project in terms of market and demand
- Legal framework incentives concessions including taxes

Deliverables:

- Preparation of business plan/ project report
- Plant Location and plant layout

Paper-13 : Basics of Research Methodology

Paper Code : OE/P/513 **Course Credits : 02**

Course Objective:

- Basic understanding and demonstration how research work is carried out.

Course Contents:

- Prepare the objective of a research proposal.
- Basic methods of information collection and its analysis.
- Synthesis of information collection.
- Ethical practice in research.
- Data representation and interpretation.
- Conclusion and scope of further research.

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

Paper-14 : Introduction to Design & Human Evolution

Paper Code : OE/P/514 **Course Credits : 02**

Objective:

- To understand the development of design in context of human evolution

Contents:

- The evolution of design as a discipline and its relationship to the environment
- Introduction of pre historic times, Ages
- Design and Designers that have made a difference

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

SEMESTER - VI

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/601	Package Design	CORE	6	45	105	150	
BPD/602	Human Comfort Design	CORE	6	45	105	150	
BPD/603	Design Management	DSE	4	30	70	100	2 Hours
BPD/604	Brand Study	DSE	4	30	70	100	2 Hours
BPD/605	Design & Innovations	DSE	4	30	70	100	
BPD/606	Rural Workshop	SEC	4	30	70	100	
BPD/607	Communication Design	SEC	4	30	70	100	
BPD/608	Craft Documentation	SEC	4	30	70	100	
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
	Open Elective	OE/SEC	2	15	35	50	1.5 Hours
		Total	32			800	

#

#CORE subjects are mandatory. *Craft Documentation is a compulsory subject.* Students may choose 2 theory based subjects from DSE, 1 studio based subjects from SEC and 2 open elective Subjects from OE/SEC (Listed below).

List of Open Elective Subjects OE/SEC. Students may choose any 2 subjects.

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
OE/L/611	Basic of Production & Control	OE/SEC	2	15	35	50	1.5 Hours
OE/L/612	Introduction to Entrepreneurship Development	OE/SEC	2	15	35	50	1.5 Hours
OE/T/615	Understanding of Home Textiles	OE/SEC	2	15	35	50	1.5 Hours
OE/T/616	Introduction to World Traditional Textiles	OE/SEC	2	15	35	50	1.5 Hours
OE/F/617	Design Strategy	OE/SEC	2	15	35	50	Portfolio
OE/F/618	Info-graphics and Visual Representation	OE/SEC	2	15	35	50	Portfolio

Paper-1 : Package Design

Paper Code : BPD601 **Course Credits : 06**

Course Objective:

- To understand the concept of packaging
- To understand the function and visual aspects of package design
- Its effects on the sales.

Course Contents:

- Why packaging required?
- How packaging done?
- Primary, secondary and tertiary packaging
- Conventional and sustainable materials in packaging
- Demonstration of visual and functional aspects of packaging
- Packaging of fragile products
- Identify the weakness of existing design and redesign the package or identify the problem of a product and design a packaging for it
- Understanding design as applied to solve communication problem
- Either visual or function problem can be chosen.

Deliverables:

- A document explaining the process of redesigning of Packaging supported by the illustrations and model.

Paper-2 : Human Comfort Design

Paper Code : BPD602 **Course Credits : 06**

Objective:

- To learn about the ways in which two pieces are joined or fastened with each other.
- To learn and design small products/furniture for human comfort

Contents:

- Learning of different types of Joineries used in wood
- Learning of different types of fasteners (screws, nuts, and their types) for wood, metal and plastics.
- Designing a device for human comfort

Deliverables:

- A model of joinery
- A document explaining the process of designing/redesigning of a product supported by a model if possible

Paper-3 : Design Management

Paper Code : BPD603 **Course Credits : 04**

Course Objective:

- Learn how to professionally manage a design consultancy firm.

Course Contents:

- Design as a Management Tool
- Human factor in managing design
- Designer attributes
- Registration, preparation of proposals, project, costing, project execution, professional correspondence
- Letter of contract
- Costing and fee estimation

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-4 : Brand Study

Paper Code : BPD604 **Course Credits : 04**

Objective:

- To understand the domestic and international brands.

Contents:

- Introduction what is Brand and its importance and role.
- Names of different Product/ Fashion and Lifestyle accessory brands.
- The history, origin, products, clientele, USP, stores and Visual Merchandising.
- Types of Branding and branding strategies.
- Case studies.

Note:

- Examiner will set ELEVEN questions in total in which 1 question will be compulsory & will be of objective type of 20 marks. From rest TEN questions, students shall attempt any FIVE questions of 10 marks each. Time duration for the exam will be of TWO hours.

