

# COURSE OUTLINE OF MASTERS IN PRODUCT AND INDUSTRIAL DESIGN

**SPRING 2024**

## **CORE SUBJECTS**

### **MPID-501: ADVANCED PRODUCT DESIGN:**

#### **Course Description:**

The aim of this module is to offer a framework in two distinct areas: Conceptualization and Production. Advance level studio projects would aim to develop student's skills both in design and production and manufacturing processes hence this would equip the students with all the advanced skills required to develop a product for potential market.

Design, Concept formulation and idea generation, execution, sketching, Development of mockups and prototypes, Development of new and existing products, Manufacturing and Manufacturing techniques/ methods, Materials exploration/ experimentation, Project development, Presentation techniques, Cost analysis, Student work will be required to be exhibited at the completion of this course.

#### **Suggested Books:**

Design (Tom Peters Essentials) by Tom Peters.

**Series:** Essentials (DK Publishing)

**Paperback:** 160 pages

**Publisher:** DK ADULT (May 30, 2005)

**Language:** English

**ISBN-10:** 0756610540

**ISBN-13:** 978-0756610548

**Product Dimensions:** 7.7 x 4.2 x 0.5 inches

## **MPID-502: INTEGRATED PRODUCT DEVELOPMENT**

### **Course Description:**

In this course, students will explore theories of product design as they apply to both physical and virtual systems. They will learn techniques for crafting product behaviors and develop strategies for using experience prototypes as part of the design process. Students will gain an understanding of physical interaction, networked objects, product personality, information displays, ergonomics, haptics and the role of products in contemporary design practice, while learning methods for testing and communicating new ideas in physical/digital design

**Suggested Books:** *Product Design and Development* by Karl T. Ulrich and Steven D. Eppinger.

**Hardcover:** 432 pages

**Publisher:** McGraw-Hill/Irwin; 5 edition (May 5, 2011)

**Language:** English

**ISBN-10:** 0073404772

**ISBN-13:** 978-0073404776

**Product Dimensions:** 7.5 x 0.9 x 9.4 inches

**Shipping Weight:** 1.8 pounds

## **MPID-503: COGNITIVE ERGONOMICS IN DESIGN**

### **Course Description:**

The course contents include Relevance of the paradigm of applied cognitive psychology, Human-centered design, Key models of human performance, Theories of cognition and their relevance in design, Systems model of performance, Implications for complex socio- technological systems, Specific ergonomic theories to specific design contexts, human factors implications of a product/ system design, Concepts of product and system design, Cognitive ergonomics, importance in the design of complex, high-tech, or automated systems, Ethno- methodology, Human-computer interaction, Mental space, Neuro-ergonomics, Supervisory control, Activity theory, Cognitive psychology, cognitive science, Cognitive work analysis, Ecological design.

**Suggested Books:** *Biomimicry: Innovation Inspired by Nature* by Janine M. Benyus

**Paperback**

**Publisher:** Harper Perennial (October 2, 2002)

**ASIN:** B0023Z2MZQ

**MPID-504: VISUAL COMMUNICATION:**

**Course description:**

Visual Communication course aims to develop creative, analytical, innovative, entrepreneurial, and socially responsible designers capable of identifying and investigating communication problems, and delivering imaginative and effective ideas, information and solutions through design. They will also be equipped with transferable skills that will allow them to pursue related professional careers, or to progress onto more advanced courses. The detailed outline for the contents of course is given below.

**Suggested Books: *Presentation Techniques*** by Dick Powell.

**Hardcover:** 160 pages

**Publisher:** Little, Brown & Company (July 12, 1990)

**Language:** English

**ISBN-10:** 0316912433

**ISBN-13:** 978-0316912433

**Product Dimensions:** 8.8 x 0.7 x 11.1 inches

**Shipping Weight:** 1.9 pounds

***Visual Rhetoric in a Digital World: A Critical Sourcebook First Edition*** by Carolyn Handa

**Language:** English

**ISBN-10:** 0312409753

**ISBN-13:** 978-0312409753

***Universal Principles of Design*** by William Lidwell, Kritina Holden and Jill Butler.

**Paperback:** 272 pages

**Publisher:** Rockport Publishers; Second Edition, Revised and Updated edition (January 1, 2010)

**Language:** English

**ISBN-10:** 1592535879

**ISBN-13:** 978-1592535873

**Product Dimensions:** 8.8 x 0.5 x 10.2 inches

## **MPID-506: DESIGN PSYCHOLOGY:**

### **Course Description:**

In this course the students will be able to understand different psychologies attached with a designed product. The student should be able to describe how research has informed different psychological perspectives used to explain human behavior. Different theories based on psychology will be discussed in detail and will be inter related with a product. At the end the students will be given a project to design a product which should relate with some design psychology, color theories and the process of idea generation. Also study the different product designer's psychologies towards the product and industrial design like Sir Jonathan Ive, Deter Rams, Karim Rashid, Alvar Alto and Frank Gehrey. Their creative, minimalistic and simple solutions towards the product design will have a great impression on the student's problem solving methodologies.

