

**Curriculum Analysis of Architecture Programs: Standard
Curriculum of Iran and Architecture Program at EMU as
Case Studies**

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ABSTRACT

Architectural education has the responsibility of preparing university students for unknown situations in their professional context. Therefore skills learned from design studios, studio-oriented courses, technological course and elective course have to go beyond cultivation of the mind, transmission of basic ideas and concepts.

Increasing population, environmental threats and social concerns as part of the architect's decision making is demanding intellectual curiosity inspiration from architecture schools. Iran is a country with a high rate of population and high rate of interest in construction and building market. Studying architecture is an increasing passion among the current generation. Eastern Mediterranean University is among one of those popular educational destinations out of the country. Analyzing all curriculum components of the architecture program in EMU and standard curriculum approved by Iran's ministry of higher education can provide new visions and insight both for students and related authorities.

The major findings of this study through evidence-based research method reveal that both case studies are sharing fully integrated architectural program and axiology concept (intercultural understanding based on motivation and desired outcome) more than EMU while in case of EMU's curriculum more ontology and epistemology concept is more paramount.

Keywords: Architectural education, the concept of education, curriculum, evidence-based methodology

ÖZ

Mimarlık eğitimi, üniversite öğrencilerinin mesleği bağlamındaki bilinmeyen durumlar için hazırlık yapma sorumluluğuna sahiptir. Bu nedenle tasarım stüdyolarından, stüdyoya yönelik derslerden, teknolojik ve seçmeli derslerden öğrenilen beceriler, zihnin geliştirilmesinin, temel fikir ve kavramların aktarılmasının ötesine geçmek zorundadır. Mimarın karar almasının bir parçası olarak nüfusu, çevresel tehlikeleri ve sosyal kaygıları artırmak, mimarlık okullarından entelektüel merak uyandırmayı talep ediyor. Nüfusu arttırmak, çevresel tehlikeler, mimarların karar vermesinin bir parçası olarak sosyal kaygılar mimarlık okullarından entelektüel merak ve ilham talep ediyor. İran, yüksek nüfus oranlı, yapı ve inşaat pazarında yüksek faizlerin bulunduğu bir ülkedir. Mimarlık okumak, şimdiki nesil arasında artan bir tutkudur. Doğu Akdeniz Üniversitesi, ülke dışındaki popüler eğitim merkezlerinden biridir. DAÜ'deki mimarlık programının tüm müfredat bileşenlerinin ve İran Yüksek Öğretim Bakanlığı tarafından onaylanan standart müfredatın incelenmesi hem öğrenciler hem de ilgili makamlar için yeni vizyonlar ve iç görü sağlayabilir. Kanıta dayalı araştırma yöntemiyle oluşan bu çalışmanın ana bulguları, her iki vaka çalışmasının da DAÜ'den daha fazla entegre mimari program ve aksiyoloji kavramını (motivasyona dayalı ve istenen sonucu temel alan kültürlerarası anlayış) paylaştığını, DAÜ müfredatında ontoloji ve epistemoloji kavramının daha önemli olduğunu ortaya koymaktadır.

Anahtar Kelimeler: Mimari eğitim, eğitim kavramı, müfredat, kanıta dayalı metodoloji

I dedicate this thesis to

My beloved family

For their endless love, support, and encouragement

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TABLE OF CONTENTS

ABSTRACT.....	iii
ÖZ.....	iv
DEDICATION.....	v
ACKNOWLEDGMENT.....	vi
LIST OF TABLES.....	x
LIST OF FIGURES.....	xi
1 INTRODUCTION.....	1
1.1 Research Background.....	1
1.2 Problem Statement.....	2
1.3 Significance of Thesis.....	2
1.4 Objectives of Thesis.....	3
1.5 Research Methodology.....	3
1.6 Limitation.....	5
1.7 Structure of Thesis.....	5
2 LITERATURE SURVEY.....	7
2.1 The Factors that Determines Quality in Education.....	7
2.1.1 Curriculum and Its Types.....	11
2.1.2 Pedagogical Approaches.....	15
2.2 Evolution of Architectural Education.....	18
2.2.1 Architectural Education before Industrial Revolution.....	18

2.2.2 Architectural Education after Industrial Revolution.....	20
2.3 The Factors That Determines Quality in Architectural Education.....	27
2.3.1 Curriculum in Architectural Education.....	27
2.3.2. Pedagogy in Architectural Education	33
2.3.3 Coordination in Architectural Education.....	40
2.3.4 Accreditation and Architectural Education.....	42
2.4 Summary of Chapter	45
3 METHOD AND FINDINGS	47
3.1 Introduction	47
3.2 Research Method.....	47
3.3 Case Study Selection Criteria.....	48
3.4 Data Analysis	50
3.5 Findings of Case 1: standard curriculum of IRAN.....	51
3.6 Findings of Case 2: EMU.....	62
3.7 Comparison and Discussion	74
4 CONCLUSION.....	82
4.1 Conclusive Remarks.....	82
4.2 Future Work	85
REFERENCES.....	87
APPENDICES	95
Appendix A: Standard Curriculum of Iran.....	96

Appendix B: Accredited Curriculum of Eastern Mediterranean University (EMU, 2018).....	100
Appendix C: Iran's Pedagogy System	106
Appendix D: Eastern Mediterranean University's Pedagogy System	108

LIST OF TABLES

Table 1. Philosophical concepts of education and related keywords (Author).....	8
Table 2. Modes of education (Author).....	11
Table 3. Pedagogical approaches (Author).....	17
Table 4. Organizing architectural education till 20th century (Author).....	26
Table 5. The content of architectural education curriculum. (Teymur, 1992).....	28
Table 6. Theoretical courses objectives and purposes (Smith, 2013).....	32
Table 7. The demonstration of analyzing steps based on the literature (Author).....	46
Table 8. Steps of analysis in both case studies (Author).....	48
Table 9. The philosophical concept of education and its related keywords (Author)	51
Table 10. Demonstrating types of philosophical concepts of education in Iran's standard curriculum (Author).....	52
Table 11. Demonstrating types of philosophical concepts of education in EMU's curriculum (Author).....	63
Table 12. Case studies' results comparison (Author).....	75

LIST OF FIGURES

Figure 1. Thesis structure	6
Figure 2. Diagram of different types of curriculum (Author)	15
Figure 3. The basic diagram of the Bauhaus curriculum (1928).....	24
Figure 4. Architectural education curriculum based on literature (Author).....	33
Figure 6. Architectural education pedagogy in design studios and theoretical courses (Author).....	40
Figure 7. The concept of education of courses in each semester for Iran (Author) ...	55
Figure 8. Iran's standard curriculum course content in each semester (Author)	57
Figure 9. The number of course categories in the whole of Iran's standard curriculum (Author).....	57
Figure 10. The number of course content in Iran`s standard curriculum (Author) ...	58
Figure 11. The number of course types on each semester in Iran`s standard curriculum (Author).....	59
Figure 12. Iran's standard curriculum pre-requisite in each semester (Author)	60
Figure 13. Evaluation system in each course type in Iran (Author).....	61
Figure 14. Evaluation system in each semester in Iran (Author).....	62
Figure 15. The concept of education of courses on each semester for EMU (Author)	67
Figure 16. The of EMU's course contents in each semester (Author).....	69
Figure 17. The number of course categories in the whole of EMU`s curriculum (Author).....	70
Figure 18. The number of course content in EMU`s curriculum (Author).....	70

Figure 19. The number of course categories during each semester in EMU's curriculum (Author)	71
Figure 20. EMU's pre-requisite in each semester (Author).....	72
Figure 21. Evaluation system in each course category in EMU (Author)	73
Figure 22. Evaluation system in each semester in EMU (Author)	74
Figure 23. The number of each concept keywords in the course description in both curriculum (Author)	74
Figure 24. The percentage of course categories in two curriculums (Author).....	76
Figure 25. The percentage of course content in two curriculums (Author).....	76
Figure 26. Comparative scheme of prerequisite network in both case of Iran and EMU (Author).....	77
Figure 27. Evaluation system comparison in both case studies (Author).....	78
Figure 28. Future work (Author).....	86

Chapter 1

INTRODUCTION

1.1 Research Background

“When the historical progress of architectural education is investigated, it is seen that architecture passes through different filters as an art movement (Ismail, 2002).” And there was an obvious alternation in architectural education after the industrial revolution in the 18th century due to the big changes in the architecture and design which needed a new and different education. These changes were started by introducing new building materials and construction techniques, offering a huge number of new buildings with special designs and assigning new concepts and meanings to these special designs (Benevolo, 1977).

So, with these rapid changes, the quality insurance in the architectural education appears which can be seen in the worldwide accreditation boards such as NAAB and RIBA that shows these concerns. There is a number of books and papers related to the architectural education context such as Necdet Teymor which has more focus on the architectural education practice on a bachelor of architecture program and its related policies such as RIBA.

Nowadays, with globalization phenomenon appearance and student mobility, there is much more interest between students to continue their study aboard than the past. So,

there should be an insight into the quality insurance of these programs for the students who want to continue or transfer their study to another country.

1.2 Problem Statement

With considering the worldwide globalization phenomenon and the needs of architecture, this interest has been appeared between people to travel around the world for study. Although, Iran is one of the countries that so many students migrate overseas for continuing their study on undergraduate programs. With considering the high potential of the construction and building in Iran, so many students are interested in architecture. And there are so many Iranian students who are coming to Cyprus for studying architecture. Based on the APR report in 2015, EMU is one of the popular and common educational destinations for Iranian students who are willing to study architecture abroad (URL2). It should be noted that the ministry of higher education in Iran defined a standard curriculum for the whole architectural programs in all the universities of Iran.

However, despite to the position of EMU in the top university rankings in the world (600-800) and the EMU department of architecture that accredited by different national and international accreditation boards such as NAAB and MIAK, this university is categorized as grade C by the ministry of higher education of Iran. From this perspective, this study is tried to shed light on both cases curriculum and pedagogical conditions with the aim that the findings of the study can help better evaluation from both body's perspective.

1.3 Significance of Thesis

Curriculum analysis of this study elaborates different components and parts of the selected cases and provides better insight to the respective authorities in Iran ministry

of higher education and architectural program leaders at EMU. This study will facilitate communication among stakeholders by means of shared similar and unique characters.

Moreover, facilitating student mobility among these programs, insight to further curriculum developments providing clear vision to the Iranian graduate students (either studied in Cyprus or Iran) to know about different similarities to act better as teachers in the context of Iran and EMU are other major achievements.

1.4 Objectives of Thesis

The main objective of this study is to facilitate quality communication and provide a new perspective to respective authorities and students. Therefore providing a precise and improved understanding of differences, similarities, and uniqueness of both selected cases is another main goal.

To achieve this following aims are defined:

- To study and document an extensive literature on the factors that determine quality in architectural education;
- To analyze the found quality determinacy in curriculum and pedagogy components.
- To compare the curriculum and the pedagogy system of two cases;
- To provide a proposition to be used by new programs for improvement.

1.5 Research Methodology

In order to achieve the objectives of the research which facilitate quality communication in architecture programs among Iran ministry of higher education; decision makers at EMU and students an extensive theoretical review on quality

determinacy factors in architectural education. Found determinant, indicator, and variables have been tracked and studied through curriculum review all selected cases.

Sergio Altomonte, Peter Rutherford, Wilson and Robin (2014); Necdet Teymor (1992) are used as main sources accompanied by recent scholarly articles of other researchers.

In educational researches and surveys, the analysis should be based on observation of valid documents. In the case of curriculum analysis, all dimension and components of the curriculum as major evidence has to be reviewed and studied. Therefore the evidence-based research method found suitable for this research.

Evidence-based method refers to the concept that makes results from the objective evidence. This methodology enables the researchers to figure out hidden relations.

As case selection criteria, big amount of interest among Iranian students to study architecture at EMU provided meaningful comparative study base. According to the issued APR report (2015) by the department of architecture the department is hosting students from more than 40 countries and Iranian students number have always been very high (URL2).

Iran has a standard curriculum for architecture program which is to be applied in all public and private universities (URL3). On the other hand, the department of architecture of EMU is nationally and internationally validated by MIAK (National Accreditation Board of Turkey) and NAAB (National Architectural Accrediting Board) (URL1).

1.6 Limitation

This study will focus on the factors that can be determined architectural education quality in terms of curriculum and pedagogy. Pedagogical tactics are excluded from this study and only those pedagogical concerns which enable better operation of the curriculum is considered. Moreover, in order to keep the evaluation based on the content of the curriculum components, the course credit hours are exempted in this study.

1.7 Structure of Thesis

Chapter one gives a summary of research background about architectural education, curriculum and pedagogy are discussed and in the next paragraphs, problem statement, the significance of thesis, the objective of the thesis, a summary of methodology, limitation and structure of thesis are presented.

In chapter two, the factors that determine quality in education, the curriculum, and its types and pedagogy approaches are discussed. The evolution of architectural education before the industrial revolution and after it is written then the relevant literature to the factors that determine architectural education which is the curriculum of architecture and its pedagogy is presented. Then the coordination in the curriculum is deliberated.

Following chapter is talking extensively about the research method, case studies, and data analysis. Chapter four illustrates the findings of curriculum review of two case studies separately then compares two results with each other to find the strengths and weaknesses of two case studies which will be presented in the discussion of the findings part. The last chapter presents the conclusion and future work. Figure 1 is showing the structure of the thesis.

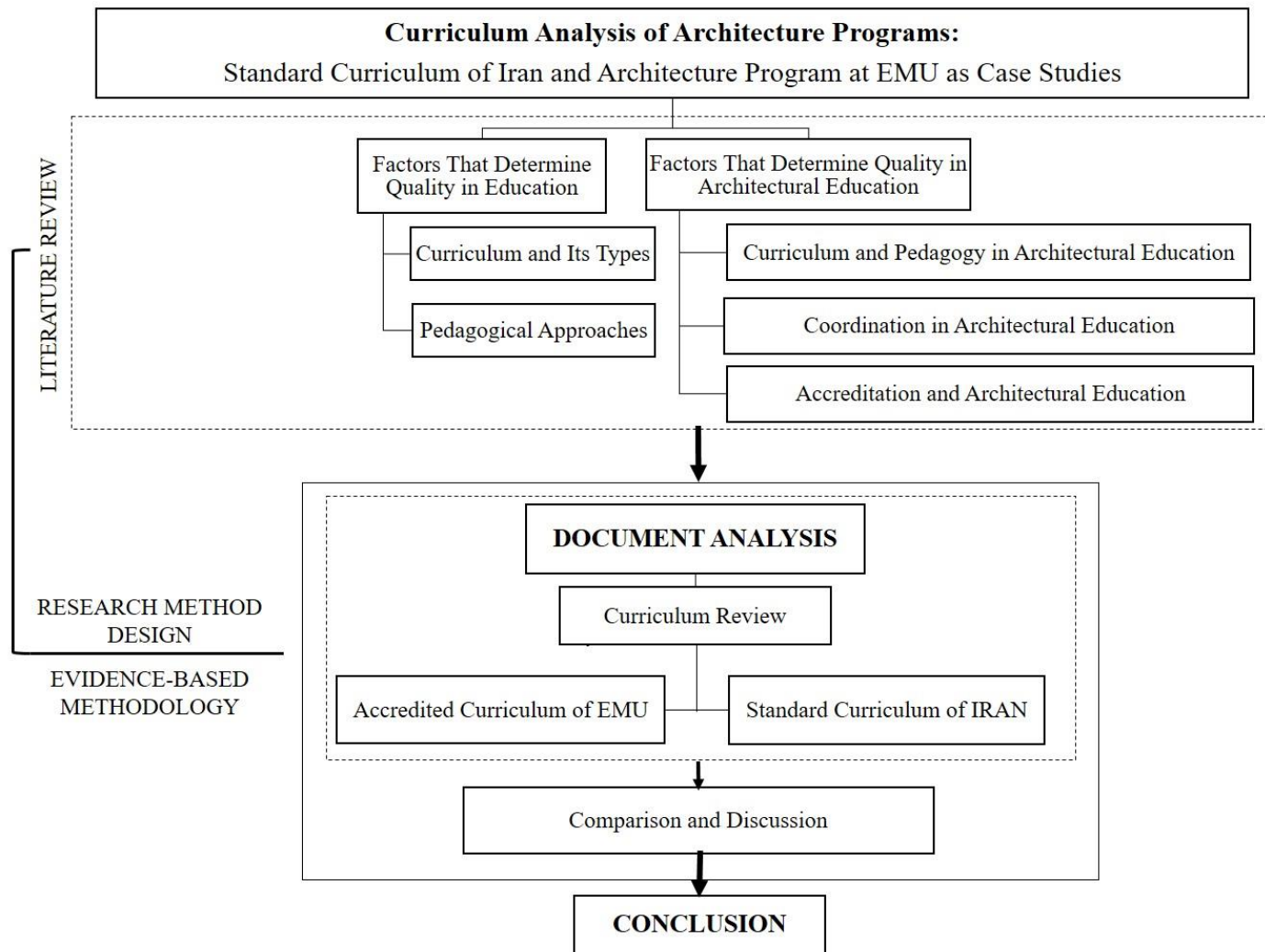


Figure 1. Thesis structure

Chapter 2

LITERATURE SURVEY

2.1 The Factors that Determines Quality in Education

Education is developing and practicing certain knowledge and skill in different contexts. The curriculum provides this context for it and pedagogical strategies are practicing engines.

Education is the progression of simplifying understanding and achieving of information and abilities from educational content which is taught in principal platforms. As Anandan in 2016 and van Inwagen, Peter and Sullivan and Meghan in 2018 mentioned, about crucial philosophical concepts for education which means how the knowledge will be understood, what peruse us to accept definite issues about information and knowledge to be successful and how to create the valuable contexts when it is going to include to the curriculum (Edelheim, 2014). These philosophical concepts are determined as Ontology, Axiology, and Epistemology concept.

a) Ontology concept

It is linked to the nature of knowledge, learning of the reality, and actuality. Ontological basis tries to give skill of asking cosmological questions. Questions like; why does something exist? Or how is it created or who is the creator? It provokes the curiosity of learning the relation between elements. The rational and philosophical study of self is encouraged in the ontological base of education as well.

b) Axiology concept

It is related to values and ethics argues of the standards. Aesthetical (nature and principles of beauty) and logical argumentations (a fact which contains the approaches of judgment) are main aims here. Different types of the proposition, hypothesis, definition, comparison, division, classification, and fundamental thoughts, are essential skills to be thought. It is the key factor of a procedure of intercultural understanding based on motivation and preferred result.

c) Epistemology concept

This is related to the theory of knowledge and covers the most essential division of philosophy and examines the implementation. It argues rationally “truth, falsehood, the validity of knowledge, limits of knowledge and nature of knowledge, knower and known etc.”

As Table 1 indicates each philosophical concept of education can be articulated base on different indicators and keywords. This findings which are highlighted in table 1 can be followed as theoretical findings and part of case review components.

Table 1. Philosophical concepts of education and related keywords (Author)

Philosophical Concepts of Education	Indicators
Ontology	The nature of knowledge, learning of the reality, and actuality.
Axiology	Values and ethics argue of the standards. Aesthetical and logical argumentations.
Epistemology	The theory of knowledge and examines the implementation.

Anandan (2016) determines three modes of education which are related to the pedagogy and the teaching system. These three modes are named as formal, non-formal and informal education.

a) Formal education

Education is a cooperative task. Its aims are to support the kid to adapt to the public atmosphere where she/he is fated to live. Education is the reason that society guarantees an adequate community in concepts and attitudes; without education, any society cannot develop and preserves itself. It is also essential that education should be totally accessible for people and it should be formalized and synchronized by an organization like the state. The formal education is a deliberately organized and scheduled education which done by the state or its considered organization such as the school with defined particular aims. In this type of education, there are rigid directions of the age of acceptance, course content and length of each course processes, examination and a collection of optional topics. Obviously, schools, colleges, institutions, and universities are presenting face to face education (Anandan, 2016).

b) Non-formal education

Unlikely to formal education that means instructing of defined information, or teaching in a specific branch of knowledge in an organized and planned way and testing, non-formal education mentions a deliberately planned education indefinite parts of information, abilities or ideals, which is in outdoor the school, with more flexible concerning age, time of teaching and with a selection of what course to study. It is for the group of people like grownups, agriculturalists, females, and dropouts which are not for many causes, capable to take benefit of formal education. (Anandan, 2016). This form of education can be managed by a trained educator or a leader with further

skills and experiences. However it does not have an official degree, non-formal education is greatly inspiring and shapes a person's abilities (Eaton, 2010).

c) Informal education

Informal Education is a broad kind of education out of a typical institute background. Informal Education is a clever, respectful and impulsive procedure of learning. It works over the discussion, investigation, and development of experiences. On the other hand, Informal learning is the unofficial, spontaneous, unplanned way which most of the people learn how to do their works. There are numerous methods of informal education: Homeschooling, Self- teaching and Youth work. Informal education mentions even too feelings, moods, beliefs and fantasies. Informal Education assistance to promote societies, links, and relations and hence it consumes some features as it works in every setting including schools, homes, and offices, creating independent connections that people can share in the public. Therefore informal education creates a situation for everyone to get a chance to easily act in strange conditions, learning without any requirements and obligations, and having the open choice to change their interest (Anandan, 2016). Also, Eaton mentioned in 2010 that no official curriculum got in this kind of education. The instructor is basically somebody with more skill such as parents, grandparents or a colleague. (Eaton, 2010) The curriculum is one of the most significant articles in the education procedure. The curriculum, in fact, is the essential issue which defines the 'warp' and 'woof' of the educational progress (Anandan, 2016).

Table 2 is showing the main indicators of modes of education. Following part is going to explain more about the curriculum and its definitions and functions in education.

Table 2. Modes of education (Author)

Modes of Education	Indicator
Formal education	Organized and scheduled education such as the school with defined particular aims. With official degree and curriculum.
Non-formal education	Planned education indefinite parts of information, abilities or ideals, which is in outdoor the school, with more flexible concerning age, time of teaching and with a selection of what course to study. Without an official degree.
Informal education	Informal learning is the unofficial, spontaneous, unplanned way which most of the people learn how to do their works. There are numerous methods of informal education: Homeschooling, Self-teaching and Youth work. Informal education mentions even too feelings, moods, beliefs and fantasies. No official curriculum.

2.1.1 Curriculum and Its Types

Etymologically, the word curriculum is consequent from the Latin word “currere” that means run or run-way or a running course. Therefore curriculum means a course to be run for getting a specific aim. Arthur J. Lewis and Mid Alice (1972) described curriculum a series of goals for educating individuals next to each other in the specific time and place with the same information, aims and instructing method.

The curriculum relates information and knowledge from one course to the following one through a program of education and incorporates information through diverse courses. This kind of articulation is carefully linked to structure and the orders. Sequencing in the program’s curriculum and syllabus is almost defining the direction of ideas through stages and topics. A unified curriculum practices both methods in vertical and horizontal relation to getting to the rational arrangement and smooth evolution. In a vertical relation, the subject that is taught in one course makes ready learners for the following course. It forms abilities and awareness which are spent through an entire platform of learning. In this method, elementary abilities and information are both advanced and strengthened as other features which are presented

in the education. This way of education is organized by concentrating on the structure in innovative stages of awareness. A horizontal relation means that what is learned in one specific lesson in a curriculum is in route with other, parallel courses both in positions of “course content” and assessment. Horizontal unity enhances estimated incorporation in all the curriculums (Hassanpour, 2018).

There is an accessible collection of theories of the curriculum since philosophers in education issues offer their own diverse clarifications of meanings and content of the curriculum. There are three different concepts by three different scholars, which characterize three main contributions to the frame of information on the curriculum. The first concept, specified by Albert Oliver, states to curriculum only as the instructive database containing three key features, like courses, activities, and supervision (Albert, 1977). The second one, labeled by Philip Phenix, is founded on a wisely thought out system of ideals which organize the goals and aims of education. The third concept, assumed by Hilda Taba, considers curriculum as the role of the public institute, she offered the three functions as conserving and spreading traditional heritage, serving as a tool for alteration of culture, and working as incomes for singular growth (Taba, 1962).

In the arguments of Cunningham, the curriculum is an instrument in the hands of the artist as the teacher to rot his material as pupil affording to his ideal as objective in his studio as a school. He specified the nature and function of the curriculum in six different types which are:

i. Curriculum as a Plan

Oliva in 1982 specified Curriculum is a plan for any type of capabilities in schools for the students. Carter V. Good in 1959 stated that curriculum is an overall inclusive plan

contains the teaching certain materials that the school is providing for learners to support them to achieve qualification for the specific field of profession. Tyler and Hilda Taba in 1962 clarified curriculum that it is a strategic plan that is written for reaching to specified aims and actions (Taba, 1962).

ii. Curriculum as an Experience

Tanner and Tanner in 1980 definite that Curriculum is reforming information and experiences analytically and improved by the schools' support to help the learner to grow his or her information and experience (Tanner & Tanner, 1975). The Secondary Education Commission in 1952-1954 statuses that curriculum contains the experiences that student achieves over the various activities and interactions with his or her instructor in all the different spaces of school like classrooms, library, laboratories, workshops, and playground. According to Crow curriculum contains all the experiences that student achieves in inside and outside of school by the support of a program that is planned to help learner psychologically, physically, passionately, mentally and morally. Krug in 1957 specified Curriculum which is includes teaching method that supports learner to reach to certain experiences.

iii. Curriculum as a Subject Matter

As Doll in 1978 clarified Curriculum as a matter be taught at schools and an area that works. The curriculum is both formal and informal content and the procedure that students learn information and knowledge, improve abilities and change the habits and thinking under the support of the school.

iv. Curriculum as an Objective

B.F. Skinner views the curriculum as an existing framework based on the behavioristic goals. The curriculum is the sequences of skills which learners should achieve doing to reach the purposes. W. W. Chatters in 1923 observed curriculum as a chain of aims that students should achieve by education involvements. Edgar Bruce defined that a curriculum is an educational tool that is planned to meet the goals in the schools (Edgar Bruce). According to Payne curriculum provides all circumstances that schools would follow to improve the personality of students to make differences in their style and way of thinking and reacting. Ralph Tyler in 1949 offered the same opinions about the curriculum but he united curriculum and the way of teaching in his method. Possibly he supposed that the curriculum and teaching method cannot be detached then the goals and purposes of curriculum preparation may not be achieved.

v. Curriculum as a system

Babcock, McNeil, and Taners specified that the curriculum may be deliberated as a system for dealing with learners and the improvement of manners for teams for applying the system.

vi. Curriculum as a field of study

Orlosky and Smith, Schubert and Tanners definite that curriculum may be recognized as a field of study, containing its own basics and areas of information, investigation, philosophy, and ethics.

