**University of Management and Technology**

**Course Outline**

UMT’s Vision

***Our Vision is... Learning***

It defines our existence, inspires all stakeholders associated with us, creates a powerful momentum inside, and responds to the challenges outside. It continues to evolve as present captures new realities and foresight to unfold new possibilities. All in an incessant attempt to help individuals and organizations discover their God-given potentials to achieve Ultimate Success actualizing the highest standards of efficiency, effectiveness, excellence, equity, trusteeship and sustainable development of global human society.

UMT Mission

Our Mission is.... Leading

We aspire to become a learning institution and evolve as the LEADING COMMUNITY for the purpose of integrated development of the society by actualizing strategic partnership with stakeholders, harnessing leadership, generating useful knowledge, fostering enduring values, and projecting sustainable technologies and practices.

Mission of the School

The mission of the School is to provide the best leadership in the fields of the built environment; particularly in the development, management and innovation in the fields of architecture, urban planning and related specializations and sub-specializations

Mission of the Department

At the Department of Architecture our mission is to challenge the participants to develop their abilities in solving complex problems by thinking creatively & informed decision making as a core of their professional schooling. Offering them a diverse interdisciplinary and meticulous program of studies led by an adroit faculty in a comprehensive studios or class environment and preparing them for leadership roles in the field of Architecture, Construction, Landscape, Built Environment and community development.

**Program educational objectives (PEO’s) of Bachelor of Science in Building Design and Construction (BS-BDC)**

**Program Objectives**

The objective of the program is to prepare professionals in the design and construction of commercial, industrial, and institutional buildings and other facilities. The curriculum has been developed to inculcate the following objectives in the graduates.

**PEO 1:**  Able to acquire construction knowledge and skills, the graduates will serve the construction industry with professional integrity.

**PEO 2:** The graduates will pose decision-making and problem-solving abilities with reference to construction.

**PEO 3:** The graduates will respect the code of ethics for the construction profession.

**Program Learning Outcomes PLO’s**

Graduates of the BS. Building & Design at UMT are expected to have acquired and developed the following set of knowledge, skills and personality traits (these are also referred to as graduate attributes).

**PLO 1 Fundamental Knowledge of Building Construction:** An ability to apply knowledge of construction fundamentals through a comprehensive learning of building design language.

**PLO 2 Construction Analysis & Development of Sustainable Solutions:** Ability to analyze and develop solutions to complex building problems that meet specified needs with appropriate considerations for public health and safety, society, and environment.

**PLO 3** **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern software computer simulations, including prediction and modeling, to complex activities, with an understanding of the limitations.

**PLO 4 Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of building construction practice.

**PLO 5 Project Management:** An ability to demonstrate management skills and apply building construction principles to one’s own work as a member and/or leader in a team and to manage projects in a multidisciplinary environment.

**PLO 6 Lifelong Learning:** Ability to recognize the importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

**Course Learning outcomes (CLO’s)**

After studying this course, the students will be able to:

1. How to apply basic concepts of design to think architecturally. (C1)
2. Develop understandings about fundamentals of architecture. (C3)
3. Apply design fundamentals and principles in spatial organization. (C3)
4. Demonstrate the functional relationship of spaces and develop perception of 3 dimensional spaces w.r.t human scale and proportions.(C2.C3)
5. Improve creative and imaginative thinking abilities by exploring process of conceptual development. (C6)

**Learning Methodology:**

 In accordance with HEC curriculum **outcomes**, students at the end of the course should be able to

* Develop an attitude towards creative design thinking process.
* Acquiring a comprehensive understand of basic concepts and terms of basic design
* Understand application of design fundamentals in architecture
* Appreciate the importance of basic design concepts to start with.
* Acquire an ability to express their design intentions through oral, written and graphic presentation skills.

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

**Marks Evaluation Marks in percentage**

Assignments 65%

Mid Viva 10%

Final Viva + Final Project 25%

Total 100%

Course title - **BUILDING DESIGN – I**

|  |  |
| --- | --- |
| **Program** | BS.BDC |
| **Credit Hours** | 0+6 |
| **Duration** | 15 Weeks + Examination |
| **Prerequisites** | None |
| **Resource Person** | Alveena Fatima Hassan |
| **Counseling Timing****(Room# )** | As per timetable |
| **Contact** | alvina.fatima@umt.edu.pk0333-4357337 |

**Chairman/Director signature………………………………….**

**Dean’s signature…………………………… Date………………………………………….**

**Learning Objective:**

The aim of this basic introductory course is to broaden, stimulate and enhance the creative abilities of the student in terms of developing an awareness, understanding and appreciation of the basic concepts of design as observed in nature and the built environment.