**Suggested Books:** *Universal Principles of Design* by William Lidwell, Kritina Holden and Jill Butler.

**Paperback:** 272 pages

**Publisher:** Rockport Publishers; Second Edition, Revised and Updated edition (January 1, 2010)

**Language:** English

**ISBN-10:** 1592535879

**ISBN-13:** 978-1592535873

**Product Dimensions:** 8.8 x 0.5 x 10.2 inches

## **MPID-507: RESEARCH METHODOLOGY:**

### **Course Description:**

This course will provide an opportunity for participants to establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global) in the form of research paper.

The course contents includes define research; explain and apply research terms; describe the research process and the principle activities, skills and ethics associated with the research process, relationship between theory and research, compare the major quantitative and qualitative research methods in mass communication research, proposal of research study and justify the theory as well as the methodological decisions, including sampling and measurement, understanding the importance of research ethics and integrate research ethics into the research process, assessment and critique a published journal article that uses one of the primary research methods in the field. To construct an effective questionnaire that employs several types of survey questions and compose a research paper which shows the application of all research techniques learnt in this semester.

## **MPID-509: DESIGN FOR SUSTAINABILITY AND RESILIENCE:**

### **Course Description:**

The aim of the course is to focus on the sustainable development in the field of product and industrial design. The three main dimensions: social, economic and environmental sustainability provides a complete background for the course. This course further elaborates scarcity of materials, life cycle assessments and cradle to cradle approach in product design. The international practices of product standards, codes and certifications are studied in detail. End use of the products, waste hierarchy of materials, remanufacturing techniques and e-waste are also elaborated to suggest alternative use of the products. The ultimate objective of this course is to introduce sustainable design strategies in product design with innovative design ideas. Like E waste, Certification Of Products, Cradle to Cradle Principles, Persuasive Design & Parametric Design, Green Movement & Sustainable Product Design.

**Suggested Books:** *Basic Visual Concepts And Principles For Artists, Architects And Designers* by Charles Wallschlaeger and Cynthia Busic-Snyder.

**Paperback:** 544 pages

**Publisher:** McGraw-Hill Humanities/Social Sciences/Languages; 1 edition (February 1, 1992)

**Language:** English

**ISBN-10:** 0697006514

**ISBN-13:** 978-0697006516

**Product Dimensions:** 8.5 x 0.8 x 10.9 inches

**Shipping Weight:** 2.4 pounds

## **ELECTIVE SUBJECTS**

### **MPID-505      Graphic Design for product & packaging**

#### **Course Description:**

This course deals with the application of graphics design to improve market values of products by focusing its packaging. At this level students have a basic understanding of packaging and its design; they are now given a more comprehensive insight into the packaging design process, from initial research to developing brand concept and brand message, through to execution of digital design idea and finally production of packaging itself. They are made to understand the social and the cultural variation that exist around the world. Students also examine the entire life span of a piece of packaging; from design and manufacture to disposal, from its display in various retail environments to its environmental impact.

#### **Recommended Books:**

*The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm* by Tom Kelley.

**Hardcover:** 320 pages

**Publisher:** Crown Business; 1 edition (January 16, 2001)

**Language:** English

**ISBN-10:** 0385499841

**ISBN-13:** 978-0385499842

**Product Dimensions:** 6.4 x 0.9 x 9.5 inches

**Shipping Weight:** 1.8 pounds

## MPID-510: DESIGN HISTORY (INDUSTRIAL / REGIONAL)

### **Course Description:**

The aim of the course is to equip students with the use of digital media in history. The use of various recent techniques like data visualizations, interactive maps, time-lines, audio files, and virtual worlds will be studied. Students will study pre-industrial beginnings in primitive and ancient design. Medieval and Renaissance preludes to the design in the Industrial Revolution and its development to the present time are reviewed. The regional design of various indigenous product, which are considered part of a specific culture like blue pottery of Multan, Chinoti furniture, Kashmiri products, etc for more sustainable design that benefit the society and preserve the historical character.