Paper-5 : Design & Innovations

Paper Code : BPD605 **Course Credits : 04**

Course Objective:

- To understand the relation between design and innovation.

Course Contents:

- Select a era and study the reason/cause which influences the product innovation of that time
- Take a influencing factor of same era & imitate a product
- History of Innovation
- Great Innovations that have shaped mankind
- Relation between design and innovation
- Use of technology in innovations

Deliverables:

- Document/ presentation/practical validation related to design and innovations supported by a product

Paper-6 : Rural Workshop

Paper Code : BPD606 **Course Credits : 04**

Course Objectives:

- To learn the processes involved in the crafts
- Creative process in Craft.
- Craft as a mean to explore material, process and Form.
- Study of Form in Bamboo or Other Craft.
- Cultural roots in Craft.

Course Contents:

- To work at place where craft is practicing or in campus with the help of craftsmen
- Call craftsmen and learn the making process involved in that crafts
- Make some products with the help of craftsmen

Deliverables:

- One or two products designed and produced at the site or in campus with the help of craftsmen.

Paper-7 : Communication Design

Paper Code : BPD608 **Course Credits : 04**

Course Objective:

- To understand the application of visual design to solve communication design problems

Course Contents:

- Understanding design as applied to solve communication problem
- Exposure to grid and its importance in page layout.
- Assimilation of text and visuals
- Sequential arrangement
- Structuring information – classification, order, sequence
- Poster design, teaser design, ad design for promotion of product
- Booklet design to solve fixing details of assembled products

Deliverables:

- A document reflecting the understanding of the subject.

Paper-8 : Crafts Documentation

Paper Code : BPD608 **Course Credits : 04**

Course Objectives:

- To gain knowledge about the handicrafts and its excellent function and visual qualities
- Stay at a location and learn and document the various processes involved in crafts.
- To Understanding craft, community &socio-economic culture influencing craft

Course Contents:

- Pre orientation about the craft.
- Basic Information Collection (About the history, geographical location, Raw Material, Artisans / Craftsmen, Design aesthetics/influences, Making Process, Marketing Avenues, Socio economic and cultural background of the crafts person and the influence on the design etc)
- Data Collection from exiting references (Documents, Books, Magazines, Reports etc.)
- Study, understand and document a detailed report / documentation of the selected craft.

Deliverables:

- Detailed Documentation & Presentation on selected craft.

Note:

- Craft documentation is a compulsory subject for all the students of Product Design. If any student fails to complete it then she/he may be given time to complete according to the ordinance/time in that semester. Net attendance of craft documentation will be added & calculated at the end of the consecutive semester only in case of shortage of the attendance.

Paper-13 : Basics of Design & Innovations

Paper Code : OE/P/613 **Course Credits : 02**

Objective:

- To understand the relation between design and innovation.

Contents:

- History of Innovation
- Great Innovations that have shaped mankind
- Relation between design and innovation
- Use of technology in innovations

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

Paper-614 : Indian Traditional Toys

Paper Code : OE/P/614 **Course Credits : 02**

Objective:

- To learn about the traditional Indian toys

Contents:

- Introduction of various traditional Indian toys
- History of toys in India
- Child psychology and development

Note:

- The paper setter will set questions in two parts (A & B).
- In Part A, the paper setter will set 15 objective type questions carrying 1 mark each.
- In Part B, the paper setter will set 08 descriptive type questions out of which students shall attempt any 04 questions carrying 5 marks each.

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SEMESTER - VII

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/701	Socially Relevant Design Project	CORE	5	75	50	125	-
BPD/702	Technical Complex Project	CORE	7	105	70	175	-
BPD/703	Dissertation	DSE	4	30	70	100	-
BPD/704	Cultural Influences in Design	DSE	4	30	70	100	-
BPD/705	Story Telling & Design	DSE	4	30	70	100	-
BPD/706	Sustainability : System Design	DSE /SEC	4	30	70	100	-
BPD/707	Toy Design	DSE /SEC	4	30	70	100	-
BPD/708	Design & Nature	DSE /SEC	4	30	70	100	-
BPD/709	Universal Design	DSE /SEC	4	30	70	100	-
BPD/710	Summer Internship		4	30	70	100	-
		Total	32			800	

 # CORE subjects are mandatory. Students may choose 4 Elective subjects out of 7 Elective subjects (BPD703 to BPD709) & Summer Internship is a compulsory subject. Summer Internship is to be conducted during summer vacation between 6th and 7th semester.

