

Bachelor

of

Architecture Engineering

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Bachelor Degree in Architectural Engineering

Aims

The Bachelor Degree in Architectural Engineering at Islamic Azad University (IAU)-UAE Branch program aims to present a combination package of many architectural subjects. The program aims consist of presenting a series of following skills and valuable knowledge.

- The program aims to prepare the graduates to engage with architectural practice and profession through comprehensive and cognitive knowledge in environment and ecology, socio-cultural conditions, construction techniques, drafting, detailing and building standards, designing practice processes and theories, programming, and building science.
- The program aims to familiarise students with design and construction through a teamwork-oriented study approach regarding the environment, ecology, socio-cultural values and ethics in architecture, and sustainable changes.
- The program aims to develop students' analytical thinking, problem-solving skills, critical thinking abilities, communicative skills, practical skills, and conceptual skills in various contexts and conditions in architecture.

Program Learning Objectives (PLO)

The Bachelor of Architectural Engineering program objectives relate to the skills, techniques, and knowledge essential for architectural studies, practice, and profession. Upon the successful completion of the program, the graduate is expected to be capable of:

- PLO1:** Recalling, classifying and translating a primary body of skills, techniques and knowledge in interdisciplinary and sub-disciplines fields: (1) geometry, trigonometry, 2D and 3D analytical algebra, mathematics; (2) building science, materials, statics and material strength, structural, mechanical, electrical and constructing building systems; (3) practical and theoretical perspectives; (4) sketching, drawing, projecting, sectioning and planning patterns, rules and standards; (5) daylighting, climate factors, natural ventilation and acoustics.
- PLO2:** Applying graphical, formal, verbal and oral presentation techniques and skills to develop analytical thinking and using presentation tools and instruments to represent objects, buildings and urban-landscape projects.
- PLO3:** Classifying, describing and analysing human precedents and architecture through history in vernacular, local, Iranian and Islamic architecture, world architecture and contemporary architecture.
- PLO4:** Applying team-working concepts and procedures in all parts of architectural studies and profession.
- PLO5:** Applying and translating socio-cultural, environmental and ecological aspects into architecture studies and design.
- PLO6:** Experimenting and testing different types of materials, processes and theories in architectural studies and professions.

PLO7: Developing design thinking, ideation, conceptualising, problem-solving and critical thinking through applying theories, practices and skills.

PLO8: Creating integrative, conventional and innovative projects following high-quality standards in the architectural profession (authentic, technical and contextual)

PLO9: Developing small building construction techniques and methods, site works and workshops.

Upon completing the requirements of the following courses, credits and hours, the students will be graduated as an architect in the Bachelor of Architectural Engineering program.

Category	Course Type	No	Credits	Hours/week
I	Core Courses (Basic)	10	26	48
II	Core Courses (Main)	31	87	135
III	General Elective Courses	4	8	10
Total		45	121	193

Course Courses (Basic)

Architectural Communication I- Core Course (Basic)

Architectural Communication (I) introduces basic processes, methods and techniques of drawings, presentation, and model making to present and represent design procedures. Students develop the skills includes presentation medium and various media, technical and freehand drawings techniques and procedures, linear and parallel perspective drawings, geometrical drawings and descriptive geometries.

This course is based on Workshop learning (WL) and Site Visit and Project Base (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Use different drawing tools and instruments

Explain projection logic and methods (Descriptive Geometry)

Use a wide range of drawings techniques in 2D and technical drafting standards

Do Freehand drawing (objects, buildings, figures and landscapes)

Apply parallel and liner projection perspective rules (3D Drawings)

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Ching, F. (2015) Architectural Graphics, Chichester: John Wiley
	McMorrough, J. (2015) Drawing for Architects: How to Explore Concepts, Define Elements, and Create Effective Built Design through Illustration, Massachusetts: Rockport
	Yanes, M. Domínguez, E. (2005) Freehand Drawing for Architects and Interior Designers, Barcelona: Norton
Persian Bibliography	
Software	N/A

Architectural Communication II- Core Course (Basic)

Architectural Communication (II) is an extension to Architectural Communication (I). This unit develops the process, methods and techniques of freehand drawing, introduce chromatic drawings, chromatic presentations, and photography to present and represent design thinking and procedure. Students develop the skills, including recording, mapping and analysing surrounding environments, presentation ideation, proceeding with freehand drawings techniques and procedures, developing perspective drawings, photography basics, and techniques.

This course is based on workshop learning (WL), site visit, and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Use different chromatic drawing tools and instruments and different camera types
- Do Freehand drawing (objects, buildings, figures and landscapes) and draw projection perspective (3D Drawings)
- Apply chromatic rendering and presentation techniques
- Implement sketching methods and techniques to present design and visual thinking
- Use camera, photography techniques, and analysing pictures

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Lin Mike W. (1985), <i>Architectural Rendering Techniques: A Color Reference</i> , John Wiley.
	Lin Mike W. (1993), <i>Drawing and designing with Confidence: A step by Step Guide</i> , John Wiley.
	Thomas, H. (2018) <i>Drawing Architecture: The Finest Architectural Drawings through the Ages</i> , Phaidon.
	Freeman M. (2019) <i>The Photographers Eye: A Graphic Guide: Instantly Understand Composition & Design for Better Photography</i> , Taylor & Francis Group.
Persian Bibliography	امید آذری، آرتور (۱۳۹۰)، آموزش گام به گام راندو در معماری، تهران، انتشارات یساولی.
	امید آذری، آرتور (۱۳۸۶)، آموزش اسکیز در معماری و معماری منظر، تهران، گنج هنر.
	طایفه، احسان (۱۳۸۸)، چگونه معمارانه طراحی کنیم، تهران، موسسه علم معمار.
Software	N/A

Architectural Communication III-Core Course (Basic)

Architectural Communication (III) is an extension to Architectural Communication (I) and (II). This unit is a final course in this category and finalises drawing, recording ideation, sketching, rendering process, methods and techniques. This course introduces software mechanisms and procedures in architectural presentation. Students develop the skills, including drawing, visualising, and illustrating, finding and solving problem processes based on different software and mediums. This course presents Iranian and Islamic Architecture cases.

This course is based on workshop learning (WL), computer-based learning (CL) (in computer laboratory) and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Use different rendering and presentation methods, techniques, presentation and drawing software (regarding Iranian and Islamic Architecture cases)
- Analyse architectural projects and their contents (regarding Iranian and Islamic Architecture cases)
- Sketch visual thinking process and map the ideation process
- Draw conceptual and visionary images
- Perform teamwork design

Prior knowledge &/ or skills

Architectural Communication (I) and (II)

Learning resources required

Educational Resource	Description
Bibliography	Lin Mike W. (1985), Architectural Rendering Techniques: A Color Reference, John Wiley.
	Lin Mike W. (1993), Drawing and designing with Confidence: A step-by-step guide, John Wiley.
	Thomas, H. (2018) Drawing Architecture: The Finest Architectural Drawings through the Ages, Phaidon.
Persian Bibliography	صديق، مرتضى و ديگران (۱۳۸۸)، گرافيك و تحليل سايت، تهران، انتشارات كلهر.
	اميد آذرى، آرتور (۱۳۸۶)، آموزش اسكيس در معماری و معماری منظر، تهران، گنج هنر.
	طايفه، احسان (۱۳۸۸)، چگونه معمارانه طراحی كنيم، تهران، مؤسسه علم معمار.
Software	Adobe Photoshop, Sketch-up, Corel Draw

Architectural Basic Design I- Core Course (Basic)

Architectural Basic Design (II) introduces the primary process, methods and techniques of design, drawing and model making skills. Students will expand and strengthen their skills includes

- model making process and techniques
- imagination and ideation process
- ideation's materialisation process in 2D and 3D objects
- design thinking process.