Thinking and creativity are mental processes which have close connections and are similar to each other. Exploring and developing creative design ideas incorporating their understanding of Figure Ground Organization, Ordering principles of Spatial Organization while invariably incorporating Design Principles. Visual & Physical Textures /Patterns, Color Theory/Harmony, Concept of Scale and proportion in Solid /Void and Abstract Compositions using horizontal and vertical planes shall also be studied. Transformation of 2D compositions into 3D forms and exploration of their spatial characteristics complimented by use of harmonious colors.

**Learning Methodology:**

 In accordance with HEC curriculum **outcomes**, students at the end of the course should be able to

* Develop an attitude towards creative design thinking process.
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Final Viva + Final Project 25%

Total 100%

**Recommended Text Books:**

**Reference Books:**

1. Architecture: Space. Form & Order by Francis D.K Ching
2. The Process: A New Foundation in Art and Design By Richard Wilde and Judith Wilde
3. Color harmony a guide to creative color combinations Chijiiwa, Hideaki by Chijiiwa, Hideaki.
4. The art of using color a course in mastering the art of mixing colors Edwards, Betty by Edwards, Betty.
5. Color Studies Edith Anderson Feisner, Ronald Reed
6. Minbar of Saladin : Reconstructing A Jewel of Islamic Art by Lynette Singer, Thames and Hudson, 2008
7. Islamic Geometric Design by Eric Broug
8. Biomimicry: Innovation Inspired by Nature by [Janine M. Benyus](https://www.kirkusreviews.com/search/?q=Janine%20M.%20Benyus;t=author), Publisher: Quill, 1998
9. Organic architecture inspired by nature by Schleifer, Simone K.  Barcelona, Spain: [Loft Publications,](https://lrc.umt.edu.pk/cgi-bin/koha/opac-search.pl?q=Provider:Loft%20Publications%2C) 2010
10. Street Furniture by [Chris van Uffelen](https://www.google.com.pk/search?tbo=p&tbm=bks&q=inauthor:%22Chris+van+Uffelen%22) , Publisher:Braun, 2010
11. **Model Making: Conceive, Create and Convince by Arjan Karssen & Bernard Otte**
12. New Space 1 to 9.
13. Analysing Architecture by **Simon Unwin**
14. The Elements of Modern Architecture: Understanding Contemporary Buildings by Antony Radford
15. Investigate, Ask, Tell, Draw, Build: 3xn Architects by Matteo Cainer
16. Thinking About Architecture: An Introduction To Architectural Theory by Colin Davies
17. The Language of Architecture: 26 Principles Every Architect Should Know by Andrea Simitch
18. Wonders of World Architecture by Neil Parkyn
19. Space Planning Basics by Mark Karlen, Rob Fleming
20. [The Architecture Reference & Specification Book: Everything Architects Need to Know Every Day](https://aax-us-east.amazon-adsystem.com/x/c/Qr-jeSuoX0aRfOOI8nvwKsgAAAFsoVzlhQEAAAFKAeSEF5U/https%3A/assoc-redirect.amazon.com/g/r/https%3A/www.amazon.com/Architecture-Reference-Specification-Book-Everything/dp/1592538487?imprToken=K4YSFoFN526uLYZbTP.AbA&slotNum=4&SubscriptionId=AKIAIOCEBIGP6NUBL47A&tag=thearcsgui07-20&linkCode=xm2&camp=2025&creative=165953&creativeASIN=1592538487) By Julia McMorrough
21. [The Ten Books On Architecture (Illustrated)](https://aax-us-east.amazon-adsystem.com/x/c/Qr-jeSuoX0aRfOOI8nvwKsgAAAFsoVzlhQEAAAFKAeSEF5U/https%3A/assoc-redirect.amazon.com/g/r/https%3A/www.amazon.com/Ten-Books-Architecture-Illustrated-ebook/dp/B0013K2K8Q?imprToken=K4YSFoFN526uLYZbTP.AbA&slotNum=16&SubscriptionId=AKIAIOCEBIGP6NUBL47A&tag=thearcsgui07-20&linkCode=xm2&camp=2025&creative=165953&creativeASIN=B0013K2K8Q) By Vitruvius
22. [Understanding Architecture: Its Elements, History, and Meaning](https://aax-us-east.amazon-adsystem.com/x/c/Qr-jeSuoX0aRfOOI8nvwKsgAAAFsoVzlhQEAAAFKAeSEF5U/https%3A/assoc-redirect.amazon.com/g/r/https%3A/www.amazon.com/Understanding-Architecture-Elements-History-Meaning/dp/0813349036?imprToken=K4YSFoFN526uLYZbTP.AbA&slotNum=22&SubscriptionId=AKIAIOCEBIGP6NUBL47A&tag=thearcsgui07-20&linkCode=xm2&camp=2025&creative=165953&creativeASIN=0813349036) By Leland M. Roth, Amanda C. Roth Clark

