

## Architecture Program

### 5 Years Structure

#### **Architecture Program**

School of Architecture and Design, KMUTT

#### **Name of Program**

Bachelor of Architecture Program in Architecture

#### **Degree**

Full name: Bachelor of Architecture, International  
Program

Abbreviate name: B. Arch. (Architecture),  
International Program

#### **The Objectives of the Program**

- To produce graduates with the knowledge and skills required to serve society and their country as a whole, with a strong awareness of the environment and the quality of life.
- To produce graduates with a high level of responsibility who can contribute greatly in different areas of architecture, research, and development.
- To produce graduates with a strong sense of moral ethics.

#### **Program Duration**

Completion of required credits for full-time program is to be made within a period of 10 semesters or 5 academic years, but not to exceed 20 semesters or 10 academic years.

### Curriculum

#### **Total Program Credits 170 credits**

#### **Curriculum Components**

#### **General Education Courses 31 credits**

- Health Courses 1 credit
- Integrative Courses 15 credits
- Language Courses 9 credits
- Elective Courses not less than 6 credits

#### **Major Courses 133 credits**

- Fundamentals Courses 26 credits
- Core Courses 48 credits
- Technology Courses 30 credits
- Supporting Courses 20 credits
- Architectural Elective Courses  
not less than 9 credits

#### **Free Elective Courses not less than 6 credits**

# Architectural Program

## Year 1

| First Semester  |   |                     |
|-----------------|---|---------------------|
| Code            | Course  | Credit*             |
| ARC 115         | Design Sketch   | 3(1-4-6)            |
| ARC 117         | Design Fundamentals I                                     | 4(1-6-8)            |
| ARC 123         | History of Art and Design                                 | 3(3-0-6)            |
| LNG 221         | Academic English in International Contexts                | 3(3-0-6)            |
| GEN 121         | Learning and Problem Solving Skills                       | 3(3-0-6)            |
| GEN 231         | Miracle of Thinking                                       | 3(3-0-6)            |
| Total           |   | <b>19(14-10-38)</b> |
| Second Semester |   |                     |
| ARC 116         | Design Drawing  | 3(1-4-6)            |
| ARC 118         | Design Fundamentals II                                    | 4(1-6-8)            |
| ARC 125         | History of Architecture and Interior Architecture I       | 3(3-0-6)            |
| LNG 222         | Academic Listening and Speaking In International Contexts | 3(3-0-6)            |
| GEN 111         | Man and Ethics of living                                  | 3(3-0-6)            |
| GEN 241         | Beauty of Life  | 3(3-0-6)            |
| Total           |   | <b>19(14-12-38)</b> |

## Year 2

| First Semester  |   |                     |
|-----------------|---|---------------------|
| Code            | Course  | Credit*             |
| ARC 226         | History of Architecture and Interior Architecture II            | 3(3-0-6)            |
| ARC 241         | Architectural Design I  | 6(2-8-12)           |
| ARC 261         | Building Materials and Construction Technology I                | 4(2-4-8)            |
| ARC 271         | Structural Design I   | 3(3-0-6)            |
| GEN xxx         | Elective I  | 3(x-x-x)            |
| Total           |   | <b>19(x-x-x)</b>    |
| Second Semester |   |                     |
| ARC 231         | Theory of Architecture and Interior Architecture                | 3(3-0-6)            |
| ARC 242         | Architectural Design II   | 6(2-8-12)           |
| ARC 262         | Building Materials and Construction Technology II               | 4(2-4-8)            |
| ARC 272         | Structural Design II  | 3(2-2-6)            |
| ARC 281         | Environmental Technology I: Comfort Factors and Thermal Design) | 3(3-0-6)            |
| Total           |   | <b>19(12-14-38)</b> |

## Year 3

| First Semester  |  |                     |
|-----------------|--|---------------------|
| Code            | Course   | Credit*             |
| ARC 343         | Architectural Design III   | 6(2-8-12)           |
| ARC 354         | Site Planning and Landscape Architecture                           | 3(2-2-6)            |
| ARC 363         | Building Materials and Construction Technology III                 | 4(2-4-8)            |
| ARC 373         | Structural Design III  | 3(2-2-6)            |
| ARC 382         | Environmental Technology II : Architectural Lighting and Acoustics | 3(3-0-6)            |
| Total           |  | <b>19(11-16-38)</b> |
| Second Semester |  |                     |
| ARC 344         | Architectural Design IV  | 6(2-8-12)           |
| ARC 352         | Urban Planning   | 3(2-2-6)            |
| ARC 383         | Environmental Technology III : Building Service System             | 3(3-0-6)            |
| ARC xxx         | Architectural Elective I   | 3(x-x-x)            |
| GEN xxx         | Elective II  | 3(x-x-x)            |
| Total           |  | <b>18(x-x-x)</b>    |

