ہائیر ایجوکیشن کمیشن

HIGHER EDUCATION COMMISSION

Government of Pakistan, Islamabad

Sector H-9
Islamabad, Pakistan
Phone : +92-51-90402111
www.hec.gov.pk
hkasi@hec.gov.pk

Deputy Director (Curriculum)
Academics Division

No. 5-4/HEC/NCRC/Arch./2025/7147
February 11, 2025

SUBJECT: REVISED CURRICULUM FOR DEGREE PROGRAMS IN ARCHITECTURE

The Higher Education Commission (HEC) of Pakistan, as mandated by its law, provides guidance to Higher Education Institutions (HEIs) on curricula for tertiary education levels in alignment with the National Qualifications Framework (NQF). To address evolving academic trends and market demands, HEC has revised the curriculum standards for Architecture degree programs at NQF levels 6 and 7 through consultations in National Curriculum Review Committee (NCRC) meetings in the year 2023-24. The curriculum is endorsed by Pakistan Council of Architects and Town Planners (PCATP) on December 17, 2024. These updated curriculum standards are aligned with HEC's Undergraduate Education Policy V 1.1 (2023) and Graduate Education Policy (2023), ensuring coherence with national priorities and adherence to international benchmarks.

2. The revised curricula for Architecture degree programs are hereby notified. Universities offering these programs are advised to align their Architecture curricula with these standards as a minimum requirement. Additionally, the respective departments must develop course contents in accordance with the prescribed framework, ensuring that the programs address both national and local industry needs. The finalized course contents be submitted electronically to this office at the earliest. An electronic copy of the revised curricula is available on HEC's official website.

3. Through the effective implementation of a new curriculum, HEC envisions a future where Pakistani graduates in architecture excel in sustainable design principles, incorporate cutting-edge building technologies to meet the new challenges of the profession, and make substantial contributions to the built environment of the cities and towns.

HIDAYATULLAH KASI

Vice Chancellors/Rectors/Heads
All Public/Private Sector Universities/DAIs

Copy for information to:

i. PS to Chairman, Pakistan Council of Architects and Town Planners (PCATP), Islamabad
ii. ES to Chairman, Higher Education Commission, Islamabad
iii. ES to Executive Director, Higher Education Commission, Islamabad
iv. PS to Consultant, Quality Assurance, Higher Education Commission, Islamabad
v. PS to Managing Director, NAHE, Higher Education Commission, Islamabad
vi. PS to Advisor, Human Resource Development Division, Higher Education Commission, Islamabad
vii. PS to Director General, Academics Division, Higher Education Commission, Islamabad
viii. PS to Director General, A&A Division, Higher Education Commission, Islamabad
ix. PS to Director General, Higher Education Commission, Regional Centers in Karachi, Lahore, Peshawar & Quetta
x. Director, Academics Division, Higher Education Commission, Islamabad
xi. Director / In-charge, Higher Education Data Repository, Higher Education Commission, Islamabad
xii. Director / In-charge, Quality Assurance Agency, Higher Education Commission, Islamabad

CURRICULUM FOR BACHELOR / MASTER OF

ARCHITECTURE

(B. ARCH /M. ARCH)
REVISED - 2025

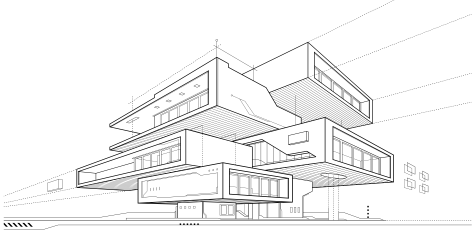
HIGHER EDUCATION COMMISSION
ISLAMABAD – PAKISTAN

Prepared by:
SUBJECTS EXPERTS
Different Universities

Facilitated by:
MR. HIDAYATULLAH KASI
Deputy Director | Academics Division
Higher Education Commission, Islamabad

MR. QAMMAR ABBAS
Assistant Director | Academics Division
Higher Education Commission, Islamabad

TABLE OF CONTENTS



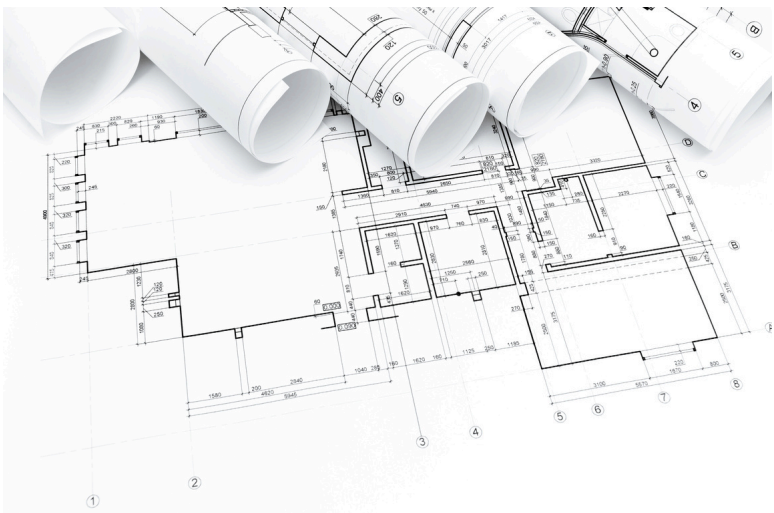
Preface

Higher Education Commission, mandated by section 10-1 (v) of HEC Ordinance 2002, has been involved in developing/revising the curricula periodically through National Curriculum Revision Committees (NCRCs) comprising eminent academics, researchers from HEC recognized universities/DAIs, professional councils, R&D organizations of repute and industry professionals. So far, HEC has developed and revised curricula of 150+ disciplines for undergraduate and graduate programs in various fields of Natural Sciences, Applied Sciences, Social Sciences, Art & Humanities, Engineering & Technology, Medical and Allied Health Sciences, Agriculture, Computing, Law, and Administration.

Over time, labor markets in the world have substantially changed, hence, workforce skills demand has also altered. Due to these transformations, there is a need to produce well-rounded individuals with the required knowledge base of specific disciplines and possess the required skills to increase their market readiness to contribute to the country's socio-economic development.

HEC has introduced the Undergraduate Education Policy 2023, which provides an overarching framework for undergraduate programs. This curriculum document is prepared in light of the UGE Policy (v1.1) 2023. I hope that this document, prepared by the respective NCRC, will serve the purpose of meeting our national, social, and economic needs, and will also provide the level of competency specified in the Pakistan Qualification Framework to make it compatible with international educational standards.