**Calendar of Course contents to be covered during semester**

**Course code** - **AR – 113 Course title** - **BASIC DESIGN – I**

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| --- | --- | --- |
|  **Week** |  **Course Contents**  | **Reference Chapter(s)** |
|  1 | Basic Introductory Session:Discussion/Description of course outline, class rules/discipline/attendance, grading policy. Students will visit library and go through the provided list of books.Preliminary theoretical introduction to Design Method and Elements, Primary Shapes and their characteristics. Exploration of different relationships such as side to side, corner to corner, side to corner, overlapping etc. Students will approve 2D designs of 4”x4” on A4 paper and will submit their final design on the next day.  | 1. Architecture: Space. Form & Order by Francis D.K Ching2. **Model Making: Conceive, Create and Convince by Arjan Karssen & Bernard Otte**<https://www.youtube.com/watch?v=4VxDoVuURNE>**https://www.youtube.com/watch?v=B4Zv500TEPA**<iframe width="853" height="480" src="https://www.youtube.com/embed/B4Zv500TEPA" title="Introduction to Architectural Design Principles" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
| 2 | 2D Exercise on Figure Ground Organization incorporating Ordering Principles of Spatial Organization. Student will study figure ground relationship by still life sketching of stacked chairs and studio tables.Next day students will prepare 6-8 formats in Black/White color scheme by using 5-6 primary shapes expressing 2-3 principles only on each format. | Architecture: Space. Form & Order by Francis D.K Ching<https://www.youtube.com/watch?v=dXX4zFmay9A><https://www.youtube.com/watch?v=NPP9okr65yQ><iframe width="853" height="480" src="https://www.youtube.com/embed/dXX4zFmay9A" title="Frank Lloyd Wright’s Design Process" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
|  3 | Wk. 2 Exercise contd. with focus on transformation of primary shapes and using 2-3 colors from colored paper for fig. and ground on day 1.Model submission of approved format will be on day 2. | Architecture: Space. Form & Order by Francis D.K Ching<https://www.youtube.com/watch?v=1PGA6v7mq2Q><iframe width="853" height="480" src="https://www.youtube.com/embed/1PGA6v7mq2Q" title="ORDERING PRINCIPLES OF DESIGN | 361BIT" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
|  4 | Color Theory/Harmony- An Exercise on use of Poster color.Students will prepare abstract painting using color theory and primary shapes.Monochromatic and Colored Screen PatternsStudents will prepare screen patterns based on monochromatic and colored schemes and the output would be in the form of a sheet followed by a lamp shade design as a group project. The students can take inspiration from every day geometry or patterns around them, doodling art or any other scheme developed by themselves. | 1. Color harmony a guide to creative color combinations Chijiiwa, Hideaki by Chijiiwa, Hideaki.2. The art of using color a course in mastering the art of mixing colors Edwards, Betty by Edwards, Betty.1.Minbar of Saladin : Reconstructing A Jewel of Islamic Art by Lynette Singer, Thames and Hudson, 20082. Islamic Geometric Design by Eric Broug<https://www.youtube.com/watch?v=1CQQld_fr4c><iframe width="853" height="480" src="https://www.youtube.com/embed/1CQQld\_fr4c" title="Color Theory | All About Color Theory | Theory of colors | NATA | JEE Mains paper 2 2023 | B.Arch" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
|  5 | Visual & Physical Textures  | Architecture: Space. Form & Order by Francis D.K Ching<https://www.youtube.com/watch?v=dTcAxdVj8Q4><iframe width="853" height="480" src="https://www.youtube.com/embed/dTcAxdVj8Q4" title="Texture: Tactile and Visual" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
|  6 | Scale, Ratio and Proportion Student will introduce the concept of scale, ratios (Golden mean ratio) and proportions.Students will explore these by taking an inspiration from nature. They will prepare design process sheet with sketches starting from original form to the final modified sketch. Finally they will prepare an on scale model of modified sketch. | Architecture: Space. Form & Order by Francis D.K ChingBiomimicry: Innovation Inspired by Nature by [Janine M. Benyus](https://www.kirkusreviews.com/search/?q=Janine%20M.%20Benyus;t=author)Organic architecture inspired by nature by Schleifer, Simone K.<https://www.youtube.com/watch?v=CroNRjwViIo><iframe width="761" height="427" src="https://www.youtube.com/embed/CroNRjwViIo" title="SCALE AND PROPORTION" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
|  7 | Space with Vertical Elements The students are supposed to get an idea of vertical spaces like how can they get 3D spaces out of 2D thus creating shadows and shades to understanding the concept. The students are later supposed to replicate famous high rise structures using common materials available around them for better understanding. | Architecture: Space. Form & Order by Francis D.K Ching |
|  8 | Cube Transformation – An exercise based on Solids and Voids. Preparation of glossary of key words and enhancement of Design Terminology/Vocabulary. | 1.http://www.designcoding.net/solid-void-exercise/<https://www.youtube.com/watch?v=idxjXXImzc4> |
|  9 | **Mid Term Examination Week** | ----- |