## Year 4

| First Semester  |  |                  |
|-----------------|--|------------------|
| Code            | Course   | Credit*          |
| ARC 445         | Architectural Design V                                 | 6(2-8-12)        |
| ARC 494         | Professional Practice and Legal Aspects                | 3(3-0-6)         |
| GEN 351         | Modern Management and Leadership                       | 3(3-0-6)         |
| ARC xxx         | Architectural Elective II                              | 3(x-x-x)         |
| XXX xxx         | Free Elective I  | 3(x-x-x)         |
| Total           |  | <b>18(x-x-x)</b> |
| Second Semester |  |                  |
| ARC 446         | Architectural Design VI                                | 6(2-8-12)        |
| ARC 493         | Construction Management                                | 3(3-0-6)         |
| LNG 321         | Academic Reading and Writing In International Contexts | 3(3-0-6)         |
| GEN 101         | Physical Education                                     | 1(0-2-2)         |
| ARC xxx         | Architectural Elective III                             | 3(x-x-x)         |
| XXX xxx         | Free Elective II                                       | 3(x-x-x)         |
| Total           |  | <b>19(x-x-x)</b> |

## Year 5

| First Semester                   |                          |                    |
|----------------------------------|--------------------------|--------------------|
| Plan 1: Cooperative Learning     |                          |                    |
| Code                             | Course                   | Credit*            |
| ARC 501                          | Thesis Preparation       | 3(1-4-6)           |
| ARC 591                          | Cooperative Learning     | 6(0-35-18)         |
| Total                            |                          | <b>9(1-39-24)</b>  |
| Plan 2: Architectural Internship |                          |                    |
| ARC 501                          | Thesis Preparation       | 3(1-4-6)           |
| ARC 592                          | Architectural Internship | 3(S/U)             |
| ARC 492                          | Building Cost Estimation | 3(3-0-6)           |
| Total                            |                          | <b>9(x-x-x)</b>    |
| Second Semester                  |                          |                    |
| ARC 502                          | Thesis                   | 9(0-18-36)         |
| ARC 593                          | Seminar                  | 2(0-4-4)           |
| Total                            |                          | <b>11(0-22-40)</b> |

## Course Description

**General Education Courses 31 Credits**

**Required Courses 25 Credits**

**Health Courses 1 Credit**

**GEN 101 Physical Education 1 (0-2-2)**

Prerequisite: none

This course aims to study and practice sports for health, principles of exercise, care and prevention of athletic injuries, and nutrition and sports science, including basic skills in sports with rules and strategy from popular sports. Students can choose one of several sports provided, according to their own interest. This course will create good health, personality and sportsmanship in learners, as well as develop awareness of etiquette of playing, sport rules, fair play and being good spectators.

**Integrative Courses** **15 Credits****GEN 111 Man and Ethics of Living** **3(3-0-6)**  
Prerequisite: none

This course studies the concept of living and working based on principles of religion, philosophy, and psychology by fostering students' morality and ethics through the use of knowledge and integrative learning approaches. Students will be able to gain desirable characteristics such as faithfulness, social responsibility, respect of others, tolerance, acceptance of differences, self-discipline, respect for democracy, public awareness, and harmonious co-existence.

**GEN 121 Learning and Problem Solving Skills** **3(3-0-6)**

Prerequisite : None

This course aims to equip students with the skills necessary for life-long learning. Students will learn how to generate positive thinking, manage knowledge and be familiar with learning processes through projects based on their interest. These include setting up learning targets; defining the problems; searching for information; distinguishing between data and fact; generating ideas, thinking creatively and laterally; modeling; evaluating; and presenting the project.

**GEN 231 Miracle of Thinking** **3(3-0-6)**  
Prerequisite: none

This course aims to define the description, principle, value, concept and nature of thinking to enable developing students to acquire the skills of systematic thinking, systems thinking, critical thinking and analytical thinking. The Six Thinking Hats concept is included. Moreover, idea connection/story line and writing are explored. Examples or case studies are used for problem solving through systematic thinking using the knowledge of science and technology, social science, management, and environment, etc.

**GEN 241 Beauty of Life** **3(3-0-6)**  
Prerequisite : None

This course aims to promote the understanding of the relationship between humans and aesthetics amidst the diversity of global culture. It is concerned with the perception, appreciation and expression of humans on aesthetics and value. Students are able to experience learning that stimulates an understanding of the beauty of life, artwork, music and literature, as well as the cultural and natural environments.

**GEN 351 Modern Management and Leadership** **3(3-0-6)**

Prerequisite: none

This course examines the modern management concept including basic functions of management—planning, organizing, controlling, decision-making, communication, motivation, leadership, human resource management, management of information systems, social responsibility—and its application to particular circumstances.

**Language Courses** **9 Credits****LNG 221 Academic English in International Contexts** **3(3-0-6)**

Prerequisite: none

The course aims at developing the confidence and academic English skills necessary for learners in an international program. The learning and teaching involves the integration of the four language skills, thinking skills and autonomous learning. In terms of reading, the course focuses on reading for main ideas, summarizing skills, critical reading and interpretation skills through the use of real-world content. In terms of writing, the emphasis is on process writing and academic writing to enable learners to effectively use the information gained from reading to support their statements. In terms of speaking, the focus is on sharing opinion and exchanging information on issues related to the learners' content areas or their field of interest. In terms of listening, the focus is on listening to English talks and taking notes from authentic input.