Paper-1 : Socially Relevant Design Project

Paper Code : BPD701 **Course Credits : 05**

Objective:

- To learn how to work as a group and solve problem with combined / group effort.
- To learn the roles and responsibilities involved in the project

Content:

- Students having different strength and skills working in a professional setup.**(Preferred in a multidisciplinary group)**
- Take a common social / environmental issues and solve it
- Group enquiry , ideation, brainstorming etc
- Creating space and environment for innovation and to encourage each other as team

Deliverables:

- A document explaining the process of solving the problem/issue taken in the group

Paper-2 : Technical Complex Project

Paper Code : BPD702 **Course Credits : 07**

Objective:

- To redesign a product/ system with Electrical and mechanical complexity.

Content:

- Select a product/ System. Analyse the functions, formal, Structural and ergonomic features. Locate scope for enhancement. Develop a solution.
- Design project of student interest and / or faculty interest and / or industry project
- Re-design a product that looks at existing problems and situation
- Investigation & study of visual and functional requirements

Deliverables:

- A document explaining the process analysing and developing the solution. Supported by a model (if possible)

Paper-3 : Dissertation

Paper Code : BPD703 **Course Credits : 04**

Course Objective:

- To develop a research document based on selected area of interest.

Course Contents:

- Abstract and Introduction of research topic.
- Research objectives
- Research questions
- Review of Literature
- Methodology of Research.
- Finding and Discussion
- Conclusion

Deliverables:

- Submission of a document in soft and hard copy.
- Presentation of the research.

Paper-4 : Cultural Influences in Design

Paper Code : BPD704 **Course Credits : 04**

Course Objectives:

- To learn how different cultures influenced the design of the product/object/architecture/artefacts
- To study the changes happened in products

Course Contents:

- Study of products in different culture of India
- Study of artefacts, weapons, objects of daily use for example Paandan, difference between Diwali diya and aarti diya etc
- For example – different cultures has history of Hukka but in every culture there were some changes in the design of hukka

Deliverables:

- A document explaining the process analysing and developing the solution. Supported by a model (if possible)

Paper-5 : Story Telling & Design

Paper Code : BPD705 **Course Credits : 04**

Course Objective:

- Introduction of storytelling as a design problem solving

Course Contents:

- What is storytelling?
- Importance of storytelling in the context of design?
- Elements of storytelling like character, personas, plot, scenario
- Problem area/statements
- tools for conveying the design solution

Deliverables:

- A document/presentation defining the design problem and its solution

Paper-6 : Sustainability : System Design

Paper Code : BPD706 **Course Credits : 04**

Course Objectives:

- To understand how to design for applications that requires variations and adoptability and
- solving it through system design

Course Contents:

- What is system design why we need it?
- Role of system design in design world?
- Principles of system design
- System-wide product/service strategies, sustainable consumption, health,
- Modelling and mapping.
- Design as a system level solution so that design can be thought of modularly as suited for different combination and application
- Understanding, strategizing, conceptualising & designing for complex system
- What is sustainability and its role in design world
  - Sustainable design principles
  - Physical, mental, spiritual, cultural, social, ethical and economic issues in designing for sustainability.
  - Waste, reuse and recycling, benign emissions, green design, Eco design
  - Design for sustainability, eco innovation
- Design project of student interest and / or faculty interest and / or industry project
- Design solutions that are suitable for sustainability in education, social issues, cultural issues etc

Deliverables:

- A document explaining the process of analysing and developing the solution. Supported by a model (if possible)

Paper-7 : Toy Design

Paper Code : BPD707 **Course Credits : 04**

Course Objectives:

- To learn about the traditional Indian toys
- To learn to the decision making, socialising and create through playing

Course Contents:

- Introduction of various traditional Indian toys
- History of toys in India
- Child psychology and development
- Developing toys which engage children in imaginative play and shape developmental skills

Deliverables:

- A 3d model of toy developed during the course

Paper-8 : Design & Nature

Paper Code : BPD708 **Course Credits : 04**

Course Objectives:

- To understand how design is inspired from nature
- solving it through system design

Course Contents:

- What is biomimicry
- Why Biomimicry is Vital for Design
- Study of designs/innovations inspired from nature
- Observing the nature with a sense of awe, wonder, and curiosity
- solve real-world problems with the help of nature

Deliverables:

- A document explaining the process of analysing and developing the solution. Supported by a model (if possible)

Paper-9 : Universal Design

Paper Code : BPD709 **Course Credits : 04**

Course Objectives:

- To understand the equality regardless of their age, size, ability or disability
- To design meaningful environment/product which help all people/society regardless of their age, size, ability or disability