The skills mentioned above are developed within the projects. The course provides materials for the design process, development, testing and research. Students learn to select appropriate techniques and methods for ideation and design process.

This course is based on workshop learning (WL) and site visit learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Use appropriate drawing and modelling techniques (2D and 3D accurate modelling) and a range of design skills

Explain the precedents

Use different ideation techniques and methods

Analyse the class projects

Apply and test ideas in projects

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Tait, J. (2018) the Architecture Concept Book, London: Thames & Hudson.
	Pause, M Clark, R . (2012) Precedents in Architecture: Analytic Diagrams, Formative Ideas, and Partis (fourth edition), New Jersey: John Wiley.
	Porter, T (2004) Archi-Speak: An Illustrated Guide to Architectural Terms, London, E & F Spon press.
Persian Bibliography	
Software	N/A

Architectural Basic Design II- Core Course (Basic)

Architectural Basic Design (II) extends and develops Architectural Basic Design (I) and Architectural Communication (I). It introduces basic processes, methods and techniques of meanings and concepts seeking in design ideation and process. Students expand and strengthen their skills, including

- thinking process: imagining and reasoning
- meaning and concept seeking
- improving form and space relation by using 2D and 3D objects
- applying form, function, construction and structure relation
- thinking process visualisation.

This course provides materials for the design process through teamwork and co-designing.

This course is based on workshop learning (WL), computer-based learning (CL) (in computer laboratory) and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Use appropriate thinking process and a complex combination of imagination and reasoning

Apply meaning and concept seeking in the design process

Explain the relationship between architectural categories (form, function, construction, meaning, and space)

Apply structural elements in architectural design

Examine ideas in projects

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Tait, J. (2018). <i>The Architecture Concept Book</i> , London: Thames & Hudson.
	Pause, M Clark, R. (2012). <i>Precedents in Architecture: Analytic Diagrams, Formative Ideas, and Partis (fourth edition)</i> , New Jersey: John Wiley.
	Porter, T (2004). <i>Archi-Speak: An Illustrated Guide to Architectural Terms</i> , London, E & F Spon press.
	Eckler, J. (2012). <i>Language of space and form: generative terms for architecture</i> , New Jersey: John Wiley.
Persian Bibliography	
Software	N/A

Architectural Basic Design III-Core Course (Basic)

Architectural Basic Design (III) extends and develops Architectural Basic Design (I) and (II). It introduces the process, methods and techniques of form and space in the design process. Students expand and strengthen their skills, including

- Visualising and enriching spatial intelligence
- Concepting the formation process
- Designing factors
- Spatial analysis and critics
- Critical thinking in the design process, and
- Spatial design

This course provides materials for the spatial design process. The range of design skills developed through teamwork and co-designing.

This course is based on workshop learning (WL), computer-based learning (CL) (in computer laboratory) and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Use spatial visualisation techniques, methods and spatial intelligent

Apply concept formation process

Explain design factors (program, context, client, culture)

Use critical thinking in the spatial design process

Apply spatial design in projects

Prior knowledge &/ or skills

Architectural Basic Design (I) and (II)

Learning resources required

Educational Resource	Description
Bibliography	Tait, J. (2018) the Architecture Concept Book, London: Thames & Hudson.
	Pause, M Clark, R. (2012) Precedents in Architecture: Analytic Diagrams, Formative Ideas, and Partis (fourth edition), New Jersey: John Wiley.
	Porter, T (2004) Archi-Speak: An Illustrated Guide to Architectural Terms, London, E & F Spon press.
	Eckler, J. (2012) Language of space and form: generative terms for architecture, New Jersey: John Wiley.
	Unwin, S (1997) Analysing Architecture, London, Rutledge.
Persian Bibliography	
Software	Sketch-up, AutoCAD

Sketch I-Core Course (Basic)

Sketch (I) or Esquiss (I) is a Beaux-Arts tradition experiment. It introduces basic processes, methods, drawings, and presentations to record a project design procedure in 8 to 10 hours. Students develop the skills, including thinking, solving problems, drawing, sketching, studying, and time management, to find a project idea quickly.

This course is based on workshop learning (WL) and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Use different drawing tools and instruments

Break down programs elements

Use a wide range of drawings techniques in 2D, 3D perspectives and technical drafting standards

Conduct Freehand drawing (objects, buildings, figures and landscapes)

Apply the ideation process and form-finding process

Prior knowledge &/ or skills

Architectural Basic Design (III)

Learning resources required

Educational Resource	Description
Bibliography	Ching, F. (2015) Architectural Graphics, Chichester: John Wiley
	McMorrough, J. (2015) Drawing for Architects: How to Explore Concepts, Define Elements, and Create Effective Built Design through Illustration, Massachusetts: Rockport
	Yanes, M. Domínguez, E. (2005) Freehand Drawing for Architects and Interior Designers, Barcelona: Norton
Persian Bibliography	طایفه، احسان (۱۳۹۰) ایده و خلاقیت در معماری ایرانی، تهران، نشر علم معمار.
	حجت، عیسی (۱۳۸۹) مشق معماری، تهران، انتشارات دانشگاه تهران.
Software	N/A

Sketch II-Core Course (Basic)

Sketch (II) or Esquiss (II) is a Beaux-Arts tradition experiment and is derived from Sketch (I). It introduces drawings and presentations' processes, methods, and techniques to record a project design procedure in 8 to 10 hours. Students develop the skills, including thinking, solving problems, drawing, sketching, studying, and time management, to find a project idea quickly. Ideation, Diagrammatizing and Climatically ideas are developed in this course.

This course is based on workshop learning (WL) and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Use different drawing tools and instruments

Break down programs elements

Use a wide range of drawings techniques in 2D, 3D perspectives and technical drafting standards

Do Freehand drawing (objects, buildings, figures and landscapes)

Use ideation process and form-finding process

Prior knowledge &/ or skills

Architectural Basic Design (III)

Learning resources required

Educational Resource	Description
Bibliography	Ching, F. (2015) Architectural Graphics, Chichester: John Wiley
	McMorrough, J. (2015) Drawing for Architects: How to Explore Concepts, Define Elements, and Create Effective Built Design through Illustration, Massachusetts: Rockport
	Yanes, M. Domínguez, E. (2005) Freehand Drawing for Architects and Interior Designers, Barcelona: Norton
Persian Bibliography	طایفه، احسان (۱۳۹۰) ایده و خلاقیت در معماری ایرانی، تهران، نشر علم معمار.
	حجت، عیسی (۱۳۸۹) مشق معماری، تهران، انتشارات دانشکاه تهران.
Software	N/A

Man, Nature, and Architecture-Core Course (Basic)

Man, Nature, and Architecture as a first semi theoretical course introduce theoretical points of view and human, nature relationship and cosmology that changed through architecture and vice versa; review manufactured strategies and approaches from prehistory to postmodern. This unit discusses compatibility architecture and nature, reviews and explains these approaches in the different geographical and cultural situation; and show architectural patterns and critical thinking through these cases.

This course is based on workshop learning (WL), site visit, lecture-based learning, and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Define architecture, nature and human beings relationship
- Explain continuity and interruption in architecture history
- Sketch and model the architecture and nature relationship diagrams
- Analyse influential factors in architecture and nature

Prior knowledge &/ or skills

Architectural Basic Design (I)

Learning resources required

Educational Resource	Description
Bibliography	Gruber, P. (2011) <i>Biomimetic in architecture: architecture of life and buildings</i> , Springer, New York.
	Jodidio, P. (2006) <i>Architecture: Nature</i> , Prestel, Munich.
	Laffon, C., Laffon, M. (2004), <i>A home in the world: houses and cultures</i> , H.N. Abrams, New York.
	Portoghesi, P. (2000), <i>Nature and architecture</i> , Skira, Milano.
	Otto, F., Rasch, B. (1995), <i>Finding form: Towards on architecture of the minimal</i> , Deutcher Werkbund, Munich.
	Rudofsky, P. (1981) <i>Architecture without architect</i> , Academy editions, London.
Persian Bibliography	
Software	N/A

Computer-Aided Architectural Presentation-Core Course (Basic)

Computer-Aided Architectural Presentation introduces 2D and 3D software to undergraduate architecture engineering students. Students develop the skills such as software environment, logic, commands and editing process. This unit focuses on AutoCAD for 2D and Sketch Up for 3D drawings.