**LNG 222 Academic Listening and Speaking in International Contexts** **3(3-0-6)**

Prerequisite: none

This course aims at developing confidence and academic listening and speaking skills necessary for learners in an international program. The teaching and learning styles involve an integration of English into learners' content areas to enable them to think critically and communicate effectively. Learners will be able to listen to extended speech and lectures in their fields, share ideas and express opinions, conduct an interview for professional, collect data and present a survey project.

**LNG 321 Academic Reading and Writing in International Contexts** **3(3-0-6)**

Prerequisite : LNG 222

The course aims at developing confidence and academic reading and writing skills necessary for learners in an international program. The teaching and learning styles involve an integration of English into learners' content areas to enable them to read academic articles in their chosen fields. Learners will be able to extract main points from the text, purposefully select required information to support their writing, write different forms of reports in their fields, use information obtained from reading and their own experience in writing an essay, and effectively use references and citations throughout the writing process.

**Elective Courses** **6 Credits**

Select from GEN xxx courses or LNG xxx courses

**Major Courses** **133 Credits****Fundamentals Courses** **26 Credits****ARC 115 Design Sketch** **3 (1-4-6)**

Prerequisite: none

Varying approaches to freehand drawing are offered to enhance awareness of the world and gain visual confidence. The course includes exercises in still life, figure drawing, and perspective sketching to expose the students to various ways of seeing. Students learn to draw form, objects, and objects in space. The course explores positive and negative space, edges and contours, and the effects of light and shadow. Proportion, details observation, awareness of space and surrounding, and creative problem solving will also be exercised. Media used includes: pencil, pen and ink, charcoal, crayon, pastels and colored pencil.

**ARC 116 Design Drawing** **3 (1-4-6)**

Prerequisite: ARC 115

This course introduces the use of drafting tools, measurement and scale, and typography and lettering. The skills and knowledge include projection drawings: plan, elevation, section, oblique, axonometric, isometric, external view of one and two point perspectives, internal view of one and two point perspectives, and shade and shadow construction of orthographical projected drawing and perspectives. The above drawings projection can be used for research, analysis and representation.

**ARC 117 Design Fundamentals I** **4 (1-6-8)**

Prerequisite: none

This course introduces the practical relevance of a set of nine design principles including Proportion, Asymmetry, Figure & Ground, Transformation, Chance, Dot/Line/Plane, Module, and Idea/Concept/ Reflexivity through structured day-length exercises in combinations of drawing, two-dimensions and three-dimensions. This class emphasizes on skills development, conceptual understanding and good working practice. The assessment is done via brief presentations and teacher advice.

**ARC 118 Design Fundamentals II** **4 (1-6-8)**

Prerequisite: ARC 117

This course introduces visual thinking methodology: Idea/s – Development – Concept – Outcome / Evaluation, via speculative visual thinking practical assignments involving variable combinations of two dimensions and three dimensions. This class emphasizes on ideas generation, creative thinking, critical evaluation, skills transference, and development across a range of situations. Assignment work is a discussion and evaluation via presentations and critical forum.

**ARC 123 History of Art and Design** **3 (3-0-6)**

Prerequisite: none

This course introduces art historical chronology from early civilizations through to contemporary period in relation to theoretical relevance of nine key principles of design; Proportion; Asymmetry; Figure & Ground; Transformation; Chance; Dot/Line/Plane; Module; Idea/Concept/ Reflexivity. Material is imparted through a combination of lectures, documentary films and illustrated presentations. The written assignments should illustrate a combination of researched art history and individual observation of design principles in relation to local environment.

**ARC 125 History of Architecture and Interior Architecture I** **3 (3-0-6)**

Prerequisite: ARC 123

Overall, historical development of architecture and interior architecture in Western Europe includes development of designed space, furniture and decoration, form, structure and site planning. This course introduces the Prehistoric period & ancient worlds. Classical foundation: Greek and Roman Architecture. Medieval era: Byzantine, Romanesque and Gothic. Renaissance: Return to Antiquity. Baroque: Mid-17th-18th century Europe. Neoclassicism Romanticism & Picturesque. Transition to Industrial Age. Pioneering architecture of Early 20th Century. Towards Demise of Modernism: architecture in Post-war period. Contemporary architecture: The end of the 20th century.

**ARC 226 History of Architecture and Interior Architecture II** **3 (3-0-6)**

Prerequisite: ARC 125

This course introduces to a relationship between architecture and interior architecture, and ideology in South, East, and Southeast Asia, ranging from prehistoric to pre-colonisation period. It also aims to study two most influential cultures: India and China, Korea and Japan, Mon and Pagan, Srivijaya Kingdom, Ancient Khmer, and Laos and Siam. The focus of analysis is on patterns of interior space, furniture and decoration, form and structure, and site planning. It will also investigate the evolution of Buddhist stupas in Southeast Asia that cohere with variation of Thai traditional religious architecture.