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|  10-11 | Study of ergonomics/anthropometrics by drawing (given in architectural standards) a variety of human postures in relation to the work environment keeping in view the standard safe clearances of circulation space. Introduction lecture of Architect Vitruvius and Leonardo Da Vinci’s creation Vitruvian Man in relation to proportions of a human body. | Time-Saver Standards for Interior Design and Space Planning by Joseph De Chiara And Julius PaneroChapter-1: Planning and Design of Interior Spaces: Residential SpacesDetailed briefing of the course content and expected outcome from the students and the rules and regulations applicable to assessments.<https://www.youtube.com/watch?v=uYmZx-yOiPE><iframe width="1349" height="480" src="https://www.youtube.com/embed/uYmZx-yOiPE" title="T1 - Anthropometrics 1" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share" allowfullscreen></iframe> |
| 12 | Briefing about bathroom and Kitchen Design followed by **Showroom Visits** **to Kale/ Interwoood /Dimension/ S. Abdullah.**Data Collection on bathroom and kitchen layout, fixtures and their execution corresponding to given sizes and shapes of spaces and using basic principles of bathroom and kitchen layouts. Study of bathroom and kitchen fixtures. Study of different types of kitchen and bathroom layouts in different buildings (minimum 3 cases) with correct layout dimensions, clearances and presence of natural light and ventilation. | Time-Saver Standards for Building Types by Joseph De Chiara And John Hancock CallenderChapter-1: Residential- Bathrooms & KitchensTime-Saver Standards for Interior Design and Space Planning by Joseph De Chiara And Julius PaneroChapter-1: Planning and Design of Interior Spaces: Residential Spaces |
|  13 | Proposed Design of bathrooms (Architectural Plans, Elevations and Sections).Constraint: Addition of Bathroom facility in already developed 3d planes form. | Bath Planning – Guidelines, Codes, Standards (2nd Edition) by Julia Beamish & Kathleen ParrotChapter 4- Human Factors and Universal Design FoundationChapter 6- Bathroom Planning |
|  14 | Draw layouts of kitchens according to given sizes, shapes and types.Proposed Design of Kitchen (Architectural Plans, Elevations and Sections).Constraint: Addition of Bathroom and Canteen/Kitchen facility in already developed 3d planes form  | Kitchen Planning – Guidelines, Codes, Standards (2nd Edition) by Julia Beamish & Kathleen ParrotChapter 4- Human Factors and Universal Design FoundationChapter 6- Kitchen Planning |
|  15 | Final Viva – Portfolio Review and Jury of Final Project | ----- |