

**BDes and Dual Degree – BDes + MDes program**

November 2014, IDC IIT Bombay

**1<sup>st</sup> Semester**

Course Number	Course Name	L	T	ST	Total Credits
DE 101	Art and Design Fundamentals 2D	0	0	6	6.0
DE 103	Image representation and Transformations I	0	0	6	6.0
DE 105	Captured Audio and Image Design – photography and videography	1.5	0	3	6.0
DE 131	Design and Human Evolution	2	0	0	4.0
DE 133	Applied Science for Designers	1.5	0	3	6.0
DE 121	Design Studio I – Problem Identification	1.5	0	3	6.0
	Total Credits for Semester I				<b>34.0</b>

**2<sup>nd</sup> Semester**

Course Number	Course Name	L	T	ST	Total Credits
DE 102	Art and Design Fundamentals 3D	0	0	6	6.0
DE 104	Image representation and Transformations II	0	0	6	6.0
DE 106	Typography fundamentals and Exploratory Printing	1.5	0	3	6.0
DE 132	World of Images and Objects	2	0	0	4.0
DE 134	Knowledge Organisation and Communication	1.5	0	3	6.0
DE 122	Design Studio II – Problem Analysis	1.5	0	3	6.0
DEP102	Self-Initiated Summer Project				Audit
	Total Credits for Semester II				<b>34.0</b>

**3<sup>rd</sup> Semester**

Course Number	Course Name	L	T	ST	Total Credits
DE 201	2D Visual Studies I – Word and Image	0	0	6	6.0
DE 203	3D Form Studies I – Aesthetics, Identity and Expressions	0	0	6	6.0
DE 205	Creative Thinking Process and Methods	1.5	0	3	6.0
DE 231	Design, Society, Culture and Environment	2	0	0	4.0
HS 200 + ES 200	Environmental Studies + Environmental Studies - Science and Engineering	3	0	0	3.0
		3	0	0	3.0
DE 221	Design Studio III - Creative Explorations	1.5	0	3	6.0
	Total Credits for Semester III				<b>34.0</b>

**4<sup>th</sup> Semester**

Course Number	Course Name	L	T	ST	Total Credits
DE 202 DE 204	Elective - 2D Visual Studies II or 3D Form Studies II	0	0	6	6.0
DE 206	Communication Theories, Visual Perception and Semiotics	1.5	0	3	6.0
DE 208	Design, Storytelling and Narratives	1.5	0	3	6.0
DE 232	Design, Media and Technology	2	0	0	4.0
	Institute UG Electives I/ Humanities UG Electives I	3	0	0	6.0
DE 222	Design Studio IV - Prototyping	1.5	0	3	6.0
DEP204	Summer Project (May or June) (focus on Social concerns)				6.0
	Total Credits for Semester IV				<b>40.0</b>

## 5<sup>th</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 303	Elective I and II: Information Graphics and Visualisation /	0	0	6	6.0
DE 305	Moving image Design /	0	0	6	6.0
DE 307	Product Design-I				
DE 309	Design for Interactive Media /				
DE 311	Mobility and Vehicle Design				
DE 313	3D modeling and prototyping /				
DE 315	Applied Ergonomics	1.5	0	3	6.0
DE 331	Design, Technology and Innovation	2	0	0	4.0
	Institute UG Electives II / Humanities UG Electives II	3	0	0	6.0
DEP 301	Collaborative Design Project				6.0
	<b>Total Credits for Semester V</b>				<b>34.0</b>

## 6<sup>th</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 302	Elective I and II: Animation Design	0	0	6	6.0
DE 304	Communication Design /	0	0	6	6.0
DE 306	Film-Video Design /				
DE 308	Product Design II /				
DE 310	Interaction Design /				
DE 312	Transportation Design /				
DE 314	Game Design /				
DE 316	Product Ergonomics				
DE 322	Elective III: Materials and Processes /	1.5	0	3	6.0
DE 324	Digital Media Technologies				
DE 332	Design Management, Planning and Professional Practice	2	0	0	4.0
	Institute UG Electives III / Humanities UG Electives III	3	0	0	6.0
DEP 302	System Design Project				6.0
DEP 304	Summer Project (May or June) (focus on Industry Experience)				6.0
	<b>Total Credits for Semester VI</b>				<b>40.0</b>

## 7<sup>th</sup> Semester (Exchange Semester with other Institutes)

Course Number	Course Name	L	T	ST	Total Credits
DE 431	Global Design Thoughts and Discourse	2	0	0	4.0
DEP 401	Re-Design Project				24.0
DEP 403	Design Research Seminar I				6.0
	<b>Total Credits for Semester VII</b>				<b>34.0</b>

## 8<sup>th</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DEP 402	BDes Design Project				36.0
	<b>Total Credits for Semester VIII</b>				<b>36.0</b>
	<b>Total Credits for BDes programme</b>				<b>286.0</b>

## Break up of BDes Credits

	Total Credits
Departmental Courses (31 courses)	172.0
Institute Courses / Electives (5 courses)	24.0
Projects (7 projects)	90.0
<b>Total Credits for BDes programme</b>	<b>286.0</b>

**9<sup>th</sup> Semester (for Dual Degree BDes + MDes program)**

Course Number	Course Name	L	T	ST	Total Credits
DEP 404	Summer Project (May or June)				6.0
ID 803	Quantitative Design Research Methods	2	0	0	4.0
ID 804	Qualitative Design Research Methods	3	0	0	6.0
	Elective I from IDC MDes courses in 3 <sup>rd</sup> semester				6.0
	Elective II from IDC MDes courses in 3 <sup>rd</sup> semester				6.0
DEP 501	Design Research Project –part 1				18.0
	<b>Total Credits for Semester IX</b>				<b>46.0</b>

**10<sup>th</sup> Semester (for Dual Degree BDes + MDes program)**

Course Number	Course Name	L	T	ST	Total Credits
DEP 502	Design Research Seminar II				6.0
DEP 504	Design Research Project – part II				36.0
	<b>Total Credits for Semester VIII</b>				<b>42.0</b>
	<b>Total Credits for Dual Degree MDes programme</b>				<b>374</b>

**Break up of MDes Credits**

	Total Credits
Departmental Courses (35 courses)	194.0
Institute Courses / Electives (5 courses)	24.0
Projects (11 projects)	156.0
<b>Total Credits for Dual Degree MDes programme</b>	<b>374.0</b>

# 1<sup>st</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 101	Art and Design Fundamentals 2D	0	0	6	6.0
DE 103	Image representation and Transformations I	0	0	6	6.0
DE 105	Captured Audio and Image Design - photography and videography	1.5	0	3	6.0
DE 131	Design and Human Evolution	2	0	0	4.0
DE 133	Applied Science for Designers	1.5	0	3	6.0
DE 121	Design Studio I - Problem Identification	1.5	0	3	6.0
	Total Credits for Semester I				<b>34.0</b>

DE 101	Art and Design Fundamentals 2D	0 0 6 6
<b>Aim:</b>	The students explore, discover and understand the fundamentals involved in 2 dimensional design – its elements, features and principles	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Exposure to various elements and principles of art and design in 2D</li> <li>. Expressions and explorations using Points, Lines, Planes and Volumes</li> <li>. Its relation in context to nature and environment</li> <li>. Study and understanding of Frame of Reference or Point of Views</li> <li>. Principles of colour theory and explorations</li> <li>. Understanding of the visual relationships – balance, proportion, order, symmetry, rhythm, etc.</li> <li>. Study of visual principles of composition: grids, layouts, asymmetry, balance and asymmetry.</li> </ul>	
<b>Design Tasks:</b>	The students understand the fundamentals and learn the principles of 2D design by doing assignments involving creative explorations and experiments with Form, Texture, Colour, and Space in relation to the context and environment.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Gail Greet Hannah, Elements of Design, Princeton Architectural Press, 2002</li> <li>- Lauer, David; Design Basics, Wadsworth Publishing, 1999</li> <li>- W. Wong; Principles of Two Dimensional Design, John Wiley and Sons, 1972</li> <li>- J. Bowers; Introduction to Two-Dimensional Design: Understanding Form and function, John Wiley &amp; Sons, 1999</li> <li>- L. Hotzschue; Understanding Colour, VNR, 1995</li> <li>- Itten, Johannes; The Art of Color: The Subjective Experience and Objective Rationale of Color, Wiley Publications, 1997</li> <li>- Proctor, R.M.; The principles of pattern, Dover Publications, 1990</li> <li>- Elam, Kimberly; Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press, 2001</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Ravi Poovaiah</li> <li>- R Sandesh</li> <li>- Raja Mohanty</li> <li>- P. Kumaresan</li> </ul>	

DE 103	Image representation and transformations I	0 0 6 6
<b>Aim:</b>	Learning the fundamental skills and knowledge of image representation in order to be able to represent objects, nature and living beings.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Object Representation</li> <li>. Representing nature</li> <li>. Figure Drawing</li> <li>. One point, Two point, and Three point Perspective</li> <li>. Studies in light and shadow on 3-dimensional Form Representations</li> <li>. Grid based drawing, Analytical Representation</li> <li>. Exposure and demonstration of Illustration and Image making software</li> </ul>	
<b>Design Tasks:</b>	The students will practice under expert guidance the intricacies of image representation through exercises and explorations.	
<b>References:</b>	- Edwards, Betty; New Drawing on the Right Side of the Brain,	

	Publisher: Tarcher; 2002 - Dalley Terence ed.; The complete guide to illustration & design, Phaidon, Oxford, 1980 - T. C. Wang; Pencil Sketching, John Wiley & Sons, 1997 - Pogany, Willy ; The Art of Drawing, Publisher: Madison Books, 1996 - R. Kasprin; Design Media – Techniques for water colour, pen and ink, pastel and coloured markers, John Wiley & Sons, 1999	
<b>Faculty</b>	- Nina Sabnani, - Kadiru Ramachandran	

<b>DE 105</b>	<b>Captured Audio and Image Design – Photography and Videography</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	Exposure and exploration of the fundamentals of Audio, photography and video	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Exposure to elements of Audio, photography and video</li> <li>. Light and Composition</li> <li>. Framing and Point of view</li> <li>. Photo-essays and Storytelling through stills and video</li> <li>. Fundamentals of Sound</li> <li>. Exposure to video editing software</li> </ul>	
<b>Design Tasks:</b>	Exercises in photography (both outdoors and indoors) and making of a short video along with audio recording	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Graves, Carson; The Elements of B &amp; W Photography, Focal Press, 2001</li> <li>- Ang, Tom; Digital Photography, Mitchell Beazley, 1999</li> <li>- Scott Kelby, The Digital Photography Book, Peachpit Press, 2006</li> <li>- Sontag Susan, On Photography, Picador; 2001</li> <li>- Hedgecoe John: The photographer's handbook, Ebury Press, London, 1977</li> <li>- Straczynski J. Michael; The Complete Book of Scriptwriting, Writer's Digest Books; 2002</li> <li>- Zettl Herbert; Video Basics, Wadsworth Publishing; 2006</li> <li>- Kelby Scott ; The Digital Photography Book, Publisher: Peachpit Press; 2006</li> <li>- Barrett Colin; Digital Video for Beginners: A Step-by-Step Guide to Making Great Home Movies; Publisher: Lark Books; 2005</li> <li>- Watkinson John; The Art of Digital Video; Publisher: Focal Press; 4th edition, 2008</li> <li>- Grimm Michele &amp; Grimm Tom; The Basic Book of Photography, Fifth Edition, Publisher: Plume, 2003</li> <li>- Chandler Gael; Cut by Cut: Editing Your Film or Video; Publisher: Michael Wiese Productions, 2004</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>. Sudesh Balan</li> <li>. C P Narayan</li> </ul>	