As a whole, the curriculum may be definite as the “social environmental in motion”. It is all the actions and skills delivered by the institutes to the students for reaching their favorite aims. The courses of education are only a recommendation for

curriculum activities and processes, guidance for instruction to monitor. Also with the support of the curriculum, the way of instruction is planned insight into the curriculum instruction method (Anandan, 2016). Which the pedagogy can make it happen, so, in the following part, the pedagogy and the learning types will be discussed. Also, figure 2 is showing the curriculum types.

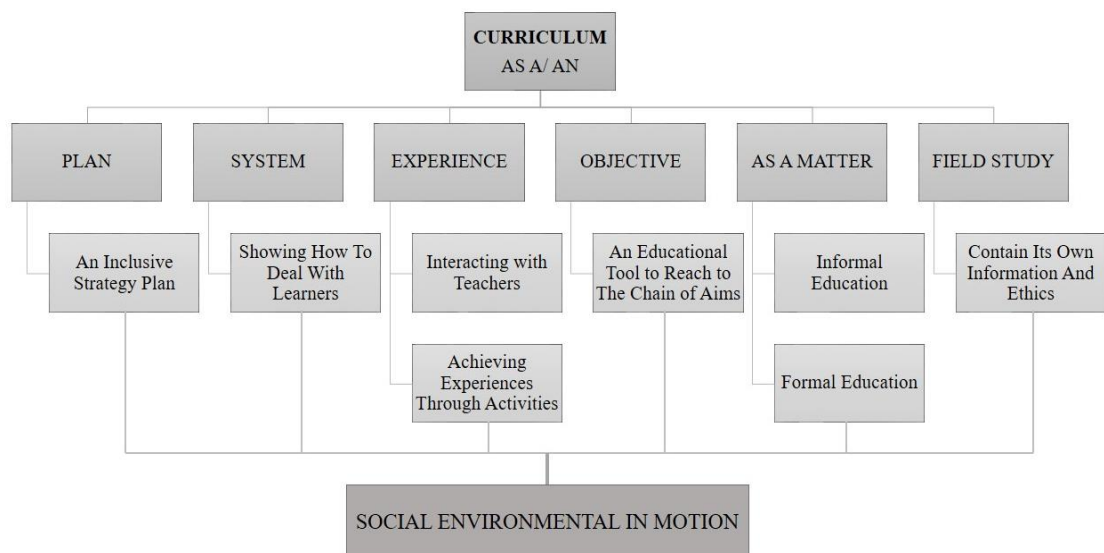


Figure 2. Diagram of different types of curriculum (Author)

2.1.2 Pedagogical Approaches

Pedagogy is referring to both the art of teaching and the knowledge of instructing which means the using of strategy, style and technique of teaching correctly and effectively. The successful learning is the result of the skill, ability, and knowledge of the instructor or the school setting. (Felder & Brent, 1999).

Pedagogy is the discipline that interacts with the philosophy and training of education and how these impact student's knowledge (Australia, 2017). Pedagogy notifies tutor movements, results, and education plans by taking into respect concepts of learning, understandings of pupils and their wants, and the circumstances. Pedagogy refers to

how the instructor interacts with learners and the academic setting the instructor seeks to create (Shulman, 1987).

On the other hand, to improve any pedagogical techniques and organizations; it is vital to assessing the current courses exactly and be logical in the choices. Accurately, what pedagogic purposes are and must be leading the educational structure as a complete as in its comprehensive process. And over which standard and approaches these aims are to be reached (Teymur, 1992).

Generally, there are three pedagogical approaches toward better learning by looking at some articles:

a) Critical pedagogy

Critical pedagogy is both an educational method and a wider communal program. Critical pedagogy acknowledges that instructive practices are challenged and formed through the past, which colleges are not ethically impartial spaces and training is radical. Choices concerning the curriculum, disciplinary practices, pupil examining, textbook collection, the languages used by the instructor, and more can enable or disempower pupils. It identifies that instructive performs favor some pupils over others and some observe damage all pupils. It also distinguishes that educational performs often service some speeches and outlooks while marginalizing or overlooking others. Another feature observed is the influence the instructor holds over learners and the implications of this. Its purposes comprise authorizing learners to develop energetic and involved residents, who are able to keenly recover their own exists and their societies. The aim of problem posing to learners is to allow them to initiate to pose their own problems. Tutors admit their place of power and display this right through their movements that support learners (Kincheloe, 2008).

b) Dialogic learning

Dialogic learning is learning that incomes through dialogue. It is classically the outcome of democratic dialogue; in other words, the result of a discourse in which diverse people deliver advice based on the specific rights (Kincheloe & Horn, 2007).

c) Student-centered learning

Student-centered learning, also recognized as learner-centered education, approximately includes approaches to instruction that change the concentration of education from the tutor to the learner. In a unique habit, student-centered learning purposes to grow learner independence (Jones, 2007). By pushing duty for the education route in the hands of learners (Hannafin & Hannafin, 2010). Student-centered instruction emphases on abilities and performs that allow lifelong education and self-determining problem-solving (Young & Paterson, 2007).

After some general explanation about the education, curriculum, and pedagogy, the next parts are going to discuss these items which are related to the curriculum and pedagogy of architectural education in more details from past till now. Table 3 is showing the pedagogical approaches indicators for better understanding.

Table 3. Pedagogical approaches (Author)

Pedagogical Approaches	Indicator
Critical pedagogy	Is both an educational method and a wider communal program. Choices concerning the curriculum, disciplinary practices, pupil examining, textbook collection, the languages used by the instructor, and more can enable or disempower pupils.
Dialogic learning	Is learning that incomes through dialogue.
Student-centered learning	In a unique habit, student-centered learning purposes to grow learner independence, by pushing duty for the education route in the hands of the learner.

2.2 Evolution of Architectural Education

The architectural education had been always recognized as “Architecture” through a design procedure which makes the qualified and specialized way of thinking while it has been supported by an articulated combination of reasonable design approaches, basic pedagogy methods and pre-defined curriculum of rational layouts, ages, characters, techniques and technologies (Teymur, 1992).

By looking at the historical evolution of architectural education, it can be seen that architectural education goes through diverse filters and challenges as an art program (Ismail, 2002). The following subtitles are going to give a brief explanation of major historic impacts, inspirations, and procedures, which had been affected the architectural education through the ancient time till now which is separated to two periods of time, before the industrial revolution and after the industrial revolution. Because there were some major changes in architecture which have an impact on architectural education. These changes were presenting new different building materials and construction methods, rapid growth on the constructing new building with various designs and allocating new ideas and meanings to these new designs which made major differences to the building and its architectural education before the industrial revolution (Benevolo, 1977).

2.2.1 Architectural Education before Industrial Revolution

On pre-renaissance, Vitruvius in 1914 categorized architect's learning in Rome and Greece beneath of two main features: ‘*theoretical*’, that Vitruvius listed them as ‘proportion’, and ‘*practical*’ learning "on the job" in actual procedures of construction. The architectural education in Greek and Rome were applied to theoretical discussions and training on the real building site. The style of teaching in ancient Rome and Greek

was how Broadbent explains it: "the original Academy, of course, was Plato's school of philosophy, of which traces are still visible in suburbs of 'arête' (struggle). " (Broadbent, 1995). Undoubtedly, architecture was taught at Plato's Academy as a practical way of thinking. Greeks were teaching architects the profession without any official courses; they even did not request drawings and when the concept and idea had been completed, they knew exactly what they have to do and every temple was a developed one of the earlier one (Ismail, 2002). In the early stages of time and the middle ages, there were some institutions for architects, artists, and craftsman which were run by the churches, named craft guilds. At first, there were informal and the learners were volunteers (Gelernter, 1995). Not same as modern architects, the medieval architect was educated in an intensive and general way. The master who was teaching to the lower level architects taught architecture by "hands-on" experience (Ateshin, 1987). The courses which were taught to the learners were geometry, construction and the laws related to the architecture and after 12 years of training, they become architects. Vitruvius was one of the first persons who wrote about architecture and his book which named The Ten Books on Architecture. It mentions the principles of architectural design which are the type of user, function, beauty, and material (Rowland & Howe, 2001).

The education system changed during the Renaissance period. This change was because of the ideal of that time which was the Universal Man. The old-fashioned educational system only had been saying that how to do a task without any explanation why it should be done in that way. Also, renaissance found the same system for all human knowledge. It made a general training and divided theory from practice (Gelernter, 1995). Designers and artists like Brunelleschi considered and revealed that they used geometry in their structure design without considering any special idea or

concept. In 1485, Leon Battista Alberti was firstly a creative author, started to learning ‘perspective and proportion’. Alberti assumed that architecture different from painting, sculpture, literature, and poetry was most vulnerable to philosophy. (Alberti, 1485)

Collins (1979) named Academie Fancaise that lastly twisted to ‘*Academie Royale d'Architecture*’, which is the origin of the current conception of architectural education. The Royal Academy of Architecture should be understood in the social and cultural set of Europe, and its equal rational convention beholding back to Renaissance Rome as its source and basis of motivation.

Risebero (1982) demonstrates “the architect's condition at that period as a gentleman who is educated, cultured, enjoying a high social status and willingly assisting in this process of class expression by designing palaces, great houses, and public buildings. His education was theoretical and antiquarian rather than practical. The academic architect with his features, and the craftsman architect, who truly grabbed most of the schemes those days, divided their techniques by the nature of their learning and practice.”

In the Enlightenment period, academicians understood they have to turn to some philosophical aims. Students were made to consider the rules and use art or architecture when they learned it and even they could copy the master’s work under the vision of their teachers (Gelernter, 1995).

2.2.2 Architectural Education after Industrial Revolution

Throughout industrial revolution there were three leading changes in architecture which were introducing diverse building methods and materials, growing of construction of brand new buildings, and assigning a new concept and meaning to

these buildings which were totally different from the earlier ones (Benevolo, 1977). Two important inventions were made in France that had a big effect on both architectural methods and the educational system which are the creation of imaginative geometry and introducing the metric system.

The 18th century France Revolution confirmed the beginning of predictable dominance, related to the Industrial Revolution in the 19th century in Britain. Known as an anti-monarchy action, new thoughts inclined to assume a pre-Roman historical moving as its motivation and to escape from any connotation. This program incompletely caused in the neo-classical and Romantic soul of the early stages of the 19th century in Europe. The innovative management disbanded French Academies in 1793 (Collins, 1979), but this was changed till 1819 when the Academy returned as the "Ecole des Beaux-Arts" - School of Fine Arts (Hansford & Smith, 1980).

Cunningham (1993) categorized seven elements as the organizational features of architectural education of the Ecole des Beaux-Arts:

1. Separating learners into studios run by a supporter;
2. Instructing fresh learners (*Nouveaux*) by grownup learners (*Anciens*);
3. Instruction of design by working architects and designers;
4. Considering design practice as the essential feature of the educational database;
5. Design studies started to be used as an atelier;
6. Methodical determination of design issues beginning with the '*esquisse*';
7. The growth of a competitive spirit as one of the pedagogic approach.

Broadbent (1995) presented "Beaux Arts' program which involved discourses in "theory of architecture, the history of architecture, construction, perspective and

mathematics and, by 1900, physics and chemistry, descriptive geometry, building law, general history and history of French architecture” have included to the standard speeches. The practices in studios were held as a monthly struggle which was related to the architectural structures. They were originally in two different types: *esquisses* (sketch designs) and *projects rendus* (fully finished drawings rendered in ink)”. Broadbent (1995) expands: "an *esquisse* might consist of part of a facade, a small house, a public fountain or whatever, whereas *projects rendus*, at the second level, might consist of a small school, an assembly hall or a small railway station". After a period of time in 1876, the other type of *projet* was included that named *elements analytiques*. In these design tasks, learners should practice Classical Orders in sketches.

Among the outstanding effects of the Beaux-Arts teaching methods that are quite suitable and appropriate in many architecture institutes, *esquiss* training might be measured as the most creative ones. Nevertheless, an unsuccessful gift from the Beaux-Arts rests is putting space on discourses from studios that separates "theory" and "practice". In the Nineteenth century, new approaches were added to the education system where the focus was more on scientific research than training or examining. In addition, the teachers were chosen for their talents and skills to regenerate knowledge and information rather than for their capabilities on spreading the prevailing knowledge. (Mahmoodi, 2001)

The Academy of Arts and the School of Arts and Crafts joint in 1919 at Weimar, Germany, to found the different institute of Bauhaus. Walter Gropius, the creator of the Bauhaus, specified his aim of creating the new institute as the indication of the essential union principal of offices of design over the institute's teaching method

(Cross, 1983). The major declaration of Weimar Bauhaus delivers "... Architects, Sculptors, Painters, we must all turn to the crafts" (Bayer, 1959).

Cunningham (1980) more defines the educational environment of the Bauhaus as anti-academic, wary of theory, founded on practical experimentations and, beyond all of them, aware of society's requirements. The Bauhaus's curriculum contained two key elements:

1. Useful teaching in the treatment of dissimilar resources and implements.
2. Formal education under the following items:
 - a) *Aspect*, learning of environment and resources;
 - b) *Representation*, learning of plane geometry, construction, draughtsman-ship, and model-making;
 - c) *Design*, the study of volumes, colors, and composition.

Courses in diverse offices of art and sciences were also delivered by lectures. The course was implemented in three phases:

- 1) Six-month *preparatory instruction*;
- 2) Three-year *technical instruction* leading to learner's *Journeyman's Certificate*;
- 3) *Structural instruction*, a change among physical work on real construction locations and theoretical teaching in the Research Department of the Bauhaus, leading to a *Master-Builder's Diploma* (Gropius, 1983).

Possibly one of a creative and significant element of the Bauhaus practice that can be considered in teaching systems is the "foundation" or "basic" course in design, developed and led by *Johannes Itten*. "The projects and exercises of the course aimed at freeing the students from preconceived notions of art and design, by exploring basic

properties in materials" (Cross, 1983). As can be seen in figure 3, the Vorkurs (the diagram of Bauhaus curriculum) for the first year students which are developed by *Johannes Itten* is purposed to inspire student's imagination over a series of implementation and instruction theoretical relations of "forms, materials, and colors, problem solving and expressive freedom" and using an advanced improvement from simple to complex (Crinson & Lubbok, 1994).

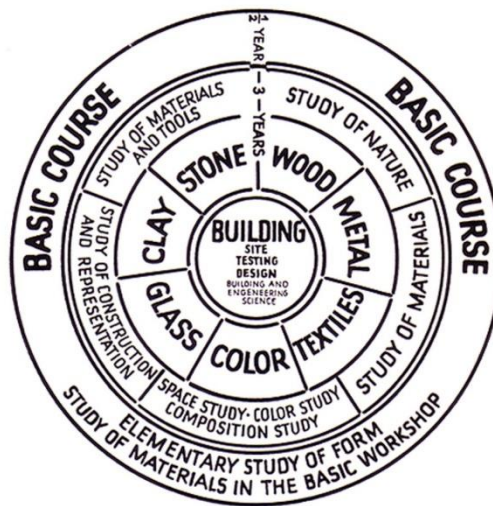


Figure 3. The basic diagram of the Bauhaus curriculum (1928)

The idea of organizing the recovery of old-style "arts and crafts" with the newest type, "machine style" by" ... absorbing ... the spirit of engineering into art" (Bayer, 1959) may be reflected as one of the significant influence of the Bauhaus on modern design instruction.

Cunningham (1993) counts History and Architecture as the two noticeable omitted courses from the curriculum of the Bauhaus. Later in 1927, yet, that the architectural problems: environmental interactions, region development, and *inter alia* (first studies to classify space requirements) were announced to the program. The institute recognized a sensible near to architectural planning and design that touched its peak

in the 1960s and yet continues in several current architecture schools. It performed to have a style conflicting with the classical preparation of the Beaux-Arts and the experiential custom that was surveyed in England (Cunningham, 1980).

Noberg-Schultz states (1966) that: "the program of the Bauhaus surely contained a basic contradiction, in wanting simultaneously to free the *self-expression* and to create a new common formal language". Also, He appreciates the demand for self-expression as a recollection of the leading expressionistic stage of the institute and reflects the second thoughts as reducing from the Dutch De Stijl program.

Gradidge (1990) defines *Pupilage*, the organization in education in which the fresh learner, or *pupil*, truly rewarded to work with a master - and sometimes joined discourses on the linked topics - as "British and successful", from the 18th to 20th century.

In this classification, training was regularly tracked by a journey abroad that constantly was Rome. The dissimilarities amongst *apprenticeship* and *pupilage* are labeled by Crinson and Lubbock (1994) as the learner had to pay a fee for education, whereas the apprentice was in the method of the medieval craftsman, replaced his effort to education.

In the twentieth century, the modernists started to speak about the architecture as a problem-solving action (Gelernter, 1995). Also, the education system tried to adapt to the people's initial needs. So, the technology was considered increasingly. And one of the fundamental concerns is to make perfect human activities to not waste future chances in the current century (Gunderman, Williamson, Frank, Heitkamp, & Kipfer, 2003). So, there is a special need for architects to update their information and their

style of design and construction system and even their skills to innovate brand new solutions for the existing and future problems and challenges.

For more clarification, the table below is organized to show the important activities in architectural education from the first days till now. As table 2 reveals, theoretical courses have always been the inseparable format of courses placed in the curriculum of architecture especially at the beginning they were going more important and through centuries studio-based education started to show up in the educational system.

Table 4. Organizing architectural education till 20th century (Author)

PERIOD OF TIME		COUNTRY/ CITY/SCHOOL	APPROACH		TEACHING METHODS
			Theoretical	Practical	
Pre-Industrial Revolution	Pre-Renaissance	Rome/ Greece, Plato's school of philosophy	✓	✓	Theoretical discussions in proportion. Training on the site of the real building.
		Crafts Guilds (run by churches)	✓	✓	The laws related to architecture and "Hands-on" experience on geometry and construction.
	Renaissance	Rome, Academie Fanaise (Royal Academy of Architecture)	✓	✓	
	Enlightenment	Europe	✓	✓	Considering rules and copy the master's work under the vision of teachers.
Post Industrial Revolution	Industrial Revolution	France	×	✓	Introducing diverse buildings methods and materials, introducing the metric system and imaginative geometry.
	France Revolution (18 th century)	France, Ecole des Beaux-Arts (School of Fine Arts)	✓	✓	Theory and history of architecture and French architecture, Mathematics, Physics, Chemistry, building law, Construction, Perspective. Design practice Teaching by working designers, monthly competitions, determination of design issues by <i>equisse</i> and <i>projets rendus</i> .
	20 th Century	Germany, The Bauhaus School	✓	✓	Environment and resources, plane geometry, Construction draughtsman-ship, model-making, the study of volumes, colors, and composition. Formal education including a journey abroad like Rome most of the time.

2.3 The Factors That Determines Quality in Architectural Education

In order to study the relationship between curriculum and pedagogy specifically in architectural education, the relevant literature has been reviewed.

2.3.1 Curriculum in Architectural Education

Boyer and Mitgang state that there is no only a particular way of practicing architecture and there must not be a regular and fixed architectural curriculum (Boyer & Mitgang, 1996). As it is reported by Crinson & Lubbok in 1994, the first curriculum format was introduced by the Beaux-Art school in France. That curriculum contains courses such as construction, lettering, guidelines, drawing, composition and the study of typology, history, perspective, sketching and design studio which was observed stable and unchangeable. From the 1960s forwards the curriculum was controlled by a principal specialist, the RIBA (Crinson & Lubbok, 1994). Currently, the Bachelor program of architecture curriculum contains features of “architectural design, building technology, history, theory, construction, structures, and environmental systems. Most architectural programs conceived design studios as a convenient tutorial environment to cultivate a set of ideologies, intellectual and artistic developments. It is not overstating that the studio environment would not develop without the active support of tutors” (Glasser, 2000).

Mainly in architecture program which is recognized as a combination of “multidisciplinary, multi-dimensional, multi-skilled and multimedia practice” that performs as if it already includes all the information that it wants. So the hope from architectural education would be so articulated that they ought to contextualize “theory, design studios” and other modules in an extra joined agenda (Teymur, 1992).

Nejdat Teymur (1992) had categorized the ‘content’ of architectural education curriculum in six different approaches, which shown in table 5.

Table 5. The content of architectural education curriculum. (Teymur, 1992)

	CONTENT	Description
1	<i>The content of the curriculum and the school life</i>	subject areas, timetabled components, number of hours, credit ratings, hierarchy of subjects and their teachers, project reviews and examinations
2	<i>The content of the syllabus and the activities within or outside the school</i>	actual bodies of knowledge taught, specific geographical areas, cultures, building types, or periods of history covered, methods used, the degree of integration or separation between the taught content and studio work, types of media used
3	<i>Method as content</i>	modes, medium, techniques, tools, and methods that constitute not just the means but the ends or substance of design and pedagogy
4	<i>The content of historical, cultural, social and physical contexts which students and teachers operate</i>	architectural and non-architectural trends, movements, media, ideologies, fashions, the profession’s definition of architectural goals or the society’s dominant value systems
5	<i>The content of students’ extra-curricular involvement within or outside the university with a direct and indirect bearing on their architectural and intellectual development</i>	sports, arts, politics, personal relationships, membership of societies, and involvement in cross-school formations such as “winter schools”, entering competitions, occasional architectural or non-architectural employment for a variety of motives
6	<i>Hidden content, hidden agendas, silent discourse, repressed or suppressed knowledge, gaps in information, messages between the lines</i>	absence in any of the above types of content or in the organization of the schools, curricula, staffing

As can be seen in table 5, the content of curriculum has more focus on the timetable, credits, and type of projects which the content of syllabus concentrates on the material and body of knowledge that is teaching to students. The techniques of teaching and pedagogy counted as a method. The architectural and non-architectural goals and ideologies considered in the historical, cultural and social content. Some elective courses like sports, arts, and politics counted as the extra-curricular. And finally, the absence of any of the items above is considered as hidden content.

As Altomonte, Rutherford, & Wilson mentioned on 2014, EDUCATE has an exploration on educational curricula worldwide, which examined the connection between diverse disciplines in numerous courses (EDUCATE, 2011), by focusing on:

- (1) ‘Content’, which is the phases of architectural education is specifically provided;
- (2) ‘Staff-To-Student Ratio’ (SSR or Full-Time Equivalents, FTEs), for theoretic and practical components;
- (3) ‘Delivery Methods’, as an example, professional discourses, conferences, studios, and workshops;
- (4) ‘Pedagogical Tools’, which includes software, live assignments and projects;
- (5) ‘Assessment Criteria’, like projects, workshop tests, and research.

Based on the outcomes of EDUCATE study on 2011, an extensive classification of five models in the educational programs of architecture and urban design has organized which are parallel, partially integrated, fully integrated, iterative, elective (EDUCATE, 2011):

a) Parallel

Every disciplinary area is taught separately and the information is delivered based on a ‘satellite’ method, by committed discourses and ‘stand-alone assessment’.

b) Partially Integrated

Diverse fields are related to delivery or in assessment. This method either realizes the module linking the different disciplines, or connecting components are introduced that performance as an opportunity for critical investigation of the practice offered by practical shown content. This approach may claim considerably more resources than a parallel organization, it carries with the benefit that the difficult examination of the subjects at hand can be measured in a way that judges the learner’s knowledge of that

definite disciplinary area. The linking components can then pursue to discover subjects at a more general stage, as they relate to the design procedure. Actually, both accuracy and its innovative investigation may be embodied and support deep education through practical applies. Assessment tools are essential to the achievement of the pedagogy.

c) Fully Integrated

Several fields of studies join the principal core of the design studio (Levy, 1980). Values and standards of each discipline are brought and measured in association with the necessities and improvement of the design task. This is the most contentious and hard of all methods, that design studio becomes the center of education and necessities that each discipline be a core character of the curriculum. Its achievement is uttered by the abilities, capabilities and skills collaboration and inspiration of the team contributing to the pedagogy beside the content and assessment tools engaged. Therefore, by the statement, all the instruction methods on the program should be obsessive about and dedicated to that discipline.

d) Iterative

Information is increasingly expanded through a series of 'loops'. The curriculum does not track a linear series of continuous phases in information delivery and assessment, but also the complication of the subjects offered slowly raises throughout the course. Essential to the accomplishment of such an arrangement is that all modules, from that, delivering methodical or theoretic contents to those categorized by an investigative and hands-on method, should be constructed on perfect interdependencies, where complication of study rises with the program.

e) Elective

Contents are improved by voluntary courses, possibly organized as domain-specific instructions that learners can add in their study program. The flexibility in the selection of the optional modules on offer – regularly from diverse faculties and departments – lets the study of other disciplinary areas from several points of view. Whereas the elective style is to a big extent expensive in terms of time and manpower, it offers learners the capability to discover their interested area (EDUCATE, 2011).