This course is based on workshop learning (WL) and project-based learning (PBL).

Learning Outcomes

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Apply a wide range of drawings techniques in 2D and technical drafting standards

Use a wide range of drawings techniques in 3D perspectives

Apply drawing techniques in practice

Prior knowledge &/ or skills

Architectural Basic Design (II)

Learning resources required

Educational Resource	Description
Bibliography	Onstott, S. (2013). <i>AutoCAD 2014 Essential: Autodesk</i> , Official Press, Sybex.
	Chopra, A (2010) <i>Google Sketch Up 8 for Dummies</i> , John Wiley & Sons.
Persian Bibliography	
Software	AutoCAD, Sketch-Up

Core Courses (Main)

(Basics of) Architectural Theory-Core Course (Main)

Basics of Architectural Theory is a theoretical course that introduces theoretical studies and views on architectural philosophy. The overall themes and contents in this course are focused on the (1) architecture definition and explanation, (2) role of architects in the society and profession, (3) theories of architectural categories (form, function, context, construction, meaning and will), (4) architectural treatises and textbooks, (5) theories and manifestos in Post-Modern era and finally (6) theory and design.

This course helps the students review, analyse and criticise architectural thesis and theories; and help them introduce and construct a theoretical framework for design projects through their writings and essays.

This course is based on Lecture learning (LL) and Workshop learning (WL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define and explain the terms ‘architecture and architect.’

Review the architecture categories, their elements, relationship and the history of theories in architecture

Analyse essay’s and texts in architecture

Criticise architectural essays through writing

Construct up a theoretical framework for design projects

Prior knowledge &/ or skills

Architectural Design (I)

Learning resources required

Educational Resource	Description
Bibliography	Capon, D.S., 1999, Architectural Theory, The Vitruvian Fallacy: Principles of Twentieth-century Architectural Theory Arranged by Category, John Wiley & Son.
	Capon, D.S., 1999, Architectural Theory, Le Corbusier's Legacy: Principles of Twentieth-century Architectural Theory Arranged by Category, John Wiley & Son.
	Johnson, P.A., 1994, The Theory of Architecture, Concepts, Themes, and Practices; Van Nostrand Reinhold, New York.
	Hays, M. 1998, Architectural Theory Since 1968, The MIT Press, Cambridge, Massachusetts.
	Kruft, H. W., 1994, A History of Architectural Theory from Vitruvius to the present; Princeton Architecture Press.
	Crysler, C.G., 2012, The SAGE Handbook of Architectural Theory, SAGE Publications
	Nesbitt, K., 1996, Theorising a New Agenda for Architecture:: An Anthology of Architectural Theory 1965 - 1995, Princeton Architectural Press.
Persian	ترجمه‌ی کتاب دیوید اسمیت کپن از انتشارات دانشگاه آزاد اسلامی واحد علوم و تحقیقات و ترجمه‌ی علی یاران.
	ترجمه‌ی کتاب کیت نزیبیت، انتشارات نشر نی به ترجمه‌ی محمدرضا شیرازی.



	ترجمه‌ی کتاب والنز کروفث، انتشارات کتابکده‌ی کسری و ترجمه‌ی پویان روحی.
Software	N/A

World Architecture (History)- Core Course (Main)

World Architecture (History) as a Historical and theoretical course introduces historical studies from Pre-History to the Modern era. The overall themes and contents in this course are focused on (1) introducing form, space and structure processing through history, (2) analysing precedents and historical cases, (3) marking out and clarifying architectural styles through their geography, climate and socio-cultural context and condition.

This course helps the students review, analyse, and criticise the history of world architecture; and help them break down historical styles, patterns, and criticism of architectural values and formulate historical architecture.

This course is based on Lecture learning (LL) and Workshop learning (WL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Describe and explain historical architecture and styles
- Develop historical design process
- Analyse architectural precedents and historical cases
- Criticise architectural styles and precedents
- Develop historical architecture process

Prior knowledge &/ or skills

Architectural Basic Design (I)

Learning resources required

Educational Resource	Description
Bibliography	Trachtenberg, M. Hyman, I., 2003, Architecture, from Prehistory to Postmodernity, Prentice-Hall.
	Fletcher, B., 1996, a History of Architecture, Architectural Press.
	Arnold, D., 2003, Reading Architectural History, Taylor & Francis.
	Kruft, H. W., 1994, A History of Architectural Theory from Vitruvius to the present; Princeton Architecture Press.
Persian	بانی مسعود، امیر ۱۳۹۱، تاریخ معماری غرب از عهد کهن تا مکتب شیکاگو، نشر خاک، اصفهان.
	گمبریچ، ارنست، ۱۳۷۸، تاریخ هنر، ترجمه‌ی علی رامین، نشر نی، تهران.
Software	N/A

(Iranian) Islamic Architecture (History) I-Core Course (Main)

(Iranian) Islamic Architecture is a historical and theoretical course that introduces concepts, themes and practices in Islamic Architecture. The overall themes and contents in this course are focused on the (1) introducing Iranian-Islamic building types like Mosque, Karvansara, Madrasa, Shrines, Bathes, Gardens or Baghes, and Houses (2) surveying, drawing, analysing precedents and historical cases, (3) marking out and clarifying architectural styles and ideas through their geography, climate and socio-cultural context and condition and (4) transforming to our real life, lived life and derived concepts and ideas to nowadays architecture.

This course helps the students draw, outline, explain, analyse and criticise Iranian Islamic architecture; and help them to develop elements, patterns, and formulated design guidelines.

This course is based on Lecture learning (LL) and Workshop learning (WL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define Iranian-Islamic Architecture concepts, themes and practice

Describe building types and diagram

Analyse precedents

Analyse architectural precedents and historical cases

Develop precedents design guidelines

Prior knowledge &/ or skills

Architectural Basic Design (II)

Learning resources required

Educational Resource	Description
Bibliography	Hillenbrand, R., 1994, Islamic Architecture: Form, Function, and Meaning, Columbia University Press.
	Trachtenberg, M. Hyman, I., 2003, Architecture, from Prehistory to Postmodernity, Prentice-Hall.
	Pope, A.U., 2016, A New Survey of Persian Art, Brill.
Persian	پیرنیا، محمدکریم، ۱۳۸۹، شیوه‌های معماری ایرانی، تدوین غلامحسین معماریان، نشر هنرهای اسلامی، تهران.
	پیرنیا، محمد کریم، ۱۳۹۲، معماری اسلامی ایران، تدوین غلامحسین معماریان، انتشارات دانشگاه علم و صنعت ایران، تهران.
	حسین سلطانزاده، مجموعه انتشارات طاق و دفتر پژوهش‌های فرهنگی
	کیانی، محمد یوسف، 1390، تاریخ هنر و معماری ایران در دوره‌ی اسلامی، سازمان مطالعات و تدوین کتب علوم انسانی (سمت)، تهران.
Software	AutoCAD and Sketch-up

Islamic Architecture History II-Core Course (Main)

Islamic Architecture History II extends the concepts, themes, and practices presented in Islamic Architecture History I. It also introduces socio-cultural, political, and historical parameters derived from different nations, kingdoms, and countries.

This unit focuses on (1) Architectural organisation concepts (hierarchical organisation, central organisation, spatial and axial organisation), (2) Islamic Arts and Architecture interaction, (3) World Islamic Architecture, and (4) Analysing Islamic Architecture cases.