<b>DE 131</b>	<b>Design and Human Evolution</b>	<b>2 0 0 4</b>
<b>Aim:</b>	To introduce the notion of Design as it evolved through the ages, from pre-historic times to a discipline in its own right. To understand the chronological development of design in the context of human evolution.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. The evolution of Design as a discipline and its relationship to the environment.</li> <li>. The discoveries and inventions that have changed the world.</li> <li>. Design and its relationship to art, craft and technology.</li> <li>. Design and designers that have made a difference.</li> </ul>	
<b>Design Tasks:</b>	A seminar paper presentation/submission on an idea or thought that has made a difference to the human evolution.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- David Raizman; History of Modern Design, Prentice Hall, 2004</li> <li>- Cross, N; Design Thinking: Understanding How Designers Think and Work, Berg, Oxford, 2011.</li> <li>- <a href="http://designhistorytimeline.com/">http://designhistorytimeline.com/</a></li> <li>- Journal of Design History, Oxford Journals</li> </ul>	
<b>Faculty</b>	- Nina Sabnani	

<b>DE 133</b>	<b>Applied Science for Designers</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	To understand some of the principles of applied science as inspirations for design.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Fundamentals of Symmetry and Patterns in Nature</li> <li>. Evolution of Form in Nature</li> <li>. Triangles, Hexagons and rigid structures</li> <li>. Work by Buckminster fuller and concept of sustainable structures</li> <li>. Understanding Fibonacci series and the Golden ratio</li> <li>. Geometry of shapes</li> </ul>	
<b>Design Tasks:</b>	Exercises in symmetry, golden ratio, proportion, geometry of objects	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Livio, Mario; The Golden Ratio: The Story of PHI, the World's Most Astonishing Number, Publisher: Broadway, 2003</li> <li>- William Neill, Pat Murphy; By Nature's Design -an Exploratorium Book, Chronicle Books, 1993</li> <li>- Darcy Wentworth Thompson, John Tyler Bonner (Editor); On Growth and Form, Dover Publications, 1992</li> <li>- Rudolf Steiner, David Booth; The Fourth Dimension: Sacred Geometry, Alchemy, and Mathematics, Steiner Books, 2001</li> <li>- R Buckminster Fuller; Guinea Pig B: The 56 Year Experiment, Critical Path Publishing, 2004</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Kadiru Ramachandran</li> <li>- Purba Joshi</li> <li>- Ravi Poovaiah</li> </ul>	

<b>DE 121</b>	<b>Design Studio I – Problem Identification</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	To understand the process of design and be able to find solutions to simple problems. The focus is on being able to identify problems and finding needs.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Introduction to Design and its eco-system</li> <li>. Design Relevance: Exposure and analysis</li> <li>. Introduction to the process of design</li> <li>. Inquiry and Observations</li> <li>. Documenting activities and environments</li> <li>. Talking and conversing with users</li> <li>. Problem Identification or need finding</li> <li>. Documentation, report making and presentations</li> </ul>	
<b>Design Tasks:</b>	Redesign of a simple problem (ex. design of a board game) that involves both communication and product design issues. The students put into practice what they have learnt during this semester in this project.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- D. Norman; The Design of Everyday things, London, The MIT Press, 1998</li> <li>- A Forty; Objects of Desire, Thems &amp; Hudson 1995</li> <li>- J. de Noblet ed., Industrial Design- Reflections of a century, Thames &amp; Hudson, 1993</li> <li>- Julier, G.; 20<sup>th</sup> Century Design, Thames &amp; Hudson, 1993</li> <li>- Potter, Norman; What is a Designer: Things, Places, Messages, Princeton Architectural Press, 2002</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- R. Sandesh</li> <li>- Nishant Sharma</li> <li>- Purba Joshi</li> <li>- P. Kumaresan</li> </ul>	

# 2<sup>nd</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 102	Art and Design Fundamentals 3D	0	0	6	6.0
DE 104	Image representation and Transformations II	0	0	6	6.0
DE 106	Typography fundamentals and Exploratory Printing	1.5	0	3	6.0
DE 132	World of Images and Objects	2	0	0	4.0
DE 134	Knowledge Organisation and Communication	1.5	0	3	6.0
DE 122	Design Studio II – Problem Analysis	1.5	0	3	6.0
DEP102	Self-Initiated Summer Project				Audit
	Total Credits for Semester II				<b>34.0</b>

DE 102	Art and Design Fundamentals – 3D	0 0 6 6
<b>Aim:</b>	The students explore, discover and understand the fundamentals involved in 3 dimensional design – its elements, features and principles	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Exposure to various elements of 3D and principles of art and design in 3D</li> <li>. Expressions and explorations of spaces and Volumes</li> <li>. Experimentations with Form, Texture, Colour and space</li> <li>. Its relation in context to nature and environment</li> <li>. Radii Manipulation, Form Transition, Morphology</li> <li>. Exposure to form and movement</li> <li>. Exposure and demonstration of 3D modeling software</li> </ul>	
<b>Design Tasks:</b>	The understanding of various elements of 3D and principles of design in 3D is done through material explorations like wood, metal and clay	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Kepes, Gyorgy; Language of Vision, Dover Publications, 1995</li> <li>- Elam, Kimberly; Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press, 2001</li> <li>- Bachelard, Gaston; Jolas, Maria (Translator); The Poetics of Space, Publisher: Beacon Press; Reprint edition, 1994</li> <li>- Hannah, Gail Greet; Elements of Design, Princeton Architectural Press, 2002</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- R. Sandesh</li> <li>- Nishant Sharma</li> <li>- Purba Joshi</li> <li>- P. Kumaresan</li> <li>- Raja Mohanty</li> </ul>	

<b>DE 104</b>	<b>Image Representation and transformations II</b>	<b>0 0 6 6</b>
<b>Aim:</b>	Learning the essential skills and knowledge of image representation in order to visualize ideas, concepts and final representations and being able to transform these for different interpretations and applications.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Representing the observed</li> <li>. Representing concepts - Sketching for ideation</li> <li>. Mimetic Imagery and Abstraction</li> <li>. Memory and Imagination</li> <li>. History of Art and Aesthetics</li> <li>. Expression and Imagery</li> <li>. Time and space in Image</li> <li>. Migration of forms and Image manipulation</li> <li>. Metamorphosis through form, colour and structure</li> <li>. Advanced exposure and demonstration to Illustration and Image making software</li> </ul>	
<b>Design Tasks:</b>	Exercises in imagination and representation, Expressions and Explorations, Concept drawings	
<b>References:</b>	<ul style="list-style-type: none"> <li>- McKim, Robert; Experiences in Visual Thinking, Publisher: Brooks/Cole Publishing Company, 1980</li> <li>- Missal, Stephen; Exploring Drawing for Animation (Design Exploration Series), Thomson Delmar Learning, 2003</li> <li>- D. K. Francis Ching; Design Drawing, John Wiley &amp; Sons, 1998</li> <li>- Porter, Tom; Design Drawing techniques for architects, graphic designers and artists, Oxford; Architectural Press, 1991</li> <li>- Dalley Terence ed.; The complete guide to illustration &amp; design, Phaidon, Oxford, 1980</li> <li>- T. C. Wang; Pencil Sketching, John Wiley &amp; Sons, 1997</li> <li>- Caplin, Steve; Banks, Adam; The Complete Guide to Digital Illustration, Publisher: Watson-Guptill Publications, 2003</li> <li>- Arnheim, Rudolph; Visual Thinking: University of California Press 2004</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>. Nina Sabnani</li> <li>. Kadiru Ramachandran</li> <li>. Purba Joshi</li> </ul>	

<b>DE 106</b>	<b>Typography Fundamentals and Exploratory Printing</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	To understand and become sensitive to the use of type, type-families and their variations. To do explorative printing on different surfaces.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Introduction to type and its history.</li> <li>. Type as a form and means of communication.</li> <li>. Type in our environment.</li> <li>. Introduction to Indian Type</li> <li>. Learning to see and recognize typefaces, type families and know about type designers.</li> <li>. Construction of type with hand.</li> <li>. Structure and anatomy of the type; x-height, ascenders, descenders, counter, cap-height, baseline, etc.</li> <li>. Typographic variables: kerning, tracking, leading, Spacing etc.</li> <li>. Classification of type.</li> <li>. Semantics of type. Legibility and readability issues in type. Vernacular letter-forms.</li> <li>. Introduction to traditional printing techniques like Block printing, Screen printing, Hot stamping, etc .</li> </ul>	
<b>Design Tasks:</b>	Exercises in calligraphy, Compositions with type, Expressive typography, 3 dimensional typography. Explorative printing on different surfaces.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Carter Ron, Day Ben Meg Phillip, Typographic Design: Form and Communication, John Wiley &amp; Sons, 1999</li> <li>- Allen Hurlburt, The Grid, John Wiley &amp; Sons, 1998</li> <li>- Jute, Andre; <u>Grids : the structure of graphic design</u>. Crans-Pres-Celigny : Rotovision, 1996</li> <li>- Carter Ron, Day Ben Meg Phillip, Typographic Design: Form and Communication, John Wiley &amp; Sons, 1999</li> </ul>	
<b>Faculty</b>	- G. V. Sreekumar	



	- Girish Dalvi	
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<b>DE 132</b>	<b>World of Images and Objects</b>	<b>2 0 0 4</b>
<b>Aim:</b>	To understand the relevance and significance of images and objects in terms of their cultural and social context. To appreciate the relationship between aesthetics, purpose and design embedded in images and objects.	
<b>Content:</b>	. Images, Objects and meaning-making . Introduction to aesthetics, form and function . Cultural codes embedded in images and objects . Everyday objects, perception and cognition	
<b>Design Tasks:</b>	A seminar paper presentation/submission on images and /or objects that have impacted society.	
<b>References:</b>	- Neill, William (Photographer); Murphy, Pat; By Nature's Design -an Exploratorium Book, Publisher: Chronicle Books, 1993 - Antonelli, Paola; Objects of Design, Publisher: Museum of Modern Art, 2003 - Clive Cazeaux; The Continental Aesthetics Reader, Routledge, 2011 - Ann Marie Barry; Visual Intelligence: Perception, Image, and Manipulation in Visual Communication, State University of New York Press, 1999	
<b>Faculty</b>	- Nina Sabnani	