On the other hand, the curriculum of architecture can be studied in terms of design studios, theoretical courses, studio-oriented courses and elective courses (Hassanpour, Alpar Atun, & Ghaderi, 2017).

a) Design Studio

As Ernest Boyer and Lee Mitgang describe the design studio not only a room where learner practice, but also a method of intellectual about design that links together architectural curriculum (Boyer & Mitgang, 1996). As Jones (1996) describes design studio pedagogy is an integrative procedure which several features of the field, practical or cultural, have to be reflected. Besides, all of the features and design must be understood in relation to each other. He technically comments that in the design studio's knowledge and the information is verified in the framework, in active arrangement with that task. In numerous design studies the important features of design such as user requirements, human issues, and practical, artistic, environmental, traditional, cultural, and social matters, as well as historical and urban backgrounds mentions (Chi, 1999; Cunningham, 2005; Davies, 1996; Kim, 2006; Kucker, 1997; Seidel, 1981). The design studio is kind of specialized training, as a tradition in architectural schools, in which learners start a design project underneath of a leading

designer's supervision. Design studio situation is like space from twelve to twenty learners organize their own drawing desks, papers, books, photographs, sketches, prototypes, and models. In this place, learners talk to each other but typically involved in private, similar pursuits of the mutual design project (Schön, 1983). "It is a process, a way of thinking during which the many elements, possibilities, and constraints of architectural knowledge are integrated. At its best, the design studio sequence provides the connective tissue that brings together, progressively, the many elements of architecture education" (Boyer & Mitgang, 1996).

b) Theoretical course

The main objective of the architectural theoretical course is to allow learners to realize the origins, disagreements, and routes of several architectural points, plus their own tendencies. Also, the theoretical courses deliver learners tactics for suggesting, searching, and modifying these situations as a part of their academic and qualified progress. Particularly, the theoretical course follows 4 main objectives and 11 learning purposes as follows in the table below:

Table 6. Theoretical courses objectives and purposes (Smith, 2013)

	MAIN OBJECTIVES	LEARNING PURPOSES
1	Make an improvement on students ability to learn several courses of architecture from the past until now and the skill to;	Recognize the similarities and differences of many theoretical texts;
		Realize the connection between different points in architectural theory;
		Realize the differences between architectural theory and other types of theory like art and history.
2	Improve each learner's ability to be more self-aware about other's architectural preferences and be able to contextualize them related to other architectural theories, and the skill to;	Recognize the relationship between other's places in architectural theory and ideology;
		A better understanding of the effects of other's ideas and their work;
		Combine new architectural ideas and theories into other's philosophy and work;
		Adjust other's architectural thinking and preferences.
3	Improve each learner's critical thinking abilities, and the skill to;	Critically participate in the content of design studios;
		More critically request the project of other classmates.
4	Develop learner's reading and writing skills, And the ability to;	Clearly recognize the meanings of different architectural texts;
		Successfully pursue and categorize texts that benefit them to support their studio work.

c) Studio oriented course

It is defined as courses that are combined both theory and practice, the course outline follows theoretical lessons and learning how to apply these lessons to the paper like construction course.

d) Elective course

Some courses that are offered in both university area and the architecture area that students are free to choose some of them based on their interests.

Figure 4 is presenting curriculum classification in three main approaches as types of courses, model and content.

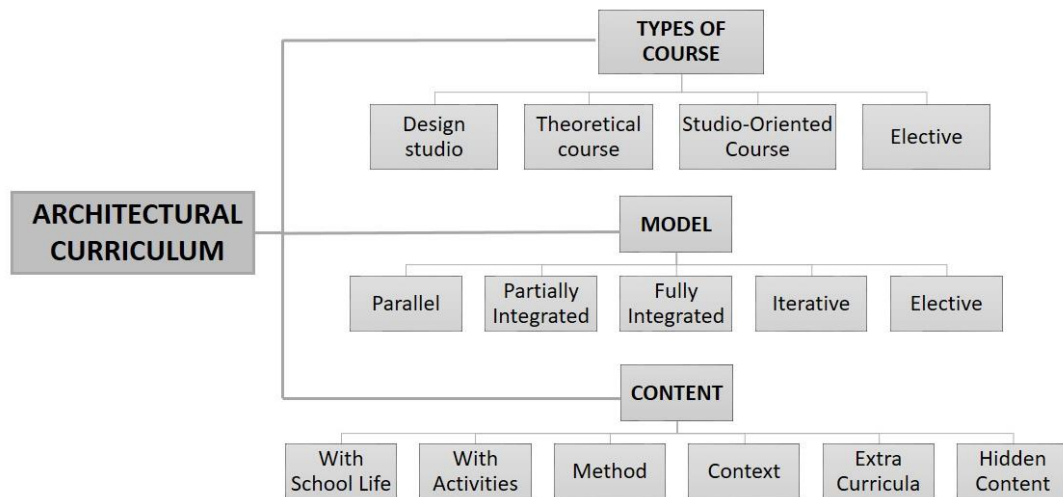


Figure 4. Architectural education curriculum classification based on literature (Author)

2.3.2. Pedagogy in Architectural Education

After the curriculum, pedagogy is the major element that complete the architectural education in the finest way. The following items are going to elucidate the pedagogy in design studios and theoretical courses and also explain a bit about other methods of pedagogy in architectural education.

a. Design Studios Pedagogy

Design studios are the core of the architectural curriculum. In the design studio set, pupils study to picture and characterize wonders explicitly; they study to "think architecturally, for as in other fields, this way of thinking refers to a particular domain of problems and solutions that characterize and are fundamental to, professional performance" (Ledewitz, 1985). The need for studio knowledge typically is reorganized in this method: synthesis is the essential ability that each architect needs, so learners should spend more of their time studying how to relate things to each other. Since creation is to learn what you must identify, studio practice stresses classifying the info is necessary and looking for it. (Attoe & Mugerauer, 1991)

The teaching methods which is using in almost all design studios is "criticism" of every learner's struggles at production (Attoe & Mugerauer, 1991). The course starts with a "design problem" is presented by the teacher to be answered. The "design problem" is set in the system of a short-term that its framework is through user demand, the user aims, location situations and its surrounding and other practical info. The problem might be an imaginary design project established to discover particular artistic, practical or methodical concerns, or the problem can be displayed after a real task under concern in the communal with all its limitations, governmental, social/cultural, structural, financial and methodical. Throughout the standard phases of the design project, learners may be questioned to cooperate in research on the common subjects related to the "design problem" to be discussed with the whole studio. On design task developments, more of learners' design will be of a singular causing in a range of other "design solutions", some of them reach to the same thing, other ones completely dissimilar. Moreover, additional discourses from the studio instructor on several

features of the problem are assumed in each week base on the whole studio. (Lackney, 1999)

The “desk critique” contains an energetic 20-30 minutes individual discussion between the learner and teacher daily or twice a week in the system of critical advice on both the learner’s progression and design project related to design issue. Throughout the “desk critique”, teacher analyses the learner's development in solving that issue by studying the learner’s “preliminary sketches, two and three-dimensional drawings, detail drawings, and physical study models.” After the desk-crit, the learner is anticipated to discover and assessed alternatives and proposals by reconsidering learner’s result. The teacher will analyze the result of the learner’s reviewed solution ideas proposing more modifications and improvements. This procedure of reconsidering different design solutions will be continued till the last design solution is reached. (Lackney, 1999)

Sometimes debates of design style and ideas can be concentrated in the "jury," background that learners' design suggestions are reflected, assessed and measured by a group of juries from outside (ANTHONY, 1989; Hassid, 1962; Peterson, 1979).

Aspects related to excellent practicing in design studios classified in three items:

- (a) “The tutor as self”: features of the tutor’s own lifestyle that is related to good instruction;
- (b) “Personal style”: the manner the instructor acts;
- (c) “Course format and implementation”. (Attoe & Mugerauer, 1991)

a) “The teacher as self”: Some teachers think interaction with learners as energizing activity. The other feels "born to teach," Thus instruction is “self-realization”. One names appointments from previous learners that specify "that I mattered in their lives”. Perfect instruction happens where there is a powerful friendly environment, a link among instructors. It occurs simply in “team-taught courses” where instructors share duty, and once they carry on debates among themselves in the course outline and its achievements and disappointments. It occurs where tutors participate in a discourse in class. Since most of the design studios are trained by persons, this aspect is not prevalent in the model but looks to be an issue in quality.

b) “Personal style”: Instructors' personal styles are different from their interests, and are similarly vital. The study specifies in three characters for the instructor as a concerned helper: “coach, counselor, and parent”. Since a coach probably recognizes what brilliance is, what the aim is and how to achieve it. “A coach can also be a heavy critic when the mark is not attained”. "Counsellor" is a kinder character. The aim is to support the learners realize themselves. One instructor tells about assisting release the inborn architect that exists in every learner; another one is realizing what's "under the surface, and helping pull it out." "Parenting" contains more inclusive encouragement to a learner's common progress and welfare. These first two characters let the learner pick the way, and then suggest recommendation and direction about success in that path. The imperative aspect of coach and counselor is that they consider the learner's benefit in mind, they are in a group with the learner, not in an oppositional place, or in an autocratic one.

Some instructors incline to practice “Socratic Method”, instruction over questioning rather than explanation and lecturing. In “Socratic Method” instructor’s emphasis is

on the learner's policymaking and observation instead of design. A feature of the “Socratic Method” is individual connections. An instructor spoke about having long discussions far from the design background to enable attentive conversation on a person-to-person base.

c) “Course format and implementation”: As people incline to appreciate stuff that matters to them, several instructors shape learners' welfares and practice the energy and efficiency related to interests as the base for instruction. By inspiring some pupils to follow their interests in car designing and national parks an instructor started procedure that permitted him to advance mutual matters linked to “symbolism, function, conservation of energy, representation”. This way learners were satisfied by taking their time on stuff they were anxious about, and the instructor simply and properly formed classes in relations of those interests.

Some instructors start at the first of the class to describe the manner of the course and their own method and preferences in training. Other instructor spends five hours presenting the course and his style through the first design studio class. The aim is to remove "the cloud of unknowing," to reduce "unnecessary obstacles to performance," "to make clear what they are trying to do to make sense." In this way, “counterproductive tension is reduced, and native creativity is allowed to blossom”.

Many instructors believe that they are effective as rather than setting up assignments that are “linear (beginning, development, end, review)” they put learners into the inside of problems. Hence, some of the instructors discover methods to put the learner in a position out of which they should design their way. Numerous instructors explain their

projects as "experiments," and other drives out of her way to escape from giving "pre-visualized solutions."

Tutors may inspire a "sense of collegiality" among learners. It can be done with group design projects, by demanding collaboration to reach design solutions, or by questioning that request debate not only through the class but outdoor as well. Instructors talk about the "chemistry" of single sessions, and how significant useful interaction could be. It looks the "sense of collegiality", useful struggle and encouraging each other on this communication aspect. Another feature of collegiality is a logic of being in a greater practice, a logic that learner is not a single pupil, but as a part of an active procedure or educational value.

Some instructors "talk and talk and talk" or it appears from explanations. They talk through "desk-critics", in different lectures, after the session, in discussions. Instruction is a hard task since it needs that teacher talk so much (Attoe & Mugerauer, 1991).

b. Theoretical Courses Pedagogy

In planning the course, Korydon H. Smith recognized the dialectical concept will help in founding direct definite meanings to allow architectural learners to first evaluate the impact of several works critically and secondly evaluate the comparative arrangement of their own worth structure of architecture consciously. He picked this dialectical organization as a pedagogical base for the architectural theoretical course for conferences in the class, allocated readings, and daily writing tasks. He saw the dialectic as beneficial for two main causes:

First, its arrangement is freely available to bachelor learners. Pupils do not want complete information about of Hegel's or other theoretical workings to realize it. The arrangement of the dialectic keeps both a binary concept (thesis and antithesis) that is increasingly and traditionally reliable with the most of students and a means by to exceed the binary synthesis. This arrangement affords both a normative basis and an exploratory foundation for critical inquiry;

Secondly, the dialectical structure offers a means to study architectural theories separate from a historical continuum. "This frees the curriculum and pedagogy of the course from the chronological system in which history and theory are often delivered" (Smith, 2013).

Also, there are two other types of pedagogy that are related to the specific curriculum structure which explained below are "Module-based teaching method", and "Three-phase" Teaching Procedure Concentrating on Skill Cultivation:

i. Module-based Teaching Method

The five-year instruction method highlights "architectural type" as the foundation, and "engineering" architectural design topics as the main line, to progressively improve architectural design lessons. The traditional instruction style underlining architectural design that must be moved to the "module-based" curriculum sequences, which contain six architectural issues: "form and cognition", "space and environment", "space and behavior", "skill and architecture", "architecture and city", as well as "city and architecture" (Chen, Dai, & YU, 2013).

ii. "Three-phase" Teaching Procedure Concentrating on Skill Cultivation

Based on learners' advanced education standards, the instruction idea splits to the five-year instruction method into three stages: "basic training", "expanded enhancement"

and "innovative practice", creating a "1+2+2" – three-phase teaching method. Instruction objective in each stage is clear and unified. Learners' specialized skill to be raised can be categorized as items follow: “special perception and interpretation ability, comprehensive design and design presentation ability, independent thinking and self-learning, as well as innovative practice and technology application.” The "three-phase" instruction method and the module-based instruction method are of common support that works synchronously (Chen, Dai, & YU, 2013). Figure 6 is showing types of architectural pedagogy in design studios and theoretical courses.

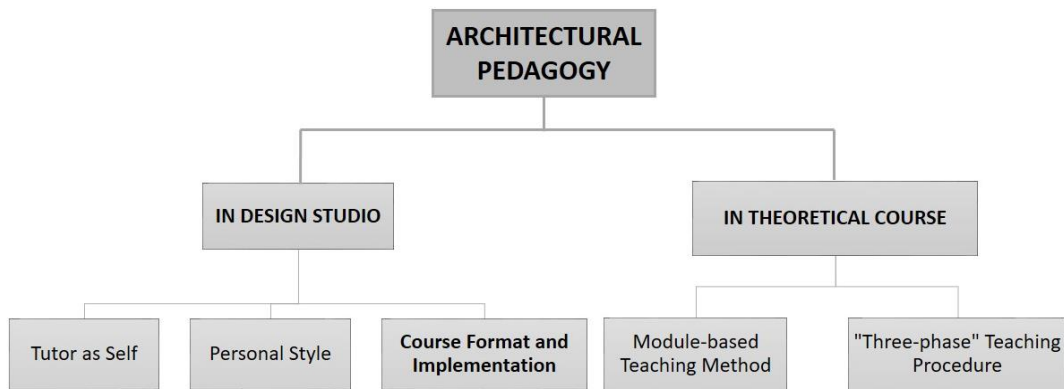


Figure 5. Architectural education pedagogy classification in design studios and theoretical courses (Author)

2.3.3 Coordination in Architectural Education

A curriculum never can show the degree or the difficulty of the requirements without making the appropriate stage of relations between courses. Effective coordination between the several responders is more critical to be successful in training and reactions. Coordination can remove breaks and repetition in the package, control a suitable partition of duty and start an outline for knowledge division, lesson association and united preparation (Hassanpour, 2018).

“Since horizontal and vertical relations among courses structures template of students’ knowledge and skill any risk can harm the quality assurance. Connectedness, the flow, and distinction between information and knowledge are becoming increasingly crucial in the process of imparting education of the professionals.” “There are few studies on how architecture programs’ curricula institutionally are articulated and how operationally the required coherency among components can be empowered.” (Hasanpour, 2018)

The coordination system must not be used as a mode to lower or increase benefit over other organizations. A coordinated method of reaching a mutual aim will work the greatest when zones of power and duty are plainly clear. The actual reasons for choices must be obvious to all of the members and adequate to the people. In numerous circumstances, tutors improve their own curriculums and syllabuses, regularly purifying and refining them over many years, though it is similarly mutual for instructors to adjust classes and curricula formed by other instructors, using curriculum patterns and guides to build their curriculum and courses, Approaches for confirming coordination include transcribed memos of understanding or related contracts. In coordinated structures, self-determining performers share data and effort with the same aim. “Coordination may be either voluntary or mandated, and carried out through formal or informal agreements.” (Hasanpour, 2018)

Coordination must support the belief of *impartiality*, i.e. the establishment of assistance only on the foundation of real requirements, not on the purposes of a specific organization. Coordination needs trust and trust needs *transparency*—the prepared current info and easy decision-making procedures. The risks of reaching operative coordination are significantly improved when some conditions have been met.

Coordination is a procedure that works preeminent once it is participatory, impartial and transparent. (Hasanpour, 2018)

2.3.4 Accreditation and Architectural Education

Accreditation is a type of quality assurance for any program. There are architecture accreditation boards around the world in national and international scales. In national scale for example there are Canadian Architectural Certification Board (CACB) for Canadian schools of architecture which founded in 1991, Architects Accreditation Council of Australia (AACA) for Australian schools for master degree program only, the Council of Accreditation and Architectural Education Malaysia (CAAEM) in Malaysia for architecture and interior design programs and Mimarlik Akreditasyon Kurulu (MIAK) for turkey architectural schools. The most widespread architectural accreditation on an international scale is the National Architectural Accrediting Board (NAAB) and Royal Institute of British Architects (RIBA) which will be explained separately.

The two essential aims of accreditation are to help architecture programs in schools, and departments in taking a regular class of standards, besides to inspire the growth and constant development. Accreditation may be an awareness process in a single architecture program to another one about its achievements and accomplishments. The goal of accreditation is representing the transparent side of the program, its conventionality to the principles of architectural education and better value from the academic viewpoint (NAAB, 2018; RIBA, 2002).

The accreditations in architectural education are required to be monitored to guarantee the convenience of the normal and suitable program. Apparently, the circumstances in

each accreditation technique must arrange the flexibility of process for cultural and conventional selections (Altomonte, 2009).

A) NAAB Accreditation

The accreditation in architectural education is a process that originated from the 19th century. Association of Collegiate Schools of Architecture (ACSA) as an initial one identifies the global principles in architectural education in the United State of America in 1912. Nevertheless, ACSA locked in 1932 and made eight years break in the regulation of architectural education structure in the US. This gap ended when National Council of Architectural Registration Boards (NCARB), Association of Collegiate Schools of Architecture (ASCA) and American Institute of Architects (AIA) together recognized and formed National Architectural Accrediting Board (NAAB) and qualified it to accredit the architecture schools at the national level (Tatar & Yamaçlı, 2013). The purpose of the association in the creation situations of NAAB in 1940 was stated as mentions:

- Create a structure that is unified into architectural education;
- Permits educational institutes to advance based on their own exact requirements;
- To make alumni who are capable to resolve architectural design issues, containing the combination of practical structures and health and safety needs;
- Realize architects' characters and duties in society (NAAB, 1998).

B) RIBA Accreditation

Royal Institute of British Architects (RIBA), is the liable association of accreditation in architectural education in the United Kingdom which was recognized in 1834. Initially, it was called “Institute of British Architects” but later granted its royal

approval and enlarged the name of “Royal” in 1837. At first, the effort of RIBA was articulating strategies on dues and other organizational and useful subjects, nevertheless, its practical zone winded with the creation of teams and the journals formed on various issues. The first group recognized was “Architectural Education Board” in 1904. The education was one of the key worries of RIBA that commends that inspiring society from several circumstances to be passionate about the arena of architecture for educating the built environment and a better prospect (Tatar & Yamaçlı, 2013). Like to the NAAB institute in America, RIBA assesses the education of architecture and study at the schools in the UK and abroad; RIBA attempts to make sustain or improve the current high regular in England (RIBA, 2013). The purpose of RIBA (Royal Institute of British Architects) is “advanced architecture by demonstrating benefits to society and promoting excellence in the profession” (Altomonte, 2009).

C) MIAK Accreditation

Architectural Accrediting Board MIAK; is a board which accredits Architecture Education programs, established in accordance with the Chamber of Architects Accreditation Board Regulations. The basic purpose of the Architecture Accreditation Board is to develop architecture education through assessment and competency work. Thus it is aimed for better educated and quality architects to be cultivated and the welfare of society to be increased. Aims to guarantee the required design, technical and professional skills and ethical formation for a competent professional practice to be sufficient for those successfully graduating the education program for the benefit of society, whether voluntarily requested by the institution itself, or deemed mandatory by the competent authorities. The course program of an architecture department accredited by MIAK includes vocational courses, general courses, and elective

courses. An architecture education program which wishes to be accredited is requested to develop an education program suited to their own mission and providing MIAK accreditation conditions, and to provide students with an education to meet “MIAK Knowledge and Skills Required of Graduates” (Tas & Sezer, 2017).

2.4 Summary of Chapter

This chapter tried to show the important relation of curriculum and pedagogy and their types and methods to the architectural education from the different points of view. Firstly, the different types of philosophical concept and three different modes of education presented, then the six various points of view about the curriculum discussed. Next part the three different pedagogical approaches defined. In architectural education section, the history and examples of the schools of the architecture around the world listed and their alteration in curriculum and pedagogy approach from the last decades till now were presented. Then specifically the curriculum of architectural education and its pedagogy explained. Then, in the coordination part, how different types of courses should be coordinated in the curriculum and with which method of teaching should be taught presented. Besides the accreditation system supervision on the curriculum of the schools can be helpful for presenting a better architecture program. Based on the literature review the research method is designed and strategy of evaluation is planned in 4 main part, curriculum analysis; educational mode; course content and pedagogical approach which is shown in table 7.

Table 7. The demonstration of analyzing steps based on the literature (Author)

PART A CURRICULUM ANALYSIS			PART B EDUCATIONAL MODE		PART C COURSE CONTENT		PART D PEDAGOGICAL APPROACH				
STEP	Description	Theoretical Findings Indicator	STEP	Description	Theoretical Findings Indicator	STEP	Description	Theoretical Findings Indicator	STEP	Description	Theoretical Findings Indicator
1	Course Type Categorizing	1. Design Studio 2. Theoretical Course 3. Studio-Oriented course 4. Elective 5. Internship *	4	Analyzing The Mode Of Architecture	1. Formal 2. Non-formal 3. Informal *	7	Finding The Number Of Course Types	1. Design Studio 2. Theoretical Course 3. Studio-Oriented course 4. Elective 5. Internship ****	10	Finding The Pedagogy Approach In Design Studios	1. Critical pedagogy 2. Dialogue learning 3. Student-centered learning *
2	Finding Keywords Related To The Philosophical Concept Of Education (PCE)	1. Ontology, 2. Axiology, 3. Epistemology **	5	Finding The Type of Curriculum	1. Plan 2. System 3. Experience 4. Objective 5. Subject Matter 6. Field Study *	8	Finding The Number Of Course Types During Semester	1. Design Studio 2. Theoretical Course 3. Studio-Oriented course 4. Elective 5. Internship ****	11	Finding The Pedagogy Approach In Theoretical Courses	1. Critical pedagogy 2. Dialogue learning 3. Student-centered learning *
3	Matching The Course Category And PCE	1. Design Studio 2. Theoretical Course 3. Studio-Oriented course 4. Elective 1. Ontology, 2. Axiology, 3. Epistemology ***	6	Finding The Model of Curriculum	1. Parallel 2. Partially Integrated 3. Fully Integrated 4. Iterative 5. Elective *	9	Pre-requisite Network	***	Legend (presentation tool) * Discussed in the content ** Table *** Figure **** Chart		

Chapter 3

METHOD AND FINDINGS

3.1 Introduction

Main implemented methodological tool will be discussed in the research method, then two case studies of this study will be introduced. Justification of this selection will be described and at last the data analysis method and finding presentation manner will be described. The aim of this study is to assess the educational journey of students from a curriculum perspective. In order to design our research method, we need to make a very strong relation with theoretical findings of literature review chapter therefore based on table 7 in chapter 2 the research method and the steps are designed and is discussed.

3.2 Research Method

The methodology of this thesis is based on the combined Evidence-Based method and the literature review on two different case studies features and structure of their curriculum which is the most suitable methodology for this study. In this method, the observers will first collect documentary evidence from schools and this includes the course description and instructors course outline. The evidence-based method refers to the concept that makes results from the objective evidence. This method mostly is used on the educational researches and its survey can be done by observing the valid documents. This methodology enables the researcher to trace all the dimensions of the curriculum in both horizontal and vertical dimensions and figure out hidden relations and features of it. The analysis base of this thesis is both qualitative and quantitative

which is more explained in the data analysis part. Also in the table below the steps are illustrated in the two case studies.

Table 8. Steps of analysis in both case studies (Author)

Step	Description	The standard curriculum of Iran	EMU
1	Course categories	Discussed in the content	Discussed in the content
2	Demonstrating types of philosophical concepts of education	Table 10	Table 11
3	The concept of education of courses in each semester	Figure 7	Figure 15
4	The mode of architectural education	Discussed in the content	Discussed in the content
5	Nature and the function of the curriculum	Discussed in the content	Discussed in the content
6	the architectural program	Discussed in the content	Discussed in the content
7	The number of course categories in the whole of the curriculum	Figure 9	Figure 17
8	The number of course types during each semester in a curriculum	Figure 11	Figure 19
9	Curriculum pre-requisite in each semester	Figure 12	Figure 20
10	pedagogy type in theoretical courses	Discussed in the content	Discussed in the content
11	type of pedagogy in design studios	Discussed in the content	Discussed in the content

3.3 Case Study Selection Criteria

The standard curriculum of Iran and the department of architecture at EMU from North Cyprus are selected as case studies. The case of Iran is selected because Iran is a country with high population which these days the big amount of its younger generation interested in continuing their study in other countries than before and also for their huge interest on architecture because of the large number of buildings and construction in the country, they interested to study aboard which one of their major destinations in Cyprus. So, for this movement, these cases found more relevant. It should be noted that Iran's standard curriculum is planned and standardized by the Ministry of Higher Education for all the architecture schools in the country.