Course Contents:

- What is universal design?
- What is the purpose of it?
- Why it is important?
- Why society need universal design?
- History of Universal design
- case study and examples
- Principle of Universal design
- To design meaningful environment/product which help all people/society regardless of their age, size, ability or disability

Deliverables:

- A document explaining the process of analysing and developing the solution. Supported by a model (if possible)

Paper-10 : Summer Internship

Paper Code : BPD710 **Course Credits : 4**

Objective:

- To understanding the working of an industry / design studio/NGO
- To understand the process involved in the manufacturing of the product
- To understand the process of finishes involved in the manufacturing of the product

Content:

- Internship at industry / design studio
- To learn how design studios/industry works
- To learn the process involved in the manufacturing of the product
- To learn the process of finishes involved in the manufacturing of the product

Deliverables:

- Detailed Documentation demonstrating the learning achieved during the internship & Presentation/Reflection
- Completion certificate provided by industry.
- Progress certificate will be issued by the concerned mentor/Industry

Note:

- Summer internship is a compulsory subject for all the students of Product Design. It will be performed between the break of 6^{th} and 7^{th} semester. If any student fails to compliance it then she/he may be given time to complete according to the ordinance. Net attendance of summer internship will be added & calculated at the end of consecutive next semester only in case of shortage of the attendance.

SEMESTER - VIII

Paper Code	Subject Title	Subject Category	Course Credits	Internal Evaluation	External Evaluation	Total Marks	Duration of Examination
BPD/801	Graduation Project	CORE	32	240	560	800	-

 # CORE subject is mandatory.

Paper-1 : Graduation Project

Paper Code : BPD801 **Course Credits : 32**

Course Objectives:

- Demonstrate the ability to perform as a professional
- Design/redesigning a Complex product/product system/interface

Course Contents:

- Analysis and redesign of the selected product. Choice can be made from industrial/consumer sector. Emphasis on doing industry sponsored projects.

Deliverables:

- A professional document clearly explaining the design approach supported by a working model. A mock-up model would be permissible only if making a working model is not possible
- Completion certificate provided by industry.

Reference Books for Product Design:

1. Norman, Don. The Design of Everyday Things.
2. Maeda, John. The Laws of Simplicity (Simplicity: Design, Technology, Business, Life.
3. Gershenfeld, Neil. Fab: The Coming Revolution on Your Desktop–from Personal Computers to Personal Fabrication.
4. Hara, Kenya. Designing Design.
5. Lidwell, William; Holden, Kritina and Butler, Jill. Universal Principles of Design.
6. McDonough, William and Braungart, Michael. Cradle to Cradle: Remaking the Way We Make Things.
7. Arden, Paul. It's Not How Good You Are, Its How Good You Want to Be.
8. Roberts, Kevin. The Love marks Effect: Winning in the Consumer Revolution.
9. Godin, Seth. Small Is the New Big and 183 Other Riffs, Rants, and Remarkable Business Ideas.
10. Peters, Tom. Design (Tom Peters Essentials).
11. Hirshberg, Jerry. The Creative Priority : Putting Innovation to Work in Your Business.
12. Moggridge, Bill. Designing Interactions.
13. De Bono, Edward. Lateral Thinking: Creativity Step by Step.
14. Kelley, Tom. The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm.
15. Haller, Lynn and Cullen, Dangel Cheryl. Design Secrets: Products 1 and 2: 50 Real-Life Product Design Projects Uncovered.
16. Hudson, Jennifer. Process: 50 Product Designs from Concept to Manufacture.
17. Thompson, Rob. Manufacturing Processes for Design Professionals.
18. Benyus, Janine M. Biomimicry: Innovation Inspired by Nature.
19. Ulrich, Karl T. and Eppinger, Steven D. Product Design and Development.
20. Reinertsen, Donald G. Managing the Design Factory.
21. Powell, Dick. Presentation Techniques.
22. Shimizu, Yoshiharu. Creative Marker Techniques: In Combination With Mixed Media.
23. Eissen, Koos and Steur, Roselien. Sketching: Drawing Techniques for Product Designers.
24. Ching, Francis D. K. Architecture: Form, Space, & Order.
25. Hannah, Gail Greet. Elements of Design: Rowena Reed Kostellow and the Structure of Visual Relationships.
26. Wallschlaeger, Charles and Busic-Snyder, Cynthia. Basic Visual Concepts And Principles For Artists, Architects And Designers.
27. Birn, Jeremy. Digital Lighting and Rendering. 2nd ed.
28. Muller-Brockmann, Josef. Grid Systems in Graphic Design.
29. Bhatt, D.N. Engineering drawing.
30. Papanek, Victor. Design for the real world.
31. Norman, Donald. Emotional design.
32. Dreyfuss, Henry. Measurement of man and woman.

