CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Scheme of Teaching & Examination

M Des - Master of Design

II Semester

S. No	Board of Study	Subject Code	Subject	Periods per Week			Scheme of Examination Theory/Practical			Total Marks	Credit L+(T+P)/2
				L	T	P	ESE	CT	TA		
1	Architecture	599211(16)	Research Methodology	3	1	-	100	20	20	140	4
2	Architecture	599212(16)	Typography	3	1	-	100	20	20	140	4
3	Architecture	599213(16)	Visual Communication-I	3	1	-	100	20	20	140	4
4	Architecture	599214(16)	Ergonomics for Industrial Design	3	1	-	100	20	20	140	4
5	Refer Table – II		Elective - I	3	1	-	100	20	20	140	4
6	Architecture	599221(16)	Research Analysis Lab	-	-	3	75	-	75	150	2
7	Architecture	599222(16)	Ergonomics Lab	-	-	3	75	-	75	150	2
Total				**15**	**5**	**6**	**650**	**100**	**250**	**1000**	**24**

L- Lecture T- Tutorial
P- Practical ESE- End Semester Exam
CT- Class Test TA- Teacher's Assessment

Table-II

S. No.	Board of Study	Subject Code	Subject
1	Architecture	599231(16)	Studies in Form II
2	Architecture	599232(16)	Design Paradigm
3	Architecture	599233(16)	New Media (Digital video Communication)
4	Architecture	599234(16)	Craft, Creativity and post-modernism
5	Architecture	599235(16)	Product Design-II

Summer Internship:
After completing second semester the students will be required to undergo 6-8 weeks summer training with any Industry/Firm/Company etc, where they learn the practical aspects of professional design. After the training the students are required to submit the report of training to the institution/Department within 3 weeks after the start of 3rd semester.

Note (1) – 1/4th of total strength of students subject to minimum of five students is required to offer an elective in a Particular academic session.

Note (2) – Choice of elective course once made for an examination cannot be changed in future examinations.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:Research Methodology **Code:** 599211(16)

Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit-1
Introduction
Need for Research, Types of Research, Characteristics of Good Research; Research Process; Problem Identification, Formulation of Business Research Objectives.

Unit-2
Research Designs
Exploratory, Descriptive and Causal Research Designs. Data Sources: Primary Data and Secondary Data; Questionnaire, Interview and Observation. Sampling Design: Fundamentals of Sampling Design, Non-probability and Probability Sampling.

Unit-3
Measurement and Scaling Techniques
Types of Data; Rating Scale and Ranking Scales; Reliability and Validity. Summarizing the Data: Mean, Median, Mode and Standard Deviation. Data Analysis Techniques: Univariate and Bivariate Analysis (t Test, Chi Square Test, ANOVA, Sign Test); Multivariate Analysis (Discriminant Analysis, Cluster Analysis, Factor Analysis, Multiple Linear Regression).

Unit-4
CPM & PERT
CPM: Network Diagram, Assessment of Critical Path and Critical Time
PERT: Expected Project Time

Unit-5
Interpretation and Report Writing
Data Interpretation, Techniques of Interpretation, Steps in Writing Report, Generic layout of a Research Report

Application of Research in New Product Ideas.

Text Books:

✍✍C.R.Kothari: Research Methodology, Vikas Publications
✍✍Cooper and Schindler: Business Research Methods, TMH
✍✍Deepak Chawla and Neena Sodhi: Research Methodology, Vikas Publishing House

Reference Books:

✍✍Gupta S. P. and Gupta, M. P., Business Statistics, Sultan Chand and Sons, New Delhi, 1997.
✍✍N D Vohra: Quantitative Techniques in Management, Ed 4, TMH
✍✍Rajendra Nargundkar : Marketing Research
✍✍Naresh Kumar Malhotra: Marketing Research

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:Typography **Code:** 599212(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit-I
Introduction
Study of Typography. History, Classification, Anatomy and usage of various letterforms. Theoretical and applicable principles of letterforms.

Unit-II
Expressive Typography. Compositions with type. Study of Indian language scripts. Calligraphic experiments in Indian Langauge scripts.

Unit-III
Typography in different contexts like New media, Posters, Signages, Books, Mailers, Motion graphics etc.

Unit-IV
Study of grids and layouts.

Unit-V
Experiments with Hierarchy

Text Books:

- Ruegg, Ruedi & Frohlich, Godi: Basic Typography, ABC edition, Zurich.1972
- Schmid, Helmut; Typography Today, Seibundo Shinkosha, 1980.
- Naik, Bapurao.S; Typography of Devanagari. Directorate of Languages, Bombay. 1971.
- Ruder, Emil; Typography, a manual of Design.
- Schmid, Helmut: The Road to Basel.
- Bringhurst, Robert; The elements of typographic Style. Hartley and Marks. ISBN-0-88179-133-4.
- Ruder, Emil; Typography. A Manual of Design. Arthur Niggli
- Shinkosha, Seibundo; Typography Today. IDEA special issue.
- Elam, Kimberly; Expressive Typography. The word as image.