Case one: Standard Curriculum of IRAN

The present academic agendas in Architecture program at the architectural school is established on a Four-year program in Bachelor level. The curriculum contains 39 courses. The nature of this program is design studio based which offers open-ended problems in the projects. Detailed information is available in Appendix A.

Case two: Department of Architecture at EMU

From North Cyprus, the Eastern Mediterranean University is selected for the second case study because it is recognized as the state university in North Cyprus and it has more accreditation for its architectural program than other universities. Its architectural program accredited from 2016 from the NAAB accreditation system beside it is trying to get accreditation from RIBA and other accreditation organization which will be named in the following paragraph. Moreover, it has numerous students from so many countries around the world.

In 1991 the department of Architecture, which initiated its educational activities as a department of architecture beneath the Faculty of Engineering. It was transformed as a Faculty in 1997 with two separate Departments of Architecture and Interior Architecture. Department of Architecture has occupied six years of accreditation from the Architecture Accreditation Council of Turkey (MIAK). Also, Faculty is a participant of ENHR (European Network for Housing Research), EA AE (European Association for Architectural Education) and IFI (International Federation of Interior Architects/Designers) (URL2). Its “design studio” with the “project-based” education model and “open-ended problems” in the projects which is the same structure of learning and teaching architectural design pedagogy in both North Cyprus and Turkey. (Ghaderi, 2016).

3.4 Data Analysis

The data analysis firstly will be done for each case study separately in both qualitative and quantitative way based on observed evidence. In a qualitative way the philosophical concept of education will be understood by finding the related keywords about each definition of concepts in the description of each course which will be demonstrated in a table, then the mode of education will be defined from the same table. The type of curriculum also can be found out from the description of courses. Then the courses will be categorized to five different course contents which are design studios, theoretical courses, studio-oriented courses, elective courses and internships which will be presented by a colorful figure with different codes to showing the content and category of courses in each semester more accurately. The relation between each course to another one and the design studio in each semester and each year will be analyzed horizontally and vertically in a different type of colorful figure. The pedagogy system, teaching methods, assignments and project requirements for each course will be tabulated then will be compared with some charts and figures.

In a quantitative way, the curriculum and pedagogy system will be analyzed numerically and presented by some graphs, percentages and average calculations which will show a number of each course type in each semester and number of each course content teaching in each semester.

After assessment of each case study, in both qualitative and quantitative approach, the results will be compared and will be presented by different charts and figures to find out their advantages and disadvantages to give some recommendations for their improvement.

3.5 Findings of Case 1: standard curriculum of IRAN

In the following paragraphs, the case of Iran is studied in 11 separated steps by considering the information which mentioned in the literature review chapter and the results are shown by some tables, figures, and charts for more illustration.

Step 1: By considering the course description in Appendix A, there are three main course categories which are design studios, studio-oriented courses and theoretical courses beside elective courses and training. In the standard curriculum of Iran, ‘B’ considered as a Basic course, ‘M’ as a Major course, ‘S’ as a Specialized course, ‘E’ as an Elective course, ‘T’ as Training and ‘G’ as a General course.

Step 2: In table 10, some keywords which are related to these three concepts are highlighted in the description of courses from appendix A to understand easily which concept(s) are more considered in each course based on table 9 that is showing the indicators of each concept and its keywords.

Table 9. The philosophical concept of education and its related keywords (Author)

PCE	Indicators	Keywords
Ontology	The nature of knowledge, learning of the reality, and actuality.	Theoretical education for design Development of architecture and art through history Information technology theories Ethics of cad
Axiology	Values and ethics argue of the standards. Aesthetical and logical argumentations.	Develop graphics communication methods Integration of design thinking Major ecological aspects and theories Tectonics of building
Epistemology	The theory of knowledge and examines the implementation.	Critical thinking Design procedure Projects Examining the environmental elements

Table 10. Demonstrating types of philosophical concepts of education in Iran's standard curriculum (Author)

Design Studio	Description of Course	Studio-oriented	Description of Course	Theoretical Course	Description of Course
B 03 Environmental Perception	Presenting how to transfer the environmental perception (nature, specific places) by freehand drawings with considering the lights, shadows, proportion, and depth of spaces and volumes.	B04 Architectural Expression 1	1. free hand drawings of nature, architectural places and students own house 2. presenting the colors and their meanings and color combinations 3. Presenting different cameras, photographing from the buildings and architectural models, analyzing the photos from artistic perspectives.	B 08 Human, Nature, and Architecture	The aim is to have more concentration on the surrounding environment from the little things to the bigger ones which are: Cosmic Space Order, the order of shape and growth of plants, the order of shape, growth and the way of existence of animals, animal's architecture and the geometry and proportions of the human body and the human scale.
B 09 Design Preliminary 1	Presenting aspects of design such as forms, space, function, material, and structure, details of the building, the role of context, human dimension, and scale.	B 01 Applied Geometry	Presenting how to draw , repeat, percept and make different lines, surfaces, volumes on different scales; how to draw plans, evaluation, and section	M 29 Statics	This course is planned to teach the main six elements in structural systems and their calculations which are recognition and application of forces, structure, equilibrium, and determination of reactions, determination of internal forces, natural structures, and sections characteristics.
B 10 Design Preliminary 2	Presenting aspects of design forms, space, function, material, structure, details of the building, the role of context, human dimension, and scale on each specific project .	B 02 Material and Construction Workshop	Presenting different materials using in structure and building; how to make and build a frame with different materials for wall or ceiling.	M 21 Initiation with world architecture	This course presents the development of architecture and art from the past to the industrial revolution; showing samples from Europe, Asia, and Africa. Also from Egypt, Greece, and Rome.
M 39 Architectural Design 1	A studio course tries to improve students' understanding of the form, function and space. Also focusing on site and the environment, topography and climatic elements, social factors, construction styles, materials, details to design a school.	B 05 Architectural Expression 2	Using the contents in the Architectural Expression 1 course in a specific architectural project .	M 30 Steel Structures	This course is planned to teach the recognition and application of forces, equilibrium, and determination of reactions in steel structures .
M 40 Architectural Design 2	A studio course tries to improve students' understanding of the form, function and space. Also focusing on site and the environment, topography and climatic elements, social factors, construction styles, materials, details to design a residential building.	B 06 Landscape Geometry	Presenting the different types of perspectives, light, and shadows .	M 35 Building 1	This course presents tectonics of buildings with all kinds of masonry and basic kinds of skeletal structures and their construction features.

M 41 Architectural Design 3	This studio course aim is to let students design a cultural building like a museum to use their artistic abilities in design as much as they can.	M 25 Surveying	This course is planned to teach how to survey , how to mark land complications and how to implant the maps and drawings on the site.	M 26 Environment al Condition Regulating	This course is planned to teach the different types of climates and their effects on designing a project and which elements should be considered in each type of climates.
S 54 Architectural Design 4	This studio course aim is to make students to design a functional building like a hospital that the concept of life should be considered in their design especially in planning.	M 22 Historical Monuments Perception	Presenting how to draw a plan, elevation, section, and perspectives of a historical monuments bay free hand; photographing from historical monuments and how to present the drawings, photographs, information, and model.	M 31 Concrete Structures	This course is planned to teach the recognition and application of forces, equilibrium, and determination of reactions in concrete structures .
S 55 Architectural Design 5	The aim of this studio course is to teach a little about the urban designing by giving them a big site to design three different types of residential building including villas, 5 floors buildings, and 12 floors building, entertainment and health center beside the all roads and parking in the big residential complex.	M 37 Village 1	The aim of this course is to show the relation of life and architecture of rural area to their history, climate, and culture.	M 23 Initiation with Islamic Architecture	This course is focusing on Islamic architecture by presenting different buildings and their function, especially in Iran.
S 57 Final Project	In the final project, students should offer a design by their choice and present it to their supervisors and the jury members.	M 36 Buildings 2	This course presents the information and abilities needed for roof structures, stairs, windows, doors with their details.	M 27 Mechanical Installations	This course is planned to teach the mechanical installations in building on the 2 main elements of water supply and sewage and heating and cooling installations.
		M 38 Village 2	In following of Village course, the SWOT table will be discussed for the rural places to make them a better place for living and work.	M 24 Initiation with Contemporar y Architecture	This course presents the development of architecture and art after the industrial revolution until now and the effects of architecture schools like the Bauhaus.
		S 52 Urban Spaces Analyses	This course presents the urban spaces and its design, how to design architecture elements and buildings in urban spaces.	M 28 Electrical Installations	This course is planned to teach how to use mechanical and electrical installation in building on two main elements of light and sound.
		M 32 Cost Estimation	This course is planned to teach how to estimate the cost of a project over the material, the workers and equipment cost.	M 20 Theoretical principles of Architecture	Presenting theoretical education for design , complete definitions of design, its elementary vocabulary, features, ethics, structural characteristics, and design procedure.
		S 53 Initiation with Building Restoration	The definition of restoration and different way of it in the old buildings will be discussed.		

		M 33 Site Organization and Management	This course is planned to teach the rights between architects and the companies in Iran and how to manage time for a project from the first stage of construction till the end.		
		S 56 Construction Technical Designing	The aim of this course is to teach students how to design a simple project by considering every detail in the construction of building from the first stage.		
		S 51 Understanding The Basics Of Urban Physical Planning	This course presents the city planning meaning, the architectural complexes planning, and architectural planning definition.		
Legend					
a) Ontology Concept		b) Axiology Concept		c) Epistemology Concept	

As can be seen in the keywords of table 9, all the design studios have the epistemology concept except the one in the second semester which have only the axiology concept. Also from 3rd to 6th semester, design studios have both axiology and epistemology concept. The studio-oriented courses have all concepts in general. The theoretical courses just have ontology and axiology concept. Furthermore, in figure 7, each course is colored by the color codes in table 9 to show how concepts are spread in the whole curriculum.

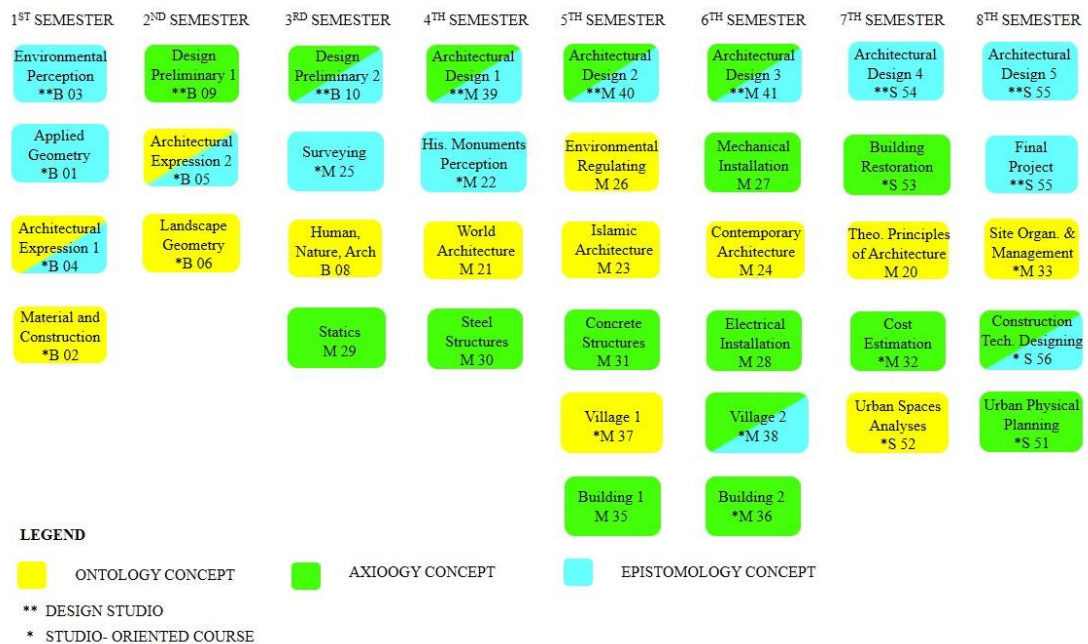


Figure 6. The concept of education of courses in each semester for Iran (Author)

Step 3: By looking at figure 7, it can be understood that in the whole curriculum, 11 courses has the only ontology concept which are theoretical courses and studio-oriented courses. The axiology concept is considered in the 11 courses. And, 6 courses have only epistemology concept which are design studios and studio-oriented courses. Moreover, two studio-oriented courses have both concept of ontology and epistemology and six courses have both axiology and epistemology concept. Also, by

a general look on the curriculum, it can be seen that the ontology and epistemology concepts are considered every semester but the axiology concept is more assumed from the second year.

Step 4: Also, the mode of architectural education in Iran is a formal education but in the design studios, besides the planned and categorized content, students are free to improve their skills and abilities without certain obligations which are recognized as a part of informal education.

Step 5: On the other hand, the nature and the function of the curriculum of Iran, in the part of theoretical related courses recognized as a plan that contains certain materials for reaching to the certain qualification by the support of the school. In the part of studio courses and studio-oriented courses, the curriculum is recognized as an experience which means learning by doing that student learns by practicing and experiencing through different activities with the support of the instructor and also as a subject matter which considers both formal and informal content.

Step 6: On the other hand, the architectural program of Iran is a fully integrated program because design studios playing the major role in the architectural education and all the courses in the curriculum are giving information which is using in the design projects in studios.

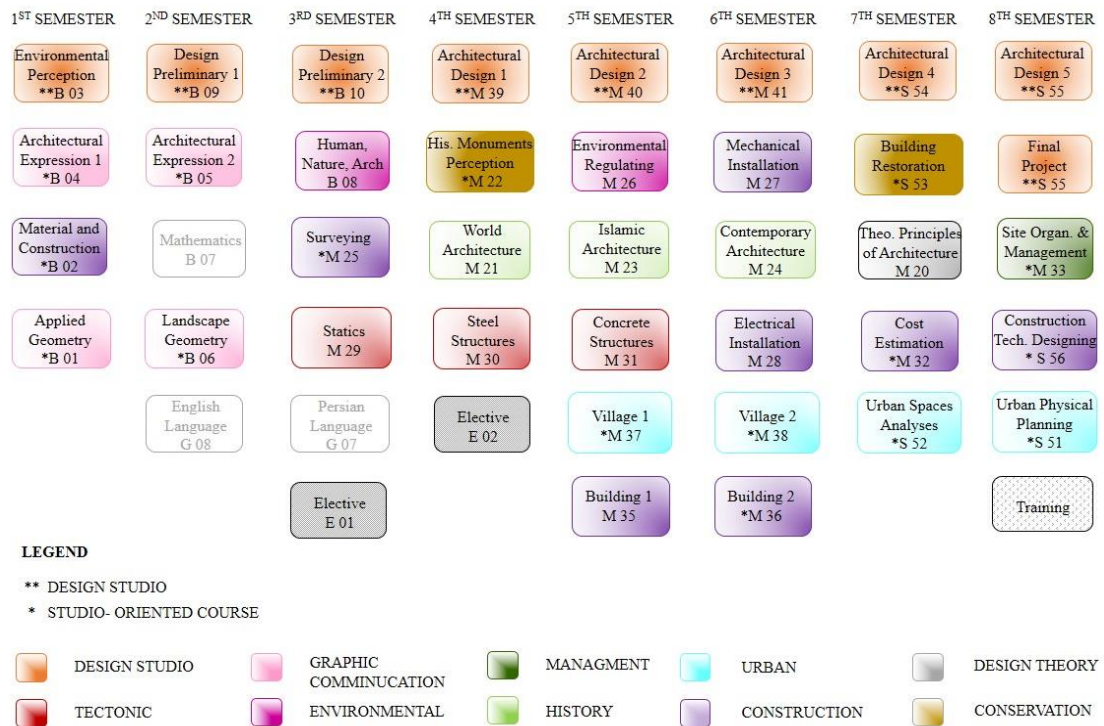


Figure 7. Iran's standard curriculum course content in each semester (Author)

Figure 8 is showing different types of course contents based on the course descriptions in Appendix A in Iran's standard curriculum each semester. These contents are a design studio, tectonic, graphic communication, environmental, management, history, urban, construction, design theory, and conservation. Which can be seen, the construction-related content is almost presented in each semester besides the design studios.

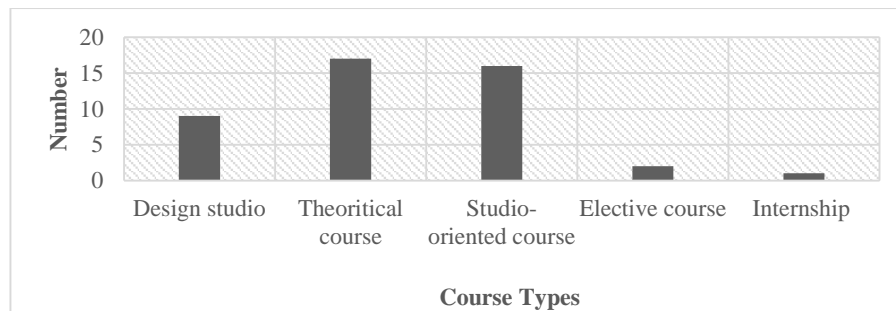


Figure 8. The number of course categories in the whole of Iran's standard curriculum (Author)

Step 7: In figure 9, the number of each course category is shown which there are nine design studios and 17 studio-oriented courses in the whole curriculum. The number of theoretical courses is 16 and there are two elective courses and one training in the total of 45 architectural courses.

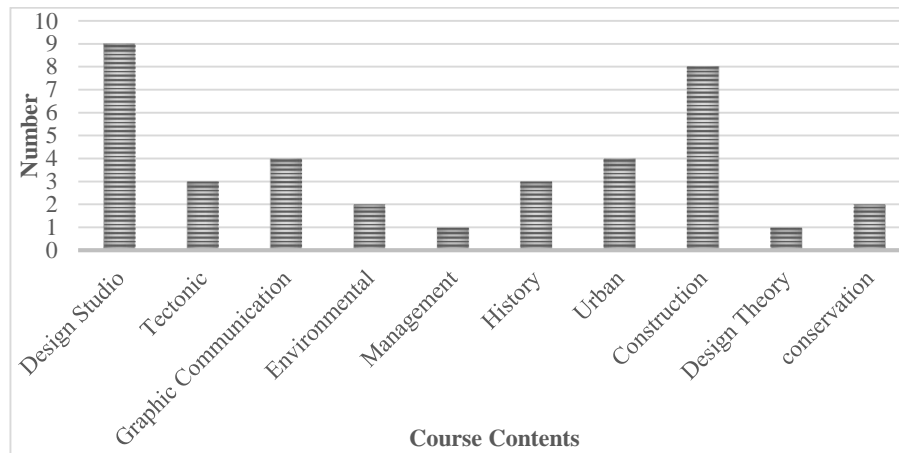


Figure 9. The number of course content in Iran`s standard curriculum (Author)

As can be seen in figure 10, the number of different course contents in the whole curriculum is presented. Design studios with the 9 studios are the most considerable content in the whole curriculum. After design studios, the construction-related courses with 8 classes have more attention. Graphic communication and urban content each one with the 4 courses and tectonic and history courses with 3 classes are the next ones. Conservation and environmental courses each one with two classes in the whole program is the less considerable content. The design theory and management as the least attention each one with only one course in the curriculum.

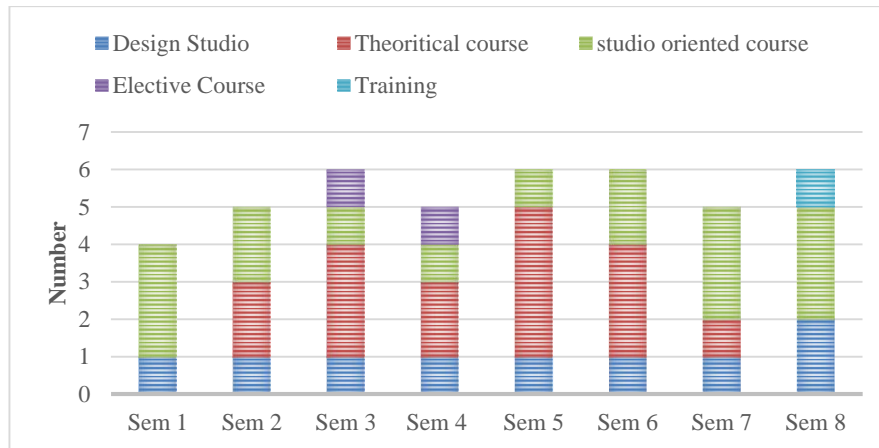


Figure 10. The number of course types during each semester in Iran`s standard curriculum (Author)

Step 8: Figure 11 is showing that each semester has one design studio which the last semester has two design studios because of the final project. Each semester has 1- 3 studio-oriented courses. From the second semester till 7th semester, each semester has at least one theoretical course which in the fifth semester there are five theoretical courses more than any other semesters. The elective courses are presented in the third and fourth semester and the internship should be taken in the last semester.

Step 9: Figure 12 is presenting the pre-requisite of the standard curriculum of Iran which can be seen that for taking each course which courses should pass in each semester. For example, for taking courses in the last year, all courses till 6th semester should pass. Also, all the pre-requisite are linked together as a chain which makes students to pass the courses step by step. If they cannot pass that certain prerequisite, their education process will stop. Moreover, in Iran, the last architectural design and the final project are presenting as co-requisites which the architectural design 5 is not operationally counted as a prerequisite for final project but if a student fails on the architectural design, it is not possible to present her/his final project.

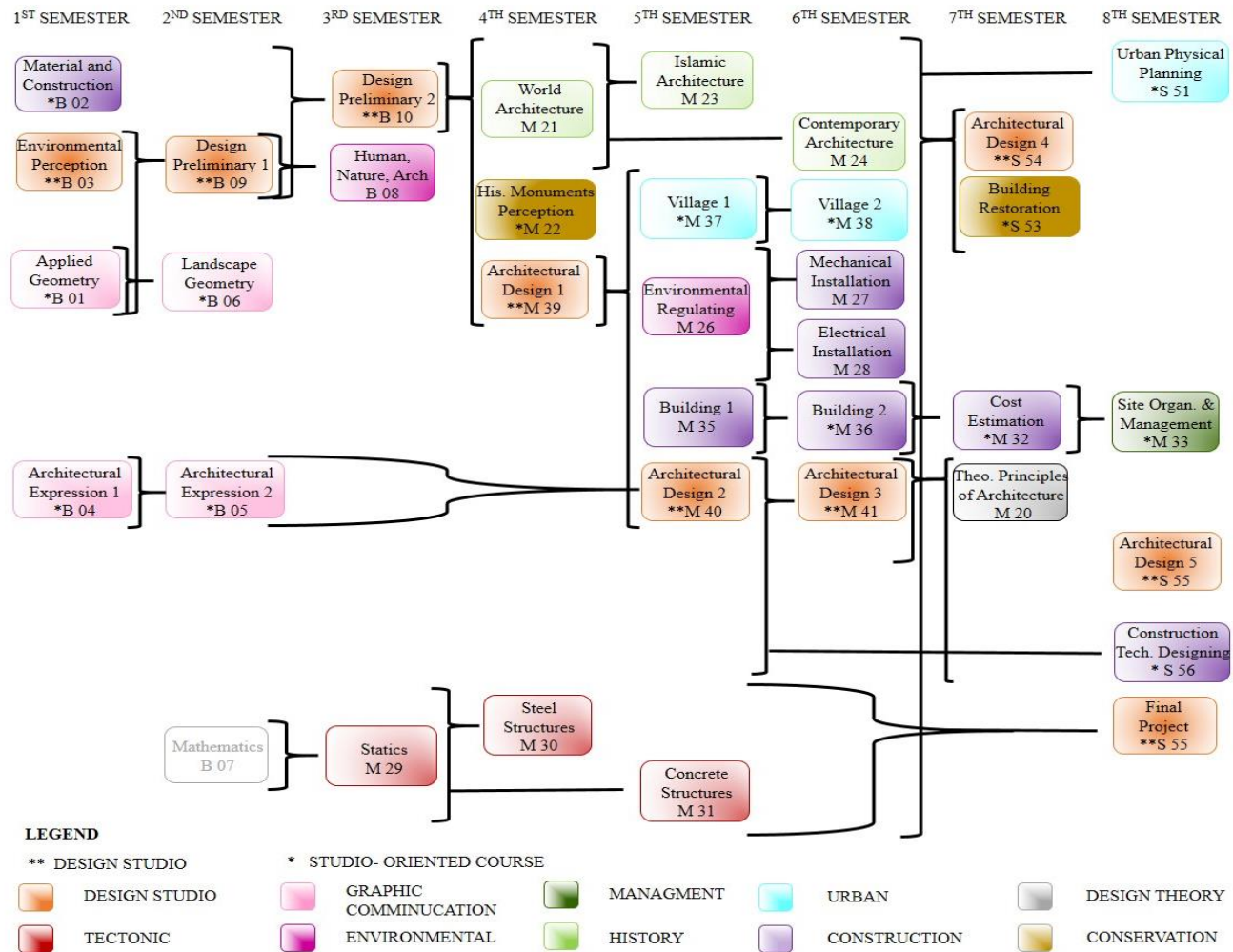


Figure 11. Iran's standard curriculum pre-requisite in each semester (Author)

Step 10: The information about teaching and learnings methods and assignments for each course is tabulated in Appendix C for a better understanding of pedagogy type of each course category in the curriculum. In the general point of view of pedagogy in the education and considering the information in table 6, it can be understood that the theoretical courses pedagogy is critical pedagogy which examines students from certain and planned materials from the past.