**ARC 231 Theory of Architecture and Interior Architecture** **3 (3-0-6)**

Prerequisite: none

Architectural Theory can be a method, an explanation, a poetic suggestion, an elucidation; it might provide the answers to definable problems, or make connections that enrich the understanding of the background from which architecture draws. A comparative study of Architectural theories and discourses along with their implementations from classic to contemporary architecture. Topics include scale and proportion, form and space, perspective, spatial perception, space and time, avant-garde, and utopia.

## Core Courses

48 Credits

### **ARC 241 Architectural Design I** 6 (2-8-12) **Prerequisite:** ARC 118

This course introduces students to the understanding of architectural design and its basic relationship between space and materialization/fabrication. Students practice their understanding to create and explore spatial configurations and develop design strategies and application methods into particularities of context and specific needs of users. Various media are applied to negotiate between the collective project and the interests of individuals, building on living structures. Various issues relevant to the projects are incorporated into studio lecture.

### **ARC 242 Architectural Design II** 6 (2-8-12) **Prerequisite:** ARC 241

Continuation of ARC 241 with greater level of complexity/sensitivity and focus on specific conditions and the development of working procedures which represent students ideas in regard with internal and external factors, such as socio cultural aspects, human and activities, space and form, site and context. Students learn methods of design thinking and communicating, and integrate knowledge of building materials, structure in the design process and respond to environmental conditions and site planning. Various issues relevant to the projects are incorporated into studio lecture. Introduction to Computer application in the design process and its representation is covered in an intensive one-week seminar before the semester begins.

### **ARC 343 Architectural Design III** 6 (2-8-12) **Prerequisite:** ARC 242

Development of architectural projects emphasizing on multi-storey residential building as well as medium scale public building. Students learn how to develop a comprehensive architectural project, starting from a design concept to site planning, organization of floor plan and circulation, articulation of façade, selection of materials and construction details. Various issues relevant to the projects are incorporated into studio lecture, i.e., the use of precedence study, geometrical assemblage, structure, user behavior, human scale, social and cultural context, building system, building codes and site analysis. Computer skills and 3D modeling workshop is incorporated.

### **ARC 344 Architectural Design IV** 6 (2-8-12) **Prerequisite:** ARC 343

Continuation of ARC343 with greater level of complexity/sensitivity of programmatic and site criteria. Students learn how to develop the design for various building types that requires technical and/or operational specifications. Students learn how to develop a design concept from a specific set of information, unfold it into a comprehensive design that could be implemented. They learn how to justify the design concept by site planning, organization of program and circulation, appearance of building, application of structure, building systems, material selection as well as construction details; how to assess the impact that the design could have on the users and environments. Various issues relevant to

the projects are incorporated into studio lecture. This course requires Computer-Aided-Design skills, both 2D and 3D, for design process as well as for presentation.

### **ARC 445 Architectural Design V** 6 (2-8-12) **Prerequisite:** ARC 344

Advanced studios are based on students' individual interest on exploring diverse design directions from small up to a large scale project with great complexity and integration of various factors related to architectural design such as: design process and tectonic formation, material construction and structural design, environmental technology, energy-efficiency and conservation, digital media and technology, history & theory, regional and global, social, culture & urban community as well as social humanities. Students have to show a high level of understanding in the process of integrating technology with architectural design. Essential figures have to be shown using computer aided software together with hand calculation where necessary. Students are required to take care of different realms they experienced in previous design studios: design fundamentals, functions and construction, and architectural concepts. Computer becomes a natural tool involved in every design process. High level of communication skills is expected to present the transformation from a virtual realm into a physical reality. Various issues relevant to the projects are incorporated into studio lecture. Each student can select his/her own interest project from the following studios: Urban Community Architecture Studio I and II, Digital Media and Technology Studio I and II, Environmental Design and Technology Studio I and II, and Building Construction and Structural Design Studio I and II.

### **ARC 446 Architectural Design VI** 6 (2-8-12) **Prerequisite:** ARC 445

Continuation of ARC 445.

### **ARC 501 Thesis Preparation** 3 (1-4-6) **Prerequisite:** ARC 446

Students learn how to develop individual interest related to contemporary debates surrounding longstanding disciplinary problems. Student position their own projects between or within the present day manifestations into an architectural question and proposition, how to set up the research conduct and provide the context for student thesis and help move beyond the personal interpretation of "known facts", concluding and culminating all research information into academic documentation formats.

### **ARC 502 Thesis** 9 (0-18-36) **Prerequisite:** ARC 501

This thesis course continues from Thesis Preparation, which covered intensive research and study of the thesis and project proposal. At this stage, the concept is well-developed for the project ready for design execution. Students demonstrate resolution of the proposals showing a logical progression from the schematic through to finalization and detailed execution, utilizing the design strategies established in previous stages. This studio class includes sketch problems, all aspects of graphic identification and

presentation, research application, review process, applying knowledge gained from previous courses and corresponding use of computer aided programs.

## **Technology Courses                      30 Credits**

### **ARC 261 Building Materials and Construction Technology I                      4 (2-4-8)**

Prerequisite: none

This course introduces principal construction materials such as wood and masonry and their properties, i.e. physical characteristics, qualifications and proper applications for building construction. Wood substituted materials will also be introduced in the course. The course focuses on the principles of construction for wood and masonry for small to medium scale buildings. All building components: foundations, column, floor, wall, stairs, and roof will be covered through lectures, drafting projects, and field trips. Basic skills and technical drawing techniques, and conventional symbols of the materials will also be covered to develop the professional skills of students.