<b>DE 134</b>	<b>Knowledge Organisation and Communication</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	To understand the dynamics of large knowledge systems and be able to structure, organize, make sense and be able to visualize and communicate its problems and issues.	
<b>Content:</b>	. Knowledge Gathering, Organisation and Visualisation . Visual Mapping of large systems . Data Mining and making sense of dynamic information . Building concept maps, affinities and networks . Diffusion and communication of Knowledge	
<b>Design Tasks:</b>	The students work on analyzing large knowledge systems (for example literacy or global warming in the world), identify issues to be solved, visualize and communicate the issues.	
<b>References:</b>	- Peter Burke, A Social History of Knowledge II: From the Encyclopaedia to Wikipedia, Polity, 2012 - Nancy Williamson, Clare Beghtol; Knowledge Organization and Classification in International Information Retrieval, Routledge, 2004 - Elaine Svenonius ; The Intellectual Foundation of Information Organization, The MIT Press, 2000 - Thomas H. Davenport, Laurance Prusak; Information Ecology: Mastering the Information and Knowledge Environment, Oxford University Press, USA, 1997 - Colin Ware, Information Visualization, Third Edition: Perception for Design (Interactive Technologies), Morgan Kaufmann, 2012 - Brian M. Moon, Robert R. Hoffman, Joseph D. Novak, Alberto J. Cañas; Applied Concept Mapping: Capturing, Analyzing, and Organizing Knowledge, CRC Press, 2011	
<b>Faculty</b>	- Ravi Poovaiah - Mandar Rane - R Venkatesh - Girish Dalvi	

<b>DE 122</b>	<b>Design Studio II – Problem Analysis</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	The course will focus on understanding the problem solving process by analyzing the problem through different methods to arrive at alternate design concepts.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Analysis of an existing problem in a given context</li> <li>. Mind Maps, Affinity Mappings, Temporal-Spatial Mappings</li> <li>. Physical(Sensory) – Social - Cognitive Mappings</li> <li>. Semiotic Analysis (Syntax-Semantic-Pragmatic)</li> <li>. Observations, Insights and Opportunities</li> <li>. Soft Prototyping the idea/concept</li> <li>. Documentation, report making and presentations</li> </ul>	
<b>Design Tasks:</b>	Redesign of an existing idea/concept (from a public Space) that has product, communication, and environmental issues and concerns. The students put into practice what they have learnt during this semester in this project.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Roozenburg and Eekels, Product Design: Fundamentals and Methods, Publisher: John Wiley &amp; Sons Inc; New Ed edition, 1995</li> <li>- Ulrich, Karl T., Eppinger, Steven D.; Product Design and Development, McGraw-Hill 1995, 2000, 2004</li> <li>- J. de Noblet ed., Industrial Design- Reflections of a century, Thames &amp; Hudson, 1993</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- R. Sandesh</li> <li>- Nishant Sharma</li> <li>- Purba Joshi</li> <li>- P. Kumaresan</li> </ul>	

<b>DEP102</b>	<b>Self-Initiated Summer Project</b>	<b>Audit</b>
<b>Aim:</b>	The scope of this summer project is to identify and locate, document and analyse a design resource chosen by the student. The documentation needs to be done methodically with appropriate analysis so as to bring the essence of the chosen resource. The resource could be examples of artifacts, arts, crafts, architecture, design, etc.	
<b>Design Tasks:</b>	The student is required to make both a presentation of the resource as well as do a write-up about the resource in form of a report.	
<b>Duration:</b>	For a month either during the month of May or June	
<b>Faculty</b>	- All faculty	

# 3<sup>rd</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 201	2D Visual Studies I – Word and Image	0	0	6	6.0
DE 203	3D Form Studies I - – Aesthetics, Identity and Expressions	0	0	6	6.0
DE 205	Creative Thinking Process and Methods	1.5	0	3	6.0
DE 231	Design, Society, Culture and Environment	2	0	0	4.0
HS 200 + ES 200	Environmental Studies + Environmental Studies - Science and Engineering	3 3	0 0	0 0	3.0 3.0
DE 221	Design Studio III - Creative Explorations	1.5	0	3	6.0
	Total Credits for Semester III				<b>34.0</b>

<b>DE 201</b>	<b>2D Visual Studies I – word and Image</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand, experiment and explore the relationship between word and image	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. To understand and experiment with word image hierarchies</li> <li>. What is an image?</li> <li>. Image and Perception</li> <li>. Word and meaning, Word as image, Image in word, word in image</li> <li>. Word Image interaction</li> <li>. Word Image juxtaposition (delete..sounds the same as above?)</li> <li>. Word/letter form transforming into image</li> <li>. Fusing word and image (cartoons)</li> </ul>	
<b>Design Tasks:</b>	Design of visual narratives, posters, book covers, symbols, title graphics, etc. exploring and experimenting the relationship between word and image	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Varnum, Robin; The Language of Comics: Word and Image: University Press of Mississippi, 2002 :ISBN-10: 1578064147 ISBN-13: 978-1578064144</li> <li>- Constantine, Mildred; Word and Image: Posters from the Collection of the Museum of Modern Art, 1968 : MOMA ASIN: B0000K8718</li> <li>- Meggs, Philip B.; Type and Image: The Language of Graphic Design: Wiley, 1992: ISBN-10: 0471284920 ISBN-13: 978-0471284925</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nina Sabnani</li> <li>- G. V. Sreekumar</li> <li>- Mandar Rane</li> </ul>	

<b>DE 203</b>	<b>3D Form Studies I – Aesthetics, Identity and Expressions</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand, experiment and explore the form relationship in 3D	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Form Studies and Aesthetics</li> <li>. Identity and Form – creating a family of forms</li> <li>. Abstraction, Expression and Meaning in Product Form</li> <li>. Material Explorations using different materials</li> <li>. Advanced exposure and demonstration of 3D modeling software</li> </ul>	
<b>Design Tasks:</b>	Exploration of 3D forms using different materials	
<b>References:</b>	<ul style="list-style-type: none"> <li>- H. G. Greet and R. R. Kostellow, Elements of Design and the Structure of Visual Relationships, Architectural Press, NY, 2002</li> <li>- Livio, Mario; The Golden Ratio: The Story of PHI, the World's Most Astonishing Number, Publisher: Broadway, 2003</li> <li>- Kimberly Elam, Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press, 2001</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nishant Sharma</li> <li>- Purbha Joshi</li> <li>- B. K. Chakravarthy</li> </ul>	

<b>DE 205</b>	<b>Creative Thinking Process and Methods</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	Creative Design process is the sequence of different steps involved in the act of designing and creative design methods are the different techniques that can be used for the generating creative solutions. The course will give an overall understanding of this.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Creative problem solving process and methods</li> <li>. Introduction to Brain storming, syntectics, etc.</li> <li>. Creative thinking experience in multiple modes of intelligence (visual, verbal, mathematical, musical, spatial (Theatrical))</li> <li>. Creativity and personality growth. Reflective thinking and self-discovery</li> <li>. Mappings, Affinities and Concept Maps</li> <li>. Understanding Users, Environments and Artifacts</li> <li>. Primary and secondary Research Methods (HCI techniques)</li> <li>. Clustering of ideas for concept development</li> <li>. Participatory and collaborative design process</li> </ul>	
<b>Design Tasks:</b>	The students will identify a problem to solve and take it through the different stages of the creative design process making use of different creativity methods.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- De Bono Edward, Lateral Thinking, Penguin (UK), 1972</li> <li>- Sculley, John; Byrne, John A.; Odyssey: Pepsi to Apple... a Journey of Adventure, Ideas and the Future; Harpercollins; Reprint edition (1988)</li> <li>- Kelly Tom: The Art of Innovation, doubleday, NY , 2001</li> <li>- Cagan, Jonathan; Vogel, Craig M.; Creating Breakthrough Products: Innovation from Product Planning to Program Approval, Publisher: Financial Times Prentice Hall; 2002</li> <li>- Jones, J.C : Design methods: Seeds of human futures, Wiley inter science, London, 1992</li> <li>- Ulrich, Karl T., Eppinger, Steven D.; Product Design and Development, McGraw-Hill, 2011</li> <li>- Karl Aspelund; The Design Process, Fairchild Pubns, 2011</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nishant Sharma</li> <li>- Purbha Joshi</li> <li>- B. K. Chakravarthy</li> </ul>	

DE 231	Design, Society, Culture and Environment	2 0 0 4
<b>Aim:</b>	Design practice does not happen in isolation. The environment, society and culture provide the context within which a designer lives and works. A student of Design needs to understand this at an experiential level. In India the experience could vary from region to region even and design needs to be centered around social concern. The objective of the course would be to provide a sample experience by placing the student in an unfamiliar environment where s/he may learn to draw connections between the environment, cultural practices and problem solving by Design. They may also learn how communities solve problems in their own way.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Culture and Society</li> <li>. Design and Social Concern</li> <li>. Urban/Rural context/needs/problems</li> <li>. Social Structure and Identity</li> <li>. The Community, the Family and the Individual</li> <li>. What is 'Indian' and how it has been defined over time</li> <li>. Gandhian thoughts, Khadi, Rabindranath Tagores thoughts- Shilpa Sadan, Aurobindo and Mothers thoughts in auroville</li> <li>. Calendrical events: festivals, rituals, rites of passage</li> <li>. Design in everyday objects</li> <li>. Cultural artifacts, ritualistic artifacts, myths and legends</li> <li>. Observation and immersion</li> <li>. Interacting with strangers, self-reflexivity</li> <li>. Drawing as method of interaction, rapport-building, observation and documentation</li> <li>. Note-keeping, synthesizing observations</li> </ul>	
<b>Design Tasks:</b>	A seminar paper presentation/submission on cultural and contextual mapping of concerns and issues in a rural environment.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Papanek, Victor; <i>Design for the Real World: Human Ecology and Social Change</i>: Academy Chicago Publishers; 1985, 2 Revised edition ISBN-10: 0897331532 ISBN-13: 978-0897331531</li> <li>- Whitely, Nigel; <i>Design for Society</i> Publisher: Reaktion Books, 1997, ISBN-10: 0948462655 ISBN-13: 978-0948462658</li> <li>- Jain, Jyotindra; <i>India's Popular Culture: Iconic Spaces and Fluid Images</i>: Marg Publications, 2008, ISBN-10: 8185026815 ISBN-13: 978-8185026817</li> <li>- Basham, A.L; <i>The Wonder That Was India: A Survey of the History and Culture of the Indian Sub-Continent Before the Coming of the Muslims</i>: Taplinger Pub Co., 1968, ISBN-10: 0800884507 ISBN-13: 978-0800884505</li> <li>- Sparke, P; <i>Introduction to Design and Culture in the 20<sup>th</sup> Century</i>, Routledge, 1986</li> <li>- Srinivas, M N; <i>The Remembered Village</i>: University of California Press, 1980</li> <li>- Kosambi, D D; <i>The Culture and Civilization of Ancient India in Historical Outline</i>, UBS Publishers, 2007</li> <li>- O'reilly, Karen; <i>Ethnographic Methods</i>: Routledge 2008</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nina Sabnani</li> <li>- P. Kumaresan</li> </ul>	