Step 11: And the type of pedagogy in design studios is student-centered learning which instructor gives a duty (design project) to the student to do it independently. Both of these types of pedagogy is using in the studio-oriented courses.

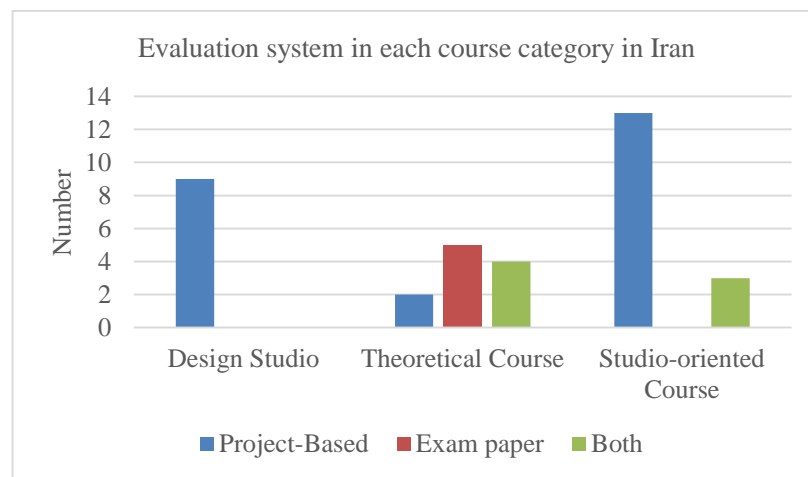


Figure 12. Evaluation system in each course type in Iran (Author)

As can be seen in figure 13, obviously all the assignments and evaluation system in design studios are project-based, but in the studio-oriented courses is also more project-based and some of taking exams besides the term projects. In theoretical courses, most of the evaluation is based on the exam papers and some of them has projects beside exams and just two course's evaluation is project-based. So, the evaluation system in Iran is more based on the term projects.

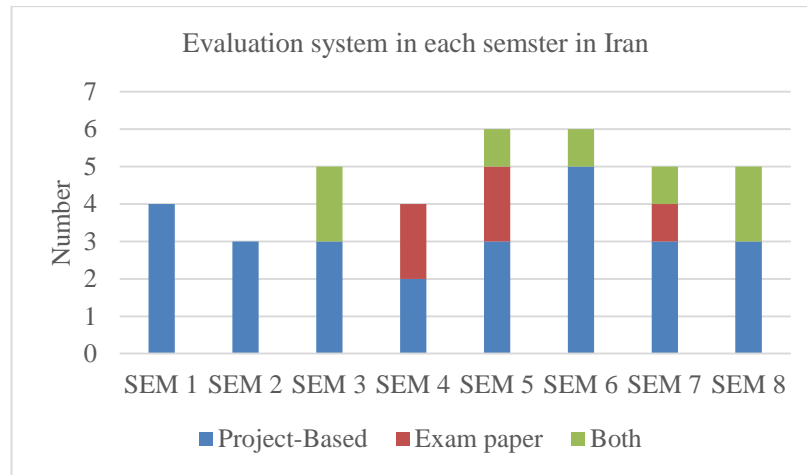


Figure 13. Evaluation system in each semester in Iran (Author)

Figure 14 is demonstrating the evaluation method in each semester that can be seen just in 4th, 5th and a 7th semester there are some courses that are evaluated based on the exam papers and after the first year, there are courses that students both give exams besides presenting their projects.

3.6 Findings of Case 2: EMU

In this part, the case of Eastern Mediterranean University will be studied by considering the data which mentioned in chapter 2 (literature review) and the outcomes will be presented by some tables, figures, and charts.

Step1: By considering the course description in the curriculum of EMU, same as the standard curriculum of Iran, there are three main course categories which are design studios, studio-oriented courses and theoretical courses beside elective courses and internship which can be seen in Appendix B.

Step2: In table 11, some keywords which are related to three concepts of education are highlighted in the description of courses from appendix B to understand easily which concept(s) are more considered in each course based on table 9.

Table 11. Demonstrating types of philosophical concepts of education in EMU's curriculum (Author)

Design Studio	Description of Course	Studio-oriented	Description of Course	Theoretical Course	Description of Course
FARC 101 Basic Design Studio	Elementary aspects of design, making graphical words over 2 and 3-dimensional tasks, design features and problems to improve learner's perceptual and physical abilities, focus on inspiration, and critical thinking.	FARC 103 Graphic Communication 1	The elementary implements of graphic communication, ethics of orthographic, axonometric and perspective drawing, an overview of diverse graphic presentation techniques.	FARC 113 Introduction to Design	Improvement of a theoretical education for design by presenting complete definitions of design, its elementary vocabulary, features, ethics, structural characteristics, and design procedure.
FARC 102 Introductory Design Studio	This course emphasis on design procedure, training on "three-dimensional forms, space, function, material, structure, role of context, human dimension, and scale, the transition from abstract problems to concrete ones."	FARC 104 Graphic Communication 2	Develop graphic communication methods, advanced abilities of 3D drawing.	ARCH 114 Human and Socio-cultural Factors in Design	Study of relationships between the human existence as the main element in modeling the "built environment, social functions, cultural factors and architectural design." Presenting "ergonomics and anthropometrics: Human scale, dimensions, and activities of the human being and association of these factors with the design." "Social and cultural life: interaction between individuals from various user groups in reference to private, public, semi-private and semi-public spaces at home, school or workplace; in and around other buildings; and urban spaces." "Culture and human behavior: Cultural differences in human interaction based on a complex set of hierarchies, social norms, behavior, translated into the design solutions." Testing the effect of social problems in several backgrounds and their connection with the place through case studies.
ARCH 291 Architectural Design Studio 1	A studio course planned to improve "an understanding of form, function and space relations" by projects of partial difficulty. Focus on the general architectural design procedure containing "site, literature survey, functional diagrams and program concepts, human and social factors ergonomics."	FARC 142 Introduction to Design Technology	Integration of design thinking with the appropriate structure and technology; history of design technology, structural logic, form, structure and material, sustainable and innovative aspects of design technology.	ARCH 213 Ecological Issues in Architecture	This course emphasis on major ecological design aspects and theories at two scales - the small scale which is site or building and the larger one involving the growth of an urban area, and represent the learners to both traditional and the newest technological information existing. Main subjects to be presented in the course contain the key aims and influences for the quickly increasing "ecological design program, sustainable architecture and its various dimensions, traditional architecture and urbanism, regional architecture, design with ecology and technology, case studies in contemporary regional/ecological design."
ARCH 292 Architectural Design Studio 2	A studio course planned to advance the "understanding of form, function and space relations through projects of fairly complex functions: A minimum of two-story buildings with simple structures in the built environment." Focus on "site and the immediate environment, sloped topography, orientation and other climatic factors,	ITEC 105 Computer 1	This course is an overview of the world of Computing and Information Technology (IT). The course offers the elementary explanation of information technology theories, elementary computer structure hardware and	ARCH 225 History and Theories of Architecture 1	The first part of the course presents the development of architecture and art from prehistory till the end of the Pagan world; the second part presents architecture which is advanced in the West and the East with the appearance of religions as Christianity and Islam, till the end of medieval periods. Because of the comparative setting of the course, the extensive geographical scope is reflected to embrace subjects and samples from "Europe, Asia, and Africa. The architecture of Egypt,

	social factors, appropriate construction techniques, materials, details- roof, and stairs”		software modules, terms in information technology.		Greece, Rome, Early Christianity, <u>Early</u> , Islamic, Byzantine, Romanesque, Gothic, Safavid, Seljuk, Mongol, and Early Ottoman architecture” are occupied in a linear set.
ARCH 391 Architectural Design Studio 3	A studio course designed to provide the student with skills of designing in urban context considering various urban problems. The emphasis on the <u>design concept</u> at a larger scale with particular attention paid on achieving unity within the urban environment. Sensitivity to the existing context by means of historic environment is essential. Requirements include a quality of design, social factors, quality and hierarchy of open and semi-open spaces, street furniture and landscaping, orientation and organization of buildings on site, public-private interface, vehicular and pedestrian circulation, climatic considerations, appropriate construction systems and materials, and regulations.	ARCH 243 Architectural Construction and Materials 1	<u>Tectonics of buildings</u> , which have all kinds of “masonry (brick, stone, timber; with or without tie beams) and some basic types of skeletal structures, and their construction characteristics.”	ARCH 235 Introduction to Tectonics of Structural Systems	A course focusing on <u>the investigation of a theory</u> of the exploration of the architectural implication of structures. Learning of simple terms and organization of structural methods in relation to the concept of tectonics in architecture. “Tectonics of all form-resistant structures, flexural and masonry structures via one successful case study for each system. Resultant forces in two dimensions, basic concepts of equilibrium, the center of gravity, and moment of inertia along with structural requirements such as stability, strength, and equilibrium, discussed on specific cases. Structural behavior, regulations, methods of construction and tectonics of masonry structures studied in detail. History of structures, philosophical concepts about the process of architectural and engineering design of building structures.”
ARCH 392 Architectural Design Studio 4	This studio course planned to offer the learners with essential <u>abilities “to design</u> multi-story and multipurpose building complex in built-up areas with high complexity in functional organizations; integration of appropriate structural and environmental control systems, materials, building codes and regulations in the metropolitan scale urban context.” The focus is to design “a mixed-use complex is important in considering the themes; repetition, reproduction, variation.”	ARCH 281 Computer Aided Design	A course presenting learners to the <u>ethics of CAD</u> , the concepts, and systems on which it is created, and its main uses “in practice - generating, evaluating, modeling, drafting, and rendering design solutions.”	ARCH 226 History and Theories of Architecture 2	This course is planned in three stages. The first phase is <u>covering with the growth “of architecture and art in Europe and Asia</u> from rising of Renaissance just after the fall of Constantinople and until the 17th century,” the second phase is dealing with the improvements in architecture in the 18th and 19th centuries in Europe and in the eastern world, and the third stage is beginning with the “19th century Industrial Revolution, covering contemporary architecture until the end of 20th century and the art of Europe and America.” An extensive geographical scope with subjects containing samples from “European, Asian, African, American and Australian continents.” A linear form “beginning from the end of the medieval times to architecture of Renaissance, Baroque, Islamic architecture, Classic Ottoman Art, Westernization of the Islamic Art and classicism, Art Nouveau, Modernism, Post-modernism and recent trends in architecture.”
ARCH 491 Architectural Design Studio 5	This studio course intended to deliver the learner <u>abilities</u> “of designing long span structures by considering integrated construction and service systems. The main emphasis is to design buildings with high complexity in function with appropriate structural systems and creating rich architectonic qualities.”	ARCH 244 Architectural Construction and Materials 2	The aim of this course is to offer learners the <u>information and abilities</u> needed for “wide span roof structures (folded plate, space frame, membranes, dome, truss systems etc.), stairs, windows, doors with details.”	ARCH 236 Tectonics of Flexural Structures	<u>History of chains and junctions in architecture</u> . “three equations of equilibrium, types of stresses and internal forces in relation to deflected shape and with the help of models.” Also earthquake resistant architectural design in relation to the architectural necessity of transformation in infill walls. “Slabs, structures of large non-load bearing surfaces, and suspended surfaces with the help of case studies. The logic behind portal and cantilever methods, high-rise building structures and their spatial characteristics.”

<p>ARCH 492 Architecture Graduation Project</p>	<p>Learners have to “work from macro to micro scales and with special emphasis on the individual interest areas. Each student is to demonstrate individually a performance that he/she has attained the professional standard required to practice within the rich context of the architectural discipline.”</p>	<p>ARCH 347 Architectural Construction and Materials 3</p>	<p>This course offers “industrialized and prefabricated building techniques (Tunnel formwork, skeleton, panel, and modular construction systems), building envelopes (structural, nonstructural facades, classification of facades according to the materials) and their construction characteristics. All possible construction methods of these structures and some constructed examples of these types of buildings in detail.”</p>	<p>ARCH 246 Energy and Environmental Issues Design In</p>	<p>This course examines the environmental elements which are affecting the architectural design. Concerns about “climate, lighting, and acoustics in relation to energy problems and user comfort. Climatic elements, classification of climates for architectural purposes, the thermal process of the human body, thermal comfort indexes, the thermal process of buildings.” Several climate controller techniques in buildings like “thermal, solar, condensation, wind control and natural ventilation.”</p>
		<p>ARCH 385 Digital Communication in Architecture</p>	<p>The purpose of this course is to make architectural projects as broad as possible from idea to finishing 3D production models. Rendering includes the considerable usage “of materials, lights, background and other rendered effects, with the aid of other software than BIM modelers such as Photoshop and/or 3DS Max.”</p>	<p>ARCH 252 Theory of Urban Design</p>	<p>This course purpose is to present the theories and approaches of urban design as a field joined with architecture. The subjects of the speeches and lectures are “concept of urban space, visual variables determining the quality of urban space, unity as the basic element of urban design, permeability, variety, and legibility as main principles of urban design determining the quality of public realm.” The course offers learners with a preliminary indication of “urban design concept and its visual, perceptual and environmental dimensions.”</p>
		<p>ARCH 342 Working Drawing</p>	<p>The aim of this course is to deliver learners the skill to make “working drawings (two-dimensional) with the aid of a computer.” In this course, learners will get aware with the regulation and operational drawing system for the qualified use. Lectures and practices will present learners “the systematics of drawing a project that could be realized in the real world.”</p>	<p>ARCH 311 Principles of Conservation and Restoration</p>	<p>This course pointing to offer the learners basic information and understanding of architectural and cultural heritage. Demonstration of suitable theories of “basic conservation, historic preservation, and restoration” to support learners gain abilities to relate in training. The subjects contain “cultural heritage, measured drawing techniques; concepts of conservation, preservation, revitalization, restoration; restoration techniques.”</p>
		<p>ARCH 355 The process of Urban Design</p>	<p>The course appeals on the broad theoretical substance of urban design as a resource to discover methods to evaluate “the character of the built environment,” and as an outcome, to advancing practical plans intended to usefully influencing the general value and livability of urban backgrounds.</p>	<p>ARCH 337 Tectonics of form Resistant Structures</p>	<p>This course focus on “the relationship between structural behavior, form, methods of construction, and tectonics for form- resistant structures, via successful case studies. The relation between internal forces, form, and tectonics. Strength and deformation of members in compression and tension, and problems of buckling and wind instability on existing examples, in relation to the effect of solutions to the tectonics of the building. Internal forces in form- resistant structures using physical models and approximate analysis of existing structures, Standards and regulations and their effects on the tectonics of architecture.”</p>

				ARH 312 Architecture and Design Theories	This course is dealing with many features of the history of architecture which are not covered in the last two history courses because of the linear method. Stress on theoretical sides of architecture such as “ideologies, philosophy of art and architecture, contemporary theories, concepts and practices of periods after modernism.”
				ARH 348 Building and Environmental Systems in Architecture	This course pointing to training all types of “sanitary and environmental systems in buildings and their approximate size prediction. Issues to be covered: Water supply, hot water, liquid waste, solid waste systems and sanitary appliances; energy systems (electrical systems, telephone ducts, gas-liquid and solid fuels), heating, cooling, ventilating, air conditioning systems, smoke and ventilation flues, refuse chutes; mechanical conveyors-lifts, escalators, tube conveyors -, fire systems -alarms and firefighting equipment-, lightning protection; security systems.”
				ARH 449 Economic and Managerial Issues in Architecture	This course containing basic theories and explanations for: “construction management, principles of engineering economy, cost/benefit analysis, break-even analysis, interest calculations, and economic comparison. Parties and stages of construction projects, engineering site organization, construction contracts and their documents. Project planning techniques, bar chart, network analysis, arrow diagram.”
				ARH 416 Professional Issues in Architecture	“Preparation Professional practices, responsibilities, ethics, relationship with other members of trade” are basic elements of this course. “Analysis and preparation of accurate estimates of probable construction costs with an emphasis on construction and finishes, writing specifications, the bidding process, contracts and letters of agreement and the preparation of bid documents will be addressed. Management concerns include the evaluation of construction time and cost, contract management, construction documents, inspections, time scheduling, and control.”
Legend					
a) Ontology Concept		b) Axiology Concept		c) Epistemology Concept	

As can be seen in table 11, all of the design studios have the epistemology concept in their course description which in the first, third and fourth semester besides the epistemology concept the axiology concept can be seen too. In the studio-oriented courses, the axiology and ontology concepts are considered more than epistemology concept. The theoretical courses have more ontology concept than the two other concepts generally. Also, figure 15, is illustrating the spread of concepts in the whole curriculum.

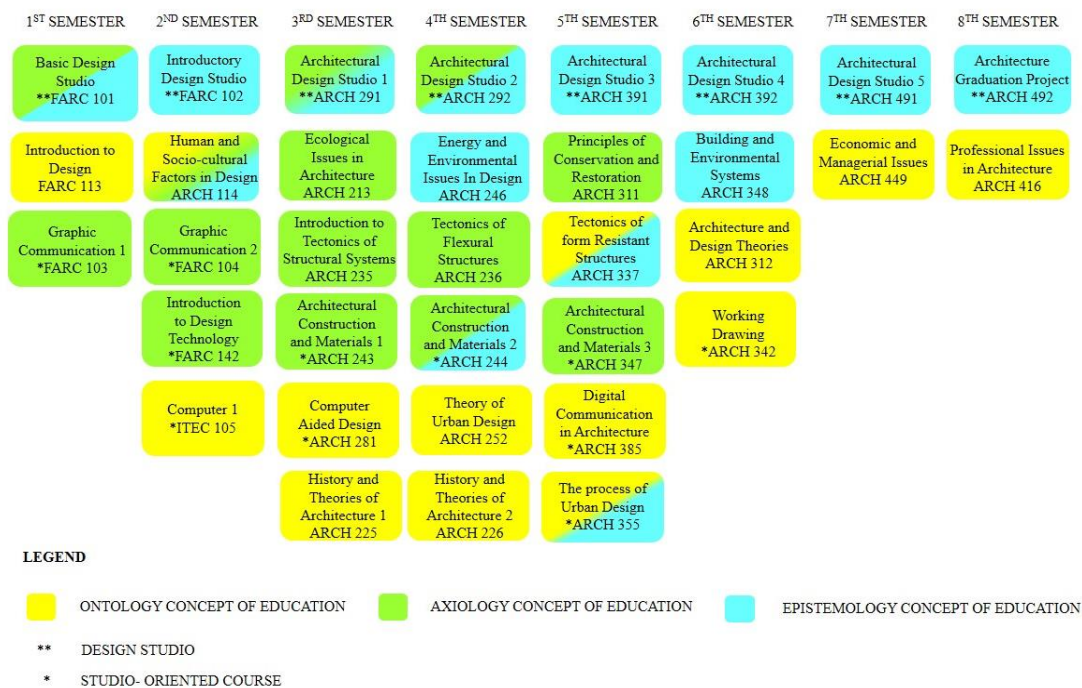


Figure 14. The concept of education of courses in each semester for Eastern Mediterranean University (Author)

Step 3: By looking at figure 15, it can be understood that the ontology and epistemology concepts are considered in each semester of curriculum, but the axiology concept is only considered till the fifth semester. Also, just one course in the whole curriculum has the all concepts in its description which is presented in the second semester and it is a theoretical course.

Step 4: Moreover, the mode of education in EMU is a formal education but in the design studios in each semester, students can develop their skills without special obligation and forces beside the planned content, which it identifies as informal education.

Step 5: Also, the nature of the curriculum in EMU has the three type together which in the theoretical related courses known as a plan that covers certain resources for getting to a certain requirement by the support of the university. In the design studios and studio-oriented courses, the curriculum is identified as an experience which is considered as learning by doing which student learns by practicing and experiencing through diverse activities under the provision of teacher and also as a subject matter which has both formal and informal content as mentioned before.

Step 6: Besides the curriculum nature, the architectural program of EMU is a fully integrated program because design studios playing the main role in the EMU's architectural education and entire courses in its curriculum are teaching the certain information that learners need them in the design tasks in design studios.

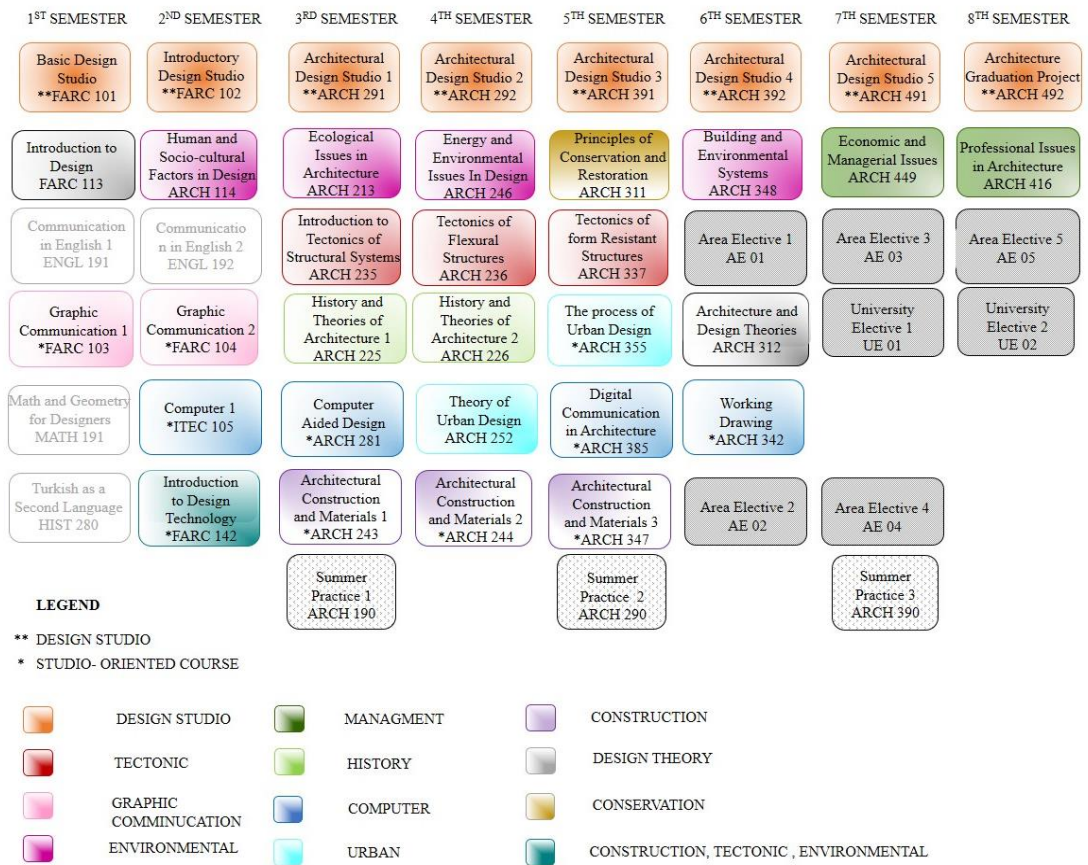


Figure 15. The of Eastern Mediterranean University’s course contents in each semester (Author)

As can be seen in figure 16, the content of courses in the curriculum of Eastern Mediterranean University are design studio, tectonic, graphic communication, environmental, management, history, computer, urban, construction, design theory, conservation, and a studio-oriented course has the three content of construction, tectonic and environmental together.

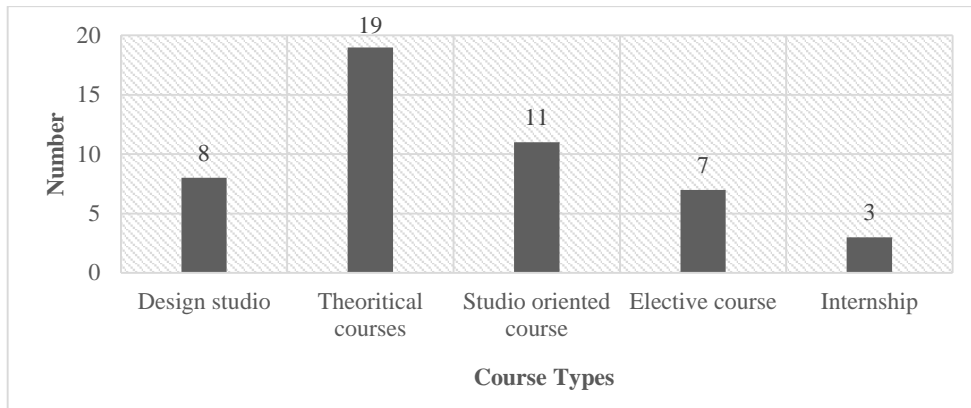


Figure 16. The number of course categories in the whole of EMU's curriculum (Author)

Step7: As can be seen in figure 17, the number of theoretical courses is approximately twice bigger than the number of design studios and studio-oriented courses which has 19 classes in the whole curriculum. Eleven studio- oriented courses, 8 design studios, 7 elective courses, and 3 summer practices are completing the program.