**Suggested Books:** *Design Secrets: Products 1 and 2: 50 Real-Life Product Design Projects Uncovered* by Lynn Haller and Cheryl Dangel Cullen, and edited by Industrial Designers Society of America.

**Series:** 50 Trade Secrets of Great Design

**Paperback:** 224 pages

**Publisher:** Rockport Publishers; 2 edition (March 2, 2002)

**Language:** English

**ISBN-10:** 1564968723

**ISBN-13:** 978-1564968722

**Product Dimensions:** 8.8 x 0.5 x 11.6 inches

**Shipping Weight:** 2.4 pounds

## MPID-511: INTERIOR DESIGN STUDIO

### **Course Description:**

The course of Interior Design Studio majorly linked with the aspects of Product Design with Interior Design Concepts that how spaces are conceived and how they can be used for multi functionality. The concepts of spaces for all, Universal Product Design in Interior spaces, semiotics and spatial properties in recognition of the user ergonomics and human design sphere. The human space interaction and the layers of meaning by the spatial occupants are much related in this aspect. The students will be given different project catering to a problem statement and they will present the solution with full model. The creation of on scale study model with the help of different modeling materials and also the idea of small scale 3d conceptual design representation is included. Relationship diagrams, Macro/mezzo/micro site analysis, Space planning, rendered concepts of the projects, complete execution plan, Information regarding materials and prices, on scale study model.

**Suggested Books:** *The Laws of Simplicity (Simplicity: Design, Technology, Business, Life)* by John Maeda



**Series:** Simplicity: Design, Technology, Business, Life  
**Hardcover:** 96 pages  
**Publisher:** The MIT Press; F First Edition edition (April 25, 2011)  
**Language:** English  
**ISBN-10:** 0262015889  
**ISBN-13:** 978-0262015882  
**Product Dimensions:** 5.4 x 0.2 x 8 inches  
**Shipping Weight:** 12 ounces

## **MPID-512: PRODUCT LIFE CYCLE**

### **Course Description:**

This course will help students understand the inputs, outputs, flows, and consequences of the material world. The coursework will follow the product manufacturing cycle from ideation to final end of life. The first quarter of the semester will focus on the business drivers that create the conditions for the full continuum of new product innovation—from high-touch design-led ideation processes down to lower-cost high turnover copycat methods of manufacturing. During the second quarter students will trace objects down to their origins, starting with mining and extraction through component manufacturing, final assembly, and shipping. The third quarter of the course will focus on branding, marketing, and sales, understanding the cues that motivate purchase intention for consumer products. During the final quarter of the course, students will understand the use phase of a consumer product, the process for recycling the product or sub-components of the product, and final disposition. Students will be required to fully document the lifecycle of a product, and develop an alternate design scenario that radically improves the product, based on ecological, social, and financial impact measures.

**Suggested Books:** *Designing Interactions* by Bill Moggridge.

**Hardcover:** 766 pages  
**Publisher:** The MIT Press; 1 edition (October 1, 2007)  
**Language:** English  
**ISBN-10:** 0262134748  
**ISBN-13:** 978-0262134743  
**Product Dimensions:** 8 x 1.8 x 9 inches  
**Shipping Weight:** 3.8 pounds

## MPID-513: ELECTRONIC MOCKUPS

### **Course Description:**

The purpose of this course is to sensitize various aspects of electronic products providing an experience in the creative aspect of design from project definition to ideation, leading to functional prototypes. Particularly electrical aspects like mechanical design and detailing. Starting from a need translated into specifications, students will have the opportunity to experience the entire process of enclosure design, including: defining product specifications, developing creative design ideas, evaluating design concepts based on engineering analysis, describing the detailed design using CAD drawings, and building multiple physical prototypes ranging from feasibility demonstration to full level functional prototypes.

### **Suggested Books:**

- **Designing Electronic Product Enclosures** 1st ed. 2018 Edition by [Tony Serksnis](#) (Author)

**Paperback:** 280 pages

**Publisher:** Springer; 1st ed. 2018 edition (September 8, 2018)

**Language:** English

**ISBN-10:** 3319693948

**ISBN-13:** 978-3319693941

**Shipping Weight:** 1.7 pounds

- **Product Design and Development**, Ulrich and Eppinger, 5th edition, 2012.

**Paperback:** 433 pages

**Publisher:** McGraw-Hill, NY 10020. Copyright © 2012 by The McGraw-Hill Companies, Inc.

**Language:** English

**ISBN:** 978-0-07-340477-6

- **Product Design: Techniques in Reverse Engineering and New Product Development**, Kevin Otto and Kris Wood, Prentice Hall, 2001.