<b>DE 221</b>	<b>Design Studio III – Creative Explorations</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	The course will focus on creativity, ideation and generating several alternate solutions	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Creativity and Ideation methods – Brain Storming, Synectics and Lateral thinking</li> <li>. Design Explorations for Alternate Concepts</li> <li>. Exposure to Design Synthesis</li> <li>. Design Conceptualization and Visualisation</li> <li>. Idea sketching for alternate creative solutions</li> <li>. Personas, Scenarios and Story Boarding</li> <li>. Rapid Visualisation and Quick Mock-ups</li> </ul>	
<b>Design Tasks:</b>	Design of a system requiring creative explorations (for example it could be creative explorations of Bamboo or corrugated sheets as a material to come out with several products).	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Kelly Tom: The Art of Innovation, doubleday, NY , 2001</li> <li>- Prahalad C.K : The Fortune at The Bottom of The Pyramid, Wharton School Publishing, 2005</li> <li>- Baxter, Mike; Product Design - Practical Methods for the Systematic Development of New Products, Publisher: Chapman &amp; Hall, 1995</li> <li>- De Bono Edward, Lateral Thinking, Penguin (UK), 1972</li> <li>- Sculley, John; Byrne, John A.; Odyssey: Pepsi to Apple... a Journey of Adventure, Ideas and the Future; Harpercollins; Reprint edition (1988)</li> <li>- Cagan, Jonathan; Vogel, Craig M.; Creating Breakthrough Products: Innovation from Product Planning to Program Approval, Publisher: Financial Times Prentice Hall; 2002</li> <li>- Myerson, Jeremy; IDEO: Masters of Innovation, Publisher: te Neues Publishing Company 2001</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- R. Sandesh</li> <li>- Nishant Sharma</li> <li>- Purba Joshi</li> <li>- P. Kumaresan</li> </ul>	

# 4<sup>th</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 202 DE 204	Elective - 2D Visual Studies II or 3D Form Studies II	0	0	6	6.0
DE 206	Communication Theories, Visual Perception and Semiotics	1.5	0	3	6.0
DE 208	Design, Storytelling and Narratives	1.5	0	3	6.0
DE 232	Design, Media and Technology	2	0	0	4.0
	Institute UG Electives I/ Humanities UG Electives I	3	0	0	6.0
DE 222	Design Studio IV - Prototyping	1.5	0	3	6.0
DEP204	Summer Project (May or June) (focus on Social concerns)				6.0
	Total Credits for Semester IV				<b>40.0</b>

<b>DE 202</b>	<b>2D Visual Studies II – Typography, Image and Composition</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand, experiment and explore the use of type and images in compositions and layouts	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Typography and layouts - symmetrical and asymmetrical layouts</li> <li>. Visual principles of text and image composition: grids and planned division of space</li> <li>. Design of dynamic layouts</li> <li>. Typography for print and digital media</li> <li>. Exposure to layouts in newspapers, magazines, webspaces, wayfinding, etc.</li> </ul>	
<b>Design Tasks:</b>	Explorations and application of Typography, Image and layouts in the design of signage systems, identity systems, social communications, etc.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Jute, Andre; <i>Grids : the structure of graphic design</i>. Crans-Pres-Celigny : Rotovision, 1996</li> <li>- Schmid Helmut, <i>Typography Today</i>, 2<sup>nd</sup> Edition, Seibundo Shinkosha, 2003.</li> <li>- Weingart Wolfgang, <i>Typography</i>, Lars Muller Publishers, 2000.</li> <li>- Swann, Cal. <i>Language and Typography</i>. London : Lund Humphries, 1991.</li> <li>- Rand, Paul; <i>Design, Form, and Chaos</i>, Yale University Press, 1993</li> <li>- Fletcher, Alan; <i>The Art of Looking Sideways</i>, Phaidon Press, 2001</li> <li>- Frutiger, Adrian; <i>Signs and Symbols: Their Design and Meaning</i>, Watson-Guption Publications, 1998</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nishant Sharma</li> <li>- Purbha Joshi</li> <li>- B. K. Chakravarthy</li> </ul>	

<b>DE 204</b>	<b>3D Form Studies II - Nature and Movement</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand, experiment and explore advanced form relationship and details in 3D	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Form and metaphors - inspirations from nature</li> <li>. Nature and Form - Biomimicry as inspirations</li> <li>. Form in Transition – movement in time and space</li> <li>. Exposure and demonstration of detailing with 3D modeling software</li> </ul>	
<b>Design Tasks:</b>	Exploration of 3D forms with inspirations from nature and experimentation with dynamic forms	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Maggie Macnab; Design by Nature: Using Universal Forms and Principles in Design, New Riders, 2011</li> <li>- Rudolf Finsterwalder; Form Follows Nature: A History of Nature as Model for Design in Engineering, Architecture and Art, Springer Vienna Architecture, 2011</li> <li>- Alan Powers; Nature in Design: The Shapes, Colors and Forms that Have Inspired Visual Invention, Conran, 2002</li> <li>- Ellen Lupton, Jennifer Tobias, Alicia Imperiale, Grace Jeffers, Randi Mates; Skin: Surface, Substance, and Design, Princeton Architectural Press, 2002</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nishant Sharma</li> <li>- Purbha Joshi</li> <li>- B. K. Chakravarthy</li> <li>- P. Kumaresan</li> </ul>	

<b>DE 206</b>	<b>Communication Theories, Visual Perception and Semiotics</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	The aim of the course is to understand the process of communication and the theories that make a difference to the development of a visual language.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Defining communication</li> <li>. Processing information – Coding &amp; Decoding</li> <li>. Sender, Channel and Receiver</li> <li>. Semiotics - signs and their meanings in Indian cultures</li> <li>. Study of relationships between Signifier, Signified and context, Denotation and Connotation</li> <li>. Communicating through gestures, voice, type and visuals</li> <li>. Designing visual messages to send meanings</li> <li>. Defining perception</li> <li>. Principles of 2 dimensional perception</li> <li>. Introduction to Gestalt laws of perception</li> <li>. Understanding Figure and ground and its relevance in design</li> </ul>	
<b>Design Tasks:</b>		
<b>References:</b>	<ul style="list-style-type: none"> <li>- Ronald H. Forgas; Perception; The basic process in cognitive development, USA, McGraw-Hill 1996</li> <li>- Arthaya, Seminar on Visual semantics, IDC, IIT Bombay 1992</li> </ul>	
<b>Faculty</b>	- Mandar Rane	



<b>DE 208</b>	<b>Design, Storytelling and Narratives</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	To introduce storytelling and narrative as a problem solving process	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Story, narrative and meaning making</li> <li>. Premise and problem statement</li> <li>. Characters and personas</li> <li>. Plot and Scenarios</li> <li>. Relationship between problem, need and conflict</li> <li>. Conflict, Action and Resolution</li> </ul>	
<b>Design Tasks:</b>	An assignment to explore story as a way of defining a design problem and its resolution	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Mike Korolenko, Bruce Wolcott; <i>Storytelling and Design: Media Literacy for the Digital Age</i>, Pearson Learning Solutions, 2005</li> <li>- Marie-Laure Ryan (editor); <i>Narrative across Media: The Languages of Storytelling</i>, University of Nebraska Press, 2004</li> <li>- Kristin M. Langellier and Eric E. Peterson; <i>Storytelling In Daily Life: Performing Narrative</i>, Temple University Press, 2004</li> </ul>	
<b>Faculty</b>	-Nina Sabnani	

<b>DE 232</b>	<b>Design, Media, Technology</b>	<b>2 0 0 4</b>
<b>Aim:</b>	To understand the connection between design, media and technology.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Communication and tools of Communication</li> <li>. Media and changing technologies</li> <li>. Potential of technology and its impact on society</li> <li>. Media artefacts and convergences</li> <li>. New Applications and ways of working</li> </ul>	
<b>Design Tasks:</b>	An assignment to explore and experiment with the relationship between Design, Media and Technology.	
<b>References:</b>	- Jacqueline M. Layng, Terre Layng Rosner, Terre Rosner; <i>Media Design: The Practice of Communication Technologies</i> , Prentice Hall, 2003	
<b>Faculty</b>	- Nina Sabnani	

<b>DE 222</b>	<b>Design Studio IV - Prototyping</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	To understand explore different prototyping techniques	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Soft prototyping and 3D quick models</li> <li>. Paper and quick mock –up models</li> <li>. Bookmaking prototyping methods</li> <li>. Keyframes and Animatics</li> <li>. Walkthroughs, Wireframes and Simulated Prototypes</li> <li>. Interactive prototyping methods</li> <li>. Introduction to Rapid Prototyping techniques</li> </ul>	
<b>Design Tasks:</b>	The design solution conceived in the course DE 210 is taken up for prototyping	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Mills, Criss B., <i>Designing with Models: A Studio Guide to Making and Using Architectural Design Models</i>, John Wiley and Sons, New Jersey 2005</li> <li>- Shimizu, Y., <i>Models &amp; Prototypes</i>, Graphic-sha Pub. Co., Tokyo, Japan, 1991</li> <li>- Sutherland, Martha, <i>Model Making: A Basic Guide</i>, WW Norton and Company, New York USA 1999</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Nishant Sharma</li> <li>- Mandar Rane</li> <li>- Pramod Khambette</li> <li>- P. Kumaresan</li> </ul>	

<b>DEP204</b>	<b>Summer Project in 2<sup>nd</sup> Year - with focus on Social Concerns</b>	<b>6.0 credits</b>
<b>Aim:</b>	The student takes up a summer project in order to explore an area of social concern. The student could choose a subject based on problems on any of these issues - global problems like water, food, warming; health related issues of HIV, Malaria, TB; Urban-Rural Problems, Migration, Craft and tradition, to those concerning the marginalized and people with special needs. The student should work on this problem as a design project in a design firm or with an NGO or in a research Institution.	
<b>Design Tasks:</b>	The student needs to make both a presentation of the work done as well as documentation of the design process in form of a report. The evaluation of the Summer Project is done internally with a panel of two faculty members.	
<b>Duration:</b>	For the duration of month during the May or June	
<b>Faculty</b>	- All faculty	