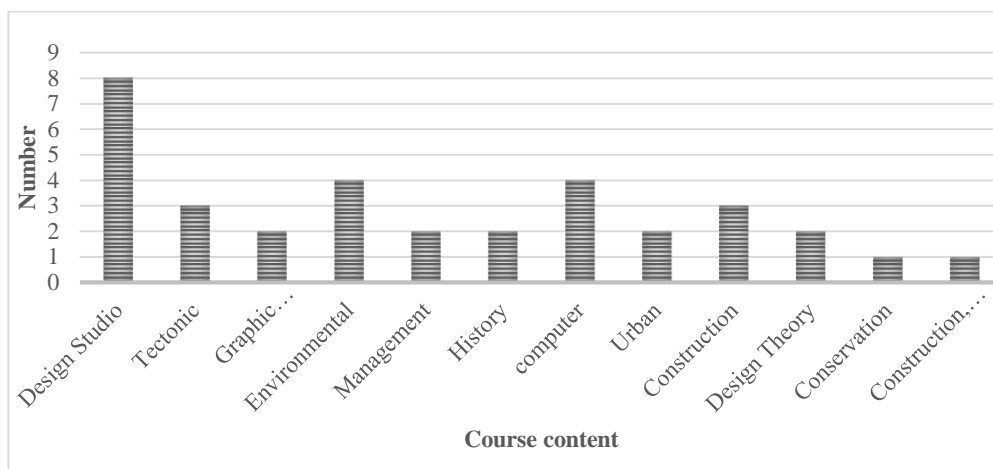


Figure 17. The number of course content in EMU's curriculum (Author)

Figure 18 shows the number of course content in the curriculum. The design is the most considerable content with 8 studios, then an environmental field with 5 classes has more attention. Computer with 4 classes in the whole program comes next. Tectonic, construction and history each one with 3 classes and graphic communication,

management, urban and design theory contents with 2 classes get less concentration. The conservation content with one class in the whole curriculum gets the least attention.

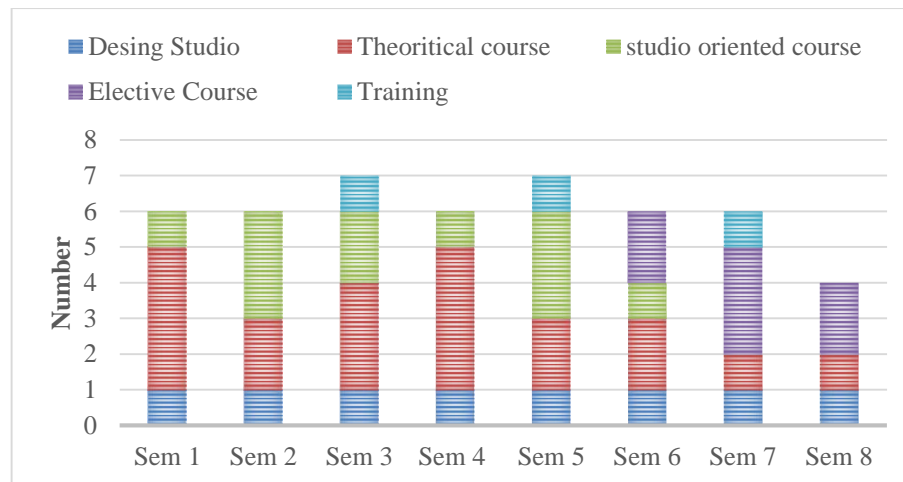


Figure 18. The number of course categories during each semester in EMU's curriculum (Author)

Step 8: By looking at figure 19, it can be understood that in each semester there is one design studio and at least one theoretical courses which in the first and fourth semester the number of theoretical courses gets to the highest level with 4 classes in each semester. Studio- oriented courses presented from the first semester till the sixth semester. Seven elective courses are concentrated in the 6th to 8th semester. Three summer practices are located in the 3rd, 5th and 7th semester.

Step 9: Figure 20 is presenting the pre-requisite in the curriculum of EMU which can be seen that for taking each course which courses should pass in each semester. For example, for taking a design studio in the 7th semester so many courses till 4th semester should be passed which means after 4th semester the courses are counting as an extra knowledge and students have progressed only in design studios.

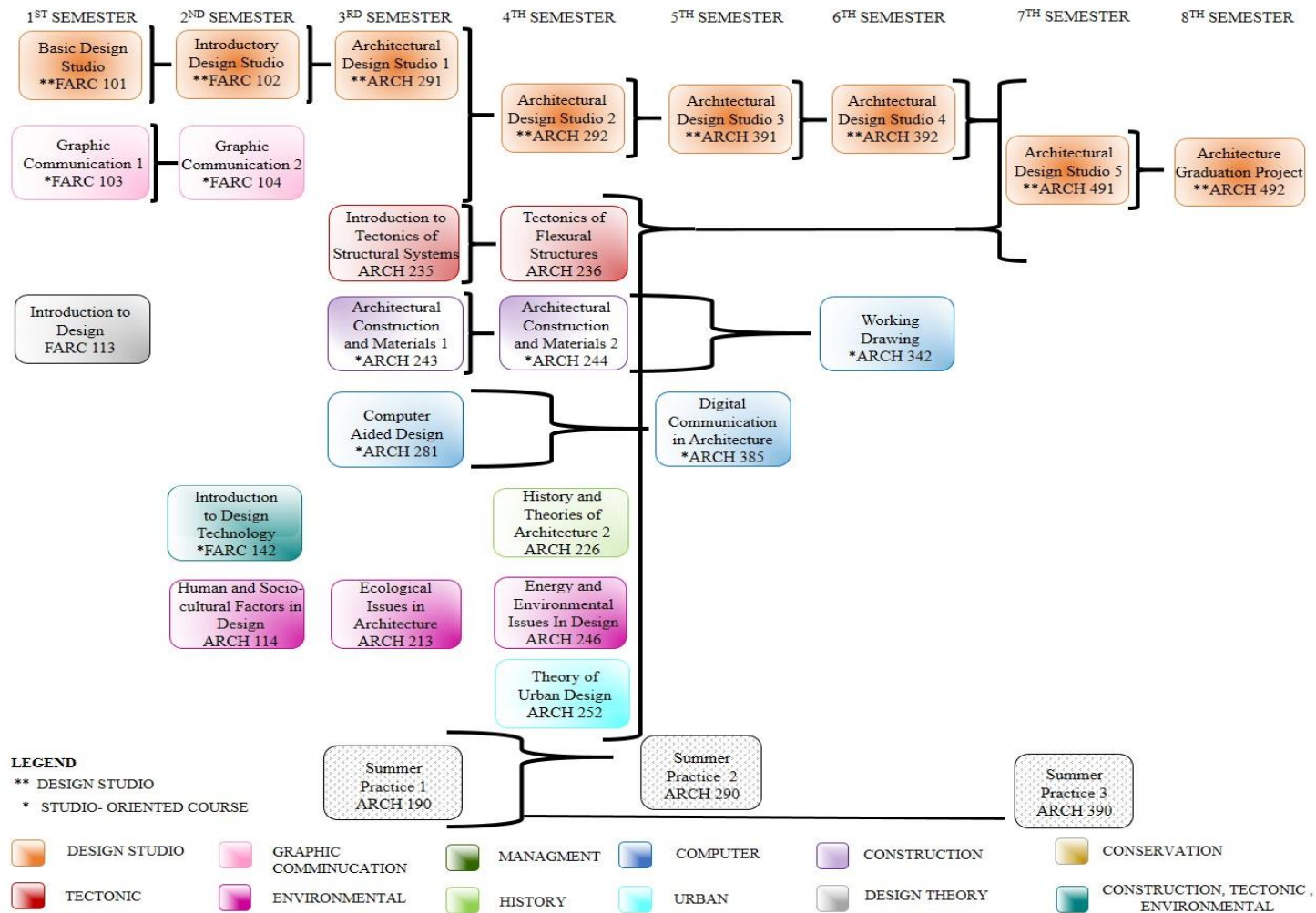


Figure 19. Eastern Mediterranean University's pre-requisite in each semester (Author)

Step 10: In appendix D the data about teaching and learnings methods and assignments for each course is presented for an understanding of pedagogy type of every course category in the whole curriculum of EMU. Generally, it can be understood that the pedagogy of the theoretical course is critical pedagogy which tests learners from certain resources from the past.

Step 11: The style of pedagogy in design studios is student-centered learning which instructor gives a duty (design project) to the student to do it individually. And both of these sorts of pedagogy is using in the studio-oriented courses.

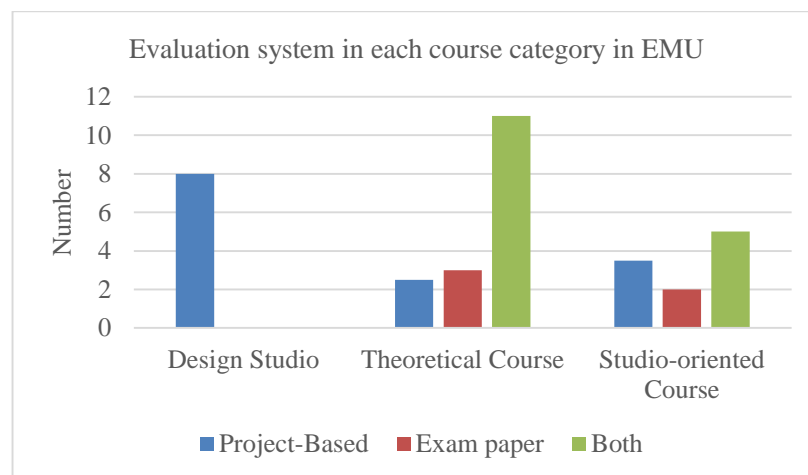


Figure 20. Evaluation system in each course category in EMU (Author)

As can be seen in figure 21, the evaluation method is project –based in the design studios obviously. Most theoretical courses are evaluated both based on term projects and exam papers which evaluating only based on exams or only projects are so less. In the studio-oriented courses, learners evaluated more based on their term projects or beside their presentations they should give exams, but just two studio-oriented courses are evaluated based on only exam papers. So, EMU’s evaluation system is more based on both term projects and exam papers.

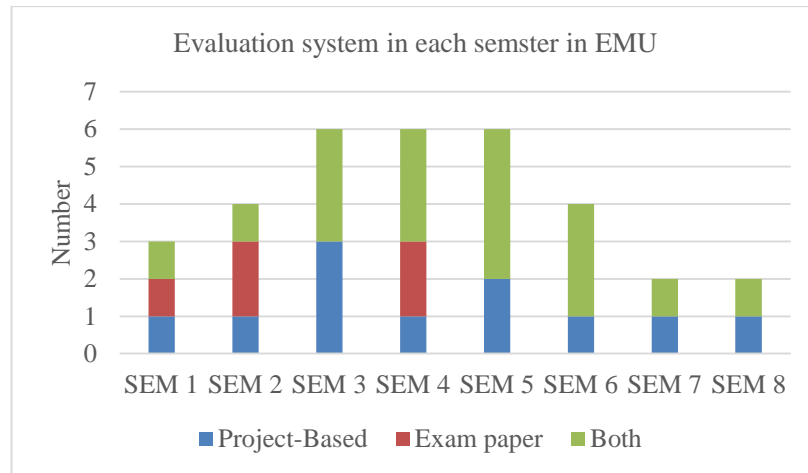


Figure 21. Evaluation system in each semester in EMU (Author)

Figure 22 is presenting the number of each evaluation method in each semester which can be understood in each semester students are evaluated both on project terms and exam papers but just till the third year, a few courses are presented which are evaluating students by the only exam papers.

3.7 Comparison and Discussion

This part is going to compare the results of curriculum review and pedagogy types in both case studies.

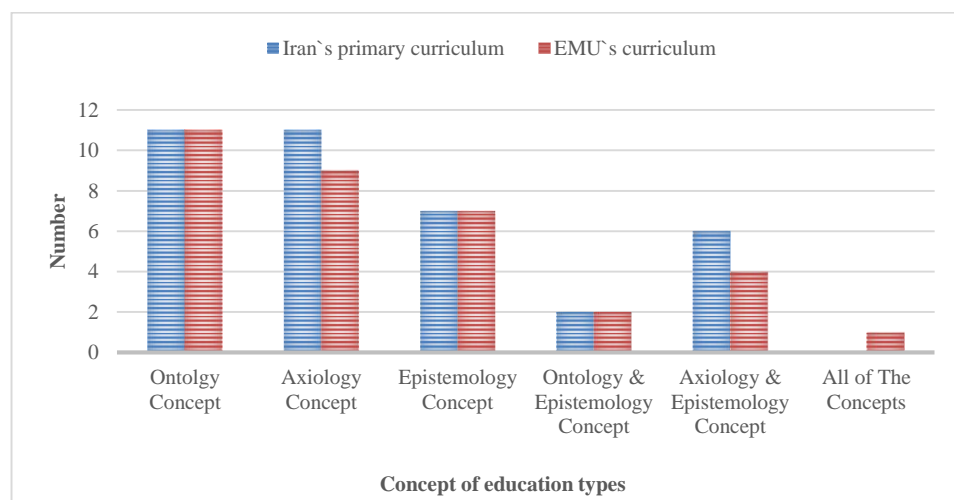


Figure 22. The number of each concept keywords in the course description in both curriculum (Author)

Firstly, in figure 23, the education concept of each course is showing specifically in six terms which are an ontology, axiology, epistemology, a mix of ontology and epistemology, a mix of axiology and epistemology and a mix of all the three philosophical concepts. It can be seen, the number of courses with the ontology, epistemology, and mix of ontology and epistemology concepts is the same in both curriculum with the number of 11, 7 and 2 respectively. Iran's program with 12 courses with axiology concept has two more courses than EMU's program. Also, Iran has two more courses with the mix of axiology and epistemology concept than EMU which shows that Iran's concept of education is more likely to have axiology concept in its curriculum. On the other hand, EMU has a course with the mix of all concepts in its course content. So, Iran's program by more considering the axiology concept is trying to transfer all the necessary knowledge to learners which are showing the mission and the vision of Iran's education concept.

With comparing both case studies' results, it can be understood that type of education, the nature of the curriculum and program type in both case studies are same as each other which is shown in the table below.

Table 12. Case studies' results comparison (Author)

		IRAN'S PROGRAM	EMU'S PROGRAM
EDUCATION MODE	Theoretical Courses	Formal	Formal
	Design Studios	Informal	Informal
NATURE OF CURRICULUM	Theoretical Courses	Curriculum As a Plan	Curriculum As a Plan
	Design Studios	Curriculum As an Experience, Curriculum as a Subject Matter	Curriculum As an Experience, Curriculum as a Subject Matter
PROGRAM TYPE		Fully Integrated	Fully Integrated

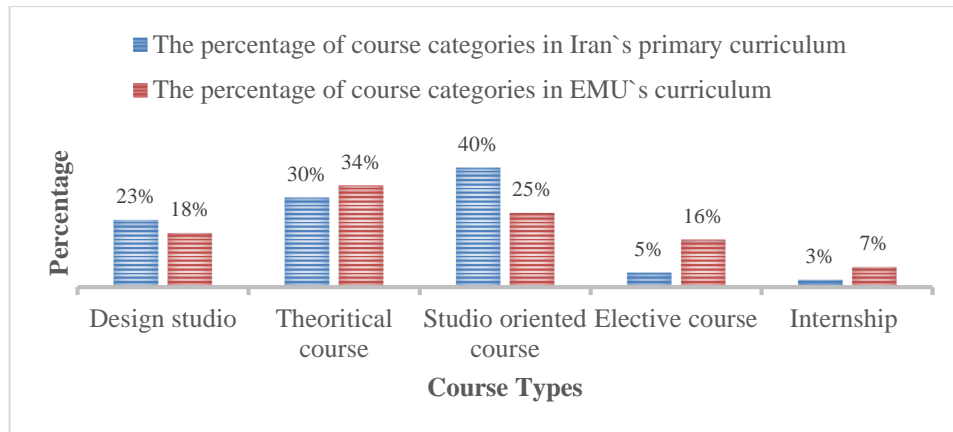


Figure 23. The percentage of course categories in two curriculums (Author)

As can be seen in figure 25, the percentage of design studios and studio-oriented courses in Iran's standard curriculum is more than EMU's curriculum. But the theoretical and elective courses and internships are more in the EMU's program. The elective courses in the EMU are more because there are some non-specialized architecture courses which students can select to learn like sports and dance classes. Furthermore, the internship in EMU contains three summer practices which are presented in different semesters but in Iran, there is one training in the last semester.

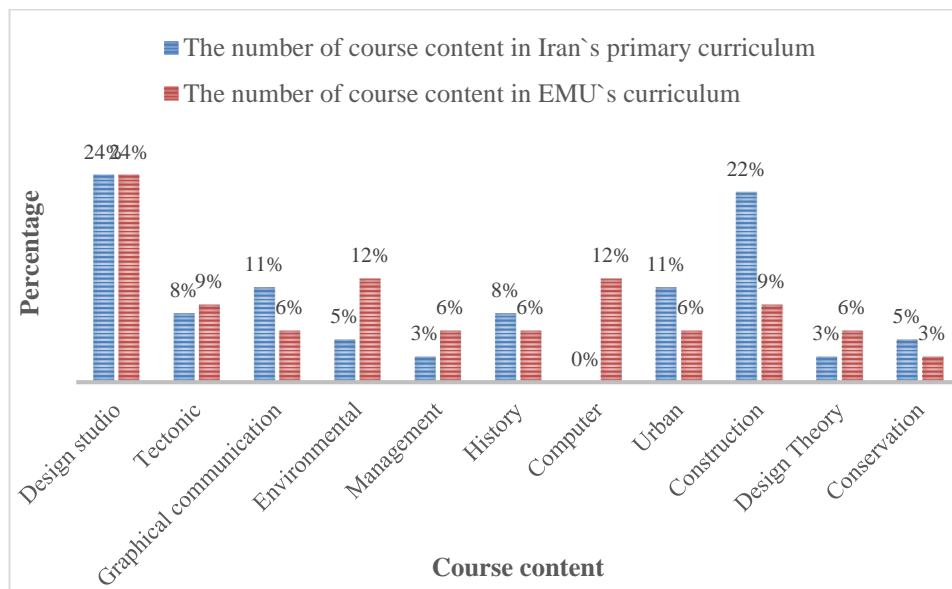


Figure 24. The percentage of course content in two curriculums (Author)

By looking at figure 26, it can be understood that the percentage of design studios, graphical communication, history, urban, construction and conservation courses content in Iran's standard curriculum are more than EMU's which the construction content is more considered in Iran with 22% of whole curriculum content. The tectonic, environmental, Management and design theory contents have more focus on EMU's curriculum. In Iran's standard curriculum the computer content is not considered as the main courses which in EMU has about 8% of all the curriculum contents. Also, there is a course in EMU's program that has three content of construction, tectonic and environmental together.

Moreover, figure 24 is demonstrating the difference between prerequisite networks of each case by comparing the figure 12 and 20 which presents the number and type of courses that should be passed in each semester till reaching to the seventh design studio. It can be seen that students in Iran should pass 27 courses from a total of 40 courses of the program before the 7th semester which learners in EMU must pass 20 courses (including design studios in 5th and 6th semester) from 44 courses of the curriculum which 18 of them should be finished before the 5th semester.

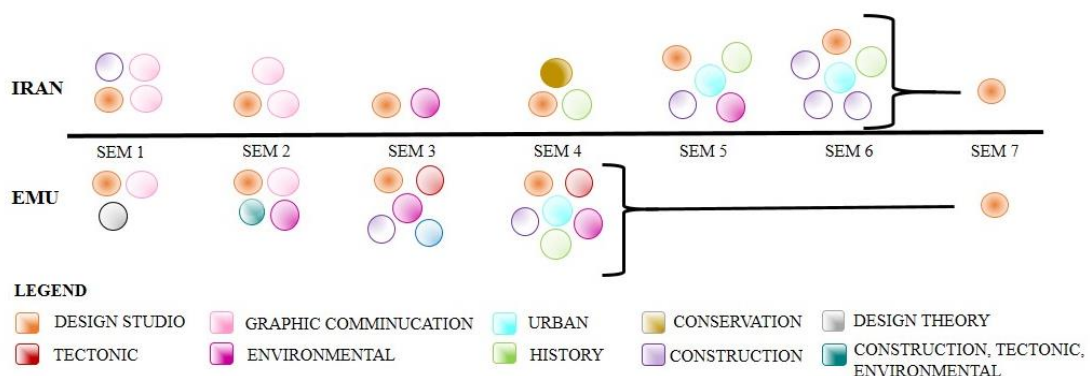


Figure 25. Comparative scheme of prerequisite network in case of Iran and EMU (Author)

As can be seen in figure 24, in both cases the barrier is on the 7th semester, but in EMU's curriculum, the density of main courses are more compact than Iran and students in EMU are more under the force to pass the pre-requisite but on the hand they have more freedom to choose the courses in each semester they want before 4th semester which in Iran all the components of perquisite network are linked together as a chain that education move step by step by a plan that makes student to pass the certain course to move on, if not its education progress will stop. But this feature reduces the student's mobility which nowadays is an important issue in education. Also, in EMU's curriculum, the courses that are presented after 4th semester are not contributing to the perquisite network. Furthermore, Iran's have the co-requisite courses in the last semester (architectural design 5 and final project) which in EMU's pre-requisite network is not defined.

By looking at the appendix C and D that are showing the pedagogy system of each case study, it can be seen both of programs has the same pedagogy type in the all course categories. Critical pedagogy in the theoretical courses, student-centered learning in design studios and a mix of these types of pedagogies in studio-oriented courses.

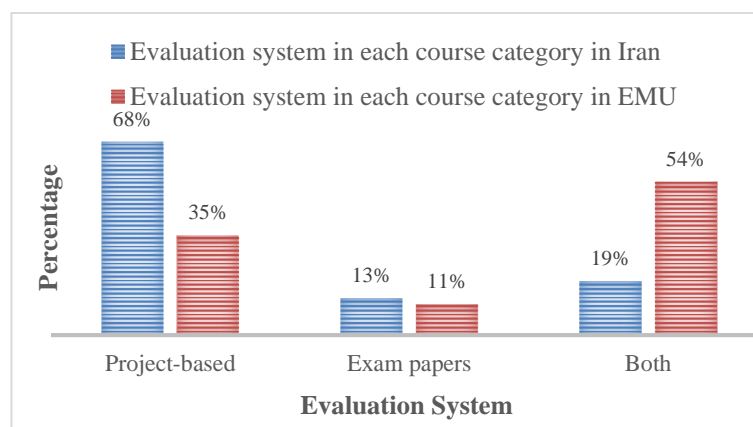


Figure 26. Evaluation system comparison in both case studies (Author)

Figure 27, is showing the percentage of each evaluation method in the whole of the programs of Iran and EMU. By comparing the two pie charts it can be understood that Iran's evaluation system is more based on only term projects, 68% which in EMU is 35%. But in EMU, both exam papers and term projects are using more as evaluation methods, 54% that in Iran is 19%. In both of the cases, the evaluation way based on only exam papers is approximately the same about 10% of the whole system.

The results of this comparison are listed below:

- Architectural education in Iran has more axiology concept in its content than EMU which means universities in Iran focus more on the transferring important knowledge, classifications, and essential skills than the nature of knowledge and its examining;
- Architectural education in both of the cases in the theoretical courses is formal and in design studios are informal;
- The nature of the curriculum in both cases in the theoretical courses are more likely as a plan and in design, studios consider as an experience and also a subject matter;
- The architectural program in both of cases known as a fully integrated program because all the courses giving information that students need them in their design tasks in the design studio. So. The core of the program is the design studios;
- Both curriculums can be categorized in the three main types, design studios, theoretical courses and studio-oriented course beside the elective courses and internships;

- There is a barrier in the 7th semester in both curriculum prerequisite network, but students should pass the courses before the 5th semester in emu to take seventh design studio but in Iran, learners should pass courses before the 7th semester.
- The pre-requisite in Iran's curriculum are linked together as a chain which decreases the student mobility which makes Iran's architectural universities more limited to accept other students from other countries;
- The last architectural design studio and a final project are presenting as co-requisites in the last semester of Iran's standard curriculum which means if learner fails on the last design studio, he/she cannot defend from their thesis in the final project.
- Iran's program has more design studios and studio-oriented courses than EMU, but EMU's program has more focus on the theoretical courses and it has three summer practices during the program which make students work in architectural companies to learn real architectural problems and solutions which can be more helpful for students to be more realistic in their design projects which in Iran's program there is just one training in the last semester to examine their learnings;
- Iran's curriculum has more focus on graphical communication, urban and especially construction content than EMU. On the other hand, EMU is considering contents like the environmental and computer more than Iran which in Iran's curriculum there are no courses related to computer and technology and this content is presented in the elective courses;

- Their pedagogy type is same which in the theoretical courses critical pedagogy is using and design studios pedagogy is student-center learning and in the studio-oriented course both of them is considered as a teaching method;
- The evaluation system in Iran is more project-based but EMU has considered exams besides the term projects in most of the courses.

Chapter 4

CONCLUSION

4.1 Conclusive Remarks

Education is the reason that society guarantees an adequate community in concepts and attitudes; without education, any society cannot develop and preserves itself. It is also essential that education should be totally accessible for people and it should be formalized and synchronized by an organization like the state and it is obvious an appropriate education will train students who will become the decision makers in the future. So, education with increasing the awareness, alter the old traditions and make improvement in any field.

Education contains two major complementary elements which are curriculum and pedagogy. As Boyer and Mitgang stated that there should be both a fixed and planned architectural curriculum and a certain method for practicing it. As before mentioned, the first curriculum format was established by the Beaux-Art school in France which includes courses and content related to the construction, guidelines, drawing, sketching, history, perspective, and design studios.

The curriculum makes a relation between knowledge and information from one course to the next course through a platform of education, and it incorporates information through diverse lessons. (Hassanpour, 2018) in the curriculum the horizontal and vertical relations between the courses are crucial. So the course content, their relation,

boundaries, and connections of diverse courses and diverse sets of one course is very essential.

Creating a single, integrated curriculum that fills the gaps between “components requires functional interdependence, mutual adaptation, and clarification of interfaces and junctions, which also helps to decrease fruitless work. Therefore, curricula need to include a framework to achieve a certain level of educational quality. Successful coordination amongst the several responders is serious to effective training and reactions of architectural education. So for quality assurance in architectural education the curriculum review is so critical.