**Paperback:** 1104 pages

**Publisher:** Pearson; 1 edition (December 8, 2000)

**Language:** English

**ISBN-10:** 0130212717

**ISBN-13:** 978-0130212719

**Product Dimensions:** 7 x 2.2 x 9 inches

**Shipping Weight:** 3.6 pounds

## **MPID-514: PROJECT PLANNING AND MANAGEMENT**

### **Course Description:**

This course will comprise of the planning of whole design process from the very initial ideas to its marketing and advertisement. All aspects of contemporary management practice will be covered, with two guiding principles used in formulating exact content and delivery methods. Firstly, the Project Management Body of Knowledge (PMBOK) will provide the conceptual framework and to apply these concepts in the planning of product design projects. Secondly, examples that are tailored to suit the background and interests of individual participants will be utilized to demonstrate and re-enforce concepts.

**Suggested Books:** *What They Don't Teach You At Harvard Business School: Notes From A Street-Smart Executive* by Mark H. McCormack.

**Paperback:** 272 pages

**Publisher:** Bantam; Reissue edition (June 1, 1986)

**Language:** English

**ISBN-10:** 0553345834

**ISBN-13:** 978-0553345834

**Product Dimensions:** 6 x 0.7 x 9 inches

**Shipping Weight:** 12 ounces

## **MPID-515: APPLIED SPACE METHODOLOGY**

### **Course Description:**

This course is directed toward the understanding of the concept of negative volume (space) in relation to interior and exterior environmental situations. Politics stimulates participation and social return is an integral part of every project. In spite of this, the management budgets are often cut back and investments have to be accounted for. And there is a shift of responsibilities from the client to the contractor. In short, plenty of developments! This requires a different approach to the management of public space. The student applies theory to a project and brings it to finished model form. Public space is becoming increasingly important in terms of health, recreation and other social objectives. How are you going to fulfill this challenge The program of the course "Applied space methodology" consists of five major contents, each with its own main theme. You work on your own issue in parallel with these themes.

### **SUGGESTED BOOKS:**

- **Measuring Public Space: The Star Model (Design and the Built Environment) 1st Edition by Georgiana Varna**

**Series:** Design and the Built Environment

**Hardcover:** 296 pages

**Publisher:** Routledge; 1 edition (October 16, 2014)

**Language:** English

**ISBN-10:** 1409467457

**ISBN-13:** 978-1409467458

- **Public Spaces, Public Life by Jan Gehl**

**Publisher: The Danish Architectural Press (March 2004)**

**ISBN-10: 8774073052**

**ISBN-13: 978-8774073055**

- **People Places: Design Guidelines for Urban Open Space, 2nd Edition 2nd Edition by Clare Cooper Marcus, Carolyn Francis**

**Publisher: John Wiley and Sons; 2nd edition (August 20, 1997)**

**Language: English**

**ISBN-10: 0471288330**

**ISBN-13: 978-0471288336**

- **Aalto University publication series, DOCTORAL DISSERTATIONS 33/2014, School of Arts, Design and Architecture Aalto ARTS Books, Helsinki**

**books.aalto.fi, This research has been supported by Aalto University's School of Arts, Design and Architecture, Oslo and Akershus University College of Applied Sciences, The Norwegian Association of Arts and Crafts (NK) and The Finnish Norwegian Culture Institute FINNO. © Arild Berg**

**Printed in Unigra**

- **Graphic design: Marte Fæhn, [www.lucas.no](http://www.lucas.no)**

**Materials: Munken Lynx 300 g (cover), Munken Lynx 120g (inside)**

**Fonts: FedraSans**

**ISBN 978-952-60-5601-2**

**ISBN 978-952-60-5602-9**

**ISSN-L 1799-4934**

**ISSN 1799-4934**

**ISSN 1799-4942**

## **MIPD-516: MACRO ELECTRONICS IN CONSUMER PRODUCTS**

### **Course Description:**

To illustrate how the design of consumer products is being rapidly changed by the introduction of inexpensive programmable microelectronics technology. How sensors play a role in almost all day-to-day requirements. The substantial growth in consumer electronics due to advancement in technology. This course provides an overview of the sensors market, including current trends and analyzes key factors influencing and limiting the growth of the market. Comprehensive and quantitative data about changing market trends, revenues, competition and opportunities are provided in this course. Discussion on recent developments and SWOT analysis would help in understanding strategies adopted by competitors, which is helpful for new entrants. In addition, to engender a basic understanding of microprocessor operation. It includes three main domains of analysis

### **Sensors Market by Product Type Analysis**

The sensors market is segmented according to product into touch, image, motion, temperature, position and pressure.