# 5<sup>th</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 303	Elective I and II:	0	0	6	6.0
DE 305	Information Graphics and Visualisation /	0	0	6	6.0
DE 307	Moving image Design /				
DE 309	Product Design-I				
DE 311	Design for Interactive Media /				
DE 313	Mobility and Vehicle Design				
DE 315	3D modeling and prototyping /				
DE 315	Applied Ergonomics	1.5	0	3	6.0
DE 331	Design, Technology and Innovation	2	0	0	4.0
	Institute UG Electives II / Humanities	3	0	0	6.0
	UG Electives II				
DEP 301	Collaborative Design Project				6.0
	Total Credits for Semester V				<b>34.0</b>

<b>DE 303</b>	<b>Information Graphics and Visualisation</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand and information design principles for creating visual graphics and visualizations	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Syntactic and semantic aspects of information design.</li> <li>. Understanding information graphics from simple to complex representations.</li> <li>. Study of visual display of quantitative and qualitative information.</li> <li>. Information structuring and principles of Visualisation, Visualisation of events, Activity in terms of time and space representations.</li> <li>. Understanding of charts, maps and diagrams</li> <li>. Explorations in visualizing dynamic information</li> <li>. Design of dynamic information</li> </ul>	
<b>Design Tasks:</b>	Exercises to explore, experiment and create visual maps, diagrams, and graphics based on current issues and themes. The students take up a design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Jaques Bertin; Graphic information processing, Walter Degruyter.</li> <li>- Herdeg, Walter; Graphic diagrams, The graphic press, Tufte, Switzerland.</li> <li>- Tufte, Edward R; Visual display of quantitative information. Graphic Press, USA. 1993.</li> <li>- Tufte, Edward R; Envisioning Information. Graphis Press</li> <li>- Tufte, Edward R; Visual Explanations-images and quantities, evidence and narrative.</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Mandar Rane</li> <li>- G. V. Sreekumar</li> </ul>	

<b>DE 305</b>	<b>Moving Image Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>	This course is intended to introduce study and analysis of moving images/cinema. Through film screenings and discussions, students are exposed to the persuasive power of film and its ability to communicate to the viewer	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. History of cinema, its development as art and as an industry</li> <li>. Film theory and analysis</li> <li>. Documentary, narrative and experimental films</li> <li>. Cinema as propoganda</li> <li>. World Cinema, Indian Cinema (main stream and parellel)</li> <li>. Digital Cinema, new filmmakers and the influence of internet.</li> </ul>	
<b>Design Tasks:</b>	<p>The students choose a topic of interest, script, storyboard, plan, video shoot and edit the video.</p> <p>The students take up an moving image design challenge and solve it during the course with discussions and inputs from the faculty mentors.</p>	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Rodriguez, Robert, Rebel without a Crew: Or How a 23-Year-Old Filmmaker With \$7,000 Became a Hollywood Player, Publisher: Penguin Group; First Plume Printing, September 1996.</li> <li>- Murch, Walter, In the Blink of an Eye Revised 2nd Edition, Publisher: Silman-James Pr; 1st edition (April 1995)</li> <li>- Dix, Andrew, Beginning film studies, Publisher: Manchester University Press, 15-Jul-2008</li> <li>- Ray, Satyajit, Our Films Their Films, Publisher: Orient Longman Pvt. Ltd., Third Edition, 1993</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Sudesh Balan</li> <li>- Sumant Rao</li> </ul>	

<b>DE 307</b>	<b>Product Design I</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand the essentials of product design process and be able to make use of different methods for designing products	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Understanding users, defining their needs and defining the problem to solve</li> <li>. Methods for creating creative concepts - exploration of alternative solutions</li> <li>. Mapping the functional requirements to possibilities of form</li> <li>. Considerations of user requirement, ergonomics, function, materials and processes</li> </ul>	
<b>Design Tasks:</b>	The students take up a product design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Asimov Morris: Introduction to Design, Prentice hall, Englewood Cliffs, NJ 1962</li> <li>- Jones, J.C; Design methods: Seeds of human futures, Wiley interscience, London 1992</li> <li>- Kevin Otto and Kristen Wood, Product design: Techniques in Reverse Engineering and New Product development, Prentice Hall, USA, 2001</li> <li>- Ulrich, Karl T, Eppinger, Steven D Product design and development, McGraw-Hill 2004</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- R. Sandesh</li> <li>- Kadiru Ramachandran</li> <li>- B. K. Chakravarthy</li> <li>- P. Kumaresan</li> </ul>	

<b>DE 309</b>	<b>Design for Interactive Media</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand the principles of interactive medias and be able to design for these medias	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Morphology of Interactive medias</li> <li>. Storytelling and narratives in Interactive medias</li> <li>. Experience design and interactive medias</li> <li>. Information Structuring, time and space for Interactive Medias</li> <li>. Design of multi-modal interfaces for text, graphics, animation, video, audio, games, etc.</li> <li>. Designing interactive medias for public use - installations, Museums and community facilities</li> </ul>	
<b>Design Tasks:</b>	<p>Assignment to explore and experiment with different interactive medias.</p> <p>The students take up an interactive design challenge and solve it during the course with discussions and inputs from the faculty mentors.</p>	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Manovich, Lev ; The Language of New Media. Cambridge, MIT Press, 2001</li> <li>- Lambert, Joe; Digital Storytelling: Capturing Lives, Creating Community, Life on the Water Inc, 2008</li> <li>- Wardrip-Fruin, Noah (Editor); Montfort, Nick (Editor): The New Media Reader, MIT Press, 2003 ISBN 0262232278</li> <li>- Alexander, Bryan; The New Digital Storytelling: Creating Narratives with New Media, Praeger, 2011</li> <li>- Klanten, Robert; Interactive Installations and Experiences, Die Gestalten Verlag, 2011</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Ravi Poovaiah</li> <li>- Anirudha Joshi</li> <li>- Pramod Khambette</li> </ul>	

<b>DE 311</b>	<b>Mobility and Vehicle Design I</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand the essentials of mobility and vehicle design process and be able to make use of different methods for designing related products	
<b>Content:</b>	<ul style="list-style-type: none"> <li>• A brief history of automobiles; from Coach building to Mass Production</li> <li>• Vehicle Types, Configurations. Vehicle Construction and Architecture, Trends and Developments</li> <li>• Vehicle Design process, Concept to Realization</li> <li>• Vehicle Ergonomics and Packaging</li> <li>• Styling/ Vehicle Form, Vehicle Aerodynamics and Form, Brand Styles and Values, Styling Trends</li> </ul> <p>Concept Sketching and Presentation Skills, CAD Skills, Modelling skills</p>	
<b>Design Tasks:</b>	The students take up a mobility and vehicle design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Haajanen, L. W. &amp; Nydén, B., Illustrated Dictionary Of Automobile Body Styles, Mcfarland &amp; Co., Jefferson, N.C., 2002</li> <li>- Lamm, M. &amp; Holls, D. A Century Of Automotive Style: 100 Years Of American Car Design, Lamm-Morada Pub. Co., Stockton, Calif., 1996</li> <li>- Lewin Tony, Broff, Ryan, How To Design Cars Like A Pro, Mbi Publishing Company, MN, USA, 2003</li> <li>- Norbye, J. P., Car Design: Structure &amp; Architecture, Tab Books, Blue Ridge Summit, PA, 1984</li> <li>- Sparke, P., A Century Of Car Design, Mitchell Beasley, London, 2002</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Kadiru Ramachandran</li> <li>- Nishant Sharma</li> </ul>	

<b>DE 313</b>	<b>3D Modeling and Prototyping</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To understand explore different prototyping techniques	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Modeling and Prototyping Techniques with the materials including timber, plaster, plastics, and metals.</li> <li>. Vacuum Forming and Mould Making</li> <li>. Introduction to the industrial clay and the techniques used in making clay models</li> <li>. Clay Modelling is an important step in the 3D design process, and in many professional studios designers are required to make preliminary proposals in clay</li> <li>. Introduction to 3D CAD using state of art CAID software for product design and development. The focus is on creating advanced 3D models both for model-making, production and advanced visualization</li> <li>Introduction to contemporary methods for prototyping like Rapid Prototyping, CNC milling. Flow of CAD data from sketch to prototypes and production.</li> </ul>	
<b>Design Tasks:</b>	The design solution conceived in the course DE 206 is taken up for prototyping	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Lefteri, Chris, Making it : Manufacturing Techniques for Product Design, Laurence King, London, 2007</li> <li>- Mills, Criss B., Designing with Models: A Studio Guide to Making and Using Architectural Design Models, John Wiley and Sons, New Jersey 2005</li> <li>- Shimizu, Y., Models &amp; Prototypes, Graphic-sha Pub. Co., Tokyo, Japan, 1991</li> <li>- Sutherland, Martha, Model Making: A Basic Guide, WW Norton and Company, New York USA 1999</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Kadiru Ramachandran</li> <li>- Nishant Sharma</li> <li>- Phani Tetali</li> </ul>	

<b>DE 315</b>	<b>Applied Ergonomics</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	The aim of this course is to understand the capabilities and limitations of human body in terms of both performing work as well as for comfort. The course will be useful to many disciplines of design taking into considerations of visual, product and transportation ergonomics.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Definition of Ergonomics and it's application and overview</li> <li>. The concept of Man Machine Environment system</li> <li>. Overview of Human body and <b>it's sub</b> systems</li> <li>. Understanding musculoskeletal system and it's function in terms of manual activities</li> <li>. Understanding nervous system, human sensory organs and their limitations.</li> <li>. Basic Bio mechanics and it's application in design</li> <li>. Anthropometry and its application</li> <li>. Understanding nervous system, human sensory organs and their limitations.</li> <li>. Issues of cognition, perception and performance</li> <li>. Study of work posture and it's impact on human performance</li> <li>. Physical environment and their impact on human performance</li> </ul>	
<b>Design Tasks:</b>	The course will involve experimentations to understand the principles of ergonomics. These principles are to be applied in simple design of objects, environments and interfaces.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Bridger, RS: Introduction to Ergonomics, 2nd Edition, Taylor &amp; Francis, 2003.</li> <li>- J. Dul, and B. Weerdmeester, Ergonomics for beginners, a quick reference guide, Taylor &amp; Francis, 1993.</li> <li>- C. D. Wicknes, S. E. Gordon, and Y. Liu, An Introduction to Human Factors Engineering, Longman, New York, 1997</li> <li>- E. Grandjean : Fitting the task to the man, Taylor &amp; Francis Ltd. 1980.</li> <li>- P. W. Jordan and W. S. Green (edit): Human Factors in Product Design- current practice and future trends, Taylor Francis, London, 1999.</li> <li>- J. Ansel, Visual ergonomics in the workplace, Taylor &amp; Francis, London, 1998</li> <li>- G. Salvendy, (edit), Handbook of Human Factors and ergonomics, John Wiley &amp; Sons, Inc., 1997</li> <li>- W. Karwowski and W. S. Marras, The Occupational Ergonomics handbook, CRC Press, New York, 1999.</li> <li>- M. S. Sanders And E. J. McCormick, Human Factors in Engineering and Design, McGraw-Hill, Inc., 1993.</li> <li>- K. Kroemer, H. B. Kroemer and K. E. Kroemer, Ergonomics- How to Design for Easy and Efficiency, Prentice Hall Englewood Cliffs, NJ 07632, 1994.</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- G. G. Ray</li> <li>- N. Sadhu</li> </ul>	