### **ARC 262 Building Materials and Construction Technology II                      4 (2-4-8)**

Prerequisite: ARC 261

This course is a continuation of Building Materials and Construction Technology I. The course introduces another set of principal construction materials such as concrete and steel and their properties, i.e., physical characteristics, qualifications and proper applications for building construction. Basic application of construction materials focuses on materials commonly used for non-structural, building envelope and insulations that will be covered through lectures and field trips. Small-scale construction techniques and building accessories will also be introduced in the course. The course also focuses on basic building system and appropriate use in buildings with different scales. Students will learn and practice the basic skill of construction drawing of reinforced concrete construction and basic detailing. The skills and technical drawing techniques will be conducted in building components such as: foundation, column, floor, wall, door & window, stairs, roof, as well as related building systems such as electrical and sanitary works.

### **ARC 271 Structural Design I                      3(3-0-6)**

Prerequisite: None

An introductory study of the property of non-metallic and metallic materials such as stone, glass, fiberglass, plastic, timber and cellular: iron, steel, and also composite materials. Examples are drawn from architecture and industrial products. This course discusses properties of the materials that results in their strengths: behaviors of the materials under forces such as elasticity and stiffness, deformation, cracks and dislocation, buckling of structural members: responses of the materials to their environments such as temperature and moisture. Another main focus is on basic properties, mechanical properties, and behavior of structural materials; wood, masonry, concrete, and steel.

Basic structural analysis implemented in architecture is also discussed in the course.

### **ARC 272 Structural Design II                      3(2-2-6)**

Prerequisite : ARC 271

The emphasis of this course is on engineering qualities of building components that are foundation, column, floor, wall, and roof. Each component is considered according to nature of materials from which they were made. Students will learn a variety of construction methods by which the building components can be built: construction detailing: appraisals of the components in terms of engineering, functional performance, aesthetic: constructions. It discusses advantages and disadvantages: the building components that are built from different materials. Examples are drawn from either existing buildings or students' design projects.

### **ARC 281 Environmental Technology I: Comfort Factors and Thermal Design   3 (3-0-6)**

Prerequisite : None

Concept of carbon footprint and importance of sustainable design are introduced. The main focus is on comfort factors and thermal control. Psychometric Chart is used as a tool. Heat gain factors include internal and external, as well as solar geometry, sun-earth relationship and solar impact on buildings. Concepts of passive and active design include orientation and site design fundamentals, zoning and layout strategies, effects from landscape and surroundings, shading design and effect of natural ventilation. Thermal performances of building components are introduced such as heat transfer modes, K, U value, SC, SHGC, OTTV and RTTV.

### **ARC 363 Building Materials and Construction Technology III                      4(2-4-8)**

Prerequisite : ARC 262

Advanced construction technology, material focuses on non-structural building envelope and large scale building safety. Design principle that concerns seismic resistance will be covered in order to equip students with the basic knowledge of minimizing danger to building users and building damage. Students will learn and practice the basic skills of construction drawing of steel structure and basic detailing with the introduction of 3D construction methods in the current construction process, i.e. REVIT, BIM, etc.

### **ARC 373 Structural Design III                      3(2-2-6)**

Prerequisite: ARC 272

The emphasis of this course is on engineering qualities of building components that are considered according to nature of materials from which they were made. Students will learn a variety of construction methods by which the building components can be built: construction detailing: appraisals of the components in terms of engineering: functional performance, aesthetics: constructions and details design. This course includes building components built for large scale and high-rise buildings. It discusses advantages and disadvantages of the building components: preparation for fighting fire

hazard. Examples are drawn from either existing buildings or students' design projects.

**ARC 382 Environmental Technology II: Architectural Lighting and Acoustics 3 (3-0-6)**

Prerequisite : ARC 281

This course introduces students to the basic physical principles, design implications and performance of environmental design focusing on the behavior of light and sound within and around buildings. The study covers relevant aspects of artificial light, daylight and acoustics that affect the psychological and physiological experience of buildings, performance metrics, and design strategies to equip students with the ability to design and modify the building fabric to enhance the environmental performance of designed spaces. The lighting study also includes lighting systems, lighting efficiency, lighting for a variety of building types, and different constraints of lighting concerning atmosphere and visibility. Energy management for lighting in buildings with reference to user's requirements, electrical circuit, equipment and health and safety issue. The second part of the course studies acoustics and architecture. It includes a study of nature of sound, sound quality and the influence of sound on architectural design: Noise control and protection for interior space and open-air environment, propagation of sound, noise reflection and absorption, applications of the knowledge on architectural design.

**ARC 383 Environmental Technology III: Building Service Systems 3(3-0-6)**

Prerequisite: ARC 382

The main focus is on building service systems: fundamentals of building sanitation, building plumbing, building illumination, fundamental of electrical systems in building, circulation, communication, air-conditioning system: principles, types, components, efficiency, and energy consumption, ventilation control, health and safety issues, intelligent building systems. It also explores different methods of assembling and detailing in the integration of such systems. Along with a look at the various system types and equipment, the class also emphasizes energy usage and savings for buildings.