This course is based on Lecture Based Learning (LBL), Project-Based Learning (PBL), and Visiting Historical Settings (VHS).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Define and identify the Islamic architecture notions and ideas
- Summarise Islamic architecture and art relationship
- Compare world Islamic architecture and Iran's Islamic architecture
- Sketch form processing Islamic architecture types and design
- Analyse organisation concepts, themes and techniques

Prior knowledge &/ or skills

Architectural World History

Learning resources required

Educational Resource	Description
Bibliography	Hillenbrand, R., 1994, Islamic Architecture: Form, Function, and Meaning, Columbia University Press.
	Trachtenberg, M. Hyman, I., 2003, Architecture, from Prehistory to Postmodernity, Prentice-Hall.
	Sutton, D. 2007, Islamic Design: A Genius for Geometry, Wooden Books, Bloomsbury USA.
	Bloom, J.M. 2017, Early Islamic Art and Architecture, Taylor & Francis.
Persian	
	اتینگهاوزن، ریچارد، ۱۳۷۸، هنر و معماری اسلامی، مترجم یعقوب آژند، انتشارات سمت.
	رسولی، هوشنگ، ۱۳۸۹، تاریخچه و شیوه‌های معماری ایران، انتشارات دولت.
	شاهچراغی، آزاده، ۱۳۸۹، پارادایم‌های پردیس، انتشارات جهاد دانشگاهی.
Software	N/A

Contemporary Architecture Analysis I-Core Course (Main)

Contemporary Architecture Analyzing I includes categorising contemporary architecture and analysing methods and techniques in the field. This unit focuses on (1) Modernity in contradiction to Tradition, (2) Modern movement in architecture, (3) Review of chronological events and projects, and (4) Analysing current projects.

This course is based on lecture-based learning (LBL), Project-Based Learning (PBL), and Visiting Modern and Pre-Modern buildings and settings.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Define and identify Modernity versus Tradition
- Summarise roots of pre-modern and modern architecture
- Determine modern architecture themes and concepts
- Break down and analyse modern approach elements
- Criticise modern architecture projects and buildings

Prior knowledge &/ or skills

Architectural Basic Design I

Learning resources required

Educational Resource	Description
Bibliography	Giedion, S. 1967, Space, Time and Architecture: The Growth of a New Tradition; Harvard University Press.
	Frampton, K. 2007; Modern Architecture: A Critical History; Thames & Hudson.
	Curtis, W.J.R. 1987; Modern Architecture Since 1900; Phaidon.
	Norberg – Schulz Ch. 1988; Roots of Modern Architecture, Tokyo.
	Collins, P. 1965; Changing Ideals in Modern Architecture: 1750-1950; McGill University Press
Persian	
	مزینی، منوچهر؛ ۱۳۷۵؛ از زمان و معماری، انتشارات مرکز مطالعات و تحقیقات مسکن و شهرسازی؛ تهران.
Software	N/A

Contemporary Architecture Analysis II-Core Course (Main)

Contemporary Architecture Analysis II is an expansion course for Contemporary Architecture Analysis I by developing modern and post-modern architecture eras. In this course, studies focused on (1) the second generation of modern architecture (late modern architecture), (2) Post-modern architecture, (3) Review modern Iranian architecture, and (4) Analysing modern and post-modern projects.

This course is based on lecture-based learning (LBL), Project-Based Learning (PBL), and Visiting Modern and Post-modern buildings and settings.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define late modern and post-modern architecture

Categorise roots of modern and modern architecture in Iran

Criticise modern architecture themes and concepts

Analyse late modern and post-modern theories and approaches

Criticise late modern and post-modern architecture projects and buildings

Prior knowledge &/ or skills

Contemporary Architecture Analysis I

Learning resources required

Educational Resource	Description
Bibliography	Giedion, S. 1967, Space, Time and Architecture: The Growth of a New Tradition; Harvard University Press.
	Frampton, K. 2007; Modern Architecture: A Critical History; Thames & Hudson.
	Bani-Masoud, A., 2020; Contemporary Architecture in Iran: From 1925 to the Present; Amazon Digital Services LLC - KDP Print US.
	Jencks, C., 1977; The Language of Post-modern Architecture; Rizzoli.
Persian	
	مزینی، منوچهر؛ ۱۳۷۵؛ از زمان و معماری، انتشارات مرکز مطالعات و تحقیقات مسکن و شهرسازی؛ تهران.
	یبانی مسعود، امیر ۱۳۹۹، معماری مدرن ایران؛ انتشارات کتابکده کسری
Software	N/A

Architectural Design Process-Core Course (Main)

Architectural Design Process is a course concerning the design theories, methods and thinking process. This course focuses on (1) Design, Design Process and Design Methods, (2) Solving Problem Process and Critical thinking in the design thinking process, (3) Programming or Briefs, and (4) Design critics.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Categorise design, design process, design methods and design thinking process

Illustrate programs, problems and design steps/phase

Plan a design thinking and design process

Conceptualise and ideation design problems

Criticise design thinking process

Prior knowledge &/ or skills

Architectural Basic Design III

Learning resources required

Educational Resource	Description
Bibliography	Jormakka, K., Schurer, O., Kuhlmann, D., 2017, Basics Design Methods, Birkhauser.
	Ganshirt, C., 2020, Tools for Ideas: Introduction to Architectural Design, Birkhauser.
	Hearn, M.F.H., 2003, Ideas that Shaped Buildings, MIT Press.
	Hershberger, R.G., 1999, Architectural Programming and Predesign Manager, McGraw-Hill.
	Cherry, E., 1998, Programming for Design: From Theory to Practice; Wiley.
Persian	
Software	N/A

(Land) Surveying-Core Course (Main)

Surveying or Land Surveying includes introducing surveying principles, rules and techniques (logics, measurements, levelling and contouring), understanding land features and land works. Students will also learn to apply surveying instruments and measurements, calculation, sectioning, profiling, and practical skills.

This course is based on lecture-based learning (LBL), site work learning, and project-based learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Explain the land surveying logic, methods and techniques

Apply surveying tools and instruments in surveying

Solve measurement problems and calculate land works

Compare types of map and map-making techniques

Develop different types of maps

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Whyte, W.S. and Paul, R.E. 1997; Basic Surveying; Butterworth-Heinemann.
	Estopinal, S.V., 2009, A Guide to Understanding Land Surveys, Wiley.
Persian	فرهودی، رحمت‌اله، روستا، حسن و عبدالملکی، نسترن؛ ۱۳۸۹؛ کاربرد نقشه‌برداری در شهرسازی و معماری، تهران، دانشگاه تهران.
	نوبخت، شمس، ۱۳۹۰، نقشه‌برداری، تهران، انتشارات دانشگاه علم و صنعت ایران.
Software	AutoCAD, Land Map

Environmental Control Systems in Building-Core Course (Main)

This course, i.e. Environmental Control Systems in Building, helps develop students' concepts and understand human climatic and heating comfort conditions. In addition, this course covers heat transmission calculation in buildings and shows design guidelines through analysing historic and modern buildings.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Describe environments, human comfort conditions and climate design

Apply heat formulas and climatic approaches

Calculate heat masses, shades length and height, climate parameters

Compare and analyse historic and modern building thermal and cooling system

Examine climatic guidelines in design projects

Prior knowledge &/ or skills

Architectural Basic Design II

Learning resources required

Educational Resource	Description
Bibliography	Heerwagen, D. 2003. Passive and Active Environmental Controls: Informing the Schematic Designing of Buildings, McGraw-Hill Higher Education.
	Szokolay, S.V. 2008. Introduction to Architectural Science: The Basis of Sustainable Design, Elsevier/Architectural Press.
	Moore, F. 1993. Environmental Control Systems: Heating, Cooling, Lighting; McGraw-Hill architecture and urban planning series, McGraw-Hill.
Persian	حیدری، شاهی؛ ۱۳۹۳؛ سازگاری حرارتی در معماری، انتشارات دانشگاه تهران.
	قبادیان، وحید؛ ۱۳۹۳. بررسی اقلیمی ابنیه سنتی ایران؛ انتشارات دانشگاه تهران.
Software	Energy builders

Electrical and Acoustical Building Systems-Core Course (Main)

The course “Electrical and Acoustical building systems” is involved in two engineering disciplines: electrical engineering and acoustics engineering.