<b>DE 331</b>	<b>Design, Technology and Innovation</b>	<b>2 0 0 4</b>
<b>Aim:</b>	To understand the relation between design and innovation	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. History of Innovation – great innovations that have shaped mankind</li> <li>. Relation between Design and Innovation</li> <li>. Factors for Innovation – from problem framing to reframing</li> <li>. Culture of innovation – understanding needs, cross-connections, limits and challenges</li> <li>. Problem-solving strategies that lead to innovation</li> <li>. Collaborative methods to enable innovation</li> </ul>	
<b>Design Tasks:</b>	A seminar paper presentation/submission on a concern that is of importance to the above topic.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, HarperBusiness, 2009</li> <li>- Steven Johnson; Where Good Ideas Come From: The Natural History of Innovation, Riverhead, 2010</li> </ul>	
<b>Faculty</b>	- B. K. Chakravarthy	

<b>DEP301</b>	<b>Collaborative Design Project</b>	<b>6 credits</b>
<b>Aim:</b>	Collaborative design project would allow for students to work as a group simulating a professional set-up trying to solve system level design issues, assuming different roles and responsibilities. It involves the students having different skills and strengths working as a team solving a relatively complex design problem. This course is open to interested B tech students to encourage collaboration among cross- disciplines.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Inter-disciplinary team effort - The learning is on working collaboratively in groups to solve design problems.</li> <li>. Group enquiry, ideation and brainstorming</li> <li>. Creating project spaces and environments to facilitate innovation</li> <li>. User participatory design process - Iterative designing with user feedback</li> <li>. The project will encourage collaboration with students from other specializations, disciplines or institutes or with professionals from the industry.</li> </ul>	
<b>Design Tasks:</b>	The students will take up a common problem and solve it as a group with collaborative efforts.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Stephen A.R. Scrivener, Collaborative Design: Proceedings of CoDesigning 2000, Springer, 2000</li> <li>- Jesper Simonsen, Routledge International Handbook of Participatory Design, Routledge, 2012</li> <li>- David Holston, The Strategic Designer: Tools &amp; Techniques for Managing the Design Process, How Books, 2011</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- B. K. Chakravarthy</li> <li>- Ravi Poovaiah</li> </ul>	



# 6<sup>th</sup> Semester

Course Number	Course Name	L	T	ST	Total Credits
DE 302	Elective I and II: Animation Design	0	0	6	6.0
DE 304	Communication Design /	0	0	6	6.0
DE 306	Film-Video Design /				
DE 308	Product Design II /				
DE 310	Interaction Design /				
DE 312	Transportation Design /				
DE 314	Game Design /				
DE 316	Product Ergonomics				
DE <u>322</u> DE <u>324</u>	Elective III: Materials and Processes / Digital Media Technologies	1.5	0	3	6.0
DE 332	Design Management, Planning and Professional Practice	2	0	0	4.0
	Institute UG Electives III / Humanities UG Electives III	3	0	0	6.0
DEP 302	System Design Project				6.0
DEP 304	Summer Project (May or June) (focus on Industry Experience)				6.0
	<b>Total Credits for Semester VI</b>				<b>40.0</b>

<b>DE 302</b>	<b>Animation Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>	The course on Animation design involves the following: Study of Animation Techniques & styles, Animation Process – Pre Production, Production and Post Production, Understanding Visual Form, Animation Methods, Animation Production Planning, Estimation and Distribution	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Study of Animation Techniques &amp; styles developed and used over the years in animation.</li> <li>. Entire animation process from script to screen in process for an animation film (short or feature)</li> <li>. Overview of the Animation Process - Preproduction, Production, Post Production</li> <li>. Exploring the look and feel for animation through concept art</li> <li>. Planning character design, layout design, illustration style, composition, staging, backgrounds</li> <li>. An exposure to various animation techniques</li> <li>. Workshops using both 2D and 3D techniques on Computer, Film, Video etc.</li> <li>. Production of professional stop-motion animation puppet and usable set props.</li> <li>. Animation Production Planning, Estimation and Distribution</li> </ul>	
<b>Design Tasks:</b>	The course will involve doing animation design projects. The students take up an animation design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Ed Hooks, Acting for Animators Heinemann, Reed Elsevier, 2000</li> <li>- Eadweard Muybridg, The Human Figure in Motion, Dover Publication Inc., NY, 1995</li> <li>- Richard William, The Animators Survival Kit, Faber and Faber, New York, London, 2002</li> <li>- Shamus Culhane, Animation from script to screen, St.Martin's Griffin Press, NY, 1990</li> <li>- Kit Laybourne, The Animation Book, Crown Trade Paperbacks, NY, 1998</li> <li>- Tony White, The Animator's Workbook- Step by Step Technique of Drawn Animation, Watson-Guption Publications, 1988</li> <li>- Mascelli Joseph V, The Five C's of Cinematography: Motion Pictures Filming Techniques, Silman-James Press, 1998</li> <li>- Daniel Arijon, Film Technique, Silman-James Press, 1991</li> <li>- David Sonnensch, Sound Design: The Expressive Power of Music, Voice and Sound Effects in Cinema, Michael Wiese Productions, 2001</li> <li>- David Lewis Yewdall, Practical Art of Motion Picture Sound, Second Edition, Focal Press, 2003</li> <li>- Tomlinson Holman, Sound for Film and Television, Second Edition, Focal Press, 2001</li> <li>- Stephen Missal, Exploring Drawing for Animation (Design Exploration Series), Thomson Delmar Learning, 2003</li> <li>- Chris Patmore; The Complete Animation Course: The Principles, Practice, and Techniques of Successful Animation, Barron's Educational Series, 2003</li> <li>- Catherine Winder and Zahra Dowlatabadi - Producing Animation – Focal Press, 2001</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Phani Tetali</li> <li>- Nina Sabnani</li> <li>- Sumant Rao</li> <li>- Shilpa Ranade</li> </ul>	

<b>DE 304</b>	<b>Communication Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>	The aim of this course is to give an advanced understanding of application of visual design to solving communication design problems.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Understanding design as applied to solving communication problems within the context of our society</li> <li>. Structuring information in terms of classifications, hierarchy, order, sequence, etc.</li> <li>. Design of magazine, textbook, picture books, Children's books, exhibition, website, e-book, etc.</li> </ul>	
<b>Design Tasks:</b>	The students take up a communication design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Meggs, Phillip B.; Type and Image: the language of graphic Design, VNR, 1992</li> <li>- R. Carter, D. B. Meg Phillip, Typographic Design: Form and Communication, John Wiley &amp; Sons, 2000</li> <li>- Kimberly Elam , Grid Systems: Principles of Organizing Type (Design Briefs), Princeton Architectural Press, 2004</li> <li>- Erik Spiekermann, E.M Ginger; Stop Stealing Sheep &amp; Find Out How Type Works, Second Edition, Adobe Press; 2 edition, 2002</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Mandar Rane</li> <li>- G. V. Sreekumar</li> </ul>	

<b>DE 306</b>	<b>Film-Video Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>	This course introduces hands on filmmaking for developing the necessary skills needed during design process, like documentation and presentation.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Pre-production: Concept development, Script writing, production planning</li> <li>. Production: Digital film cameras, Lens, Accessories Digital Image; technology, Formats Digital Sound Recording, Formats and techniques</li> <li>. Post production: Editing, audio, color correction, display and distribution</li> </ul>	
<b>Design Tasks:</b>	The students take up a film and video design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Steven Ascher, Edward Pincus, The Filmmaker's Handbook: A Comprehensive Guide for the Digital Age, Publisher: Penguin Group; New edition, 2008</li> <li>- Katz, Steven D., Film Directing Shot by Shot: Visualizing from Concept to Screen, Publisher: Michael Wiese Productions; 1991</li> </ul>	
<b>Faculty</b>	- Sudesh Balan	

<b>DE 308</b>	<b>Product Design II</b>	<b>0 0 6 6</b>
<b>Aim:</b>	Advanced understanding of the product design process	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Product function, structure, form and ergonomic relationship</li> <li>. Situation/ Context of use, users, market research, and product research with a focus on materials and processes.</li> <li>. Analysis of research information and identification of problem areas leading to a problem statement and articulation of constraints</li> <li>. Methods/ Techniques for evolution of creative alternative concepts</li> <li>. Validation of concepts through Exploratory Mock ups from the point of view of functionality, ergonomics, form etc, by the users and other stakeholders.</li> <li>. Finalisation of the concept, preparation of final model, technical drawings and other supporting documentation</li> </ul>	
<b>Design Tasks:</b>	The students take up a product design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Brenda Laurel, Design Research: Methods and Perspectives, The MIT Press, US, 2003</li> <li>- Jonathan Cagan, Craig M. Vogel, Creating Breakthrough Products: Innovation from Product Planning to Program Approval, Pearson Education, 2007</li> <li>- Kevin Otto and Kristen Wood, Product design: Techniques in Reverse Engineering and New Product development, Prentice Hall, USA, 2001</li> <li>- Lefteri, Chris, Making it : Manufacturing Techniques for Product Design, Laurence King., London, 2007</li> <li>- Mike Baxter, Product Design: Practical Methods for Systematic Development of New Products, Taylor &amp; Francis, 1995</li> <li>- Nigel Cross, Engineering Design Methods: Strategies for Product Design, Willey, 2000</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Kadiru Ramachandran</li> <li>- Nishant Sharma</li> </ul>	

<b>DE 310</b>	<b>Interaction Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>	To Understand the design process for solving interaction design problems that can involve products, services and environments.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Use of HCI methods (Contextual Enquiry, Focus Groups, Interviews, etc.) for understanding the user and his requirement.</li> <li>. Understanding the factors that define user experience.</li> <li>. Design of multi-modal interfaces, expressive interfaces, audio interfaces, tangible interfaces and gestural interfaces.</li> <li>. Design of interactive systems, products for future use, Collaborative products to be used in groups, devices for rural applications and devices for use in public places.</li> </ul>	
<b>Design Tasks:</b>	The course will involve doing interactive design projects. Students need to build soft prototypes of proposed systems at the end of the course. The students take up an interaction design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Norman, Donald A.; Invisible Computer: Why Good Products Can Fail, the Personal Computer Is so Complex and Information Appliances Are the Solution; MIT Press (1998)</li> <li>- Laurel, Brenda; Computer as Theater; Addison-Wesley Pub Co (1993)</li> <li>- Raskin, Jef; The Humane Interface: New Directions for Designing Interactive Systems; Pearson Education (2000)</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Anirudha Joshi</li> <li>- Ravi Poovaiah</li> <li>- Pramod Khambette</li> </ul>	