Dr. Amjad Hussain
Director General
Academics Division



MEMBERS - NCRC ARCHITECTURE

AR. MUHAMMAD ARIF CHANGAZI
Chairman (Convener)
Pakistan Council of Architects and Town Planners (PCATP)
Islamabad

DR. ARIF KHAN
Dean/Professor
Faculty of Art and Design
University of South Asia Lahore
Vice Chairman, PCTAP

DR. ANILA NAEEM
Professor/Chairperson
Department of Architecture and Planning
NED University of Engineering and Technology, Karachi

DR. FAISAL SAJJAD
Professor/Dean
Department of Architecture
National College of Arts, Lahore

DR. SAMRA MOHSIN KHAN
Professor
Department of Architecture and Design
COMSATS University, Islamabad

DR. YASIRA NAEEM PASHA
Professor/ Dean
Faculty of Civil Engineering, Architecture & Planning
Dawood University of Engineering and Technology, Karachi

DR. SAIMA GULZAR
Professor
Department of Architecture
University of Management and Technology, Lahore

AR. /PLNR. SADIA FAZLI
Ex-Registrar, PCATP

DR. MUNAZZAH AKHTAR
Chairperson/Associate Professor
Department of Architecture
University of Engineering and Technology, Lahore

AR. MUHAMMAD OMAR FAROOQ
Head of Department/Associate Professor
Razia Hassan School of Architecture
Beaconhouse National University, Lahore

AR/PLNR. SIKANDAR AJAM KHAN
Senior Architect Islamabad |
Industry Expert

DR. SYEDA RAAEHA TUZ ZAHRA ABIDI
Dean/Associate Professor of Practice
SADA, NUST, Islamabad

AR. ADNAN AHMED KHAN
Associate Professor
Department of Architecture
CECOS University, Peshawar

DR. SUNEELA AHMED
Head of Department/Associate Professor
Department of Architecture
Indus Valley School of Art and Architecture, Karachi

AR. UMAR SAEED
Chairman
Board of Architectural Education,
Lahore

AR. MUHAMMAD TAHIR KHATTAK
Consulting Architect
M/s Wadaan Consultants, Peshawar

AR. REENA MAJID MEMON
Assistant Professor
Department of Architecture and Planning,
Dawood University of Engineering and Technology, Karachi

DR. MANSOOR AHMED
Ex-Chairperson/Associate Professor
Department of Architecture
University of Punjab, Lahore

DR. WAQAS AHMED MAHAR
Chairperson/Assistant Professor
Department of Architecture
BUITEMS, Quetta

DR. YASMEEN AHMED
Chairperson
Department of Architecture
Lahore College for Women University,
Lahore

AR. SOHAIL ANWER SAEED
Consulting Architect
M/s Sohail Saeed Associates, Lahore

AR. IRFAN AHMED MEMON
Assistant Professor
Department of Architecture
Mehran University of Engineering and Technology, Jamshoro

Reviewed by:
PROF. DR. ARIF KHAN
Dean/Professor
Faculty of Art and Design
University of South Asia Lahore
Vice Chairman, PCTAP

Curriculum for Bachelor of Architecture (B. Arch)

BACHELOR OF ARCHITECTURE

PROGRAM OVERVIEW

The Bachelor of Architecture is a five-year degree program comprised of 10 semesters in compliance with the Higher Education Commission (HEC) and meeting the accreditation criteria of the Pakistan Council of Architects and Town Planners (PCATP). This degree program includes knowledge areas based on Design Studios, Building Systems & Allied Technologies, and Professional Practice & Management through best pedagogical practices. It caters to a well-versed deliberation for architectural design, social sciences, environmental, future challenges, and entrepreneurial domains that are interrelated to each other as well as integrated with several other disciplines including emerging technologies.

The objective of this dissemination is to develop architectural professionals who aim to cater to the spatial, environmental, and social needs of the inhabitants of a specific setting according to a particular context. It aims to foster the idea of Equity, Diversity, and Inclusivity (EDI) through the design of spaces with a scientific approach relevant to context, its connection with history, culture, and adaptability to the future. The program aims to prepare architectural graduates who can successfully work in local and international markets.

PROGRAM EDUCATIONAL OBJECTIVES

The Bachelor of Architecture (B. Arch) has five Program Educational Objectives (PEO). These objectives shall be measured after the completion of one cycle of five years through indirect assessment and subsequently proceed with the Continuous Quality Improvement process (CQI).

PEO-1: Graduates demonstrate their ability to apply architectural knowledge (history, theories of architecture / related art, culture, environment, social science, urbanism, and technology) in preparing design proposals and solving complex architectural design problems.

PEO-2: Graduates exhibit an adequate knowledge of building construction, building systems structure, (mechanical, and electrical), and services in architectural planning.

PEO-3: Graduates demonstrate an adequate level of effective communication through interpersonal skills, leadership, teamwork, self-management, and digital and design tools.

PEO-4: Graduates demonstrate the ability to investigate, think critically, and analyze problems of diverse and complex nature.

PEO-5: Graduates participate actively in activities and processes related to professional practice, development, and life-long learning.

PROGRAM LEARNING OUTCOMES (PLOS)

The Bachelor of Architecture has the following eight Program Learning Outcomes (PLOs). The graduating students are supposed to display all these PLOs in their final year thesis project to an acceptable level determined by the program administration.

PLO-1: Architectural Knowledge
Ability to apply Architecture knowledge (history, theories of architecture / related art, culture, environment, social science, urbanism, and related technology) in the context of architectural design problems.

PLO-2: Professional Skills
Ability to comprehend the requirements of building users in depth and translate the same in architectural design efficiently with appropriate solutions for architectural, structural, and building construction associated problems.

PLO-3: Critical Thinking
Ability to identify, investigate, analyze, and comparatively evaluate critical / complex architectural problems and suggest multiple viable design solutions.

PLO-4: Communication
Ability to convey ideas and express rationale clearly in design through effective communication including but not limited to proposals, presentations, reports, multimedia, and digital tools.

PLO-5: Investigation
Ability to investigate complex architectural and related problems through various methods including literature review, case studies, surveys, simulations, experimental investigation, interpretation of data, and synthesis of information leading to conclusions.

PLO-6: Leadership and Professional Ethics
Ability to inspire and motivate the team members with leadership skills including interaction, collaboration, negotiation, interpersonal skills, and professional ethics for an effective working relationship /environment.

PLO-7: Lifelong Learning
Ability to acquire knowledge, professional skills, and information in the context of innovation and professional development through continuous efforts from diverse sources.

PLO-8: Architect and Society
Ability to understand the role of an architect in societal and environmental contexts addressing contemporary issues through design solutions.

ELIGIBILITY CRITERIA

F. Sc. Pre-Eng. /Pre-Med /A-Levels /Intermediate with Mathematics, Physics, and one more Computer /Natural Science subject with a minimum grading percentage of 60%.

Any university preferring to follow any other criteria may do so after getting approval from its academic council and subsequent endorsement from the PCATP, Executive Committee.

Admitting University may set minimum eligibility scores and may conduct entry test through its own testing body or an external testing services provider of repute as per its screening, admission, and merit calculation criteria approved by its statutory bodies.

FRAMEWORK FOR BACHELOR OF ARCHITECTURE (B. ARCH.)

Architectural education needs are different for different regions within Pakistan. This curriculum provides a broad outline and framework of knowledge areas with built-in flexibility for it to be adapted by different schools of architecture according to their specific needs.

Institutes/Schools/Universities are advised to follow PCATP studio guidelines/policies for architectural design studios and dissertation/thesis requirements for final year thesis.

The proposed template is for individual Institutes/Schools/Departments to interpret it according to their ideology and broad objectives of their architectural education.