Therefore, the curriculum plays a major role in architectural education which will be functional with the support of pedagogy and different teaching methods. Actually, curriculum as a core of architectural education plans the content and the material of each course, coordinate them in the whole curriculum by considering the relation of each course to other courses in each semester and year, vertically and horizontally. But, the curriculum will be implemented properly with the appropriate teaching methods which are defined in the pedagogy system of each architectural program.

In this thesis, two selected cases were studied. Iran’s standard curriculum and department of architecture at EMU are the case studies. Due to the high population of the younger generation in Iran and the interest of huge amount of them to continuing their study in other countries, and because of the large potential of building and construction in Iran, Iranians are keener to learn architecture. As the EMU is the major destination between them these cases are considered more relevant to study and compare.

It should be noted that Iran's standard curriculum which was planned by the ministry of Iran and the architecture program at Eastern Mediterranean University in North Cyprus has some accreditation for its curriculum from national and international accreditation such as MIAK and NAAB. Which in the ministry of higher education in Iran the EMU is considered as grade C.

This study tried to show the main aims which were improving the quality evaluation from the ministry of higher education perspective. Moreover, this study can provide a clear picture to the students who are willing or already studied in the architecture program at EMU.

As major findings of the study, it can be mentioned that both case studies are sharing the fully integrated program of architecture, the modes of education in the theoretical courses in both cases are formal education and in design, studios are informal education.

The nature of the curriculum in both case studies, in the theoretical courses, are counted as the curriculum as plan and in the design, studios are counted as the experience and subject matter. Also, the philosophical concept of education in the standard curriculum of Iran is more considered as axiology concept which is in EMU it has more ontology and epistemology concept in its curriculum.

In following items some recommendations are presented for more improvement of both curriculums which can be also helpful for other schools which are seeking greater architectural education:

- In Iran's curriculum more than one training course can be considered during the program which students can have a more realistic look at the design projects;
- Also, with the technology growth in every detail of life, computer and technology courses should be a must course not an elective one in Iran's curriculum;
- Nowadays, with the rapid growth of sustainability issues around the world, more environmental related courses can be presented in the standard curriculum of Iran;
- In the curriculum of EMU can be more focus on the construction-related content to give more information to students to design more functional and rational projects;
- In the curriculum of Iran, it should be better to present at least one theoretical course to support design studio in the first semester;
- In the pre-requisite network, based on student mobility, the barrier-free system can be reviewed as a case based on any program.

4.2 Future Work

As can be seen in figure 28, for the future work it can be more focus on the relation between the pedagogy in design studios and theoretical courses that how they affect each other and be complimentary. Or concentrate on the design studio pedagogy as a tutor as self or personal style because in this these the only consideration in the pedagogy context was related to the course format and implementation which is linked to the curriculum.

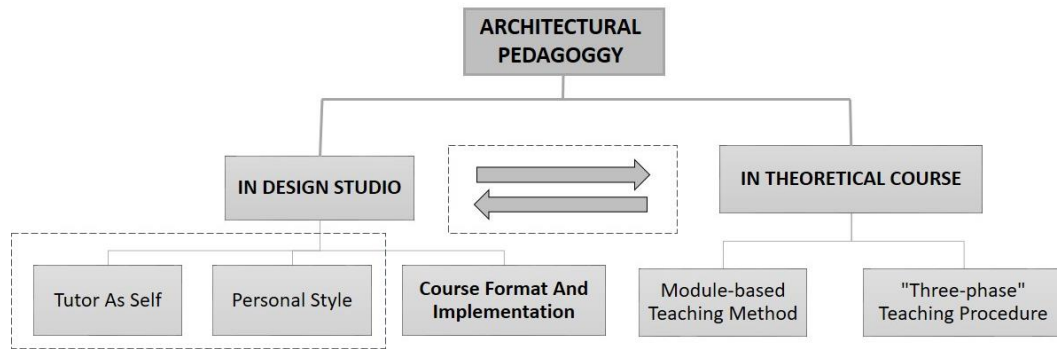


Figure 27. Future work (Author)

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APPENDICES

Appendix A: Standard Curriculum of Iran

SEM	COURSE CODE	FULL COURSE TITLE	COURSE CATEGORY	DESCRIPTION	PREREQUISITES
1	B 03	Environmental Perception	Design Studio	Presenting how to transfer the environmental perception (nature, specific places) by freehand drawings with considering the lights, shadows, proportion, and depth of spaces and volumes.	
1	B 04	Architectural Expression 1	Studio-Oriented Course	1.free hand drawings of nature, architectural places and students own house 2. presenting the colors and their meanings and color combinations 3. presenting different cameras, photographing from the buildings and architectural models, analyzing the photos from artistic perspectives	
1	B 01	Applied Geometry	Studio-Oriented Course	Presenting how to draw, repeat, percept and make different lines, surfaces, volumes on different scales; how to draw plans, evaluation, and section	
1	B 02	Material and Construction Workshop	Studio-Oriented Course	Presenting different materials using in structure and building; how to make and build a frame with different materials for wall or ceiling.	
2	B 05	Architectural Expression 2	Studio-Oriented Course	Using the contents in the Architectural Expression 1 course in a specific architectural project.	B 04
2	B 09	Design Preliminary 1	Design Studio	Presenting forms, space, function, material, and structure, details of the building, the role of context, human dimension, and scale.	B 01 B 03
2	B 06	Landscape Geometry	Studio-Oriented Course	Presenting the different types of perspectives, light, and shadows.	B01
2	B 07	Mathematics	Theoretical Course	Algebraic terms, equations, and inequalities.	
2	G 08	English Language	Theoretical Course	Academic English course is planned to support learners increase the level of their English language.	
3	B 10	Design Preliminary 2	Design Studio	Presenting forms, space, function, material, structure, details of the building, the role of context, human dimension, and scale on each specific project.	B 09 B 02
3	B 08	Human, Nature, and Architecture	Theoretical Course	The aim is to have more concentration on the surrounding environment from the little things to the bigger ones which are: Cosmic Space Order, the order of shape and growth of plants, the order of shape, growth and the way of existence of animals, animal's architecture and the geometry and proportions of the human body and the human scale.	B 09
3	M 25	Surveying	Studio- Oriented course	This course is planned to teach how to survey, how to mark land complications and how to implant the maps and drawings on the site.	

3	M 29	Statics	Theoretical Course	This course is planned to teach the main six elements in structural systems and their calculations which are recognition and application of forces, structure, equilibrium, and determination of reactions, determination of internal forces, natural structures, and sections characteristics.	B 07
3	E 01	Elective 1	Elective	Architecture Rights, Architectural Ethics, Repair and Conservation of Building, Research Method, Specialized English, New Structure, Computer Application in Architecture, Initiation With Other Arts.	
3	G 07	Persian Language	Theoretical Course	This course is planned to improve the knowledge of Persian literature.	
4	M 39	Architectural Design 1	Design Studio	A studio course tries to improve students' understanding of the form, function and space. Also focusing on site and the environment, topography and climatic elements, social factors, construction styles, materials, details to design a school.	B 10
4	M 21	Initiation with the world architecture	Theoretical Course	This course presents the development of architecture and art from the past to the industrial revolution; showing samples from Europe, Asia, and Africa. Also from Egypt, Greece, and Rome.	B 10
4	M 22	Historical Monuments Perception	Studio-Oriented Course	Presenting how to draw a plan, elevation, section, and perspectives of a historical monuments by free hand; photographing from historical monuments and how to present the drawings, photographs, information, and model.	B 10
4	M 30	Steel Structures	Theoretical Course	This course is planned to teach the recognition and application of forces, equilibrium, and determination of reactions in steel structures.	M 29
4	E 02	Elective 2	Elective	Architecture Rights, Architectural Ethics, Repair and Conservation of Building, Research Method, Specialized English, New Structure, Computer Application in Architecture, Initiation With Other Arts.	
5	M 40	Architectural Design 2	Design Studio	A studio course tries to improve students' understanding of the form, function and space. Also focusing on site and the environment, topography and climatic elements, social factors, construction styles, materials, details to design a residential building.	M 39 B 05
5	M 35	Building 1	Theoretical Course	This course presents tectonics of buildings with all kinds of masonry and basic kinds of skeletal structures and their construction features.	M 39
5	M 26	Environmental Condition Regulating	Theoretical Course	This course is planned to teach the different types of climates and their effects on designing a project and which elements should be considered in each type of climates.	M 39
5	M 37	Village 1	Studio-Oriented Course	The aim of this course is to show the relation of life and architecture of rural area to their history, climate, and culture.	M 39
5	M 31	Concrete Structures	Theoretical Course	This course is planned to teach the recognition and application of forces, equilibrium, and determination of reactions in concrete structures.	M 29
5	M 23	Initiation with Islamic Architecture	Theoretical Course	This course is focusing on Islamic architecture by presenting different buildings and their function, especially in Iran.	M 22

6	M 41	Architectural Design 3	Design Studio	This studio course aim is to let students design a cultural building like a museum to use their artistic abilities in design as much as they can.	M 40
6	M 36	Buildings 2	Studio-Oriented Course	This course presents the information and abilities needed for roof structures, stairs, windows, doors with their details.	M 35
6	M 27	Mechanical Installations	Theoretical Course	This course is planned to teach the mechanical installations in building on the 2 main elements of water supply and sewage and heating and cooling installations.	M 26
6	M 24	Initiation with Contemporary Architecture	Theoretical Course	This course presents the development of architecture and art after the industrial revolution until now and the effects of architecture schools like the Bauhaus.	M 21
6	M 38	Village 2	Studio-Oriented Course	In following of Village course, the SWOT table will be discussed for the rural places to make them a better place for living and work.	M 37
6	M 28	Electrical Installations	Theoretical Course	This course is planned to teach how to use mechanical and electrical installation in building on two main elements of light and sound.	M 26
7	S 54	Architectural Design 4	Design Studio	This studio course aim is to make students to design a functional building like a hospital that the concept of life should be considered in their design especially in planning.	After 6 th sem
7	S 52	Urban Spaces Analyses	Studio- Oriented Course	This course presents the urban spaces and its design, how to design architecture elements and buildings in urban spaces.	
7	M 32	Cost Estimation	Studio-Oriented Course	This course is planned to teach how to estimate the cost of a project over the material, the workers and equipment cost.	M 36
7	M 20	Theoretical principles of Architecture	Theoretical Course	Presenting theoretical education for design, complete definitions of design, its elementary vocabulary, features, ethics, structural characteristics, and design procedure.	M 41
7	S 53	Initiation with Building Restoration	Studio- Oriented Course	The definition of restoration and different way of it in the old buildings will be discussed.	After 6 th sem
8	S 55	Architectural Design 5	Design Studio	The aim of this studio course is to teach a little about the urban designing by giving them a big site to design three different types of residential building including villas, 5 floors buildings, and 12 floors building, entertainment and health center beside the all roads and parking in the big residential complex.	M 41
8	M 33	Site Organization and Management	Studio- Oriented Course	This course is planned to teach the rights between architects and the companies in Iran and how to manage time for a project from the first stage of construction till the end.	M 32
8	S 56	Construction Technical Designing	Studio- Oriented Course	The aim of this studio course is to teach students how to design a simple project by considering every detail in the construction of building from the first stage.	M 40 M 41

8	S 51	Understanding The Basics Of Urban Physical Planning	Studio- Oriented Course	This course presents the city planning meaning, the architectural complexes planning, and architectural planning definition.	After 6 th sem
8	S 57	Final Project	Design Studio	In the final project, students should offer a design by their choice and present it to their supervisors and the jury members.	M 30 M 31 M 36
8	T	Training	Training	Learners should work in office give some design or technical drawings a project or several projects for 250 hours.	

Appendix B: Accredited Curriculum of Eastern Mediterranean University (EMU, 2018)

SEM	COURSE CODE	COURSE TITLE	COURSE CATEGORY	DESCRIPTION	PREREQUISITES
1	FARC 101	Basic Design Studio	Design Studio	Elementary aspects of design, making graphical works over 2 and 3-dimensional tasks, design features and problems to improve learner's perceptual and physical abilities, focus on inspiration, and critical thinking.	
1	FARC 103	Graphic Communication 1	Studio-Oriented Course	The elementary implements of graphic communication, ethics of orthographic, axonometric and perspective drawing, an overview of diverse graphic presentation techniques.	
1	FARC 113	Introduction to Design	Theoretical Course	Improvement of a theoretical education for design by presenting complete definitions of design, its elementary vocabulary, features, ethics, structural characteristics and design procedure.	
1	MATH 191	Math and Geometry for Designers	Theoretical Course	Algebraic terms, equations, and inequalities.	
2	FARC 102	Introductory Design Studio	Design Studio	This course focus on design procedure, training on "three-dimensional forms, space, function, material, structure, role of context, human dimension, and scale, the transition from abstract problems to concrete ones."	FARC 101
2	FARC 104	Graphic Communication 2	Studio-Oriented Course	Develop graphic communication methods, advanced abilities of 3D drawing.	FARC 103
2	FARC 142	Introduction to Design Technology	Studio-Oriented Course	Combination of design thinking with the suitable organization and technology; "history of design technology, structural logic, form, structure and material, sustainable and innovative aspects of design technology."	
2	ENGL 192 ENGL 182	Communication in English 2 Academic English 2	Theoretical Course	This English course is aimed to additional support to learner advance their English to B2 level, as identified in the Common European Framework of References for Languages.	ENGL 191 181
2	ITEC 105	Computer 1	Studio-Oriented Course	This course is an overview of the world of Computing and Information Technology (IT). The course offers the elementary explanation of information technology theories, elementary computer structure hardware and software modules, terms in information technology.	

2	ARCH 114	Human and Socio-cultural Factors in Design	Theoretical Course	Study of relationships between the human existence as the main element in modeling the “built environment, social functions, cultural factors and architectural design.” Presenting “ergonomics and anthropometrics: Human scale, dimensions, and activities of the human being and association of these factors with the design.” “Social and cultural life: interaction between individuals from various user groups in reference to private, public, semi-private and semi-public spaces at home, school or workplace; in and around other buildings; and urban spaces.” “Culture and human behavior: Cultural differences in human interaction based on a complex set of hierarchies, social norms, behavior, translated into the design solutions.” Testing the effect of social problems in several backgrounds and their connection with the place through case studies.	
3	ARCH 291	Architectural Design Studio 1	Design Studio	A studio course planned to improve “an understanding of form, function and space relations” by projects of partial difficulty. Focus on the general architectural design procedure containing “site, literature survey, functional diagrams and program concepts, human and social factors ergonomics.”	FARC 102 103
3	ARCH 213	Ecological Issues in Architecture	Theoretical Course	This course emphasis on major ecological design aspects and theories at two scales - the small scale which is site or building and the larger one involving the growth of an urban area, and represent the learners to both traditional and the newest technological information existing. Main subjects to be presented in the course contain the key aims and influences for the quickly increasing “ecological design program, sustainable architecture and its various dimensions, traditional architecture and urbanism, regional architecture, design with ecology and technology, case studies in contemporary regional/ecological design.”	
3	ARCH 225	History and Theories of Architecture 1	Theoretical Course	The first part of the course presents the development of architecture and art from prehistory till the end of the Pagan world; the second part presents architecture which is advanced in the West and the East with the appearance of religions as Christianity and Islam, till the end of medieval periods. Because of the comparative setting of the course, the extensive geographical scope is reflected to embrace subjects and samples from “Europe, Asia, and Africa. The architecture of Egypt, Greece, Rome, Early Christianity, Early Islamic, Byzantine, Romanesque, Gothic, Safavid, Seljuk, Mongol, and Early Ottoman architecture” are occupied in a linear set.	
3	ARCH 235	Introduction to Tectonics of Structural Systems	Theoretical Course	A course focusing on the investigation of a theory of the exploration of the architectural implication of structures. Learning of simple terms and organization of structural methods in relation to the concept of tectonics in architecture. “Tectonics of all form-resistant structures, flexural and masonry structures via one successful case study for each system. Resultant forces in two dimensions, basic concepts of equilibrium, the center of gravity, and moment of inertia along with structural requirements such as stability, strength, and equilibrium, discussed on specific cases. Structural behavior, regulations, methods of construction and tectonics of masonry structures studied in detail. History of structures, philosophical concepts about the process of architectural and engineering design of building structures.”	
3	ARCH 243	Architectural Construction and Materials 1	Studio-Oriented Course	Tectonics of buildings, which have all kinds of “masonry (brick, stone, timber; with or without tie beams) and some basic types of skeletal structures, and their construction characteristics.”	

3	ARCH 281	Computer Aided Design	Studio-Oriented Course	A course presenting learners to the ethics of CAD, the concepts, and systems on which it is created, and its main uses "in practice - generating, evaluating, modeling, drafting, and rendering design solutions."	
3	ARCH 190	Summer Practice 1	Training	Exploring and Practical Field Trip: The learners have to learn beside their architectural courses for their qualification. It should be at least 10 days for investigation, and 10 days for a workshop or practical trip.	
4	ARCH 292	Architectural Design Studio 2	Design Studio	A studio course planned to advance the "understanding of form, function and space relations through projects of fairly complex functions: A minimum of two-story buildings with simple structures in the built environment." Focus on "site and the immediate environment, sloped topography, orientation and other climatic factors, social factors, appropriate construction techniques, materials, details- roof, and stairs"	ARCH 291 FARC 104
4	ARCH 226	History and Theories of Architecture 2	Theory Course	This course is planned in three stages. The first phase is covering with the growth "of architecture and art in Europe and Asia from rising of Renaissance just after the fall of Constantinople and until the 17th century," the second phase is dealing with the improvements in architecture in the 18th and 19th centuries in Europe and in the eastern world, and the third stage is beginning with the "19th century Industrial Revolution, covering contemporary architecture until the end of 20th century and the art of Europe and America." An extensive geographical scope with subjects containing samples from "European, Asian, African, American and Australian continents." A linear form "beginning from the end of the medieval times to architecture of Renaissance, Baroque, Islamic architecture, Classic Ottoman Art, Westernization of the Islamic Art and classicism, Art Nouveau, Modernism, Post-modernism and recent trends in architecture."	
4	ARCH 236	Tectonics of Flexural Structures	Theoretical Course	History of chains and junctions in architecture, "three equations of equilibrium, types of stresses and internal forces in relation to deflected shape and with the help of models." Also earthquake resistant architectural design in relation to the architectural necessity of transformation in infill walls. "Slabs, structures of large non-load bearing surfaces, and suspended surfaces with the help of case studies. The logic behind portal and cantilever methods, high-rise building structures and their spatial characteristics."	ARCH 235
4	ARCH 244	Architectural Construction and Materials 2	Studio-Oriented Course	The aim of this course is to offer learners the information and abilities needed for "wide span roof structures (folded plate, space frame, membranes, dome, truss systems etc.), stairs, windows, doors with details."	ARCH 243
4	ARCH 246	Energy and Environmental Issues In Design	Theoretical Course	This course examines the environmental elements which are affecting the architectural design. Concerns about "climate, lighting, and acoustics in relation to energy problems and user comfort. Climatic elements, classification of climates for architectural purposes, the thermal process of the human body, thermal comfort indexes, the thermal process of buildings." Several climate controller techniques in buildings like "thermal, solar, condensation, wind control and natural ventilation."	
4	ARCH 252	Theory of Urban Design	Theoretical Course	This course purpose is to present the theories and approaches of urban design as a field joined with architecture. The subjects of the speeches and lectures are "concept of urban space, visual variables determining the quality of urban space, unity as the basic element of urban design, permeability, variety, and legibility as main principles of urban design determining the quality of public realm." The course offers learners with a preliminary indication of "urban design concept and its visual, perceptual and environmental dimensions."	

5	ARCH 391	Architectural Design Studio 3	Design Studio	A studio course aimed to deliver the learner with abilities to design in urban background considering several urban issues. The focus is on the design concept at a bigger scale with specific emphasis on reaching unity in the urban environment. "Requirements include a quality of design, social factors, quality and hierarchy of open and semi-open spaces, street furniture and landscaping, orientation and organization of buildings on site, public-private interface, vehicular and pedestrian circulation, climatic considerations, appropriate construction systems and materials, and regulations."	ARCH 292
5	ARCH 311	Principles of Conservation and Restoration	Theoretical Course	This course pointing to offer the learners basic information and understanding of architectural and cultural heritage. Demonstration of suitable theories of "basic conservation, historic preservation, and restoration" to support learners gain abilities to relate in training. The subjects contain "cultural heritage, measured drawing techniques; concepts of conservation, preservation, revitalization, restoration; restoration techniques."	
5	ARCH 337	Tectonics of form Resistant Structures	Theoretical Course	This course focus on "the relationship between structural behavior, form, methods of construction, and tectonics for form- resistant structures, via successful case studies. The relation between internal forces, form, and tectonics. Strength and deformation of members in compression and tension, and problems of buckling and wind instability on existing examples, in relation to the effect of solutions to the tectonics of the building. Internal forces in form-resistant structures using physical models and approximate analysis of existing structures, Standards and regulations and their effects on the tectonics of architecture."	
5	ARCH 347	Architectural Construction and Materials 3	Studio-Oriented Course	This course offers "industrialized and prefabricated building techniques (Tunnel formwork, skeleton, panel, and modular construction systems), building envelopes (structural, nonstructural facades, classification of facades according to the materials) and their construction characteristics. All possible construction methods of these structures and some constructed examples of these types of buildings in detail."	
5	ARCH 355	The process of Urban Design	Studio-Oriented Course	The course appeals on the broad theoretical substance of urban design as a resource to discover methods to evaluate "the character of the built environment," and as an outcome, to advancing practical plans intended to usefully influencing the general value and livability of urban backgrounds.	
5	ARCH 385	Digital Communication in Architecture	Studio-Oriented Course	The purpose of this course is to make architectural projects as broad as possible from idea to finishing 3D production models. Rendering includes the considerable usage "of materials, lights, background and other rendered effects, with the aid of other software than BIM modelers such as Photoshop and/or 3DS Max."	ARCH 281
5	ARCH 290	Summer Practice 2	Training	Training at the specific construction site which should be confirmed and described through reliable "documenting, photocopy, and daily activity reports." Period of ARCH 290 must be 25 working days.	ARCH 190
6	ARCH 392	Architectural Design Studio 4	Design Studio	This studio course planned to offer the learners with essential abilities "to design multi-story and multipurpose building complex in built-up areas with high complexity in functional organizations; integration of appropriate structural and environmental control systems, materials, building codes and regulations in the metropolitan scale urban context." The focus is to design "a mixed-use complex is important in considering the themes; repetition, reproduction, variation."	ARCH 391

6	ARCH 312	Architecture and Design Theories	Theoretical Course	This course is dealing with many features of the history of architecture which are not covered in the last two history courses because of the linear method. Stress on theoretical sides of architecture such as “ideologies, philosophy of art and architecture, contemporary theories, concepts and practices of periods after modernism.”	
6	AE 01	Area Elective 1	Elective	<i>The elective courses which are suggested in the 2017-2018 spring semester are itemized below.</i> Superheroes of Architecture; Adaptive Re-Use of Buildings; Building and Environmental Systems in Architecture; Computer 3D Modeling and Rendering; Introduction to Design Technology; Multidisciplinary Collaboration in Design By BIM; Decoration, Furniture, and Fashion in History; Landscape Design; History of Art; Interior Design; Rhino for Architects; Architectural Drawing and Presentation Techniques; Building and Urban Space Relationship; Urban Planning for Architect; Life Safety in Buildings	
6	ARCH 342	Working Drawing	Studio-Oriented Course	The aim of this course is to deliver learners the skill to make “working drawings (two-dimensional) with the aid of a computer.” In this course, learners will get aware with the regulation and operational drawing system for the qualified use. Lectures and practices will present learners “the systematics of drawing a project that could be realized in the real world.”	ARCH 244
6	ARCH 348	Building and Environmental Systems in Architecture	Theoretical Course	This course pointing to training all types of “sanitary and environmental systems in buildings and their approximate size prediction. Issues to be covered: Water supply, hot water, liquid waste, solid waste systems and sanitary appliances; energy systems (electrical systems, telephone ducts, gas-liquid and solid fuels), heating, cooling, ventilating, air conditioning systems, smoke and ventilation flues, refuse chutes; mechanical conveyors-lifts, escalators, tube conveyors -, fire systems -alarms and firefighting equipment-, lightning protection; security systems.”	
6	AE 02	Area Elective 2	Elective		
7	ARCH 491	Architectural Design Studio 5	Design Studio	This studio course intended to deliver the learner abilities “of designing long span structures by considering integrated construction and service systems. The main emphasis is to design buildings with high complexity in function with appropriate structural systems and creating rich architectonic qualities.”	ARCH,392 113, 142 114, 213 281, 226 236, 244 246, 252
7	ARCH 449	Economic and Managerial Issues in Architecture	Theoretical Course	This course containing basic theories and explanations for: “construction management, principles of engineering economy, cost/benefit analysis, break-even analysis, interest calculations, and economic comparison. Parties and stages of construction projects, engineering site organization, construction contracts and their documents. Project planning techniques, bar chart, network analysis, arrow diagram.”	
7	AE 03	Area Elective 3	Elective		
7	AE 04	Area Elective 4	Elective		
7	UE 01	University Elective 1	Elective	<i>The elective courses which are suggested in the 2017-2018 spring semester are itemized below.</i> Cyprus History and Culture; Superheroes of Architecture; Decoration, Furniture, and Fashion in History; History of Art	

