DEPARTMENT OF DESIGN

Course Structure & Syllabi for MINOR Programme in Product Design
(To be applicable from BTech 2010-batch onwards)

Semester	Course Code	Course Title	L-S-P-C
3rd	DD 210 M	Introduction to Design	3 - 0 - 0 - 6
4th	DD 220 M	Introduction to Ergonomics	3 - 0 - 0 - 6
5th	DD 310 M	Product Design	3 - 0 - 0 - 6
6th	DD 320 M	Product Planning and Strategy	3 - 0 - 0 - 6
7th	DD 410 M	Design Management	3 - 0 - 0 - 6
		Total credits	**15 -0 -0 -30**

DD 210M Introduction to Design (3-0-0-6)

Preamble:

The course is intended to introduce an overall awareness of the design discipline, designing processes and methods dealing with creation of systems, products, visuals and environments.

Course contents:

Design definitions; Industrial Design chronology; Interrelationships of Design to Engineering, Arts, Architecture and Sciences. Overview of sub fields: Industrial, Visual Communication, Textile and Fashion, Interaction Design, Human Computer Interaction; Role of Creativity and Innovation in Design; Design Methods; Theory of Design Space; Design Metrics; Visual Quality: aesthetic elements, principles; Case studies of award winning designs; Current advances in Design Research; Analysis and redesign of a simple utility artifact / product / visual communication / interface or environment.

Texts:

1. J. Heskett, *Design – a very short Introduction*, Oxford University Press (Indian Edition), 2007.
2. C.H Flurscheim, *Industrial Design in Engineering*, Design Council, London, 1983.

References:

1. D. Norman, *The Design of Everyday things*, Currency Doubleady Publications, NY, 1990.
2. *Encylopedia of 20th Century Design*, Thames & Hudson, London, 1993.
3. M. A. Muser and D. Macleon, *Art and Visual Environments*, MIT Press, 1996.

DD 220M Introduction to Ergonomics (3-0-0-6)

Preamble:

The course is intended as an introduction to the domain of Ergonomics – the science of man – machine interface and its importance to the Design discipline. Emphasis will be on processes and methods dealing with creation of systems, products, visuals & environments.

Course contents:

Ergonomics / Human Factors - overview and background; Design communication and ergonomics; User friendly man machine environment system; Capabilities and limitations of people - physical (body structure, growth, anthropometry, biomechanics, movement), physiological (allowable limits and safety factors) and psycho sociological (behaviour, cognitive issues, information processing and perception); Evaluation of facilities, environment, jobs and tasks, training methods and equipment, and user capabilities; Potential reduction of fatigue, errors, discomforts and unsafe acts; Ergonomics design principles and criteria, and checklist for ease and efficiency (including HCI); Occupational hazards and safety, and environment factors affecting performance.

Texts:

1. R. S. Bridger, *Introduction to Ergonomics*, McGraw-Hill, Inc., 1995.
2. M. S. Sanders and E. J. McCormick, *Human Factors in Engineering and Design*, McGraw-Hill, Inc., 1993.

References:

1. D. Chakrabarti, *Indian Anthropometric Dimensions for ergonomic design practice*, National Institute of Design, Ahmedabad, 1997
2. J. Dul and B. Weerdmeester, *Ergonomics for beginners a quick reference guide*, Taylor & Francis, 1993.
3. P. W. Jordan and W. S. Green (Eds.), *Human Factors in Product Design- current practice and future trends*, Taylor Francis, London, 1999.
4. W. Karwowski and W. S. Marras, *The Occupational Ergonomics Handbook*, CRC Press, New York, 1999.
5. K. H. E. Kroemer, H. B. Kroemer and E. K. E. Kroemer, *Ergonomics- How to Design for Easy and Efficiency*, Prentice Hall Englewood Cliffs, NJ, 1994.
6. G. Salvendy (ed.), *Handbook of Human Factors and ergonomics*, John Wiley & Sons, Inc., 1997
7. C. D. Wicknes, S. E. Gordon and Y. Liu, *An Introduction to Human Factors Engineering*, Longman, NY, 1997.

DD 310M Product Design (3-0-0-6)

Preamble:

The course is intended to introduce industrial design aspects involved in the design of product and product systems; and the contributions of the Product Designer as a team member in the product development process.

Course contents:

Product Life cycle phases; Development of Strategies in new product design; Industrial Design considerations in product design; Morphology of Design Process; Product Analysis: Economic, Physiological, Aesthetic and Functional consideration in Design of Products with case studies; Approaches to form generation in product design; User centered approach to Product Design; Selection of Materials and Processes; Product Detailing; Communication of design ideas.

Texts:

1. B. E. Burdek*, Design – History, Theory and Practice of Product Design*, Birkhauser,2005
2. A.K. Chitale and R.C Gupta, *Product Design and Manufacturing*, Prentice Hall of India, 2005.

References:

1. C.H Flurscheim*, Industrial Design in Engineering*, Design Council, London, 1983.
2. E.Tjalve, *A short course in Industrial Design*, Newnes-Butterworths, London, 1979.

DD 320M Product Planning and Strategy (3-0-0-6)

Preamble:

The course is intended to introduce concepts in product planning, marketing aspects that are related to design of new products, and contributions of the Product Designer as a member of the product planning team.

Course contents:

Marketing Planning; Planning of the Marketing mix; Market Segmentation; Marketing research and its application; Competitor Analysis; Product feature Matrices; Customer Analysis; Consumer behaviour including psychological, economic, socio cultural, and decision making influences on consumer behavior; Introduction to Product management in the context of market research studies; New Product Planning & Development; Techniques of product planning and development, including team approach to product idea generation, concept development, technical and economic screening, and product concept testing and commercialization; Developing Product Strategy with Strategic Alternatives; Product positioning.

Texts:

1. K. T. Ulrich and S. D. Eppinger, *Product Design and Development*, 3rd Ed., Tata McGraw-Hill, New Delhi, 2003
2. M. Bruce and R. Cooper, *Creative Product Design: A Practical Guide to Requirement Capture Management*, John Wiley, 2000.

References:

1. G.L.Schiffman and L. L. Kanuk, *Consumer Behaviour*, 9th Ed, Prentice Hall India,2007
2. D. R. Lehmann and R. S. Winer, *Product Management*, 3rd Ed, Tata McGraw-Hill, 2002

DD 410 M Design Management (3-0-0-6)

Preamble:

To introduce the subject of management in relation to design and design related activity as prevalent in the corporate and business world.

Course contents:

Essentials of management - marketing management, consumer behaviour, finance, and operations; Project planning; Product Planning; Strategic management; Organizational structures; Understanding of design activity and designer's role in organizations; Creativity, innovation and its management in team work; Leadership - soft skills, communicating, etiquettes, ethics, values, interpersonal relationship, and conflict resolution; Intellectual property rights; and Case studies.

Texts:

1. J. L. Massie, *Essentials of Management*, Prentice Hall of India (P) Ltd, New Delhi, 1990.
2. A.F.J. Stoner and R.E Freeman, *Management*, Prentice Hall of India (P) Ltd, New Delhi, 1989.

References:

1. P. Kotler, *Marketing Management*, Pearson Education Asia, 2003.
2. L. G. Schiffman and L.L.Kanuk, *Consumer Behaviour,* Pearson Education Asia, 2002.
3. M. Okley (ed.), *Design Management – A handbook of Issues and Methods*, Blackwell Publishing , London, 1998.