KNOWLEDGE AREAS											
		MAJOR									
General Education	**Cr. Hrs.**	**Studios Project based learning**	**Cr. Hrs.**	**Building Systems and Allied Technologies Lecture/ Practice based learning**	**Cr. Hrs.**	**Professional Practice for Architects Lecture/ Practice based learning**	**Cr. Hrs.**	**Allied Subjects of Art and Architecture Lecture/ Seminar based learning**	**Cr. Hrs.**	**Inter Disciplinary & Elective Subjects Lecture/ Seminar based learning**	**Cr. Hrs**
Arts and Humanities (Pool of subjects)	2	Foundation Studio, 1 and 2	6+6 = 12	Materials and Construction, 1, 2, 3 and 4	2+2+2+2 =8	Visual communication and Skills, 1 and 2	2 + 2	History of Art and Architecture, 1***, 2, 3 & 4.	2+2+2+2 =8	Interdisciplinary courses (Pool of Subjects)	Min 12 as per UGEP v1.1
Natural Science (Pool of Subjects)	(2+1)	Architectural Studio, 1 to 6	6x (6-8) =36-48	Structure for Architects, 1 and 2	4-6	Digital Tools for Architecture, 1 and 2	3 + 3	Theory of Architecture/ Architectural Discourse	2+2=4	Elective courses (Pool of Subjects)	Min 08
Social Science (Pool of subjects)	2	Focus Studio	8	Building Services and Systems, 1, 2 and 3	2+2+2=6	Architectural Research Methods	2	Urban Design	2		
Functional English + Expository Writing	3+3	Architectural Design Thesis, 1 and 2	((6+6) or (4+8)) = 12	Energy and Environment, 1** and 2	2+2	Professional Practice	3	Urban Planning	2		
Quantitative Reasoning I & II	3+3					Internship	3	Landscape Architecture*	2-3		
Islamic Studies/Ethics	2							Interior Design*	2-3		
Ideology and Constitution of Pakistan	2							Heritage and Conservation*	2-3		
Applications of ICT	2+1							Disaster Resilient Architecture*	2-3		
Entrepreneurship	2							Universal Design Accessibility*	2-3		
Civics and Community Engagement	2										
Pakistan Studies	2										
Total	**32**		**68-80**		**20-24**		**18**		**Min. 14**		**Min. 20**

*Theory/specialized studio courses. Credits are to be decided by the department
**Energy and Environment-I is counted in the GE cluster as a Natural Science subject
***History of Art & Architecture-I is counted in the GE cluster as an Arts and Humanities subject
-As exit with AD is not allowed in B. Arch program, hence the General Education courses can be distributed over 5 years

Inter-Disciplinary Subjects=min 12 credits

The interdisciplinary subjects shall be offered by the respective departments based on requirements and availability e.g., Photography, Sculpture, Furniture Design, Artificial Intelligence, Data Science, Project Management and Planning, Construction /Facility Management, Business Economics, Music, Film and Theatre, Parametric Design and Coding, AR/VR/XR Technologies, etc.

SCHEME OF STUDIES (10 SEMESTERS)

Minimum Credits Allowed	172
Credit Hours in the Model Scheme	178
Maximum Credits Allowed	188
General Education Courses	32 credit hours as per revised HEC UGEP 2023 v1.1
Discipline Related Courses	126 credits
Interdisciplinary Courses	12 credits
Elective Courses	08 credits (04 courses of 02 credit hours each)
Program Duration	10 Semester (5 years), Maximum up to 8 years
Semester Duration	16-18 weeks (1-2 weeks for examination)
Course Load	As per HEC Semester Guidelines and UGEP v 1.1
Summer Semester Credit Hours	As per HEC Semester Guidelines
Summer Duration	8 – 10 weeks
Attendance	75%

B. Arch (Five-Years) Program: Semester-wise Distribution of Cr. Hrs. for Knowledge Areas

Semester	Studio	Gen. Ed	BT	PP	Allied Subjects	IDS	Elective	Total
I	06	09	-	02	-	-	-	17
II	06	05	02	02	02	-	-	17
III	06	05	04	02	02	-	-	19
IV	06	03	08	-	02	-	-	19
V	06	03	04	02	02	-	-	17
VI	08	02	02	02	04	-	-	18
VII	08	03	-	-	02	04	02	19
VIII	08	02	-	02	-	04	02	18
IX	12	-	-	03	-	02	-	17
X	08	-	-	03	-	02	04	17
Total	**74**	**32**	**20**	**18**	**14**	**12**	**08**	**178**

A suggestive template of scheme is given below

SEMESTER I			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Foundation Studio–I	06 (01, 05) 11	Maj (Studio)
2	History of Art & Architecture–I	02 (02, 00) 02	GE (Arts & Humanities***)
3	Ideology and Constitution of Pakistan	02 (02, 00) 02	GE
4	Islamic Studies/Religious Studies/Ethics	02 (02, 00) 02	GE
5	Visual Communication–I	02 (01, 01) 03	PP
6	Functional English	03 (03, 00) 03	GE
Total Credits = 17			

SEMESTER II			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Foundation Studio–II	06 (01, 05) 11	Maj (Studio)
2	History of Art & Architecture–II	02 (02, 00) 02	History & Theory
3	Visual Communication–II	02 (01, 01) 03	PP & CS
4	English–II (Expository Writing)	03 (02, 00) 03	GE
5	Materials and Construction–I	02 (01, 01) 03	BT
6	Pakistan Studies	02 (02, 00) 02	GE
Total Credits = 17			

SEMESTER III			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Architectural Studio–I	06 (01, 05) 11	Maj (Studio)
2	Materials and Construction–II	02 (01, 01) 03	BT
3	Structures for Architects–I	02 (02, 00) 02	BT
4	History of Art & Architecture–III	02 (02, 00) 02	History & Theory
5	Visual Communication–III	02 (01, 01) 03	PP & CS
6	Applications of ICT	03 (02, 01) 03	GE
7	Energy and Environment–I	02 (02, 00) 02	GE (Natural Science**)
Total Credits = 19			

SEMESTER IV			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Architectural Studio–II	06 (01, 05) 11	Maj (Studio)
2	Materials and Construction–III	02 (01, 01) 03	BT
3	Structures for Architects–II	02 (02, 00) 02	BT
4	Building Services and Systems–I	02 (01, 01) 03	BT
5	History of Art & Architecture–IV	02 (02, 00) 02	History & Theory
6	Quantitative Reasoning I	03 (03, 00) 03	GE
7	Energy and Environment–II	02 (02, 00) 02	BT
Total Credits = 19			

SEMESTER V			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Architectural Studio–III	06 (01, 05) 11	Maj (Studio)
2	Materials and Construction–IV	02 (01, 01) 03	BT
3	Building Services and Systems–II	02 (01, 01) 03	BT
4	Theory of Architecture–I	02 (02, 00) 02	History & Theory
5	Digital Tools for Architects–I	02 (00, 02) 04	PP & CS
6	Social Science (Pool)	03 (03, 00) 03	GE
Total Credits =17			

SEMESTER VI			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Architectural Studio–IV	08 (01, 07) 15	Maj (Studio)
2	Building Services and Systems–III	02 (01, 01) 03	BT
3	Theory of Architecture–II	02 (02, 00) 02	History & Theory
4	Allied Discipline Course	02 (02, 00) 02	Follow BOS
5	Digital Tools for Architects–II	02 (00, 02) 04	PP & CS
6	Civics and Community Engagement	02 (02, 00) 02	GE
Total Credits = 18			

`SEMESTER VII			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Architectural Studio–V	08 (01, 07) 15	Maj (Studio)
2	Quantitative Reasoning II	03 (03, 00) 03	GE
3	Allied Discipline Course	02 (02, 00) 02	Follow BOS
4	Interdisciplinary Course	02 (02, 00) 02	Follow BOS
5	Interdisciplinary Course	02 (02, 00) 02	Follow BOS
6	Elective-I	02 (02, 00) 02	Follow BOS
Total Credits = 19			