### **Sensors Market by Application Analysis**

The sensors market is segmented by application into entertainment, I.T., communication products and home appliances

### **High level analysis**

Environmental factors that are influencing the growth of the sensors market have been critically analyzed in this course.

**Suggested Books:** *Cradle to Cradle: Remaking the Way We Make Things* by William McDonough and Michael Braungart.

**Paperback:** 193 pages

**Publisher:** North Point Press; 1st edition (April 22, 2002)

**Language:** English

**ISBN-10:** 0865475873

**ISBN-13:** 978-0865475878

**Product Dimensions:** 5 x 0.8 x 8 inches

**Shipping Weight:** 15.2 ounces

**MPID-517: SERVICE ENTREPRENEURSHIP**

**Course Description:**

To give students an understanding of the value of contemporary approaches to service innovation and how it applies to entrepreneurship, To guide students in developing new and more effective service designs by understanding market needs, technology opportunities and people's expectations in a changing society, To train students in the work of modeling product- service systems in a logical, prescriptive, consistent and visual way, To enable students to apply effective models of behavior change and conversation as they are required for co-evolving with compatible goals and values, building human relationships, learning and building trust, To provide students with a rich perspective for critiquing service design activities and with ways to describe a new product-service business narrative by pitching in front of an audience.

**Suggested Books: *Presentation Techniques*** by Dick Powell.

**Hardcover:** 160 pages

**Publisher:** Little, Brown & Company (July 12, 1990)

**Language:** English

**ISBN-10:** 0316912433

**ISBN-13:** 978-0316912433

**Product Dimensions:** 8.8 x 0.7 x 11.1 inches

**Shipping Weight:** 1.9 pounds

## **MPID-518: PRODUCT MARKETING AND BRANDING:**

### **Course Description:**

The course will encompass the present business and marketing techniques. The students will be able to learn how they can make their product look attractive in terms of sales. The students will use several medias to study marketing like market survey, and filling questionnaires etc. Also different market strategies will be taught like, role of Leader, role of Challenger, role of Follower, role of Nicher, market introduction strategies, market growth strategies, market maturity strategies, market decline strategies, Borden's "marketing mix", Smith's "differentiation and segmentation strategies", Forrester's "product life cycle (PLC)", Andrews' "SWOT analysis", Porter's "generic strategies", Ansoff's "growth strategies".

The objectives of the course are to help students appreciate the various cultural and market forces on products, and to provide insight into how those products come into being, live, and thrive. Students will go through a complete design process in this course: defining an opportunity within a specified consumer space, undertaking research, deriving insights, and defining design opportunities. These insights will then be converted into a meaningful design strategy, whereupon students will generate design concepts, develop and refine them, and arrive at a final design. Since much of contemporary product design and development includes the participation of a number of specialists, part of the challenge will be to identify and collaborate with appropriate partners to complete their fully realized designs.

**Suggested Books:** *It's Not How Good You Are, Its How Good You Want to Be: The World's Best Selling Book* by Paul Arden

**Paperback:** 128 pages

**Publisher:** Phaidon Press; 1st edition (June 1, 2003)

**Language:** English

**ISBN-10:** 9780714843377

**ISBN-13:** 978-0714843377

**ASIN:** 0714843377

**Product Dimensions:** 4.8 x 0.6 x 7.1 inches

**Shipping Weight:** 6.4 ounces

## **MPID-519: DESIGN CULTURE:**

### **Course Description:**

This course explores the design of everyday things and spaces, unpacking the ways in the designed environment can both reveal and construct powerful social and cultural meanings and practices. Drawing on thematic case studies that relate to sites such as the home the course introduces key concepts, theories and methods used in the study of design and material culture. The course will be of relevance to students working across a range of disciplines, including sociology, geography and anthropology but will be of particular importance to those studying design and visual culture. The detailed outline for the contents of course is given below.

### **Suggested Books:**

- **Appadurai, A. ed. (1986) The Social Life of Things. Commodities in Cultural Perspective. Cambridge:** Cambridge University Press
- **Cohen, D. (2006) Household Gods: The British and their Possessions. New Haven, Conn.:** Yale University Press
- **Csikszentmihalyi, M. &Halton, E. (2003) Home interview questionnaire, with coding categories and definitions.** In: Pearce, S. ed. Interpreting Objects and Collections. London: Routledge
- **Crouch, C. and Pearce. J. (2012) Doing Research in Design. London: Berg**
- **Dunne, A. &Raby, F. (2013) Speculative Everything: Design, Fiction, and Social Dreaming. Cambridge Mass.:** The MIT Press