Reference Books:

- Bain, E.K; Display Typography.
- McLean, Ruari; Manual of typography. Thames and Hudson.
- Lupton, Ellen; Thinking with type : a critical guide for designers, writers, editors, and students. New York : Princeton Architectural Press 2004.
- Schmid, Helmut; The road to Basel. Helmut Schmid Design.
- Samara, Timothy; Making and breaking the grid : a graphic design layout workshop. Gloucester : Rockport Pub. 2002.
- Jute, Andre; Grids : the structure of graphic design. Crans-Pres-Celigny : Rotovision, 1996.
- Hurlburt, Allen; Grid : a modular system for the design and production of newspapers, magazines, and books. Van Nostrand Reinhold Company.
- Muller-Brockmann, Josef; Grid systems in graphic design. Arthur Niggli, Netherland, 1981

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject: Visual Communication-I **Code:** 599213(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit- 1
Introduction
Importance of communication, Languages and grammar, visual communication.

Unit 2
Drawing
Introduction, Drawing as a tool for observation. Communication through drawing, Basics of drawing-tools & surfaces, line, tonalities, perspective freehand drawing etc.,

Unit 3
Photography
Basics of photography-Cameras, aperture, shutter speed, light, composition,, creative exercises. Popularity of the camera, going beyond pretty pictures, creative imagery through photomontage, the camera as an extension of the eye.

Unit 4
Graphics, paintings and illustrations
Visual representation of information & data, graphic imagery, logos and brand identities. Introduction to paintings and illustrations, paintings and illustrations.

Unit 5
Animations, Film and video
Basic principles of animation, the magical world of communication.
Film and video**-**The moving image, the Auteur school of thought, the Rasa theory, film appreciation.

Text Books:

- Subhramanyan, K.G., The Magic of Making, Seagull, 2007
- Jencks, Charles; Post-Modernism: A New Classicism in Art and Architecture, Academy Editions, London, 1987.
- Berger John, Ways of Seeing, Penguin, 1990
- Sontag Susan, On Photography, Picador, 2001
- Marie , Anne; Barry Seward; Visual Intelligence: Perception, Image, and Manipulation in Visual Communication,
- Publisher: State University of New York Press, 1997

Reference Books:

- Tufte Edward R., The Visual Display of Quantitative Information, Graphics Press, 2001
- Harm J. G. Zwaga, Theo Boersema, Henriette C.M. Hoonhout; Visual information for everyday use - Design and research perspectives. Taylor & Francis. 1999.
- Kit Laybourne, The Animation Book, Crown Trade Paperbacks, NY, 1998
- Bringhurst Robert, The Elements of Typographic Style, Hartley and Marks, 2004
- Dix, Alan J.; Finlay, Janet E.; Abowd, Gregory D.; Beale, Russell; Human-Computer Interaction, Pearson Education; 2 edition (1998)

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:ERGONOMICS FOR INDUSTRIAL DESIGN **Code**599214(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit-I
Introduction
A short History of Ergonomics; Ergonomics/Human Factors fundamentals
Unit-II
Communication and Ergonomics
Design communication and ergonomics; User-friendly man-machine-environment system; Capabilities and limitations of people in terms of physical (body structure, growth)

Unit-III
Anthropometric Study
Anthropometry, biomechanics, movement), physiological (allowable limits and safety factors) and psycho-sociological (behavior, cognitive aspects, information processing and perception issues) design interaction

Unit-IV
Design development and role of ergonomics
User-compatible industrial design principles, methods and criteria; Design development and role of ergonomics for consumer products, hand tools, furniture, workplace and component layout;
Unit-V
Design Analysis and Ergonomics
Considerations for people with functional limitations and special needs for inclusive and exclusive design aspects; Design evaluation techniques and assessment methods, and aspects of Usability in Product Design

Text Books:

- **Chakrabarti, D**: Indian Anthropometric Dimensions for ergonomic design practice, National Institute of Design, Ahmedabad, 1997
- **Christopher P Nemeth**: Human Factors Methods for Design, Making Systems Human-centered, CRS Press LLC, 2004
- **Dul, J. and Weerdmeester, B**: Ergonomics for beginners a quick reference guide, Taylor & Francis, 1993.