SEMESTER VIII			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Architectural Studio–VI	08(01, 07) 15	Maj (Studio)
2	Architectural Research Methods	02 (02, 00) 02	PP & CS
3	Entrepreneurship	02 (02, 00) 02	GE
5	Interdisciplinary Course	02 (02, 00) 02	Follow BOS
6	Interdisciplinary Course	02 (02, 00) 02	Follow BOS
7	Elective-II	02 (02, 00) 02	Follow BOS
Total Credits = 18			

SEMESTER IX			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Thesis Design–I	04 (00, 08) 08	Maj (Studio)
2	Professional Practice	03 (03, 00) 03	PP & CS
3	Focus Studio	08 (01, 07) 15	Maj (Studio)
4	Interdisciplinary Course	02	Follow BOS
Total Credits = 17			

SEMESTER X			
S.N.	**COURSE**	**Cr. Hrs. (Th. + Pr.) Cn. Hrs.**	**CATEGORY**
1	Thesis Design–II	08 (00, 16) 16	Maj (Studio)
2	Internship	03	PP & CS
3	Interdisciplinary Course	02	IDS
4	Elective-III	02	Follow BOS
5	Elective-IV	02	Follow BOS
Total Credits= 17			

COURSE LEARNING OUTCOMES

FOUNDATION STUDIO-I

- Display technical skills such as scale, space, legibility, and harmony in handwritten lettering using various tools (pencil, brush, pen, etc.).
- Develop conceptual ideas and depict analytical, reflective thinking and reasoning while forming design patterns and composition, triggering creativeness.
- Utilize the knowledge of fundamental design elements (point, line, composition, form, shape, texture, and color) to develop design sensibility in design projects.
- Demonstrate skills and techniques of shading by introducing depth and texture in drawings/sketches.
- Develop personal expressions and creative limits through the creative process of interpreting painting, and narrative expressions and exploring drawing mediums.
- Develop vocabulary related to the color wheel to comprehend the relationship between different hues, tints & shades.
- Transform shapes, basic solids, and complex compositions using design vocabulary.

HISTORY OF ART AND ARCHITECTURE-I

- Comprehend the knowledge of prehistoric architectural practices and technology and its contribution to the development of later civilizations.
- Demonstrate the importance of historical, social, geographical, and cultural contexts in art and architecture during ancient civilizations.
- Recognize various factors behind the development of building technology during early civilizations.
- Display knowledge of the evolution of art, architecture, and urban planning during Greek civilization.

- Comprehend the knowledge of architecture, social organization, and building technology during Roman civilization.
- Reflect the transition of building forms and structures from early civilizations to the Greek period in chronological order through drawings and freehand sketches.

VISUAL COMMUNICATION-I

- Practice the fundamental concepts of drafting techniques required to transform conceptual thinking into graphical illustration in complex technical drawings.
- Demonstrate the acquired drafting skills in the design of projects related to creating graphical illustrations of conceptual ideas on paper using various drawing techniques and mediums.
- Create complex drawings for communicating the concepts in graphical form.

FOUNDATION STUDIO-II

- Comprehend and interrelate geometric shapes/forms with 2D or volumetric compositions and analyze these in terms of solids v/s voids (figure-ground relationship).
- Interpret the meaning of space in 2D and 3D design compositions- investigating and exploring 'spatial' qualities and contexts.
- Apply 'proportions' in producing design; to create aesthetically improved design solutions.
- Comprehend the basic concepts of structural stability and strength through use of origami folds and tessellations in 2D and 3D forms.

HISTORY OF ART & ARCHITECTURE-II

- Recognize the importance of material and visual culture of geographic regions in their respective art and architecture.
- Establish reasonings for the emergence of medieval period architecture.
- Grasp the background knowledge of various styles of medieval architecture and their architectural features.
- Compare the building technology of the medieval period with previous civilizations and its impact on architecture.
- Comprehend the role of different religious, political, social, and intellectual developments, and their interconnection in shaping cultural artistic practices and architecture during the medieval period connecting with previous civilizations.
- Interpret with the help of drawings and sketches of buildings built during the medieval period to identify building forms, meanings, and technological developments.

VISUAL COMMUNICATION-II

- Apply advanced 3D drafting techniques to communicate conceptual design into dimensional graphical illustrations.
- Visualize the concept in a 3-dimensional mode in the form of orthographic projections and perspective drawings.
- Design complex volumetric models and drawings composed of details and patterns specific to the situation.

MATERIAL AND CONSTRUCTION-I

- Compare the physical and mechanical properties of brick with earth-compressed blocks and ramped earth construction.
- Identify the process of brick manufacturing, types of brick, bonding, joinery system, and technical terms used in brick masonry construction.
- Comprehend the knowledge of stone masonry construction.
- Demonstrate knowledge of wood types, wood seasoning, and joinery systems.
- Display the fundamental knowledge of binding materials and mortars with mechanical properties.
- Identify types, materials, and construction of building foundations.

ARCHITECTURAL STUDIO-I

- Able to conceptualize and explore small-scale architectural forms.
- Develop architectural design processes involving intuitive and rational responses.
- Integrate scale and size in the context of a given site.
- Produce explorative and communicative drawings and model-making to express envisaged design solutions.

MATERIAL AND CONSTRUCTION-II

- Identify types of concrete, concrete constituents, mechanical properties of concrete, and quality of appropriate mixture for various purposes.
- Determine the function, materials, construction, and types of retaining walls.
- Comprehend the knowledge of pre-cast and pre-stressed concrete products and their use for structural and nonstructural purposes in buildings.
- Explain types, materials, and construction techniques for staircases.
- Identify types and properties of glass for advanced applications in buildings.

STRUCTURE FOR ARCHITECTS-I

- Describe the fundamentals of building structures.
- Explain various types of structures and structural systems.
- Explain load transfer mechanisms in different structural systems.
- Select/suggest appropriate materials for various structures and structural elements subjected to different types of stresses.
- Develop bending moment, shear force, and axial force diagram.
- Display the knowledge of the structural behavior of pre-cast and pre-stressed structural components in a building in comparison to reinforced cement concrete (RCC) members.
- Explain fundamental knowledge of cable structure, tension fabric structure, corner, cores, and wind bracing in the context of aesthetics and structure requirements in building.
- Design appropriate member cross-sectional shape under axial, bending, and shear stresses.

HISTORY OF ART & ARCHITECTURE-III

- Exhibit the knowledge of the paradigm shift brought by the industrial age and its impact on art and Architecture.
- Demonstrate the knowledge of building materials and construction technology that shaped the architecture of the Industrial Revolution and urbanism.
- Comprehend the knowledge of philosophy behind the work of leading modern architects.
- Identify the response of architects and urban experts to social and environmental problems that emerged as a result of urbanization and industrialization at a large scale during the Industrial Revolution.
- Determine the philosophies behind architectural movements after the Industrial Revolution.

VISUAL COMMUNICATION-III

- Create advanced-level technical drawings to communicate conceptual ideas.
- Interpret the conceptual idea in the form of orthographic projections, and technical drawings with necessary information.
- Construct complex technical drawings that include necessary details that are specific to the situation.

ENERGY AND ENVIRONMENT-I

- Comprehend the knowledge of the physical and built environment.
- Grasp the knowledge of solar geometry for buildings.
- Recognize the impact of climate, its factors, and seasonal changes on human life and buildings.
- Analyze the role of ecosystems and the physical environment including the atmosphere, planet Earth, and natural hazards.
- Analyze the factors of the built environment including human habitat and settlements.