This course covers:

- (1) lighting electrical systems basics (principles and calculations)
- (2) building acoustics concepts, principles and practices.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Classify concepts, themes and techniques (electrical lighting design and acoustics design)
- Apply design guidelines and sketches diagrams
- Calculate lighting and acoustics formulas
- Sketch design diagrams (electric and acoustic design for interior and exterior spaces)
- Design basic electrical and acoustical project

Prior knowledge &/ or skills

Environmental control systems in buildings

Learning resources required

Educational Resource	Description
Bibliography	Dadras, AS 1995, Electrical Systems for Architects, McGraw-Hill.
	Wujek, J.B. and Dagostino, FR 2011, Mechanical and Electrical Systems in Architecture, Engineering and Construction, Pearson Education.
Persian	مقررات ملی ساختمان، مبحث سیزدهم، دفتر تنظیم مقررات ملی ساختمان وزارت راه و شهرسازی، ۱۳۸۲.
Software	DIALux

Building Mechanical Systems-Core Course (Main)

The course “Building Mechanical systems” covers the basics of building mechanical systems and their relationship to architecture. This course presents concepts, themes and techniques in mechanical design and shows mechanical engineers and architects working frameworks to use a common language. This unit explains different mechanical building systems, heating and cooling, piping, water supply, mechanical equipment and mechanical rooms in buildings, and fire protection systems. This unit also introduces the primary automatic system references for architectural design.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Classify concepts, themes and techniques (mechanical systems design)

Use mechanical system design diagrams

Calculate heating, cooling and water usage

Sketch design diagrams (mechanical room placement, mechanical hafts and duct distribution)

Design basic mechanical system design project

Prior knowledge &/ or skills

Environmental control systems in buildings

Learning resources required

Educational Resource	Description
Bibliography	Butler, R.B. 2002, Architectural Engineering Design: Mechanical Systems; McGraw-Hill Education.
	Wujek, J.B. and Dagostino, FR 2011, Mechanical and Electrical Systems in Architecture, Engineering and Construction, Pearson Education.
Persian	مقررات ملی ساختمان، مبحث چهاردهم، دفتر تنظیم مقررات ملی ساختمان وزارت راه و شهرسازی، ۱۳۹۱.
	مقررات ملی ساختمان، مبحث پانزدهم، دفتر تنظیم مقررات ملی ساختمان وزارت راه و شهرسازی، ۱۳۹۲.
	مقررات ملی ساختمان، مبحث نوزدهم، دفتر تنظیم مقررات ملی ساختمان وزارت راه و شهرسازی، ۱۳۸۹.
Software	N/a

Building Structure Systems-Core Courses (Main)

Building Structure Systems covers an introduction to structural systems and types, analysing structure behaviour, structural forms, conceiving modern structures' logics, and introducing modern architecture structures. In this unit, the basics types of building forces and the logic of force distribution are discussed.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Classify concepts, themes and techniques of building structure systems

Use structure systems logics

Apply different types of building structures

Calculate vertical and horizontal building forces

Sketch structure system diagrams

Prior knowledge &/ or skills

Concrete Building Design

Learning resources required

Educational Resource	Description
Bibliography	Sandaker, B.N. and Eggen, A.P. and Cruvellier, M.R. 2013, The Structural Basis of Architecture, Taylor & Francis.
	Ching, F.D.K. and Onouye, B.S. and Zuberbuhler, D. 2011, Building Structures Illustrated: Patterns, Systems, and Design, Wiley.
	Dabby, R. and Bedi, A. 2012, Structure for Architects: A Primer, Wiley.
	Mainstone, R. J. 2002, Developments in structural form, Cambridge, the MIT press.
Persian	سالوادوری، ماریو، ۱۳۸۹، سازه در معماری، ترجمه محمود گلابچی، انتشارات دانشگاه تهران.
	مور، فولر، ۱۳۸۷، درک رفتار سازه، ترجمه محمود گلابچی، انتشارات دانشگاه تهران.
Software	N/a

Building Statics and Structures-Core Courses (Main)

Building Statics and Structure cover introduction building forces, buildings reaction, logics and rules. This course explains loads and points, structural elements, loadbearing structures.

This course is presented in Lecture Based Learning (LBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Classify concepts, themes and techniques of building structure forces and loads

Use forces and loads logics

Apply different types of structural elements and loadbearing systems

Calculate the forces that affect a particular structural part and transmits

Determine the stability of structural element

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Sandaker, B.N. and Eggen, A.P. and Cruvellier, M.R. 2013, The Structural Basis of Architecture, Taylor & Francis.
	Ching, F.D.K. and Onouye, B.S. and Zuberbuhler, D. 2011, Building Structures Illustrated: Patterns, Systems, and Design, Wiley.
	Dabby, R. and Bedi, A. 2012, Structure for Architects: A Primer, Wiley.
	Mainstone, R. J. 2002, Developments in structural form, Cambridge, the MIT press.
Persian	سالوادوری، ماریو، ۱۳۸۹، سازه در معماری، ترجمه محمود گلابچی، انتشارات دانشگاه تهران.
	مور، فولر، ۱۳۸۷، درک رفتار سازه، ترجمه محمود گلابچی، انتشارات دانشگاه تهران.
Software	N/a

Material Strength and Steel Structure Design-Core Course (Main)

The course “Material Strength and Steel Structure Design” covers two main parts:

- Studying and developing the building forces, loads and moments calculation
- Introducing steel material, steel structures, and basic structural design

This course is based on Lecture Based Learning (LBL) and Site Visit Learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define and classify concepts, themes and techniques of steel structure buildings

Use forces, loads, moments diagrams

Apply different types of steel structural elements

Calculate and conjecture the profile of structural elements

Determine the steel structure design concept

Prior knowledge &/ or skills

Building Statics and Structures

Learning resources required

Educational Resource	Description
Bibliography	Onouye, B. and Kane, K. 2007, Statics and Strength of Materials for Architecture and Building Construction, Pearson Prentice Hall.
	Stephens, R.C. 2013, Strength of Materials: Theory and Examples, Elsevier Science.
	Bedi, A. and Dabby, R. 2019, Structure for Architects: A Case Study in Steel, Wood, and Reinforced Concrete Design, Routledge.
	Lawson, M. and Trebilcock, P. 2004, Architectural Design in Steel, Taylor & Francis.
Persian	گلابچی، محمود، ۱۳۹۰، مقاومت مصالح کاربردی، دانشگاه تهران.
	ملائیس، مالکوم ۱۳۹۱، مبانی سازه برای معماران، ترجمه محمد گلابچی و کتابیون تقی زاده، دانشگاه تهران.
Software	N/a

Concrete Building Design-Core Course (Main)

The course “Concrete Building Design or Reinforced Concrete Building Design” covers the main parts, introducing concrete technology and construction. This course also covers essential concrete building and structure design.