<b>DE 312</b>	<b>Transportation Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>		
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Vehicle Design Process</li> <li>. Vehicle Product Planning, Product Brief, User Study,</li> <li>. Concept Generation,</li> <li>. Concept Presentation,</li> <li>. Theme Selection,</li> <li>. Rendering,</li> <li>. Tape Drawing,</li> <li>. 3D and Computer Model Development,</li> <li>. Design Evaluation.</li> </ul>	
<b>Design Tasks:</b>	The students take up a transportation design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Armi, C. E. American Car Design Now: Inside The Studios Of Today's Top Car Designers, Rizzoli : Distributed In The U.S. Trade By St. Martin's Press, New York, 2003</li> <li>- Armi, C. E., Hodge, B., Keeley, D. &amp; Museum Of Contemporary Art (Los Angeles Calif.), Retrofuturism: The Car Design Of J Mays, Universe Pub., Museum Of Contemporary Art, New York, Ny, Los Angeles, Calif., USA 2002</li> <li>- Evenden, Helen, Moving Forward: New Directions In Transport Design, Helen Evendon, London , 2007</li> <li>- Lewin Tony, Broff, Ryan, How To Design Cars Like A Pro, Mbi Publishing Company, Mn, USA, 2003</li> <li>- Macey, S., Wardle, G., H-Point: The Fundamentals Of Car Design &amp; Packaging, Design Studio Press, Culver City Ca, USA 2008</li> <li>- Powell, Dick, Presentation Techniques: A Guide To Drawing And Presenting Design Ideas, Little, Brown, Boston, 1994</li> <li>- Shimizu, Y., Models &amp; Prototypes, Graphic-Sha Pub. Co., Tokyo, Japan, 1991</li> <li>- Taylor, Thom, Hallet, Lisa- How To Draw Cars Like A Pro, Mbi Publishing Company, MN, Usa 1996</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Kadiru Ramachandran</li> <li>- Nishant Sharma</li> </ul>	

<b>DE 314</b>	<b>Game Design</b>	<b>0 0 6 6</b>
<b>Aim:</b>	This course is about the fundamentals of Game Design with details on learning the process of designing a game. The course familiarises the students to Computer game design, the difference in approach, the technologies involved, to understand the production processes in Computer game design and how it is practiced in the industry.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Game Design – an introduction (Game Theory, Detailed Design Docs, Storytelling, Visual Storytelling, Critical Game Analysis)</li> <li>. Various Genres of Games</li> <li>. Various platforms in games and their differences</li> <li>. Game Art and a comparison with Art asset creation for animation</li> <li>. Game Art production techniques and technologies involved</li> <li>. Technology for game development (a study on various game engines)</li> <li>. A detailed look at a 3D game engine</li> <li>. Game Design Documents and Technical Design Document</li> <li>. Level Design</li> <li>. Sound, UI Design</li> <li>. Production pipelines in game production</li> <li>. The gaming industry, Producing and Distribution</li> <li>. Making a playable level</li> </ul>	
<b>Design Tasks:</b>	The students take up a game design challenge and solve it during the course with discussions and inputs from the faculty mentors.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Leo Hartas and Dave Morris, The Graphic Art of Computer Games, Watson-Guptill, 2003</li> <li>- Chris Crawford, Game Design, New Riders, 2003</li> <li>- Katie Salen and Eric Zimmerman, Rules of Play: Game Design Fundamentals, The MIT Press, 2003</li> <li>- Josh Jenisch, The Art of the Video Game by, Quirk Books, 2008</li> <li>- Jeannie Novak and Travis Castillo, Game Development Essentials: Game Level Design, Delmar Cengage Learning, 2008</li> <li>- Flint Dille and John Zuur Platten, The Ultimate Guide to Video Game Writing and Design, Lone Eagle, 2008</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Phani Tetali</li> <li>- V P Bapat</li> </ul>	

<b>DE 316</b>	<b>Product Ergonomics</b>	<b>0 0 6 6</b>
<b>Aim:</b>	This course is to specifically understand the role of ergonomics for product design applications	
<b>Content:</b>	. Understanding of Product Ergonomics . Ergonomics as applied to transportation design field . Physical ergonomic evaluation of any vehicle workstation	
<b>Design Tasks:</b>	The course will involve experimentations to understand the principles of ergonomics. These principles are to be applied in simple design of objects, environments and interfaces.	
<b>References:</b>	- Peacock, B. and Karwowski, W., 1993. Automotive ergonomics. London: Taylor & Francis Ltd. - William H. Cushman, Daniel J. Rosenberg, Human Factors in Product Design, Elsevier Science Pub Co, 1991 - Alvin R. Tilley (Editor), Stephen B. Wilcox (Introduction), Henry Dreyfuss assoc; The Measure of Man and Woman: Human Factors in Design, John Wiley & Sons, 2001 - Galer, I., 1987. Applied Ergonomics Handbook. 2nd ed. London: Butterworth & Co. Publishers Ltd. - Christopher P. Nemeth; Human Factors Methods for Design: Making Systems Human-Centered, CRC Press, 2004	
<b>Faculty</b>	- G. G. Ray - N. Sadhu	

<b>DE 322</b>	<b>Materials and Processes</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	Understanding of materials and the processes that are involved in manufacturing of products	
<b>Content:</b>	. Properties and usage of thermoplastics and thermosetting plastics. . . Process of selection and applications of plastics for engineering and consumer products. . Design limitations and specific advantages of plastic molding processes. . Properties, detailing and use of rubber, ceramics and glass. . Properties of natural materials like wood, bamboo, cane, leather, cloth, jute and paper and their use at craft and industry.	
<b>Design Tasks:</b>	In addition to factory visits to see and experience different processes, the students will be asked to de-construct products, identify materials and processes and suggest improvements.	
<b>References:</b>	- Garratt J.: Design and Technology, Cambridge University Press, UK, 2004 - Thompson R.: Manufacturing processes for design professionals, Thames & Hudson, London 2007 - Ashby, Michael; Johnson, Kara; Materials and Design: The Art and Science of Material Selection in Product Design, Publisher: Butterworth-Heinemann; 2002	
<b>Faculty</b>	- V P Bapat - Nishant Sharma	

<b>DE 324</b>	<b>Digital Media Technologies</b>	<b>1.5 0 3 6</b>
<b>Aim:</b>	Understanding of different media technologies	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. An overview of the media industry – print and publishing, TV and Video, Web and e-books, Movie and Animation.</li> <li>. Introduction to web specifications.</li> <li>. Introduction to Paper, specifications and its variations</li> <li>. Introduction to printing technologies.</li> <li>. Introduction to Video production and TV industry.</li> <li>. Introduction to the animation and movie industry.</li> </ul>	
<b>Design Tasks:</b>	In addition to studio and factory visits to see and experience different medias, the students will be asked to de-construct media products, identify key factors in its production and suggest improvements.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Harald Johnson; Mastering Digital Printing, Second Edition (Digital Process and Print), Course Technology PTR, 2004</li> <li>- David Bann; The All New Print Production Handbook, Watson-Guptill, 2007</li> <li>- Eve Light Honthaner; The Complete Film Production Handbook, Focal Press, 2010</li> <li>- Jim Owens, Gerald Millerson; Video Production Handbook, Focal Press, 2011</li> <li>- Catherine Winder, Zahra Dowlatabadi, Tracey Miller-Zarneke; Producing Animation, Focal Press, 2011</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- G. V. Sreekumar</li> <li>- Sudesh Balan</li> <li>- Sumant Rao</li> </ul>	

<b>DE 332</b>	<b>Design management, Planning and Professional Practice</b>	<b>2 0 0 4</b>
<b>Aim:</b>	To look at the process of design from a perspective of continuity and future growth potentials. To understand the requirement of strategy and planning to achieve this. To expose the students to the particulars of Professional Practice of Design, introduction to design management of design and details of design patents and registrations.	
<b>Content:</b>	<p>Product Planning for the future</p> <ul style="list-style-type: none"> <li>. Product Life Cycle management</li> <li>. Planning for redesign</li> <li>. Strategy for product differentiation and identity</li> <li>. Models of entrepreneurship</li> <li>. Exposure to successful firms that are based on sound design principles</li> <li>. How to set up an independent office, method of charging, preparing project schedules, etc.</li> <li>. Study of Intellectual property Rights and design registration procedures</li> </ul>	
<b>Design Tasks:</b>	A seminar paper presentation/submission on a case study of a successful design firm/organisation.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- Kathryn Best, The Fundamentals of Design Management, AVA Publishing, 2010</li> <li>- Brigitte Borja De Mozota, Design Management: Using Design to Build Brand Value and Corporate Innovation, Allworth Press, 2004</li> <li>- Ted Crawford, AIGA Professional Practices in Graphic Design, Allworth Press, 2008</li> <li>- Shan Preddy, How to Run a Successful Design Business: The New Professional Practice, Gower Publishing, Ltd., 2011</li> <li>- Kenneth B Khan, Product Planning Essentials, M E Sharpe Inc, 2011</li> <li>- John Stark; Product Lifecycle Management: 21st Century Paradigm for Product Realisation, Springer, 2011</li> <li>- Craig M. Vogel, Jonathan Cagan, Creating Breakthrough Products: Innovation from Product Planning Program Approval, FT Press, 2001</li> <li>- David L. Rainey; Product Innovation: Leading Change through Integrated Product Development, Cambridge University Press, 2011</li> </ul>	
<b>Faculty</b>	- B. K. Chakravarthy	



<b>DEP302</b>	<b>Systems Design Project</b>	<b>6 credits</b>
<b>Aim:</b>	The aim of this project is to understand how to design for applications that require a whole lot of variations and adoptability	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Design of system level solutions so that design can be thought of modularly as suited for different combinations and applications.</li> <li>. Understanding, strategizing, conceptualising and designing for complex systems.</li> <li>. Designing complex artifacts</li> <li>. Design solutions that are suitable for transportation, education, publishing, retailing, etc.</li> </ul>	
<b>Design Tasks:</b>	The students will solve a system level problem and will have to come out with appropriate solutions by the end of the project.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- John Thackara; In the Bubble: Designing in a Complex World, The MIT Press, 2005</li> <li>- Bruce Hanington, Bella Martin, Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions, Rockport Publishers, 2012</li> <li>- Donald A. Norman, Living with Complexity, MIT Press, 2010</li> <li>- Jeffrey Whitten and Lonnie Bentley, Systems Analysis and Design Methods, McGraw-Hill/Irwin, 2005</li> <li>- Gerald M. Weinberg, Daniela Weinberg, General Principles of Systems Design, Dorset House, 1988</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Ravi Poovaiah</li> <li>- R Venkatesh</li> <li>- V P Bapat</li> <li>- K Chakravarthy</li> </ul>	