ARCHITECTURAL STUDIO-II

- Validate conceptualized design solutions along with contextual analysis, party diagrams, form development, and material details.
- Inculcate forward-thinking, problem-solving, and time management for group and individual work.
- Produce presentations involving written, verbal, graphical, and model-based forms of expression.
- Demonstrate professional awareness and sensitivity towards social, ethical, cultural, and contextual aspects of the built environment.
- Learn to develop manual drawings and models of small-scale buildings.
- Comprehend the knowledge of fundamentals of light study, narrative building, materiality, emotions and senses, form making, and implement in building projects.

MATERIAL AND CONSTRUCTION-III

- Apply fire-resistant materials and design in fire-prone areas.
- Use damp prevention materials and techniques in buildings and water tanks.
- Recommend insulating materials and techniques for various regions in Pakistan.
- Conduct life cycle analyses of construction materials and systems.
- Evaluate materials in terms of long-term environmental effects, selection, and specification.
- Recognize the smart and recycled materials for buildings to create a sustainable environment.
- Recommend fire & sound resistive materials for various architectural spaces.
- Communicate knowledge of materials effectively for a building with the help of samples available in the local market, digital presentations, and discussions in an organized manner concerning cost-effectiveness, type of building, architectural design, sustainability, availability, and building integrity.

STRUCTURE FOR ARCHITECTS-II

- Determine tentative and actual sizes of the structural members.
- Develop and interpret bending moment, shear force, and axial force diagrams for various structure components under different load types.
- Explain the smart materials and building structure.
- Explain the reasoning behind the modern structural systems and structural materials.
- Integrate building services with the structural systems.
- Develop structural forms considering the functional requirements and overall appearance of a building regarding its type.
- Suggest appropriate structural systems for various architectural and structural constraints.
- Develop basic structural drawings of the foundation, columns, beams, and slabs.
- Comprehend the knowledge of earthquake zones in Pakistan, earthquake-resistant architectural planning, materials, foundations, and techniques.

BUILDING SERVICES AND SYSTEMS-I

- Explain the fundamental knowledge and design principles of plumbing systems in Buildings.
- Design the water supply systems, including sizing and selection of pipes, pumps, and fixtures, overhead, underground tanks per local standards for small-scale to large-scale buildings.
- Design layout of the drainage systems in compliance with local standards and building requirements including provisions of septic tanks for small-scale to large-scale buildings.
- Integrate water conservation & sustainable practices such as water-efficient fixtures, Rainwater Harvesting Systems, and Grey-water recycling in the plumbing system of Buildings.
- Integrate water supply & sewerage system with architectural spaces and building envelope for cost-effectiveness, space conservation & efficiency of systems.

- Justify plumbing system solutions through effective communication, plumbing terminology, and background knowledge.

HISTORY OF ART & ARCHITECTURE-IV

- Analyze dialectical readings in architecture to develop argumentative reasoning skills.
- Evaluate the phenomenon of globalization in architecture and urbanism, and the embracing of modernity in the newly founded nation-states.
- Determine various approaches to forming a Pakistani identity in art, architecture, and urbanism.
- Develop sensitivity in analyzing alternative approaches.

ENERGY AND ENVIRONMENT-II

- Comprehend the knowledge of climate, and its effects including thermal comfort, human comfort zones, temperature scales, heat loss and heat gain, and thermophysical properties of building materials.
- Recognize the importance of building physics for various purposes in building.
- Recognize the impact of precipitation, moisture, and ventilation in buildings.
- Reflect on the knowledge of passive design principles and techniques.
- Analyze the climate change effect, its causes, greenhouse effects, global warming, and climate change mitigation.
- Analyze the climate factors and design buildings and structures considering climate, energy, sustainability, human needs, and climate change.
- Employ innovative materials and techniques to create high-performance energy-efficient buildings.
- Recommend techniques and strategies to develop net zero energy buildings.

ARCHITECTURAL STUDIO-III

- Develop schematic-spatial understanding and conceptual representation of medium-scale architecture projects.
- Represent architecture (medium scale) and built environment through drawings, models, and verbal, and written expressions.
- Analyze existing buildings and open spaces design and interpret their underlying concepts.
- Develop architectural design in compliance with relevant building regulations.

MATERIAL AND CONSTRUCTION-IV

- Differentiate among diverse cladding materials for application in buildings for appearance in a specific context and to protect the building's structure from natural elements like wind, rain, etc.
- Comprehend the knowledge of sound-absorbing materials and techniques regarding sound-sensitive spaces in various buildings.
- Explain strategies and materials that enhance the resilience of structures to earthquakes, floods, hurricanes, and other hazards.
- Identify the types, materials, and properties for openings in buildings with sectional details.

- Explain the variety of finishing materials for the interior of a building with a specific context, cost-effectiveness, life span, and properties.
- Develop working drawings of a project showing details for critical points/areas, specifications, and quantities.

BUILDING SERVICES AND SYSTEMS-II

- Explain fundamental knowledge and design principles of heating, ventilation, air conditioning, and cooling (HVAC) systems in buildings.
- Calculate the heating and cooling loads for small to large-scale buildings manually and with related software tools.
- Explain fundamental concepts of electrical systems in buildings including circuit, voltage, current, load calculations, and distribution systems.
- Layout the electrical wiring systems in the building keeping in compliance with building codes and standards, ensuring that electrical installations meet safety regulations and practices.
- Design lighting system of buildings keeping in view lux requirements and illuminance level for building using DIALux or any other relevant software.

THEORY OF ARCHITECTURE-I

- Outline the most relevant past, present, and future-architectural theories and the evolution of ideas.
- Critically assess, discuss, debate, and document theoretical concepts and tenets against a general theoretical framework.
- Differentiate between the various theories, their evolution, and their impact in general and especially in architecture.

DIGITAL TOOLS OF ARCHITECTS-I

- Display the knowledge and importance of CAD, 3D visualization, 3D/2D rendering, and animation software.
- Set up a new project File, Create Grids & Axis in AutoCAD, and develop 2D simple drawings using fundamental commands and editing techniques in AutoCAD.
- Create layers with line types and colors for different elements in the drawing and display skills in annotations on drawings including Dimensions, Text Notes, Tags, and symbols.
- Develop 2D conceptual designs and drawings using AutoCAD for a project from the foundation to the finish stage including 2D Plans, Elevations, Sectional Details, Callout Views, Drafting Views, working drawings, and submission drawings for a project.
- Display expertise in plotting, printing, pen assignment, and viewport scales.
- Complete 3D model in AutoCAD including walls, doors, windows, floors, ceilings, and stairs using 3D solid commands.
- Create a 3D model of a small-scale project in Sketchup and visualize the application of materials, lighting conditions, and cameras.
- Develop a portfolio of all projects/assignments on local and international Standards.

ARCHITECTURAL STUDIO-IV

- Develop advanced ability to demonstrate schematic-spatial understanding and conceptual representation of complex medium-scale architectural projects (public buildings).
- Advance capacities to address issues of the built environment through concepts of sustainability, green architecture, and passive energy systems.
- Develop an advanced understanding of relationships between built structures and open spaces for public use through medium-scale public building projects.
- Learn to incorporate structure and services-related requirements within the architectural design process and incorporate these in drawings.