**Supporting Courses 20 Credits**

**ARC 354 Site Planning and Space Planning 3 (2-2-6)**

Prerequisite: none

Definition of Site Planning and its application in the architecture. Definition of Urban planning and Landscape Architecture. Fundamental knowledge of Site Planning. Gathering site factors. Conducting process of site planning. Linking knowledge of architecture, civil engineering, landscape architecture, and city planning. Analyzing of various physical & natural aspects of site such as climate, landform and topography. Determining slope analysis. Assisting the formation of proper architectural program. Linking the design of architecture and interior space to outdoor atmosphere at basic level. Integrating definitions of landscape architecture and methodology to understand open space atmosphere. Basic

knowledge of plant materials and their physical aspects for designing landscape architecture.

**ARC 352 Urban Planning 3 (2-2-6)**

Prerequisite: none

Explaining various definitions and aspects of urbanism or city and planning. Theories and ideas about urban planning profession. Theories and ideas about urban design profession. Formations of European and North American cities. Analyzing historical and cultural contexts of cities in Thailand. Comparing Thai metropolises with those in western sphere. Practice of creating and implementing city planning and policies such as land use planning transportation planning, and open space planning. Management of urban facilities and utilities such as drainage system, waste water treatment, street lighting, road, and public transportation. Introduction to community development and participation process in planning. With reference to case studies of Urban Planning.

**ARC 493 Construction Management 3 (3-0-6)**

Prerequisite: none

Studies include introduction to professional ethics and legal aspects, which include codes of ethics and conducts, architect's responsibilities, the evolution of the profession and today's career options, construction planning and control by critical path method, etc. Laws involving architectural practice; namely, building controls and professional controls. Others may involve zoning environmental protection, and energy conservation laws, liability in faulty design involved with tort and criminal law, contract laws and regulations, building regulations with history and intent of regulations.

**ARC 494 Professional Practice 3 (3-0-6)**

Prerequisite: none

Studies include (1) Professional ethics, which include codes of ethics and conducts, architect's responsibilities, the evolution of the profession and today's career options etc. (2) Laws involving architectural practice; namely, building controls and professional controls. Others may involve zoning environmental protection and energy conservation laws; etc. Liability in faulty design will also involve tort and criminal law. (3) Architectural practice including forming organizational management teams, design contracts, work process, preparation of bidding, contract and construction documents, roles and responsibilities of an architect as a designer in construction project.

**ARC 591 Cooperative Learning 9 (0-35-18)**

Prerequisite: ARC 446

This course requires students to participate in architecture design-related industries according to individual interest for four months. It allows students to see the working process in different organizations to develop responsibility and self-confidence from working with other people, to accumulate knowledge and direct experiences needed for their architectural design project in the final semester. At the end of the program, students will be able to decide what kind of work they would like to participate in after graduation.

**ARC 592 Architectural Internship 3(S/U)**

Prerequisite : ARC 446

Supervised field experience in architectural offices. Understanding the practice of Architecture. Minimum of 2 months full-time internship in architecture or relevant design office.

**ARC 593 Seminar 2 (0-4-4)**

Prerequisite: none

The course introduces group discussion method that will help broaden all participants' viewpoint in the topic of interests. Discussion based on architectural works and related fields. Students will also practice how to search for knowledge/topic of interests, share and exchange ideas/information as well as analyze various inputs and synthesize them.

**\*\*\*Architectural Elective Courses  
Not less than 9 Credits****ARC 329 Analysis of Contemporary Architecture 3 (2-2-6)**

Prerequisite: none

Study of development in all aspects involved in the emergence of contemporary architecture systematically. Analyze and collect all findings using different types of media such as drawings, media such as drawing, models or digital media. In each semester, architecture of a country is selected to be working models.

**ARC 330 Analysis of Western and Architecture 3 (2-2-6)**

Prerequisite: none

The course provides the opportunity for students to analyze and evaluate western art and architecture directly on site. Various assignments (sketching, research, short presentations) in museums and specific architecture project sites will enable students to get a deeper understanding of western art and architecture throughout history.

**ARC350 Professional Communication and Presentation 3 (2-2-6)**

Prerequisite: none

The content of this course is comprised of two different yet closely interrelated parts: visual and verbal presentation. The visual part introduces various tools and techniques for visual presentation including building up image library, mood board, material catalogues, diagramming technique as well as presentation lay-out and composition of presentation. The verbal part includes how to organize the content and put them in a clear and comprehensible order, selection of information, preparation of space and equipment as well as how to handle criticism.

**ARC351 Sustainable Urban Management 3 (3-0-6)**

Prerequisite: none

The course provides basic knowledge of architecture and urban planning in the context of sustainable urban management. Three aspects of planning and urban development will be introduced. The first seeks to think analytically and creatively about the city and regional building process. The second introduces the formulation of transformative plans that will make a

real difference in the lives of people, and the third deals with operating as a planner in the world of politics, limited resources, and class divisions.