33. Urich, Karl. Product design and development.
34. Sayolen, Kara and Macdonald, Allan. Learning curves : An inspiring guide to improve your design sketch skills.
35. Sayolen, Kara. Design sketching.
36. Pollock, Naomi. Made in Japan: 100 New Products.
37. Henry, Kevin. Drawing for Product Designers (Portfolio Skills).
38. The Soul of Design: Harnessing the Power of Plot to Create Extraordinary Products
39. Austin, Robert and Devin, Lee. Vision in Product Design.
40. Hekkert, Paul and van Dijk, Matthijs. Handbook for Innovators.
41. Gorman, Carma. The Industrial Design Reader.
42. Raizman, David. History of Modern Design.
43. Steur, Roselien and Eissen, Koos. Sketching: The Basics.
44. Lefteri, Chris. Making It: Manufacturing Techniques for Product Design.
45. Jackson, Paul. Structural Packaging: Design Your Own Boxes and 3D Forms.
46. Fancy Packaging (Structural Package Design). Pepin Press.
47. 1,000 Package Designs (Mini): A Comprehensive Guide to Packing It In (1000 Series).
48. DuPuis, Steven . Package Design Workbook: The Art and Science of Successful Packaging.
49. Ellicott, Candace. Packaging Essentials: 100 Design Principles for Creating Packages.
50. Dul , Jan. Ergonomics for Beginners: A Quick Reference Guide. 3rd ed.
51. Salvendy, Gavriel. Handbook of Human Factors and Ergonomics.
52. Grandjean, E. and Kroemer, Karl H.E. Fitting The Task To The Human, Fifth Edition: A Textbook Of Occupational Ergonomics.
53. Dul, Jan and Weerdmeester, Bernard. Ergonomics For Beginners: A Quick Reference Guide. 2nd ed.
54. Bridger, R.S. Introduction to Ergonomics. 3rd ed.
55. MacLeod, Dan. The Rules of Work: A Practical Engineering Guide to Ergonomics. 2nd ed.
56. Grandjean, E. Ergonomics In Computerized Offices.
57. Gkikas, Nikolaos. Automotive Ergonomics: Driver-Vehicle Interaction.
58. Kroeme, K.H.E. Fitting the Human: Introduction to Ergonomics. 6th ed.
59. Humantech, Inc. Handbook of Ergonomic Design Guidelines.
60. Reif, F. Understanding Basic Mechanics.
61. Naval Education And Training Program. Basic Machines and How They Work.
62. Marget, Richard and Ludescher, Matt. Basic Mechanics Book.
63. Shankar, Ramamurti. Principles of Quantum Mechanics.

64. Rae, Alastair I. M. Quantum Physics: A Beginner's Guide.
65. Jones, J. and Burdess, J. Basic Mechanics with Engineering Applications.
66. Meriam, J. L. and Kraige, L. G. Engineering Mechanics: Statics.
67. Brown, Henry T. Mechanical Movements: Mechanisms and Devices. Dover Science Books.
68. Hiscox, Gardner Dexter. Mechanical Movements, Devices and Appliances. Dover Science Books.
69. Van Valkenburgh, Nooger and Neville. Basic Electricity: Complete Course. 5 V in 1.
70. Ryan, Charles William. Basic Electricity: A Self-Teaching Guide.
71. Matt, Stephen R.. Electricity and Basic Electronics, Workbook.
72. United States of America, Naval Education & Training Program. Basic Machines and How They Work.
73. United States of America, Bureau of Naval Personnel. Basic Electronics.
74. Schuler, Charles A. and Fowler, Richard J. Basic Electricity and Electronics.
75. Toffler, Alvin. Future Shock.
76. Toffler, Alvin. The Third Wave
77. Wong, Wucius. Principles of Form and Design.
78. Spencer, Henry Cecil; Dygdon, John Thomas and Novak, James E. Basic Technical Drawing.
79. Giesecke, Frederick E.; Hill, Ivan L. ; Spencer, Henry C. and Mitchell, Alva E. Technical Drawing with Engineering Graphics. 14th ed.
80. Basic Technical Drawing: Student Edition Workbook. New York: McGraw-Hill, 2004.
81. Smith, Douglas and Ramirez, Antonio. Technical Drawing: 101 with AutoCAD. 2nd ed.
82. Giesecke, Frederick Ernest. Principles of Technical Drawing.