BUILDING SERVICES AND SYSTEMS-III

- Grasp the knowledge of electricity generation through the use of renewable energy systems including wind, and solar (BAPV, BIPV) for buildings and integration with architectural and structural design at the planning stage.
- Reflect the fundamental knowledge & principles of building surveillance systems with respect to building type, occupancy & cost-effectiveness.
- Identify fire hazards, risks & safety requirements using standards and regulations for existing and new buildings at the planning stage.
- Layout the various communication systems and identify potential clashes with architectural & structural systems.
- Reflect the fundamental knowledge & principles of sound systems in buildings including building form, sound wavelength, amplitude, frequency & concepts of reflection, absorption, and diffraction.
- Design intelligent building automation systems for enhanced occupant comfort, building performance evaluation, and configuring building control systems for optimal performance.
- Apply monitoring tools and data analytics to assess the performance of building systems over time.
- Explore and understand the implementation of smart building technologies, including Building Automation Systems (BAS) and the Internet of Things (IoT) in architecture.

THEORY OF ARCHITECTURE-II

- Develop a critical knowledge of the ideas and theories of architecture comparing various periods with each other.
- Comprehend the knowledge of architecture at a macro scale (globally) to determine the reasoning for evolution over time.
- Evaluate historical precedents relating to architecture through writing and visual communication.
- Refer to arguments based on the theory of architecture while presenting historical precedents in written and visual form.

DIGITAL TOOLS FOR ARCHITECTS-II

- Display knowledge of industry-leading 3D visualizing software such as SketchUp, Rhino, Blender, 3ds Max, Lumion, and Grasshopper.
- Demonstrate basic modeling commands of 3D max or alternate, and import 3D models from other software.
- Apply materials, environment, and camera on a 3D model of a building in 3D max or alternate and apply rendering techniques.
- Develop interior and exterior visualization of 3D models of a building through animation and apply rendering techniques.
- Create BIM models 3D - 6D.

ARCHITECTURAL STUDIO-V

- Display knowledge to deal with complexities in architectural design and its contextual realities, including rural and urban contexts.
- Integrate knowledge of building materials, building systems, and construction practices into architecture and urban design protocols.
- Develop abilities for design research, analysis, evaluation, forward-thinking, problem-solving, and time management for group and individual work.
- Display professional graphics, effective verbal communication, and presentation skills.

ARCHITECTURAL STUDIO-VI

- Design mixed-use large-scale projects of medium and high-rise construction.
- Acquire knowledge of advanced building technology/systems and their integration into design solutions, including high-rise and long-span structures.
- Display professional graphics, effective verbal communication, and presentation skills.
- Develop design with building regulations.

ARCHITECTURAL RESEARCH METHODS

- Recognize the importance of an effective research approach in the discipline of architecture.
- Identify research questions related to architecture and built environment using various methodologies.
- Conduct problem analysis through literature review and other sources related to an architecture problem and develop an in-depth concept study of relevant scholarly work.
- Display the knowledge of various architectural research methods paradigms for conducting architectural research.
- Demonstrate the key ideas, movements, and protagonists in contemporary architectural discourse, and critique these using advanced oral, written, and graphic communication skills.
- Navigate between the differing methodologies and conventions of various modes of architectural research and their theoretical underpinnings; from those that stem from the sciences to those of the humanities, and those of architectural design.
- Demonstrate advanced understanding of one mode of architectural research, and prepare a carefully conceived, appropriately framed, and articulated research proposal.

- Recognize the opportunities of new knowledge and practices in research, and how these can be harnessed to arrive at innovative solutions to problems in the discipline of architecture.

THESIS DESIGN-I

- Perceive and formulate creative solutions for complex problems of the built environment based on architectural knowledge and research.
- Identify the feasibility of a project and develop an approach to design a self-directed comprehensive design project.
- Conduct an effective literature review relevant to the project selected.
- Use various research methods including case studies for data collection and subsequently its analysis.
- Select and analyze a site according to the scope of the project.
- Identify building requirements and develop a building program and project concept.
- Develop a sense of social responsiveness to mitigate larger architectural problems.

PROFESSIONAL PRACTICE

- Grasp the Knowledge of various possibilities to work as an architect in public and private sectors.
- Recognize the role of an architect in the built environment and the ethical responsibilities of an architect.
- Identify the different phases of a building project and the role of the architect and other stakeholders at each stage.
- Recognize the requirements of building codes and by-laws for various types of buildings.
- Devise effective project planning and project scheduling using various tools.
- Display the knowledge of different methods of cost estimation and bill of quantities.
- Comprehend the knowledge of bids, tender documents, contracts, selection of contractors & subcontractors, and procurement in public and private sectors.
- Reflect the knowledge of the Planning Commission's proformas (PC-I to PC-V), provincial, central, and divisional development working parties, and ECNEC.
- Develop architecture business models including administration, financial and legal management, marketing strategies, and entrepreneurship.
- Comprehend the knowledge of preparing effective project reports.

FOCUS STUDIO

- Deliver short architectural design projects with specializations covered in allied theories in previous semesters particularly in the 7th and 8th semesters of B. Arch.
- Reflect grip on working drawings for any assigned architectural design project regarding submission requirements in various local and national level authorities.
- Deliberate teamwork in a single project of Building Design or Master Planning.
- Correlate the Studio Project with a real-life Business Plan for consultancy in or out of campus.
- Evolve relevant architectural research methods for implementation in Thesis Design Studio in parallel to Focus Studio.
- Learn principles of structural design studio as a reinforcement to previous knowledge in 8 semesters as well as a prerequisite for semester 10 Thesis Design Project.

THESIS DESIGN-II

- Develop detailed master planning of a project considering the building requirements, relevant case studies, site analysis, and by-laws.
- Display an effective approach towards architecture planning and concept of the project conceiving its 3D form.
- Design the project with an integrated approach in terms of architecture planning, structural, environmental, and technological solutions, and methods.
- Create 3D models and animation using software skills.
- Visualize building form, scale proportions, and spatial organization with the help of models.
- Develop a thesis report to communicate the problem statement, research methodology, data analysis, conclusions, and recommendations.
- Defend project feasibility, site selection, architectural planning, building forms, and concepts, using presentation & communication skills.
- Display Architectural Knowledge in the process of defending the project theme, requirements, and scope.

HERITAGE AND CONSERVATION

- Understand the importance of cultural and built heritage in a wider context.
- Identify the advantages and disadvantages of different approaches to cultural heritage conservation and management.
- Assess heritage contexts and identify suitable conservation solutions.
- Utilize digital tools and technology for documentation and conservation of architectural heritage.
- Analyze heritage conservation policies and recommend suitable solutions to resolve various problems/issues.

LANDSCAPE ARCHITECTURE

- Identify key designers and proponents of important historical theories of landscape design.
- Relate contemporary landscapes to their sources in history.
- Recognize the relationship between built landscapes and the context in which they are embedded with reference to factors such as suitable climate, propagation methods, etc.
- Create holistically designed landscape spaces using various manual and digital modes exploiting appropriate materials, construction methods, and technologies.

DISASTER RESILIENT ARCHITECTURE

- Assess the vulnerability of architectural structures and urban environments to different types of disasters through risk assessment methodologies.
- Grasp the knowledge of international and local building codes, standards, and regulations related to disaster resilience in architecture.
- Analyze real-world case studies of disaster-resilient architecture and urban planning, learning from successful examples and understanding the lessons from failures.