**ARC353 Creative Community and City 3 (3-0-6)**

Prerequisite: none

An introduction to new terms of global competition which revolve around a nation's (community's) ability to mobilize, attract, and retain human talent by building creative community and city. Case studies of contemporary solutions to critical issues of crime, health, traffic, environmental degradation, and economic vitality around the world are reviewed. Relationship of architecture as well as urban space design and creative urban development is suggested.

**ARC356 Landscape Architecture II 3 (2-2-6)**

Prerequisite: none

This course emphasizes on the profession of Landscape Architecture and its role within Urban Planning: knowledge of site planning and landscape architecture that involve more complicated factors of human behavior, social, cultural, and urban contexts. The complexity of site engineering, site drainage system, ecological system, local community. Vehicular and pedestrian circulation. Designating different structures by selecting and analyzing a site, forming a land use plan. Theory and history of landscape architecture. Aspects of park system and urban space atmosphere are the crucial topics for creating the design that unify architecture, human and all aspects of nature together seamlessly. Readjusting the existing landform design grading, providing proper drainage. Developing the construction details connecting structure and landform.

**ARC357 Information Technology for Architects and Designers 3 (2-2-6)**

Prerequisite: none

This course focuses on information technology that can be applied to use in architectural and design works. The course covers the topics of management of computer in architectural and design office, data management, applied internet and modern communication. It also covers the current technology that will be applied in architecture and design works. Students will have practical exercises and experiments with applying information technology in their work.

**ARC 358 Design for Sustainable Tourism Development 3(2-2-6)**

Prerequisite: none

The course will emphasize on the idea and concept of sustainable development that supports tourism industry as well as concerns of environmental awareness. The course will cover the definition and concept of sustainable development, suitability study of factors related and the exploration of planning and/or design that is suitable for tourism development in valuable socio-environmental area. The course will mainly study from the real case.

**ARC 420 VERNADOC: Vernacular Documentation**

Prerequisite: none 3(1-4-6)

This course focuses on a methodology for vernacular architecture study. It emphasizes the collection of data and information on site by basic techniques. In addition, VERNADOC method includes architectural details of historic wooden structure through measuring the buildings, communicating and documenting by drawing technique on paper with details including texture, materials shade and shadow.

**ARC 430 Film and Architecture**

Prerequisite: none 3(2-2-6)

This course focuses on a methodology for vernacular architecture study. It emphasizes the collection of data and information on site by basic techniques. In addition, VERNADOC method includes architectural details of historic wooden structure through measuring the buildings, communicating and documenting by drawing technique on paper with details including texture, materials shade and shadow.

**ARC 432 Computational Design and Digital Fabrication**

3(1-4-6)

Prerequisite: none

The course aims to introduce the concepts and applications of computation in architecture and design. It aims to provide the basic skills to build and control parametric models, analysis tools and introduction to the basic machine operation of the fabrication tools such as laser cutter, CNC and rapid prototyping and how it may relate to the contemporary architectural discourses in the form of design tools and interactive presentations.

**ARC 436 Architectural Conservation: An introduction**

3 (1-4-6)

Prerequisite: none

An introduction to the concepts of conservation and their applications on ways in which peoples manage their built environments. Examples are drawn from Europe and Thailand. This course comprises three sections. The first of which is concerned with the development of rationales behind conservation practices in Europe and other regions around the world: the essence of the international conservation charters (UNESCO) and their weaknesses. The second section introduces students to conservation process including documentation and techniques used in building conservation. The last section discusses the idea of area conservation and the subsequent controversy over decision to conserve. The study is conducted with lectures, group discussions, and individual case study.

**ARC 451 Special Topic Study I**

3 (1-4-6)

Prerequisite: none

Special study about an architecture topic that is adjusted to individual needs.

**ARC 452 Special Topic Study II**

3 (1-4-6)

Prerequisite: none

Special study about an architecture topic that is adjusted to individual needs.

**ARC 453 Special Topic Study III**

3 (1-4-6)

Prerequisite: none

Special study about an architecture topic that is adjusted to individual needs.

**ARC 454 Architecture and Human Rights 3 (3-0-6)**

Prerequisite: none

This course will examine the relationship between architecture and human rights and what it will mean for the future of the practice of architecture, planning and engineering. By first reviewing post-WWII Human Rights Law, the course will undertake a brief analysis of modern architectural history from a rights perspective and then develop a set of principles that can be used in practice. Finally, students will study a number of applications of these principles of international human rights law in design practice.

**ARC 455 Computer in Architectural Design**

Prerequisite: none 3 (1-4-6)

The use of computer in architectural design, exhibition, communication and searching of various methodologies that could be applied in the design process by emphasizing in the creation of architectural space.

**ARC 456 Revit**

Prerequisite: none

3 (2-2-6)

This course introduces Building Information Modeling (BIM) and tools for parametric building design and documentation. The course offers hands-on exercises, concepts of BIM through the modelling of a basic building, from creating the building to making form, window/door, materials, room schedule, and shadow studies as well as rendering including generating documentation at professional level.