This course is based on Lecture Based Learning (LBL) and Site Visit Learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Classify concepts, themes and techniques of concrete construction

Use concrete building and construction logic and techniques

Apply structural and non-structural elements

Calculate and conjecture the profile of structural elements

Determine the concrete structure design concepts

Prior knowledge &/ or skills

Building Statics and Structure

Learning resources required

Educational Resource	Description
Bibliography	Frohlich, B. and Mollmann, M. and Benson, R. 2002, Concrete Architecture: Design and Construction, Dt. BauZeitschrift.
	Bedi, A. and Dabby, R. 2019, Structure for Architects: A Case Study in Steel, Wood, and Reinforced Concrete Design, Routledge.
Persian	گلابچی، محمود، ۱۳۹۰، مقاومت مصالح کاربردی، دانشگاه تهران.
	ملانیس، مالکوم ۱۳۹۱، مبانی سازه برای معماران، ترجمه محمد گلابچی و کتابیون تقی زاده، دانشگاه تهران.
	گلابچی، محمود ۱۳۸۸، طراحی ساختمان های بتنی برای دانشجویان، تهران، دانشگاه تهران.
Software	N/a

Building Cost Estimating-Core Course (Main)

Building Cost Estimating is a course that helps students figure out how to forecast the cost of building a physical structure. This course discusses why builders and clients worry about the financial impact of cost overruns and fail to complete a project. This course also covers the rationale for estimating how much a project will cost before deciding to move forward.

This course is based on lecture-based learning (LBL), Workshop Base Learning and Site Visit Learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define concepts, themes and techniques of building construction cost

Use standards, guidelines and formulas

Analyse and break down themes and process

Calculate cost lists

Estimate construction cost

Prior knowledge &/ or skills

Building Construction II

Learning resources required

Educational Resource	Description
Bibliography	Chiang, J.H. and Plotner, S.C. 2002, Building Construction Cost Data: 2003 Metric Version, Robert s Means Company.
	Holm, L. 2005, Construction Cost Estimating: Process and Practices, Pearson Prentice Hall.
	Holm, L. 2018, Cost Accounting and Financial Management for Construction Project Managers, Routledge.
Persian	فهرست بها و مقادير ابنيه، سازمان مديريت و برنامه ريزي كشور
Software	RSMeans

Construction Management-Core Course (Main)

Construction Management or Site Management covers building site works, building agents, building construction process and managing different site work phases. Students will develop their skills in site work organisation, scheduling and planning, quality management, cost management, inspection and acceptance, and handovers in this course.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Classify the concepts, the themes and the techniques of building site works

Define construction stage and process

Organise the site working

Calculate and estimate time and costs

Organise the site working

Prior knowledge &/ or skills

Construction I

Learning resources required

Educational Resource	Description
Bibliography	Bielefeld, B. 2013, Basics Project Management Architecture, Palgrave Macmillan.
	Pellicer, E. and Yepes, V. and Teixeira, J.C. and Moura, H.P. and Catal'a, J. 2013, Construction Management, Wiley
Persian	N/A
Software	N/A

Building Materials-Core Course (Main)

Building Material covers the history of building materials from prehistory until today, standard building materials, modern and new materials, materials analysis, and materials usage.

This course is based on Lecture Based Learning (LBL) and Project-Based Learning (PBL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Classify material requirements and technical properties
- Identify building materials
- Use building materials in proper position and connection
- Materialise design projects
- Design material approaches

Prior knowledge &/ or skills

N/A

Learning resources required

Educational Resource	Description
Bibliography	Fernandez, J. 2012, Material Architecture, Taylor & Francis.
	Borden, G.P. and Meredith, M. 2012, Matter: Material Processes in Architectural Production, Taylor & Francis.
Persian	سازمان مدیریت و برنامه ریزی، نشریه 55، مشخصات فنی عمومی کارهای ساختمانی.
Software	N/A

Building Construction I-Core Course (Main)

Building Construction I covers an introduction to building components, elements and details through roles, functions, logic, standards and rules. This course focused on the concept of building construction and primary structural features: footings, walls, floors and roofs.

This course is based on Lecture Based Learning (LBL) and Site Visit Learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define concepts, themes and techniques of building construction components and details

Use building components and detailed logic and techniques

Apply types of jointing

Sketch detail diagrams and drawings

Design construction details

Prior knowledge &/ or skills

Architectural Design I

Learning resources required

Educational Resource	Description
Bibliography	Soffker, G.H. and Deplazes, A.2005, Constructing Architecture: Materials, Processes, Structures, Birkhauser Basel.
	Ballast, D. K. 2009, Architect's Handbook of Construction Detailing, Wiley.
	Emmitt, S. and Olie, J. and Schmid, P. 2009, Principles of Architectural Detailing, Wiley.
Persian	زمرشیدی، حسین ۱۳۹۲، عناصر و جزییات ساختمانی، جلد یک و دو، تهران، پرهام نقش.
	حسینی، فرهاد ۱۳۹۴، عناصر و جزییات ساختمانی، دانشگاه تهران.
Software	Auto Cad + Revite

Building Construction II-Core Course (Main)

Building Construction II covers an introduction to building components, elements and details through roles, functions, logic, standards and rules in continuing Building Construction I. This course focused on the concept of building construction and main architectural and spatial components: stairs and lifts, plastering and pointing, façade apertures and type of joints.

This course is based on Lecture Based Learning (LBL) and Site Visit Learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define concepts, themes and techniques of building construction components and details

Use building components and details logics and techniques

Apply types of jointing

Sketch detail diagrams and drawings

Design construction details

Prior knowledge &/ or skills

Building Construction II

Learning resources required

Educational Resource	Description
Bibliography	Soffker, G.H. and Deplazes, A.2005, Constructing Architecture: Materials, Processes, Structures, Birkhauser Basel.
	Ballast, D. K. 2009, Architect's Handbook of Construction Detailing, Wiley.
	Emmitt, S. and Olie, J. and Schmid, P. 2009, Principles of Architectural Detailing, Wiley.
	Bhavikatti S.S. 1995, Building Construction, Vikas Publishing House.
Persian	زمرشیدی، حسین ۱۳۹۲، عناصر و جزئیات ساختمانی، جلد یک و دو، تهران، پرهام نقش.
	حسینی، فرهاد ۱۳۹۴، عناصر و جزئیات ساختمانی، دانشگاه تهران.
Software	Auto Cad + Revite

Rural Research and Design-Core Course (Main)

Rural Research and Design introduces the socio-cultural, eco-environmental and vernacular context of (Iranian) rural areas. This course covers reviews, surveys, data finding, data gathering, data analysis, and social field works to research and rural design areas.

This course is based on lecture-based learning (LBL), Workshop Base Learning and Site Visit Learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define concepts, themes and techniques of rural studies

Use studies guidelines and frameworks

Analyse rural areas

Sketch generative diagrams and drawings

Design rural zones, regions and space

Prior knowledge &/ or skills

Architectural Design I

Learning resources required

Educational Resource	Description
Bibliography	Thorbeck, D. 2017, Architecture and Agriculture: A Rural Design Guide, Taylor & Francis.
	Thorbeck, D. 2013, Rural Design: A New Design Discipline, Taylor & Francis.
	Ballantyne, A. 2009, Rural and Urban: Architecture Between Two Cultures, Taylor & Francis.
Persian	N/A
Software	AUTO CAD + REVITE

Architectural Design I-Core Course (Main)

Architectural Design (I) extends and develops Architectural Basic Design (I), (II) and (III). It introduces the problem-solving process, spatial design process and ideation process. Students can develop their skills in:

- Visualisation
- Conceptualisation
- Design development
- Analysing and Synthesising
- Critical thinking

This course provides basic materials for the spatial design process, development, testing and research. Students can develop these skills through conducting teamwork projects and co-designing. This unit supports designing a simple, small and straightforward program like a workshop, a multi-usage service centre, and a motel.