- Learn about emergency response protocols and evacuation strategies for buildings and urban areas in the event of disasters.
- Understand the importance of involving local communities and stakeholders in the design and planning process to create more resilient and responsive architectural solutions.
- Explore strategies for post-disaster recovery and reconstruction, including considerations for preserving cultural heritage.
- Evaluate the impact of various natural and man-made disasters on built environments.

INTERIOR DESIGN

- Integrate interior design concepts seamlessly with the architecture of built-up areas to create cohesive and functional spaces.
- Analyze and evaluate interior spaces, considering factors such as human behavior, ergonomics, and circulation to create the ambiance that defines the character and atmosphere focusing on the principles and elements of design.
- Develop and communicate creative design concepts that align with client needs and project goals using software(s)and tools commonly used in the field.
- Apply building codes and regulations related to interior design, ensuring compliance and safety in design projects.
- Explore sustainable design practices to integrate eco-friendly and energy-efficient solutions into interior design projects.
- Study the historical and cultural aspects of interior design to appreciate its evolution and influence on different design styles.
- Work closely with clients, understand their preferences, and translate their vision into a functional and aesthetically pleasing interior design.
- Display fundamentals of project management, including budgeting, scheduling, and coordination of design projects and use effective communication and presentation skills to convey design ideas.

URBAN DESIGN

- Comprehend the historical, social, economic, and environmental factors that shape urban environments.
- Develop proficiency in fundamental urban design principles including spatial organization, circulation, density, and land use.
- Learn to integrate sustainable design practices to create environmentally friendly and resilient urban spaces including an effective site analysis.
- Create a Design process, from concept development and sketching to detailed design and implementation, and recognize the importance of community engagement and participation in design processes.
- Analyze and manipulate urban form and morphology to achieve specific design objectives.
- Display the knowledge of local zoning codes, building regulations, and legal aspects of urban design.
- Communicate design ideas effectively through drawings, models, and presentations and give importance to ethical implications of urban design decisions including social equity, inclusivity, and cultural sensitivity.

URBAN PLANNING

- Reflect the knowledge of urban systems including transportation, housing, land use, and infrastructure.
- Conduct spatial analysis to assess and analyze urban environments including demographic data, land use patterns, and geographic information systems (GIS).
- Explore sustainable urban planning principles and practices to create environmentally friendly and resilient cities and analyze and evaluate urban policies, such as housing policies, transportation policies, and sustainability initiatives.
- Use zoning codes, land use regulations, and the legal aspects of urban planning and development, and involve communities and stakeholders.
- Explore strategies for affordable housing development and addressing housing challenges in urban environments.
- Apply transportation planning strategies to improve mobility and accessibility within urban areas.
- Examine strategies for promoting economic development and revitalization within urban, peripheral, and rural areas.
- Recognize the importance of ethical aspects of urban planning, including social equity, inclusivity, and addressing disparities in urban development.
- Planning tools and techniques, such as land use models and scenario planning, and create balance in resource-sharing mechanisms in various types of human settlements.

DESIGN FOR UNIVERSAL ACCESSIBILITY

- Analyze and interpret the national and international standards for accessible design.
- Extract the Common design considerations for especially abled persons.
- Incorporate accessible design principles into the design projects.
- Comprehend the knowledge of anthropometrics and architectural signage.

GENERAL EDUCATION COURSES

For Course Learning Outcomes (CLOs) of the mandatory 13 subjects worth 32 credits in the General Education (GE) cluster, Model CLOs prepared by HEC for these courses may be consulted.

Curriculum for Master of Architecture (M. Arch)

MASTER OF ARCHITECTURE

PROGRAM OVERVIEW

The program, offering both specialized and general studies options, is a strategic response to the multifaceted needs and aspirations of architecture students and the evolving dynamics of the profession. Both options are designed to equip graduates with advanced knowledge and research skills in architecture. In the specialized option, the candidates have great flexibility to select the area of their own choice for in-depth studies. This option strengthens the graduates in their chosen architectural careers, while also contributing to the advancement of the architectural discipline in Pakistan and on the global stage. The M. Arch (General) option covers some important areas but not any specific or specialized area. It provides a broad-based understanding of the field and its connections to other disciplines, enhancing the versatility and adaptability of an evolving professional. In both options, the program structure includes a combination of four core courses and four elective courses with a thesis. In M. Arch (specialized), the core courses, elective courses, and thesis are aligned with the specialization area. In the general option of M. Arch, the core courses are diversified, and elective courses contribute to these areas. In this option, the thesis must address one of the core areas. Both options are designed for 30 credit hours and shall be considered equivalent for all practical purposes. The architecture schools can start multiple specialized programs subject to the availability of relevant faculty and approval of the HEC in each case. One NOC from HEC will be considered as the requirement to start the M. Arch program.

M. ARCH (SPECIALIZATION) RESEARCH TRACK

M. Arch (specialized) is an option where graduates have an opportunity to excel in a particular area of architecture. In this option, four streams are initially allowed and are in no way restricted. The schools may consider other options considering the availability of faculty and other resources. Students will select a specialized area from the options offered by the department. The total credit hours requirement is 30. The minimum and maximum duration for degree completion is 18 and 48 months. The research tracks/streams are:

1. Architectural Heritage and Conservation (AHC)
2. Responsive Architecture (RA)
3. Energy Efficient Architecture (EEA)
4. Building Technology (BT)

M. ARCH SPECIALIZATION STREAMS AND CORE COURSES

Stream I (30 Credits) Architectural Heritage and Conservation (AHC)	Stream II (30 Credits) Responsive Architecture (RA)	Stream III (30 Credits) Energy Efficient Architecture (EEA)	Stream IV (30 Credits) Building Technology (BT)
Core Courses (12 Credits)	Core Courses (12 Credits)	Core Courses (12 Credits)	Core Courses (12 Credits)
1. Architectural Heritage and Conservation	1. Climate Responsive Architecture	1. Building Performance & Monitoring Techniques	1. Building Information Modeling (BIM
2. Conservation Theory, History & Technology	2. Human Centric Design	2. Sustainable Building Design	2. Advanced Technology in Architecture
3. Heritage Legislation and Policies	3. Responsive Design & Built Environment	3. Building and Urban Energy Modeling	3.Building Systems Integration
4. Architectural Research Methods	4. Architectural Research Methods	4. Architectural Research Methods	4. Architectural Research Methods

COURSE REQUIREMENTS AND CREDIT HOURS

- Four (04) core courses of 12 credits related to area of specialization.
- Four (04) elective courses of 12 credits from the elective list of respective specialization.
- A thesis of six (06) credit hours aligned with the area of specialization.

CORE COURSES (12 CREDITS)

- Students are required to take four (04) core courses offered by the department.
- The department may add a maximum of four (04) more core courses to the list given above according to the specialized area of the faculty.

ELECTIVE COURSES (12 CREDITS)

- Four (04) elective courses from the list of the respective specialization. Students can choose four (04) elective courses from a range of elective courses offered by the department.
- The list of the elective courses for each specialization is given below. The list of elective courses may be enhanced according to the availability of faculty.
- Elective courses must be offered according to the expertise available in the department, but these must synchronize with the core courses.