**ARC 457 Housing**

3 (2-2-6)

Prerequisite: none

The study focuses on standards and classifications of residential units, including the procedure, regulations and guiding concept in providing living accommodation for the community. The study includes problems affecting peoples' accommodation both in urban and rural areas. Instruments, building codes, occupancy standards, and zoning by-laws are examined.

**ARC 461 Building Materials and Construction IV**

Prerequisite: none

3 (2-2-6)

To study the principles in making the architectural detailing documents and detailing schedule of various building types. Preparation of architectural accessories and presentation technique.

**ARC 462 Prefabricated Design and Construction**

Prerequisite: none 3 (1-4-6)

This course is a study about pre-fabricated design and construction. Specific materials and construction methods are introduced and discussed along with building systems. Students will also gain essential understanding of construction method through fieldtrip to fabrication facilities and construction sites.

**ARC 464 Supervision of Construction 3 (3-0-6)**

Prerequisite: ARC 363

The course is intended to be a guide for those who are new to the business of supervising construction works. Supervision is the link between design and construction, making the transition from the theoretical to the practical by attempting to demonstrate how standards of design and specification developed on design office are on the site.

**ARC 484 Environmental Technology IV: Energy-Efficient Building Design Techniques and Simulation**

Prerequisite : ARC 383

The main focus is on energy-efficient building design techniques and evaluation: definition of sustainability, climate change, global warming, and natural disasters, reasons to conserve energy, definition and strategies of energy-efficient buildings, energy sources: renewable and non-renewable, energy consumption including carbon footprint and carbon credit. Architects' role in energy conservation are included into an advanced level towards the links between the micro/macro environment, energy and building form and reviews the development of building skin. The state of the art building energy conservation is evaluated via the use of environmental design software and assessment of climate data, the simulation of solar, ventilation, thermal and lighting processes in-and-around real-or-virtual buildings with minimum use of non-renewable energy sources comparing to building codes and regulations. Operation and maintenance will be taken into consideration as well as life-cycle cost analysis.

**ARC 492 Building Cost Estimation 3 (3-0-6)**

Prerequisite : None

Studies include introduction into organizational and financial concerns for buildings; interior architects, architects, engineers and builders relationships; organization of their work; studies of cost estimation according to material prices, wages, instrument, and management costs in various types of buildings. It will also include studies of other factors that influence initial costs such as construction contract liability, special specification contact liability, special specifications, and labor.

**ARC 498 Introduction to Real Estate 3 (3-0-6)**

Prerequisite : None

This course focuses on basic understanding of Thailand Real Estate Market and Embarking on Property Development. Not only the necessary fundamental knowledge are provided, the class also aims to broaden student's perspective of career opportunity aside from architecture and design profession. The learning method includes lecture, group discussion and independent study with a field trip and workshop.

**ARC 499 Hospitality Design and Hotel Operation Management 3 (2-2-6)**

Prerequisite : None

Hospitality Design and Hotel Operation Management, this class will teach you how to start a successful hotel business focused on Boutique Hotel and Hostel. Not only architectural and interior design aspects are studied, but hotel operations are included. Moreover learners will better know the chains-hotel criteria, hotel related law and Regulation and understanding hotel departments for example front office, reservation, housekeeping, and food and beverage (F&B).

**3(3-0-6)****ARC 553 Independent Study I 3 (1-4-6)**

Prerequisite: none

The primary purpose of an independent study course is to provide students with the opportunity to explore a special study topic that is not available through regular course offered. The topic is of mutual interest to the faculty and the student.

**ARC 554 Independent Study II 3 (1-4-6)**

Prerequisite: none

The primary purpose of an independent study course is to provide students with the opportunity to explore a special study topic that is not available through regular course offered. The topic is of mutual interest to the faculty and the student.

**CMD 364 Web Design 3 (2-2-6)**

Prerequisite: none

This course introduces students to the web design and development lifecycle. The course focuses on theory, tools, techniques and standard in the design phase including layout design, interface design, components of web e.g. typography, color, media, contents, etc. It also covers the standards and trend in modern web design such as responsive web design (RWD) and other modern concepts in web design. The practical exercises cover the usage of tools and techniques in design a web including the implementation of design into a real web site using a current available instant web implementation tools.

**CMD 365 Web Development for Designer 3 (1-4-6)**

Prerequisite: none

This course introduces students to the web design and development lifecycle. The course focuses on theory, tools, techniques and standard in the design phase including layout design, interface design, components of web e.g. typography, color, media, contents, etc. It also covers the standards and trend in modern web design such as responsive web design (RWD) and other modern concepts in web design. The practical exercises cover the usage of tools and techniques in design a web including the implementation of design into a real web site using a current available instant web implementation tools.

**INA 314 Aesthetics**

**3 (2-2-6)**

Prerequisite: none

An investigation into appreciation of design philosophy in form and other elements and the meaning of aesthetic values in relation to other elements of architecture and interior architecture.

**IND 339 Photography**

**3 (1-4-6)**

Prerequisite: none

Principles of Photography. Processes of Photography. Tools and techniques exploration. Artistic and aesthetic self-expression through photography.

**Free Electives Not less than 6 Credits**