This course is based on workshops, site visits, case studies, and projects.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Find and solve design problems and programs

Sketch design ideas

Visualise program analysing and ideation process

Criticise conceptualisation process and form development process

Assemble spatial elements and creative design project

Prior knowledge &/ or skills

Architectural Basic Design III

Learning resources required

Educational Resource	Description
Bibliography	Krebs, J. 2007, Basic Design and Living, Birkhauser, Basel.
	Exner, U., Pressel, D. 2009, Basic Spatial Design, Birkhauser, Basel.
	Bielefeld, B., El Khouli, S. 2007, Basic Design Ideas, Birkhauser, Basel.
	Kelein, O., Schlenger, J. 2008, Basic Room Conditioning, Birkhauser, Basel.
Persian	N/A
Software	Auto Cad + Sketch up

Architectural Design II-Core Course (Main)

Architectural Design (II) extends and develops Architectural Design (I). It introduces the problem-solving process, spatial design process, ideation process and linking between Contemporary World Architecture and Environmental Control Building Systems in the design project. Students expanding and strengthening the skills includes (1) Visualisation, (2) Conceptualisation, (3) Design development, (4) Analysing and Synthesising, (5) Critical thinking and (6) Context, Climate and interrelations. The skills are developed within the projects. The unit provides materials basis for the spatial design process, development, testing and research and determines whole and particulars relationship. The range of design skills is developed through teamwork and co-designing. This unit supports designing a family house in co-living two up to three generations in urban context and approaches to site selection, compatibility to climate and context, and structural and mechanical strategies.

This course is presented in Workshop learning (WL), Site Visit Learning (SVL), Case Study Base Learning (CSBL) and Project Base (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Adjust design problems and programs

Sketch and visualise design ideas

Demonstrate compatibility to context and condition

Criticise conceptualisation process and form development process

Design creative project and integrative design

Prior knowledge &/ or skills

Architectural Basic Design III

Learning resources required

Educational Resource	Description
Bibliography	Krebs, J. 2007, Basic Design and Living, Birkhauser, Basel.
	Exner, U., Pressel, D. 2009, Basic Spatial Design, Birkhauser, Basel.
	Bielefeld, B., El Khouli, S. 2007, Basic Design Ideas, Birkhauser, Basel.
	Kelein, O., Schlenger, J. 2008, Basic Room Conditioning, Birkhauser, Basel.
Persian	N/A
Software	Auto Cad + Sketch up

Architectural Design III-Core Course (Main)

Architectural Design (III) extend and develop Architectural Design (I) and (II). It introduces problem-solving, spatial design, ideation, cultural, artistic, and issues. Students expanding and strengthening the skills includes (1) Visualisation, (2) Conceptualisation, (3) Design development, (4) Analysing and Synthesising, (5) Critical thinking and (6) cultural continuity and artistic vision. The skills are developed within the projects. The unit provides materials basis for the spatial design process, development, testing and research and determines whole and particulars relationship. The range of design skills developed through teamwork and co-designing. This unit support design of cultural centres, galleries, kindergartens or landmarks.

This course is based on Workshop learning (WL), Site Visit Learning (SVL), Case Study Base Learning (CSBL) and Project Base (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Adjust design problems and programs
- Sketch and visualise design ideas
- Demonstrate compatibility to cultural issues and artistic vision
- Develop the conceptualisation process
- Design a creative project and integrative design

Prior knowledge &/ or skills

Architectural Design I

Learning resources required

Educational Resource	Description
Bibliography	Krebs, J. 2007, Basic Design and Living, Birkhauser, Basel.
	Exner, U., Pressel, D. 2009, Basic Spatial Design, Birkhauser, Basel.
	Bielefeld, B., El Khouli, S. 2007, Basic Design Ideas, Birkhauser, Basel.
	Kelein, O., Schlenger, J. 2008, Basic Room Conditioning, Birkhauser, Basel.
Persian	N/A
Software	Auto Cad + Sketch up

Architectural Design IV-Core Course (Main)

Architectural Design (IV) extends and develops the Architectural Design (I), (II) and (II). It introduces problem-solving, spatial design, ideation, cultural, artistic, and issues. Students shall expand and strengthen the skills that include (1) Visualisation, (2) Conceptualisation, (3) Design development, (4) Analysing and Synthesising, (5) Critical thinking and (6) and Integration design between architecture, Structure, mechanical and constructive disciplines. The skills are developed within the projects. The unit provides materials for the spatial design process, developing, testing, researching, and determining the relationship between the whole and the particulars. The range of design skills is developed through teamwork and co-designing. This unit is supported by designing a daycare centre, small hospital, small air terminal, port terminal, and museum.

This course is based on Workshop learning (WL), Site Visit Learning (SVL), Case Study Base Learning (CSBL) and Project Base (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Adjust design problems and programs

Sketch and visualise design ideas

Integrate all design issues

Criticise conceptualisation process and form development process

Design creative project and theorising design process and practice

Prior knowledge &/ or skills

Architectural Design II

Learning resources required

Educational Resource	Description
Bibliography	Krebs, J. 2007, Basic Design and Living, Birkhauser, Basel.
	Exner, U., Pressel, D. 2009, Basic Spatial Design, Birkhauser, Basel.
	Bielefeld, B., El Khouli, S. 2007, Basic Design Ideas, Birkhauser, Basel.
	Kelein, O., Schlenger, J. 2008, Basic Room Conditioning, Birkhauser, Basel.
Persian	N/A
Software	Auto Cad + Sketch up

Architectural Design IV-Core Course (Main)

Architectural Design (IV) extends and develops the Architectural Design (I), (II) and (II). It introduces the problem-solving process, spatial design process, ideation process, cultural, artistic aspects, and other related issues. Students are expected to expand and strengthen the following skills:

- visualising,
- conceptualising,
- designing,
- analysing,
- synthesising,
- managing a large scale design project

The skills mentioned above are developed within the projects. In addition, the unit provides relationships among the spatial design process, development, testing and research The range of design skills developed through teamwork and co-designing—this unit requires students to design a large scale residential complex by designing neighbourhood units.

This course is based on Workshop learning (WL), Site Visit Learning (SVL), Case Study Base Learning (CSBL) and Project Base (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Adjust design problems and programs

Design a site and the inner and the outer dimensions of an organisation

Demonstrate the compatibility to different dimensions and aspects

Illustrate conceptualisation process and form development process

Design multi values project

Prior knowledge &/ or skills

Architectural Design III

Learning resources required

Educational Resource	Description
Bibliography	Krebs, J. 2007, Basic Design and Living, Birkhauser, Basel.
	Exner, U., Pressel, D. 2009, Basic Spatial Design, Birkhauser, Basel.
	Bielefeld, B., El Khouli, S. 2007, Basic Design Ideas, Birkhauser, Basel.
	Kelein, O., Schlenger, J. 2008, Basic Room Conditioning, Birkhauser, Basel.
Persian	N/A
Software	Auto Cad + Sketch up

Urban Planning Basics-Core Course (Main)

The course “Basics of Urban Planning” introduces urban concepts, definitions, theories, methods and practices. This course covers a multidisciplinary vision in architecture, urban design, urban geography, social sciences and behavioural sciences. This unit helps students find their architectural project in a broad context and find urban studies and urban planes roles in the design atmosphere.

This course is based on workshops, site visits, case studies, and projects.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define concepts, themes and techniques of urban planning

Apply the rules, guidelines and frameworks

Analyse urban environment and urban plans

Evaluates urban problems and themes

Develop urban problems and urban planning

Prior knowledge &/ or skills

Architectural Design I

Learning resources required

Educational Resource	Description
Bibliography	Scheer, B.C. 2019, The Evolution of Urban Form: Typology for Planners and Architects, Routledge.
	Tarbatt, J. and Tarbatt, C.S. 2020, The Urban Block: A Guide for Urban Designers, Architects and Town Planners, RIBA Publishing.
	Jacobs, J. 2016, The Death and Life of Great American Cities, Random House.
Persian	پورمحمدی، محمدرضا ۱۳۸۲، برنامه‌ریزی کاربری اراضی شهری، تهران سمت.
	حبیبی، سید محسن و مسائلی، صدیقه ۱۳۷۸، سرائه کاربری‌های شهری، تهران، سازمان ملی زمین و مسکن.
Software	N/A

Urban Design Project (Urban Space Design)-Core Course (Main)

Urban Design Project or Urban Space Design introduces urban design parameters, rules, principles and techniques to design typical urban spaces or thematic ones. This course covers the following themes:

- urban design knowledge and practice or urban design discipline,
- urban design methods and techniques,
- urban data gathering and mapping,
- urban theories and processes,
- urban design basics,
- and urban design experience.