STREAM 1: ARCHITECTURAL HERITAGE AND CONSERVATION (AHC)

ELECTIVE COURSES

1. Conservation of Urban Built Heritage
2. Advanced Conservation Technology
3. Conservation Materials and Techniques
4. Art and Architecture of a Core City in Pakistan
5. Religious Architecture of a Historical Period in Pakistan
6. History and Architecture of Cantonments in Pakistan
7. Heritage of Forts in Pakistan
8. History and Development of Urban Form
9. Conservation and Adaptive Reuse
10. Colonial Architectural Heritage in Pakistan
11. Building Technology and Development during British India
12. Modern Technologies and Conservation

STREAM 2: RESPONSIVE ARCHITECTURE (RA)

ELECTIVE COURSES

1. Disaster Resilience & Risk Assessment Strategies
2. Dynamic Facades Design in a Specific Climate Zone
3. Smart Materials and Responsive Structures
4. Human Centred Design for Responsive Spaces
5. Responsive Urban Planning and Sustainable Cities
6. Responsive Interior Architecture
7. Daylighting and Natural Ventilation Strategies
8. Responsive Landscape Architecture
9. Acoustic Design for Responsive Environments
10. Urban Resilience and Climate Adaptation
11. Responsive Design for Cultural and Artistic Spaces
12. Responsive Design for Adaptive Reuses Projects
13. Responsive Design and Biophilic Architecture
14. Responsive Architecture Case Studies and Best Practices
15. Responsive Healthcare Facility Design

STREAM 3: ENERGY EFFICIENT ARCHITECTURE (EEA)

ELECTIVE COURSES

1. Net-Zero Energy Building Design
2. Advanced Building Envelope Technologies
3. Energy Modelling and Simulation
4. Daylighting and Electric Lighting Design
5. Building Commissioning for Energy Efficiency
6. Advanced Thermal Comfort and Indoor Air Quality

7. Building Energy Auditing and Retrofits
8. Renewable Energy Integration in Buildings
9. Sustainable Building Design
10. Sustainable Materials and Life Cycle Assessment
11. Building Resilience and Climate Adaptation
12. Advanced Building Controls and Automation
13. Sustainable Building Economics and Finance
14. High-Performance Energy Efficient Buildings
15. Sustainable Urban Planning and High-Performance Communities
16. Low-Income Housing and Energy Efficient Solutions
17. Building Energy Management Systems
18. Circular Economy and Sustainability

STREAM 4: BUILDING TECHNOLOGY (BT)

ELECTIVE COURSES

1. Smart Building Systems
2. Building Information Modeling (BIM) and its applications
3. Building Automation & Control Systems
4. Smart Materials
5. Accessibility Technologies
6. Virtual Reality and Augmented Reality
7. Advanced Construction Materials and Techniques
8. Sustainable Building Technologies
9. Digital Tools for Construction & Project Management
10. Construction Safety and Risk Management
11. Green Building Certifications and Sustainability
12. Innovations in Structural Engineering
13. Fire Protection and Life Safety Systems
14. Modular and Prefabricated Construction
15. Advanced Environmental Technologies
16. Building Maintenance and Facility Management
17. Building Systems Performance Analysis
18. Precast and Pre-Stressed Concrete Products for building
19. Green Materials and Construction

M. ARCH (GENERAL RESEARCH TRACK)

M. Arch (General) provides a broad understanding of various emerging areas in architecture and focuses on one of the areas in the research thesis. M. Arch (General), research track is designed for 30-40 credit hours with four core and four elective courses. The department must ensure that core courses are selected according to the available expertise. The elective courses are required to strengthen the core courses. After the completion of core and elective courses students are required to complete a thesis

aligned with one of the core areas. Architecture Schools may follow the core and elective courses given in the sections below or they may include other courses considering the expertise of available faculty while seeking NOC from HEC.

COURSE REQUIREMENTS

- Four (04) core courses of 12 credits.
- Four (04) elective courses of 12 credits.
- A thesis of six (06) credits.

CORE COURSES

1. Architectural Heritage and Conservation
2. Responsive Architecture
3. Research Methods
4. Energy Efficient Architecture

ELECTIVE COURSES

1. Heritage Legislation and Policies
2. Conservation Theory, History and Technology
3. Climate Responsive Architecture
4. Human Centric Design
5. Responsive Design & Built Environment
6. Building Performance Simulation and Monitoring Techniques
7. Sustainable Building, Codes and Certifications
8. Building and Urban Energy Modelling
9. Building Information Modelling
10. Advanced Technology in Architecture

SCHEME OF STUDIES FOR M. ARCH (GENERAL) AND M. ARCH (SPECIALIZATION)

Credit Hours	30-40
Four Core Courses	12 Credits
Four Elective Courses	12 Credits
Thesis	6 Credits
Program Duration	3 Semester (1.5 years), Maximum up to 4 years
Semester Duration	16-18 weeks (1-2 weeks for examination)
Course Load	As per HEC Semester Guidelines
Summer Semester Credit Hours	As per HEC Semester Guidelines
Summer Duration	8 – 10 weeks
Attendance	75%
Minimum GPA for the award of Degree	A minimum 2.0 CGPA on a scale of 4.0 is required for the award of M. Arch degree.

DEGREE TITLE

a. For M. Arch (Specialization): M. Arch (Complete name of the specialization)
b. For M. Arch (General): M. Arch

ADMISSION REQUIREMENTS

- A minimum 2.0 CGPA in B. Arch or equivalent qualification.
- Research proposal outlining the intended area of research. (If required by the institute)
- Clear the department admission test and interview with 60 and 50 percentage marks respectively.

A SUGGESTIVE SEMESTER TEMPLATE FOR M. ARCH (GENERAL) AND M. ARCH (SPECIALIZATION)

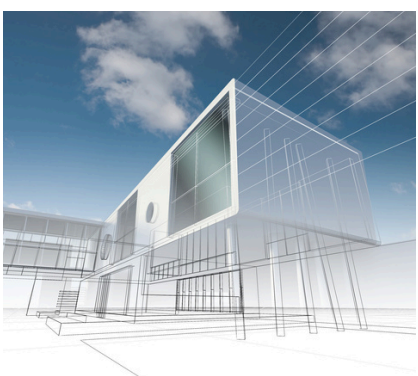
Semester 1		
Course Code	Core Courses M. Arch (specialization) (Architectural Heritage and Conservation)	Credits
As per Institution Format	Architectural Heritage and Conservation	03 (03, 0) 03
	Research Methods for Heritage Conservation	03 (03, 0) 03
	Heritage Legislation and Policies	03 (03, 0) 03
	Conservation Theory, History, and Technology	03 (03, 0) 03
Total Credit Hours		12

Semester 1		
Course Code	Core Courses M. Arch (General)	Credits
As per Institution Format	Architectural Heritage and Conservation	03 (03, 0) 03
	Responsive Architecture	03 (03, 0) 03
	Research Methods	03 (03, 0) 03
	Energy Efficient Architecture	03 (03, 0) 03
Total Credit Hours		12

Semester 2		
Course Code	Elective Courses M. Arch (General) or M. Arch (Specialization)	Credits
As per Institution Format	From elective list	03 (03, 0) 03
	From elective list	03 (03, 0) 03
	From elective list	03 (03, 0) 03
	From elective list	03 (03, 0) 03
Total Credit Hours		12

Semester 3		
Course Code	Thesis M. Arch or M. Arch (Specialization)	Credits
As per Institution Format	Thesis as per approval of the competent authority	06 (00, 12) 12
Total Credit Hours		06

Semester 4		
Course Code	Thesis M. Arch or M. Arch (Specialization)	Credits
As per Institution Format	Thesis (Continued)	06 (00, 12) 12
Total Credit Hours		06



HIGHER EDUCATION COMMISSION
ISLAMABAD – PAKISTAN