7	ARCH 390	Summer Practice 3	Training	Architectural Office: learners should contribute to the design or technical drawings of the application projects (house, shop, office, restaurant... etc.) of a single project or several projects lead by the institution" that the learner is working there in 25 working days.	ARCH 190
8	ARCH 492	Architecture Graduation Project	Design Studio	Learners have to "work from macro to micro scales and with special emphasis on the individual interest areas. Each student is to demonstrate individually a performance that he/she has attained the professional standard required to practice within the rich context of the architectural discipline."	ARCH 491
8	ARCH 416	Professional Issues in Architecture	Theoretical Course	"Preparation Professional practices, responsibilities, ethics, relationship with other members of trade" are basic elements of this course. "Analysis and preparation of accurate estimates of probable construction costs with an emphasis on construction and finishes, writing specifications, the bidding process, contracts and letters of agreement and the preparation of bid documents will be addressed. Management concerns include the evaluation of construction time and cost, contract management, construction documents, inspections, time scheduling, and control."	
8	AE 05	Area Elective 5	Elective		
8	UE 02	University Elective 2	Elective		

Appendix C: Iran's Pedagogy System

SEM	CODE	COURSE TITLE	COURSE CATEGORY	LEARNING/TEACHING METHOD	ASSIGNMENTS, SUBMISSION REQUIREMENTS
1	B 03	Environmental Perception	Design Studio	The practical studio work is supported by lectures and audio-visual presentations in various subjects related to design. General and individual critiques are the main media for teaching design. Improving the ability to sketch from nature and buildings, presenting the colors and rendering and photographing from the buildings and analyzing them.	A series of assignments with different emphasis is offered in this course. Initial assignments concerning abstraction, design elements, principles and formal composition in 2D and 3D are given at the first half of semester. These are followed by a half-term final project related to a 3D organization with a simple function.
1	B 04	Architectural Expression 1	Studio-Oriented Course	The practical studio work is supported by lectures and audio-visual presentations in various subjects related to perspective, plan, elevation, a section in different scales.	There are different series of assignments related to the subject of every week's lecture.
1	B 02	Material and Construction Workshop	Studio-Oriented Course	Using slideshows and films to presenting the different materials, their types, and functions such as wood, glass, concrete, and steel.	Students should make a report from the visiting of one of the material workshops related to the subjects of course and present in the class.
1	B 01	Applied Geometry	Studio-Oriented Course	Presenting the different types of perspectives, light, and shadows supporting by lectures and different practices.	There are different series of assignments related to the subject of every week's lecture.
2	B 09	Design Preliminary 1	Design Studio	The practical studio work is supported by lectures and audio-visual presentations in various subjects related to design. General and individual critiques are the main media for teaching design. Improving the ability to sketch from nature and buildings, presenting the colors and rendering and photographing from the buildings and analyzing them.	A series of assignments with different emphasis is offered in this course. Initial assignments concerning abstraction, design elements, principles and formal composition in 2D and 3D are given at the first half of semester. These are followed by a half-term final project related to a 3D organization with a simple function.
2	B 05	Architectural Expression 2	Studio-Oriented Course	The practical studio work is supported by lectures and audio-visual presentations in various subjects related to the perspective, plan, elevation, a section in different scales and incomplete details such as dimensions and other details of a building like the ceiling, walls, windows and etc.	There are different series of assignments related to the subject of every week's lecture.
2	B 06	Landscape Geometry	Studio-Oriented Course	Presenting the different types of perspectives, light, and shadows supporting by lectures and different practices.	There are different series of assignments related to the subject of every week's lecture.
3	B 10	Design Preliminary 2	Design Studio	A small-scale project like a temporary exhibition will be asked and the information related to this design which would help students will be presented by slide shows and the instructor will give critics to each student each week.	Students should present their concept and idea, plans, elevations, sections and site plan in one or two sheets which should be done and rendered by hand.
3	B 08	Human, Nature, and Architecture	Theoretical Course	Every week lectures will focus on different subjects by using different slide shows and films for a better understanding of students about the three main subject of course and their relation which are human, nature and architecture.	There will be research from the natural phenomena, giving a report and giving a small-scale project like a bower for humans in the nature that should be presented in class for practicing the theoretical information. And also two exams that students should do them.
3	M 25	Surveying	Studio-Oriented Course	The definition of surveying, how to survey, different scales, types of errors that may happen, different types of surveying equipment and formulas and how to work with them, topographies, different types of aligning and implanting the buildings drawings on the site is presented by different slideshows and practicing in the real site.	There are different series of assignments related to the subject of every week's lesson that should be done on the real site and each week students should bring the report and calculation of the previous week to class. In the end, they should do a project in one day in the real site with the report and calculations.
3	M 29	Statics	Theoretical Course	The main six elements in structural systems and their calculations which are recognition and application of forces, structure, equilibrium, and determination of reactions, determination of internal forces, natural structures, and sections characteristics with categorizing the different type of them, their definitions will be presented.	Students should model one of the structures and present in class beside the exam.
4	M 39	Architectural Design 1	Design Studio	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, pre-final and final juries.	Site plan, Plans, sections and elevations, 2 or 3 Perspectives from the exterior, decisions for facade materials in 1/100 or 1/200, Model of product in 1/200 scale A 500 m2 school in 1000 m2 site
4	M 30	Steel Structures	Theoretical Course	Different types of forces and their charts, explanation about different types of steel and their features, analysis of anchors, advantage and disadvantages of steel structures, the design of steel structures and the calculations will be presented.	Exam
4	M 21	Initiation with the world architecture	Theoretical Course	The history and the form of architecture from the cave dwellers, Mesopotamia, Achaemenian, Egypt, India, Greece, Rome, Christianity, Byzantine, Romanesque, Gothic, Renaissance till Baroque is presented with the slide shows and films.	Exam
4	M 22	Historical Monuments Perception	Studio-Oriented Course	The course presents the techniques about how to draw plans and elevations of historical monuments in the site and how to take photos from historical monuments.	A student in a small group should present plans, photos, and elevations with colors and shadows with a 3D model.
5	M 40	Architectural Design 2	Design Studio	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, pre-final and final juries.	Site plan, Plans, sections and elevations, 2 or 3 Perspectives from the exterior, decisions for facade materials in 1/100 or 1/200, Model of product in 1/200 scale A 400 m2 residential building in 1000 m2 site
5	M 37	Village 1	Studio-Oriented Course	This course will present how students should record the information related to the lifestyle, culture, history, and architecture of rural area by visiting a village.	2 students in each group should select a village and visit the area and record all the information about history, architecture, types of buildings, the age of buildings and everything related to the village's lifestyle, culture, climate, and architecture. They should also find their problems and offer some solution for them by offering some simple design ideas and present in the class. Also, they should bring a map of the village, with different types of plan, elevation, and the section from houses.
5	M 26	Environmental Condition Regulating	Theoretical Course	The different types of climates in the world with considering the sun, earth and weather elements, the geometry of sun and its angles, the human features and the comfort range, the psychometric chart, different types of heat transfer, the ventilation types, different types of windows, Heat capacity of materials and the energy saving types is presented in different slide shows.	Exam
5	M 31	Concrete Structures	Theoretical Course	Different types of forces and their charts, explanation about different types of concrete and their features, advantage, and disadvantages of concrete structures, the design of concrete structures and the calculations will be presented.	Exam

5	M 35	Building 1	Theoretical Course	Tectonics of buildings, which have all kinds of “masonry (brick, stone, timber; with or without tie beams) and some basic types of skeletal structures, and their construction characteristics” will present by slideshows and visit the real site.	Students should draw all the details related to every week lectures beside exam.
5	M 23	Initiation with Islamic Architecture	Theoretical Course	The history and the form of Islamic architecture and the famous buildings and their functions such as mosques, bazaars, inns, hammams and the residential buildings with their compassions and forms and also their specific space elements, ornaments, and the geometrical or herbaceous drawings are presented with the slide shows and films.	Students should present one of the projects related to Islamic architecture and their analysis in class.
6	M 41	Architectural Design 3	Design Studio	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, pre-final and final juries.	Site plan, Plans, sections and elevations, 2 or 3 Perspectives from the exterior, interior, decisions for floors, walls and facade materials in 1/100 or 1/200, Model of product in 1/200 or 1/500 scale A museum in 2500 m2 site
6	M 36	Buildings 2	Studio- Oriented Course	The information and abilities needed for “wide span roof structures, folded plate, space frame, membranes, dome, truss systems, stairs, windows, doors with details” will be presented by slideshows and visit the real site.	Students should draw all the details related to every week lectures.
6	M 24	Initiation with Contemporary Architecture	Theoretical Course	This course presents the development of architecture and art after the industrial revolution till now such as the art novo, modernism, expressionism, postmodernism, organic architecture, new classic, high tech, deconstruction, the effects of architecture schools like the Bauhaus and the famous architects by slide shows and films.	Students should present one of the architecture projects or one of the architect’s works and their analysis in class.
6	M 27	Mechanical Installations	Theoretical Course	The element of water supply and sewage which contains central water supply network and the appropriate way of sewage and heating and cooling installations element which contains heating with warm water, heating with warm air and the ventilation systems will be presented by slide shows.	Students should present one of the systems in the class beside the exam.
6	M 28	Electrical Installations	Studio- Oriented Course	The light element which contains the sight range, the light effects, the different types of light, the features of different lights, the artificial lights and their appropriate usage in the different spaces in building, the element of sound that contains auditory range, the sound charts, the sounds effect, sound insulation and the appropriate usage of them in different spaces will be presented by slideshows.	Students should do electrical installations in small-scale project and present in the class.
6	M 38	Village 2	Design Studio	The SWOT table (Strengths, Weaknesses, Opportunities, and Threats) will be presented.	In following of the Village course students again in groups should continue their project and fill the SWOT table, offer some solutions for their problems and design some buildings such as appropriate houses for living, hospitals, workplaces, entertainment areas to make the people not to leave their village because of the lack of job or any good situation for living.
7	S 54	Architectural Design 4	Design Studio	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, pre-final and final juries.	Every 3 students in a group should present each specific space of the hospital, its dimension and the rules in design by analyzing 2 specific case study for the hospital from around the world. Each student should present site plan, plans, sections and elevations, 2 or 3 Perspectives from the exterior, interior, decisions for floors, walls and facade materials in, every detail in the building and the structural drawings 1/100 or 1/200, Model of product in 1/200 scale A hospital in 5000 m2 site
7	S 52	Urban Spaces Analyses	Studio-Oriented Course	Lectures related to urban design will be presented.	Simple urban design sketches presentation Exam
7	M 20	Theoretical principles of Architecture	Theoretical Course	Every week lectures will focus on different subjects which are the definition of architecture and design, the relation between culture and design and understanding of the scientific and artistic elements of architecture by using different slideshows and sometimes by showing films. During the lectures, the student’s participation will be encouraged.	Exam
7	M 32	Cost Estimation	Studio-Oriented Course	How to use the specific categorized costs of materials, how to calculate the costs and different way of calculations, how to estimate the costs of workers and equipment will be presented on the real project drawings.	Students should present and do the calculation for one real project with details.
7	S 53	Initiation with Building Restoration	Studio- Oriented Course	The definition of restoration and renovation, the different way of restoration and their standards in the old and historical buildings will be presented by slide shows.	An old and historical building should be analyzed that which parts have been restored or renovate and which parts need restoration by considering the standards, history, and function of the place.
8	S 55	Architectural Design 5	Design Studio	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, pre-final and final juries.	site plan in 1/500 scale plans, sections, and elevations, 2 or 3 Perspectives from the exterior, interior, decisions for floors, walls and facade materials in 1/100, Model of product in 1/500 scale A residential complex
8	S 57	Final Project	Design Studio	Supervisor by giving critics help and support the student.	site plan, plans, sections and elevations, 2 or 3 Perspectives from the exterior, interior, decisions for floors, walls and facade materials in, every detail in the building and the structural drawings 1/100 or 1/200, Model of product in 1/200 scale 100 pages thesis about their concept and the standards
8	S 51	Understanding The Basics Of Urban Physical Planning	Studio- Oriented Course	This course presents lectures related to the city planning and its meaning.	Assignments Exam
8	M 33	Site Organization and Management	Studio- Oriented Course	Architect’s right, different types of contracts, different types of time management for the construction from the first to last stage and types of workers and their rights will be presented by slide shows.	Students should do and present one real project time management charts in the class beside the exam.
8	S 56	Construction Technical Designing	Studio- Oriented Course	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, pre-final and final juries.	site plan, plans, sections and elevations, every detail in the building and the structural drawings 1/100 or 1/200

Appendix D: Eastern Mediterranean University's Pedagogy System

SEM	COURSE CODE	FULL TITLE	COURSE CATEGORY	LEARNING/TEACHING METHOD	ASSIGNMENTS, SUBMISSION REQUIREMENTS
1	FARC 101	Basic Design Studio	Design Studio	This is a studio course where learning by doing the pedagogical approach is used. Students learn about the design process by getting directly involved in the process. The practical studio work is supported by lectures and audio-visual presentations in various subjects related to design. General and individual critiques are the main media for teaching design.	A series of assignments with different emphasis is offered in this course. Initial assignments concerning abstraction, design elements, principles and formal composition in 2D and 3D are given at the first half of semester. These are followed by a half-term final project related to a 3D organization with a simple function.
1	FARC 103	Graphic Communication 1	Studio-Oriented Course	The method of instruction involves the use of Blackboard as well as LCD presentations where the students encouraged to participate in the theoretical discussions on the course topics. Yet, the main emphasis is on class exercises conducted under the supervision of instructors. Students are encouraged to strengthen their knowledge through homework exercises	Home assignments Exam
1	FARC 113	Introduction to Design	Theoretical Course	The course includes a series of audio-visual presentations where examples from nature, abstract student work, and existing design products are utilized to initiate an interactive learning environment through class discussions. A feedback mechanism is created through class interaction for making appropriate modifications in the weekly scheduling of the course so that it runs parallel to the studio.	Exam
2	FARC 102	Introductory Design Studio	Design Studio	There are lectures for different topics, general discussions and one to one critics as a general teaching method Interactive teaching method based on one-to-one communication through creative problem-solving exercises to develop critical thinking ability is applied. Individual project development (learning by doing) alongside group works (learning from friends) besides learning through experiences (making research, learn from guest designers or jury members) helps students to learn through different methods.	There are 2 warm-up projects and 1 Architectural Design Project which is composed of 2 parts. Part 1 is an Architectural Design project and common for all students from 2 different departments. And Part 2 is the continuation of Part one but will be a design which will be shaped according to students field of study
2	FARC 104	Graphic Communication 2	Studio-Oriented Course	The course information will be given primarily through lectures in class. The students are comprised of both lectures and assessment exercises conducted under the supervision of instructors period will be Also additional exercises are given as homework to support the given theory at class sessions	Exam
2	FARC 142	Introduction to Design Technology	Studio-Oriented Course	There will be regular lectures and studio (classwork) sessions.	The term project will be an analysis and design of an object from a given list to be worked on related subjects of the course. Final submission of term project will be in two sheets of A3. Exam
2	ARCH 114	Human and Socio-cultural Factors in Design	Theoretical Course	Every week lectures will focus on different subjects. For example the definition of man and environmental relations, the importance of the human factor and dimensions in public and private spaces. Ergonomics and anthropometrics will be introduced. During the lectures, student's participation will be encouraged. There will be some researchers of students that will be presented in class. There will be small-scaled exercises for practicing the theoretical information.	Exam
3	ARCH 291	Architectural Design Studio 1	Design Studio	Studio work, desk critics, seminars and group critics, case studies. Site visits, lectures on selected topics, in-term reviews, mid-term, pre-final and final juries.	Site analysis board in 1/200 scale Site model in 1/200 scale including the neighboring lots with the new proposals Site plan in 1/100 scale Plans, sections, and elevations in 1/50 scale Perspectives from the interior, decisions for floor, wall and façade materials for one important space 1/100 and 1/50 scales Model of product in 1/100 scale A small residential complex with an annex in 400 m2
3	ARCH 213	Ecological Issues in Architecture	Theoretical Course	The course includes a series of audio-visual presentations (seminars and films) where various issues and examples are utilized to initiate an interactive learning environment through class discussions. Depending on the completion of the theoretical work, the course may be supported by field trips so that students may draw out lessons from their observations. The course also encourages students to develop critical thinking skills through the reading and interpretation of important text material on the subject.	Poster format presentation of group work Exam
3	ARCH 225	History and Theories of Architecture 1	Theoretical Course	The lectures will be presented with the help of visual materials such as slides and video films concerning each topic.	During the whole semester, you must prepare ONE PAPER on the topics assigned Exam
3	ARCH 235	Introduction to Tectonics of Structural Systems	Theoretical Course	Giving general information about structures, Presentation of case studies.	The term project is an analysis of the structure of an architecturally valuable masonry building (stone, brick, adobe or timber masonry structure with walls as the main structural elements). Each project is containing: 1. Photocopies of plans, sections, elevations, and photos of the selected building and the reference list showing the sources used to get this information. 2. Photos of the partial model of the building, which shows its tectonic qualities. The scale of the models will be selected by the students depending on the dimensions of the building. However, the models will be approximately 50x50x50cm in size. 3. Analysis of the selected building's structure according to the following criteria: . (teamwork)
3	ARCH 243	Architectural Construction and Materials 1	Studio-Oriented Course	There will be regular lectures and studio drawing sessions	Term project Homework Exam
3	ARCH 281	Computer-Aided Design	Studio-Oriented Course	Each week a specific subject matter will be lectured during the first two hours of the class meeting In the remaining part of the class hours. Students will be assigned an exercise, which will be related to the topics of the week and which they will have to complete by the end of the class hours.	Homework
4	ARCH 292	Architectural Design Studio 2	Design Studio	Studio work, table critics, seminars and group critics, case studies, site visits, lectures on selected topics, interim reviews, Mid-term and Final Juries.	Site analysis board (1/500, 200) Models 1:1000, 1:500, 1:200 scales Site plan 1:500, 1:200 scales Plans, sections and elevations 1:200, 1:100 scales System Detailing 1:20 scale Boutique Hotel in 1200 m2
4	ARCH 226	History and Theories of Architecture 2	Theoretical Course	This course will try to teach how to analyze the built forms as well as other aircraft from different points of view such as themes, the purpose of creation/ formation, elements of architecture and principles of design. 11 lectures will be held during the whole semester. The lectures will be presented with the help of the audio-visual materials, such as digital images and movies and also slide projections in relation to each subject.	Term project Exam
4	ARCH 236	Tectonics of Flexural Structures	Theoretical Course	Giving general information about flexural structures Presentation of case studies	The term project is the design of structures of the current design project of each student Clear plans, sec elevations of the design projects should be submitted, Drawings should reflect the architecture of the process the structure together Axes should be shown without hiding the architectural decisions. Exam
4	ARCH 244	Architectural Construction and Materials 2	Studio-Oriented Course	There will be regular lectures and studio drawing sessions.	Exam

4	ARCH 246	Energy and Environmental Issues In Design	Theoretical Course	There will be regular lectures, problem-solving applications, and short quizzes. The lecture notes can be purchased at the beginning of the semester. They are also available on the web Lecture notes will be projected to a screen. During the lecture and the students will be encouraged to ask questions and contribute to the discussions.	Exam
4	ARCH 252	Theory of Urban Design	Theoretical Course	There will be regular lectures related to the topics.	Assignments Exam
5	ARCH 391	Architectural Design Studio 3	Design Studio	Covered by lectures and discussions in the studio on a variety of subjects such as quality of urban environment, public-private interface, buildings as definers of public spaces, quality of public place-public space, urban identity, sense of place, sense of belonging; local-global issues, lifestyles and cultural patterns; user as an individual and a part of the community; innovative and sustainable building solutions, etc. In addition to lectures and class discussions, site analysis, lectures by guests, and examination of relevant professional examples will help develop students' understanding.	Accessibility & linkage, traffic 1/5000, 1/2500, 1/1000 scales. Natural analysis (topography, landform, climatic considerations, landscaping and vegetation 1/1000. Urban structure, urban form analysis 1/1000 scale. Townscape / existing buildings and structures / architectural evaluation (1/1000) with photos Socio-cultural analysis (data about the existing users, locals, their expectations, jobs, ages, economic structure) Model Making 1/500 (teamwork) Synthesis & Development of Common Proposals (Urban Strategies and Concepts for the Neighborhood) 1/2500 and 1/1000 scales (pair work) Conceptual and detailed design for the selected points of concentration within the site 1/500, 1/200, 1/50 for detailing (Individual projects) Neighborhood Revitalization through Lifelong Learning in Total 3000-3500 m2 for closed spaces.
5	ARCH 311	Principles of Conservation and Restoration	Theoretical Course	The topics will be lectured with the support of OHP and slide show. The students will be encouraged to participate in the discussions on the course topics. Technical excursions will be organized as a part of the lectures provided. Students will be required to do studio exercises related to the lecture topics.	Assignments will be given throughout the semester by distributing a reasonable number of students per week. The assignment will be prepared by two students and will be presented in the class session. The presentations should be in PowerPoint format. Exam
5	ARCH 337	Tectonics of form Resistant Structures	Theoretical Course	Giving general information about structures Presentation of case studies	Term project Exam
5	ARCH 347	Architectural Construction and Materials 3	Studio-Oriented Course	Giving general information about structures Presentation of case studies	term project dents are asked to select a which will contain the following long-span structure and prepare a model and a black and white 70x100cm poster 1 Plan, sections, elevations (can be photocopied) and photos of the selected building and a list of reference sources from which these drawings and photos are taken, 2. Photos of a partial structural model of the building to represent the system and show the tectonic qualities of the building. There should also be verbal expressions about the tectonic qualities of the photos. And Exam
5	ARCH 355	The process of Urban Design	Studio-Oriented Course	Lectures through OHP and slide show. Students will be encouraged to participate in the discussion on the course topics through group work before each lecture. Besides, there will be studio work based on theoretical knowledge.	Term project Designing a public space
5	ARCH 385	Digital Communication in Architecture	Studio-Oriented Course	This is a lab course where learning by doing practical approach is used. In each period we will begin with a lecture, to be followed by exercises to be completed by students in the computer studio. The practical studio work supported by lectures and audio-visual presentations in various subjects' related to visual communication design. As a teaching method, general and individual critiques will take a role.	Homework Exam
6	ARCH 392	Architectural Design Studio 4	Design Studio	A studio course designed to provide the student with skills of designing buildings with symbolic value and high complexity in functional, structural and constructional terms. Integration of all architectural systems is the main task. The main emphasis on the design concept, architectural expression and architectonic qualities, and producing alternative design solutions, developing a personal identity and integrating all systems-appropriate structural and environmental control systems, materials, climatic factors, energy uses, building codes and regulations in the urban context etc.-into design. Requirements include detailed research on the chosen topic	-Site Plan: Road network, hierarchy, distribution of buildings, locations, location of public spaces, boundaries of settlement patterns and overall relations within neighboring plots, main settlement decisions will be presented in 1/2000 urban decisions 1/1000 or 1/500 Preliminary -Design Decisions: Complete settlement pattern should be seen together including the basement, ground, typical floor plan, sections and elevations(on the same layout) 1/500 Repetitive units, critical parts of settlement patterns, complete repetition/alternative repetition units; floor plans/sections/elevations: 1/200 -Implementation Project: Floor Plans/sections and elevations of one of the building type, including system detailing of at least 2 building modules together with vertical circulation elements: 1/100, Drawings identifying reproduction and settlements logic-Typology Map and Schematically drawn building/land proportions Perspective, Model: 1/1000 or 1/500 -Presentation Poster: A1 Housing development for temporary profile 5000 m2
6	ARCH 312	Architecture and Design Theories	Theoretical Course	Since this is a course in the history and theory of architecture then both verbal and graphic means of communication are equally important. The lectures will be presented with the help of audio-visual materials such as digital images and slide projections in relation to each subject. Also, the active discussions on these subjects are important.	Term project Exam
6	ARCH 342	Working Drawing	Studio-Oriented Course	Each week a specific subject matter will be lectured during the first two hours of the class meeting. In the remaining part of the class hours, students will be assigned an exercise which will be related to the topics of the week and which they will have to complete by the end of the class hours or given as homework.	There will be one submission at mid-term and one final submission at the end of the semester as a final project. Exam
6	ARCH 348	Building and Environmental Systems in Architecture	Theoretical Course	Each week a specific subject matter will be lectured.	A House-Scale Central Heating System Description: Students are asked to design the heating system of a house. Exam
7	ARCH 491	Architectural Design Studio 5	Design Studio	A studio course designed to provide the student with skills of designing long span structures by considering integrated construction and service systems. The main emphasis is to design buildings with high complexity in function with appropriate structural systems and creating rich architectonic qualities.	-Concept sheet as a poster with expression of site analysis, conceptual ideas, bubble diagram, zoning, architectural program, scenario outline. Paper size A0 -Site plan with 4 silhouettes in scale 1/500, 1/1000 scales. -Plans, sections, and elevations 1/100. -A structure model and a system detail model -2 preliminary system details in scale 1/20 -3D drawings showing the mechanical and electrical service systems. -1/500 model with the site. -1/100 and 1/200 models. Techno Spot in 3000 m2 total building area.
7	ARCH 449	Economic and Managerial Issues in Architecture	Theoretical Course	There will be regular lectures and class exercise sessions. All students are required to attend the course with a scientific calculator	Homework and a Term project will be given on the related subject. Exam
8	ARCH 492	Architecture Graduation Project	Design Studio	This is the final project in which students are expected to work from macro to micro scales, and with special emphasis placed upon individual interest areas. Each student is expected to demonstrate that he/she has attained the professional standard required to practice within the rich context of the architectural discipline. Thus students are expected to develop their designs independently.	Location plan at city scale: 1/25000 Site plan: 1/500 Model: 1/2500 or 1/500 Plans 1/200 Sections and elevations 1/100 System detail 1/20 3D drawings showing Conference hotel in 13,439 m2
8	ARCH 416	Professional Issues in Architecture	Theoretical Course	The teaching methods include conventional lecture-based input and group work carried out by the students where they will have the opportunity to present the outcome of their group discussions. In this way, students will be actively involved in teaching and learning.	Exam Group presentation