Reference Books:

- **G. Salvendy**, (edit), Handbook of Human Factors and ergonomics, John Wiley & Sons, Inc., 1997
- **P. W. Jordan and W. S. Green** (edit): Human Factors in Product Design- current practice and future trends, Taylor Francis, London, 1999.
- **Wicknes, CD., Gordon, SE. and Liu, Y**: An Introduction to Human Factors Engineering, Longman, New York, 1997

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:Studies in Form II **Code:** 599231(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit-I
Introduction
Form exploration in the context of products.

Unit-II
Expressions in Form
Expressions in Form like soft, hard, warm, cold, precise, gross ,delicate , strong, fragile, rugged etc.

Unit-III
Study of product expressions
Study of product expressions by analyzing in terms of elements like form, proportion, colour, texture etc.

Unit-IV
Abstraction in form
Introduction to abstraction in form. Study of 3D abstraction in art and sculpture.

Unit-V
3D abstraction
Exploration of industrial material and processes as elements of design through 3D abstraction of entities in Nature.

Text Books:

- Kimberly Elam, Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press, 2001
- Thompson, Darcy Wentworth; Bonner, John Tyler (Editor); On Growth and Form by D"Arcy Thompson
- Doczi, Gyorgy; Power of Limits, Publisher: Shambhala; Reissue edition, 1981

Reference Books:

- Lawlor, Robert; Sacred Geometry: Philosophy and Practice (Art and Imagination), Publisher: Thames & Hudson, 1989
- Kepes, Gyorgy; Language of Vision, Dover Publications, 1995
- Abhikalpa : The journal of Industrial Design Centre, IIT Bombay, January 1984

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject: Design Paradigm **Code:** 599232(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit- 1
Introduction: Introduction to Design Paradigm, Biomimicry & Paradigm in Nature. Application of paradigm.

Unit 2
Design, Paradigm & Science of Design: Paradigm in Human Body , comparison between the modern design and the traditional design, modular design.

Unit 3
Simple Shape Paradigm : Basic Geometrics; Platonic Solids (Five Simple Solids); Simple applications in Packaging Design.

Unit 4
Paradigm in Nature: Simple Paradigms- Ball, Disc, Tube, Coil, Spiral, Spoon, Cup, Jar, Bottle, Bubble, Blister, Skin, etc. Möbius Strip, Wrap, Pipe, Bag, Bending & Flexing**,** Growth, Expansion & Contraction, Swelling & Squashing, Spring, Arms & Legs, Wing, Scissors, Screw, Flower, etc

Unit 5
Joining & Attaching: Zipper, Sewing, Wielding, Ball & Socket, Universal Joints, Knots, Bridge, etc. Glue, Adhesive Tape, Clips & Clamps, Magnet

Text Books:

- Bailey, Jill. **Animal Life: Form and Function in the Animal Kingdom,** NY: Oxford University Press, 1994
- Beck, Benjamin B. **Animal Tool Behavior: The Use and Manufacture of Tools by Animals**, New York: Garland, 1980

- Bueciarelli, Louis L. **Designing Engineers**, Cambridge, MA: MIT Press 1994
- Fuller, R. Bucminster. **Synergetics: Explorations in the Geometry of Thinking**, New York: Macmillan Pub. 1975,'82

Reference Books:

- Fuller, R. Buckminster. **Inventions: The Patented Works of R. Buckminster Fuller**, New York: St. Martin's Press, 1983
- Hargroves, K. D. & Smith, M. H. (2006). Innovation inspired by nature Biomimicry. Ecos, (129)
- Roukes, Nicholas. **Design Synecties: Stimulating Creativity in Design**, Worcester, MA: Davis Pub. 1988
- Rowe, Peter G. **Design Thinking**, Cambridge, MA: MIT Press 1987
- Thompson, D'Arcy W. **On Growth and Form**. Dover 1992 reprint of 1942 2nd ed. (1st ed., 1917)
- Wake, Warren K., **Design Paradigms A Source for Creative Visualization**, New York: John Wiley & Sons, 2000

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:New Media (Digital video Communication) **Code:** 599233(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit-I
Introduction

Overview/What are New Media?

Unit-II
Digital Communication

Evolution of Digital Communication

Unit-III
Online Information
Finding and Evaluating Online Information

Unit-IV
Networks Evolution
Networks – Social and Technological

Unit-V
Learning Networks
Networks – Personal Learning Networks**,** Digital Economics, Online News, Online Politics, Access and the Digital Divide

Text Books:

- FirstMonday (online peer-reviewed journal)
- GoogleScholar
- Readings from COM546 : recent journal articles – PDF : student projects (each has an annotated bibliography)
- UW Lib databases(remember off-campus login!)

Reference Books:

- ACM
- Academic Search Complete (EBSCO)
- ComStudies (suggestions and tips from Jessica Albano, our research librarian)
- The Journal of Computer-Mediated Communication (off-campus link)
- Social Science Computer Review (off-campus link)

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:Craft, Creativity and Post-modernism **Code:** 599234(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

Unit-I
Introduction
Creative process in Craft. Study of Form in Bamboo and Other Craft. Cultural roots in Craft.