<b>DEP304</b>	<b>Summer Project in 3rd Year - with focus on Industry Experience</b>	<b>6 Credits</b>
<b>Aim:</b>	<p>The student takes up a summer project suitable to pursue his own area of interest. This project is to help him get a hands on experience in working on a live project.</p> <p>The student should work on this problem as a live design project in a industry / in a design firm / with an NGO / in an innovation lab / in a research Institution.</p>	
<b>Design Tasks:</b>	<p>The student needs to make both a presentation of the work done as well as documentation of the design process in form of a report.</p> <p>The evaluation of the Summer Project is done internally with a panel of two faculty members.</p>	
<b>Duration:</b>	For the duration of a month during May or June	
<b>Faculty</b>	- All faculty	

# 7<sup>th</sup> Semester [Exchange Semester with other Institutes]

Course Number	Course Name	L T ST	Total Credits
DE 431	Global Design Thoughts and Discourse	2 0 0	4.0
DEP 401	Re-Design Project		24.0
DEP 403	Design Research Seminar I		6.0
	Total Credits for Semester VII		<b>34.0</b>

<b>DE 431</b>	<b>Global Design Thoughts and Discourse</b>	<b>2 0 0 4</b>
<b>Aim:</b>	To understand the significance of thoughts on design in the context of the globalised sustainable world	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. Understanding 'Form follows nature', 'Form follows Function' and 'Form follows emotion'</li> <li>. Understanding the concept of 'Less is more'</li> <li>. The role of aesthetics in society</li> <li>. The role of design in a sustainable world</li> <li>. Design in the context of a globalised world</li> <li>. Exposure to Indian and Asian thoughts on design</li> </ul>	
<b>Design Tasks:</b>	A seminar paper presentation/submission on an issue or concern of relevance to the world and the role of design in solving it.	
<b>Exchange students</b>	Students on exchange program who are out of the campus are required to attend the sessions virtually and participate in discussions.	
<b>References:</b>	<ul style="list-style-type: none"> <li>- William Lidwell, Kritina Holden, Jill Butler; Universal Principles of Design, Rockport Publishers, 2003</li> <li>- Stefano Marzano; Creating Value by Design: Thoughts and Facts, Antique Collectors' Club, 1999</li> <li>- Victor Papanek; Design for the Real World: Human Ecology and Social Change, Academy Chicago Publishers, 2005</li> <li>- Friedman, Thomas L.; The World Is Flat: A Brief History of the Twenty-first Century, Publisher: Farrar, Straus and Giroux, 2004</li> </ul>	
<b>Faculty</b>	<ul style="list-style-type: none"> <li>- Ravi Poovaiah</li> <li>- P. Kumaresan</li> <li>- R. Sandesh</li> <li>- Sumant Rao</li> </ul>	

<b>DEP 401</b>	<b>Re-Design Project</b>	<b>24 credits</b>
<b>Aim:</b>	The student will apply his learning until now in identifying problems to solve in an existing solution and redesign it by following a design process and come out with innovative and appropriate solutions	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. An independent student project based on student inclination and interest.</li> <li>. This project allows students to identify a problem to solve and then address different issues pertaining to various segments of society under different contexts and environments.</li> <li>. The project also encourages students to adopt appropriate design process and methods to solve the chosen problem.</li> </ul>	
<b>Design Tasks:</b>	<p>The outcome is the final design along with the documentation of the design process in form of a report along with a seminar presentation. The work will have to be defended in an open viva.</p> <p>The evaluation of the Re-Design Project is done internally with a panel appointed by the DPGC in consultation with the guide. The panel will consist of the guide and two other faculty members.</p>	
<b>Duration:</b>	from Mid July -November.	
<b>Faculty</b>	- All faculty	

<b>DEP403</b>	<b>Design Research Seminar I</b>	<b>6 credits</b>
<b>Aim:</b>	The aim is to give the students an opportunity to conduct design research and come out with a a paper on the subject of investigation	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. The research seminar involves student researching in an area related to design and is expected to produce new insights on the topic.</li> <li>. This will involve in-depth analysis of an area that is of interest to design.</li> <li>. The work may involve primary and secondary research, framing research questions, creative exploration of alternatives, choosing a suitable methodology for analysis, experimental set-ups and methodical documentation. The students are encouraged to make use of research methods for documentation, analysis and experimentation.</li> <li>. Use of photography, sketching, audio, video for research documentation purposes. The documented material is analyzed for inferences and insights.</li> <li>. Students are expected to explore new fields, materials and media, with a focus on analysis.</li> <li>. Students need to choose a topic in consultation with a faculty member and work under faculty guidance.</li> </ul>	
<b>Design Tasks:</b>	The outcome is expected to be an insightful report or paper on the chosen subject along with a seminar presentation. The students are encouraged to publish this as a paper in a design journal or present this as a paper in a conference.	
<b>Duration:</b>	from Mid July -November.	
<b>Faculty</b>	- All faculty	

# 8<sup>th</sup> Semester

Course Number	Course Name	L T ST	Total Credits
DEP 402	BDes Design Project		36.0
	Total Credits for Semester VIII		<b>36.0</b>
	<b>Total Credits for BDes programme</b>		<b>286.0</b>

DEP 402	BDes Design Project	36 credits
<b>Aim:</b>	This being the final project for the BDes program, the student is expected to apply all the knowledge and skills he has learnt in the last 7 semesters to solve a design problem and find an appropriate and innovative solution.	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. The project could be any of the following:               <ul style="list-style-type: none"> <li>a. Design project of student interest and / or faculty interest and / or industry project</li> <li>b. Re-design project that relooks at an existing problem or situation</li> <li>c. Research project, delving into methodological or pedagogic issues</li> <li>d. Exploration project, exploring application possibilities in a new technology or medium or variations</li> </ul> </li> <li>. This project would involve all aspects of the design process starting from problem identification to complete solution. The student is expected to make use of the knowledge and skills gained during the previous years to independently handle a design project.</li> <li>. The project can be multi-disciplinary in nature involving many of these disciplines – Product Design, Interaction Design, Communication Design, Animation, etc.</li> <li>. This project can also be sponsored by an industry or other organisations.</li> </ul>	
<b>Design Tasks:</b>	<p>The outcome is the final design along with the documentation of the design process in form of a report along with a seminar presentation. The work will have to be defended in an open viva.</p> <p>The evaluation of the Project III is done internally with a panel appointed by the DPGC in consultation with the guide. The panel will consist of the guide and two other faculty members.</p>	
<b>Duration:</b>	from January till April.	
<b>Faculty</b>	- All faculty	

# 9<sup>th</sup> Semester (for Dual Degree MDes program)

Course Number	Course Name	L	T	ST	Total Credits
DEP 404	Summer Project (May or June)				6.0
ID 803	Quantitative Design Research Methods	2	0	0	4.0
ID 804	Qualitative Design Research Methods	3	0	0	6.0
	Elective I from IDC MDes courses in 3 <sup>rd</sup> semester				6.0
	Elective II from IDC MDes courses in 3 <sup>rd</sup> semester				6.0
DEP 501	Design Research Project –part 1				18.0
	<b>Total Credits for Semester IX</b>				<b>46.0</b>

DEP304	Summer Project in 4th Year – with focus on Design Research	6 Credits
<b>Aim:</b>	The student takes up a summer project suitable to pursue his own area of interest. The student should be able to work as an intern in a design research project undertaken at an Industry / Institution / Research Lab.	
<b>Design Tasks:</b>	The student needs to make both a presentation of the work done as well as documentation of the design research process in form of a report. The evaluation of the Summer Project is done internally with a panel of two faculty members.	
<b>Duration:</b>	For the duration of a month during May or June	
<b>Faculty</b>	- All faculty	

DEP 501	Design Research Project – part I	18 credits
<b>Aim:</b>	To understand how to conduct research in the field of design	
<b>Content:</b>	. The project could be any of the following: a. Design project of student interest and / or faculty interest and / or industry project b. Research project, delving into methodological or pedagogic issues c. The project can be multi-disciplinary in nature involving many of these disciplines – Product Design, Interaction Design, Communication Design, Animation, etc. . This project can also be sponsored by an industry or other organisations.	
<b>Design Tasks:</b>	The outcome is the first part of the project that includes deep survey of literature, systematic understanding of the problem at hand by conducting primary research, methodical analysis of the information collected and framing the research questions. The output is in form of a report along with a seminar presentation. The work will have to be defended in an open viva. The evaluation of the Red-Design Project is done internally with a panel appointed by the DPGC in consultation with the guide. The panel will consist of the guide and two other faculty members.	
<b>Duration:</b>	from July – November.	
<b>Faculty</b>	- All faculty	

# 10<sup>th</sup> Semester (for Dual Degree MDes program)

Course Number	Course Name	L T ST	Total Credits
DEP 502	Design Research Seminar II		6.0
DEP 504	Design Research Project – part II		36.0
	Total Credits for Semester VIII		<b>42.0</b>
	<b>Total Credits for Dual Degree MDes programme</b>		<b>374</b>

DEP 502	Design Research Seminar II	6 credits
<b>Aim:</b>	The aim is to give the students an opportunity to conduct design research and come out with a paper on the subject of investigation	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. The research seminar involves student researching in an area related to design and is expected to produce new insights on the topic.</li> <li>. This will involve in-depth analysis of an area that is of interest to design.</li> <li>. The work may involve primary and secondary research, framing research questions, creative exploration of alternatives, choosing a suitable methodology for analysis, experimental set-ups and methodical documentation. The students are encouraged to make use of research methods for documentation, analysis and experimentation.</li> <li>. Use of photography, sketching, audio, video for research documentation purposes. The documented material is analyzed for inferences and insights.</li> <li>. Students are expected to explore new fields, materials and media, with a focus on analysis.</li> <li>. Students need to choose a topic in consultation with a faculty member and work under faculty guidance.</li> </ul>	
<b>Design Tasks:</b>	The outcome is expected to be an insightful report or paper on the chosen subject along with a seminar presentation. The students are encouraged to publish this as a paper in a design journal or present this as a paper in a conference.	
<b>Duration:</b>	from Mid July -November.	
<b>Faculty</b>	- All faculty	

DEP 504	Design Research Project – part II	36 credits
<b>Aim:</b>	To understand how to conduct research in the field of design	
<b>Content:</b>	<ul style="list-style-type: none"> <li>. This is a continuation of the project from the previous semester.</li> <li>. The students need to publish this as a paper in a design journal or present this as a paper in a conference.</li> </ul>	
<b>Design Tasks:</b>	<p>The outcome is the final research outcome along with the documentation of the design research process in form of a report along with a seminar presentation. The work will have to be defended in an open viva.</p> <p>A panel of examiners appointed by DPGC does the evaluation of the Project – part II. The panel will consist of external jury member along with an internal examiner, the guide and the chairman (A Professor or an Associate Professor from IIT Bombay)</p>	
<b>Duration:</b>	from December to April/June.	
<b>Faculty</b>	- All faculty	