This course is presented through workshops, site visits, case studies, and projects.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Categorise the urban study basics

Apply theories, methods and process to draft an urban design project

Map urban data

Analyse urban space dimensions

Conceptualise urban design problems

Prior knowledge &/ or skills

Urban Planning Basics

Learning resources required

Educational Resource	Description
Bibliography	Lang, J. 2017, Urban Design: A Typology of Procedures and Products, Taylor & Francis.
	Cuthbert, A.R. 2011, Understanding Cities: Method in Urban Design, Routledge.
	Banerjee, T. and Loukaitou-Sideris, A. 2011, Companion to Urban Design, Taylor & Francis.
	Association, AP and Steiner, F.R. and Butler, K. 2012, Planning and Urban Design Standards, Wiley.
Persian	بحرينى، حسين ۱۳۷۵، تحليل فضاهاى شهرى، تهران، موسسه انتظارات دانشگاه تهران.
	بحرينى، حسين ۱۳۷۷، فرايند فضاهاى شهرى، تهران، موسسه انتظارات دانشگاه تهران.
	جبيبي، سيد محسن ۱۳۷۸، از شار تا شهر: تحليلى تاريخى از مفهوم شهر و سيمای كالبدى آن: تفكر و تاتر، تهران، موسسه انتظارات دانشگاه تهران.
Software	Auto Cad + Sketch up

Building Conservation and Restoration-Core Course (Main)

The course “Building Conservation and Restoration” introduces the principles, theories, approaches, techniques and practices. This unit covers a comprehensive view of restoration science and conservation methods on historical architecture.

This course is based on lecture-based Learning (LBL) and site visit learning (SVL).

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Define concepts, themes and techniques of building conservation and restoration

Apply rules, guidelines and frameworks in building conservation and restoration

Analyse historic buildings

Sketch conservation diagrams and drawings

Design conservation and restoration framework

Prior knowledge &/ or skills

Architectural Design II

Learning resources required

Educational Resource	Description
Bibliography	Stubbs, J.H. 2009, Time Honored: A Global View of Architectural Conservation, Wiley
	Croci, G. 1998, The Conservation and Structural Restoration of Architectural Heritage, Computational Mechanics Publications.
	Kolisnychenko, S. 2017, Restoration of Architectural Heritage, Trans Tech Publications Limited.
Persian	آیت‌المزاده شیرازی، سید باقر ۱۳۸۱، تاریخچه حفاظت و مرمت ایران، دانشگاه علم و صنعت.
	حناچی، پیروز، ۱۳۸۷، تنوری مرمت، تهران، موسسه انتشارات و چاپ دانشگاه تهران.
	فلامکی، محمد منصور، ۱۳۸۴، نوسازی و بهسازی شهری، تهران، انتشارات سمت.
	فلامکی، محمد منصور، ۱۳۷۴، باززنده سازی بناها و شهرهای تاریخی، تهران، موسسه انتشارات و چاپ دانشگاه تهران.
Software	Auto Cad + Revite

Building Technical Design-Core Course (Main)

“Building Technical Design” course extends and develops Building Construction I, II and all building science courses. It introduces technical design logic, principles and techniques to architecture detailing design and construction drawings. In this course, small projects are used to investigate the technical issues in building and drawing a construction project.

This course is based on workshop learning (WL), site visit learning (SVL), case study base Learning (CSBL) and project base (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

Apply rules, guidelines, design and drawing frameworks

Adopt architectural aspects and building sciences

Integrate different building dimension

Criticise technical design and detail design

Design construction project

Prior knowledge &/ or skills

Building Construction II

Learning resources required

Educational Resource	Description
Bibliography	Allen, E. and Rand, P. 2016, Architectural Detailing: Function, Constructibility, and Aesthetics, Wiley.
	Bielefeld, B. 2018, Basics Detail Drawing, Birkhauser.
	Bielefeld, B. and Skiba, I. 2017, Basics Technical Drawing, Birkhauser.
Persian	مجموعه مقررات ملی ساختمان مباحث ۲۲ گانه، وزارت راه و شهرسازی، دفتر تدوین مقررات ملی ساختمان.
Software	Auto Cad + Sketch up

Final Design Project-Core Course (Main)

Final Design Project finalises and sums up all education process in the bachelor of architecture engineering program. This course covers all design disciplines in architecture, including urban studies, structural design, mechanical and electrical design, technical design and conceptualisation in problem statement and form processing.

In addition, this course requires presenting a complete architecture project and its technical drawings. All projects topics, themes and supervisors should be approved by the department of architecture engineering at the Islamic Azad University (IAU, Dubai Branch).

Students should report a complete design process from the initial plan to the complete project, including drawings. The final project report should include:

- process mapping- from the initial problem to the final project
- the consideration of integrity, socio-cultural, technical, urban, visual dimensions in the design process
- the consideration of integrity in architecture, constructing, structure, and mechanical, electrical and environmental building systems
- the presentation of architectural drawings, modelling (physical and virtual) and detail designs,
- the acknowledgement of the scientific resources cited in the report

This course is based on workshop learning (WL), site visit learning (SVL), case study based Learning (CSBL) and project-based (PBL) learning.

Learning Outcomes (LO)

On completion of this unit, you should be able to:

- Define design problems and program
- Adopt design factors in the design project
- Integrate design values and dimensions to a whole project
- Criticise the conceptualisation process in the final project
- Design integrated project

Prior knowledge &/ or skills

Architectural Design I, II, III, IV and V + Technical design

Learning resources required

Educational Resource	Description
Bibliography	Borden, I. 2006, The Dissertation: Seriously useful guides for architecture students, Tylor and Francis.
	Borden, I. and Ray, K.R. 2014, The Dissertation: A Guide for Architecture Students, Rutledge, Tylor and Francis (newest version).
Persian	فاطمه مهدی زاده، انتشارات سروش ایان بردن ، کاترینا رودی ری، 1378، رساله‌ی پایانی برای دانشجویان معماری، دانش.
Software	Auto Cad + Sketch up+

General English-Core Course

The course “General English” is designed for undergraduate students. This course aims to develop and empower those thinking and monitoring skills in writing as literacy skills essential to study at university. There is a particular focus on developing grammar skills and the issues dealing with academic writing skills.

This course is sequenced as follows:

- A focus on tenses in the English language
- A focus on conditional and passive statements and other grammatical points
- A focus on speaking ability using grammar
- A focus on essay writing and writing skills

Learning Outcomes

On completion of this unit, you should be able to:

Improve your awareness by reflecting on what you already know about grammar writing skills

Learn about academic writing skills

Apply grammatical structures that can enhance your ability while writing an academic writing

Apply grammatical structures in speaking

Prior knowledge &/ or skills

Students studying for a bachelor's degree in Architectural Engineering at the Islamic Azad University can study this course.

Learning resources required

Educational Resource	Description
Bibliography	Brick, J. (2011). <i>Academic culture: A student's guide to studying at university (2nd Ed.)</i> . South Yarra, VIC: McMillan Education Australia.
	Faigley, L. (2011). <i>The little Penguin handbook</i> . Frenchs Forest, NSW: Pearson Australia.