Unit-II
Craft and tradition
Craft as an expression of Indian Tradition.

Unit-III
Craft and Post modernism
Significance of craft as a creative base for current Design practices. Post modern interpretation of craft.

Unit-IV
Craft and Globalization
Creative exploration in Craft. Design to suit urban and export markets.

Unit-V
Craft Design Process
Craft as a means to explore material, process and Form.

Text Books:
✍✍John Thackara (Ed), Design After Modernism (Beyond the Object), 1989
✍✍Victor Margolin (Ed), Design Discourse (History, Theory, Criticism), The University of Chicago Press, 1989
✍✍Powell, Jim; Postmodernism for beginners, Orient Longman, India,1998

Reference Books:

✍✍Jencks, Charles; Post-Modernism: A New Classicism in Art and Architecture, Academy Editions, London, 1987
✍✍McKim, Robert; Experiences in Visual Thinking, Publisher: Brooks/Cole Publishing Company, 1980

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: M Des. II Sem. **Branch:**
Subject:Product Design-II **Code:** 599235(16)
Total Theory Periods: 40 **Total Tutorial Periods: ****
Total Marks in End Semester Exam. : 100
Minimum number of class test to be conducted: 02

UNIT – I
Product Styling
Visual perception of products, perception of product style, rules of visual perception, general rules, rules means for product styling, specific rules, fabulous fibonaccis, bisociative attraction, social culture and business affects, determinants of style, attractiveness and product style, four faces of attractiveness, styling process

UNIT – II
Principles of Creativity
Archimedes Eureka, preparation, faradays electricity, incubation and illumination, buckyballs, from hymn books to post-it notes, nature of incubation and illumination, bisociation and lateral thinking, creative thinking in practice, preparation, preparation toolkit, idea generation, idea generating procedures, idea generation toolkit, synectics – a critique, idea selection, idea selection toolkit, reviewing and improving creative thinking procedures

UNIT – III
Embodiment Design
Steps of embodiment design, checklist for embodiment design, basic rules of embodiment design, clarity, simplicity, safety, principles of embodiment design, principles of force transmission, principles of division of tasks, principles of self help, principles of stability and bi-stability, principles of fault-free design, guidelines for embodiment design, general considerations, design to allow for expansion, design to allow for creep and relaxation, design against corrosion, design to minimize wear, design for ergonomics, design for aesthetics, design for production, design for assembly, design for maintenance, design for recycling, design for minimum risk, design for standards, evaluating embodiment design, example of embodiment design

UNIT - IV
Mechanical connections, Mechatronics and Adaptronics
Mechanical connections - general functions and general behavior, material connections, form connections, force connections, applications, Mechatronics – general architecture and terminology, goals and limitations, development of mechatronic solutions, examples, Adaptronics – fundamentals and terminology, goals and limitations, development of adaptronic solutions, examples.

UNIT – V
Size Ranges and Modular Products
Size ranges – similarity laws, decimal-geometric preferred number series, representation and selection of step sizes, geometrically similar size ranges, semi-similar size ranges, development of size ranges, Modular products - modular product systematics, modular product development, advantages and limitations of modular systems, examples, recent rationalization approaches, modularisation and product architecture, platform construction.

Text Books:

- Baxter, Mike; Product Design - Practical Methods for the Systematic Development of New Products, Publisher: Chapman & Hall, 1995
- G.Pahl and W. Beitz: Engineering Design, A Systematic Approach, springer, London, 2001

Reference Books:

- Gordon, W.J.J : Synectics, Harper & Row, .Y., 1968
- Hill, P.H : The Science of engineering design, Holt, Rinehart and Winston, N.Y, 1970
- G.Pahl and W. Beitz: Engineering Design, A Systematic Approach, springer, London, 2001
- Kelly Tom: The Art of Innovation, doubleday, NY , 2001
- Prahalad C.K : The Fortune at The Bottom of The Pyramid, Wharton School Publishing, 2005

CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,BHILAI (C.G.)

Semester: M Des. **Branch:**
Subject: Research Analysis Lab **Code:** 599221(16)
Total Lab Periods: 40
Total Marks in End Semester Exam. : 75

This lab aims to build students capability for using software used in Design. This may include SPSS, etc.

CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,BHILAI (C.G.)

Semester: M Des. **Branch:**
Subject: Ergonomics Lab **Code:** 599222(16)
Total Lab Periods: 40
Total Marks in End Semester Exam. : 75

Objective: To understand design evaluation techniques and assessment methods, and aspects of Usability in Product Design.

To improve productivity, safety, comfort while reducing muscle loads etc.