Journal of Architecture and Planning , Vol. 33(2) , pp. 245-259, Riyadh (2021/1442H)

doi: 10.33948/JAP-KSU-33-2-5

Exploring Curriculums of Landscape Architecture in Saudi Arabia from the International Federation of Landscape Architects Perspective

Nawaf R. Alhajaj

Assistant Professor

Department of Landscape Architecture, Faculty of Architecture and Planning, King Abdulaziz University – P.O. Box 80210 Jeddah 21589, Saudi Arabia

nalhajaj@kau.edu.sa

(Received 28/6/2020; accepted for publication 10/8/2020.)

Abstract: The present study investigates how the only current two bachelor of landscape architecture (LA) curriculums in Saudi universities consider the International Federation of Landscape Architects' (IFLA) twelve areas required for LA education. This is to explore differences, which will highlight the focus of the LA field in each program. This study categorizes the courses in each of the two LA curriculums based on their primary focus and degree of fit to IFLA's twelve areas through examining carefully the courses' titles, descriptions and objectives. Findings indicate that both curriculums show the highest strength in IFLA's three areas out of twelve, which include landscape design, theory and methodology as well as site engineering. The study also finds that both LA curriculums show a significant weakness in the area of public policy and regulation and an imbalance in the coverage of IFLA's areas in elective courses. Also, one of the LA curriculums shows a higher percentage of credit hours in the courses that do not fit IFLA's areas for education. The research approach applied in this study offers programs directors and researchers in LA or any other fields of education an easy and effective approach to review and assess curriculums according to a set of international criteria for education. Further research on the minimum coverage requirements of IFLA's twelve areas in LA curriculums is required.

Keywords: Curriculum, Landscape Architecture, Saudi Arabia, IFLA, Areas for Education.

1. Introduction

Landscape Architecture (LA) is one of the built environment specialties that has become a major focus in higher education. In 1900, the world's first LA program was established in Harvard University in the US, and by the twenty first century the education of this specialty has become well established worldwide except for a few regions in Africa and the Middle East (Holden and Liversedge, 2014). The American Society of Landscape Architecture (ASLA, 2020), which is the world's oldest LA association, defines LA as the specialization that is concerned with planning and designing the external built environment to enhance quality of life. LA education covers a wide range of courses which intersect with other disciplines. However, there is no perfect template for designing a LA curriculum. The Landscape Architectural Accreditation Board (LAAB, 2016), which is the US official accrediting body for the first professional programs in LA, states that a LA curriculum must be designed in a way that could achieve its learning goals as highlighted in the mission as well as its specific educational objectives. A first-professional program in LA has to include both coursework and other co-curricular activities, which are planned to develop the knowledge and skills of students in this specialty. The importance of co-curricular activities such as elective courses has been highlighted by other accreditation boards such as the National Architecture Accrediting Board (NAAB, 2014). Elective courses can assist students to extend their

knowledge and personal experience. The board has emphasized that a curriculum's development should be flexible to permit students to increase their knowledge in other areas internally or externally based on their study programs (NAAB, 2014).

LAAB (2016) also highlights that a bachelor LA program should be a four-year program. LAAB (2016) also insists that a bachelor LA curriculum should offer an educational context, which is enriched by other disciplines such as natural and social sciences as well as liberal and fine arts. It also provides students with a range of opportunities to develop other areas of interest. In contrast, a master of LA program focuses on the education and application of scholarly and research methods. LAAB (2016) points out eight areas to be considered in a professional bachelor of LA program. These areas include, without limitation: "[1] History, theory, philosophy, principles, and values; [2] Design processes and methodology; [3] Systems and processes—natural and cultural; [4] Communication and documentation; [5] Implementation; [6] Computer applications and advanced technologies; [7] Assessment and evaluation; [8] Professional practice" (LAAB, 2016, p.10-11).

In addition, the International Federation of Landscape Architects (IFLA, 2012), which is the international official body to supervise the profession and its education around the globe, highlights that LA education requires the acquisition of skills and knowledge within twelve areas. The twelve areas are considered important by IFLA to achieve its LA educational objectives requirements and to guide educational institutions for devising their curriculums and ensuring high expertise. However, IFLA did not define a certain percentage or amount of credit hours to be provided for each area of the twelve. The twelve identified areas are:

"[1] History of cultural form and an understanding of design as a social art; [2] Social, political, economic and natural systems; [3] Natural sciences such as geology, hydrology and biology; [4] Plant material and horticultural applications; [5] Site engineering including materials, methods, technologies, construction documentation and administration, and applications; [6] Theory and methodologies in design, planning and research; [7] Landscape design, management, planning and science at all scales and applications; [8] Ecological studies and principles of sustainability; [9] Information technology and computer applications; [10] Public policy and regulation; [11] Communications and public facilitation; [12] Ethics and values related to the profession" (IFLA, 2012, p. 2).

In addition to IFLA's twelve areas required for education, additional aspects of LA education are suggested to be considered when designing a new LA curriculum. For example, Celik (2014) pointed out that the education in basic design studios should focus not only on teaching the techniques and skills of visual communication, but it also has to teach students imagination, experiment, and how to be curious in order to be able to develop different design solutions. Also, computer applications have to be integrated with the teaching of basic design studios to enhance creativity (Celik, 2014). Francis (2001) indicated that case studies can be a useful component in LA education. This is because case studies allow students to obtain insight about previous design projects, which then will assist them to develop new design ideas effectively. In addition, Abern et al. (2002) highlighted that teaching ecology is best regarded across LA curriculums but not as separate courses. Gottfredson (2014) indicated that design processes are also another important aspect that should be considered in the education of LA. This is because design process can provide a high level of thoroughness to design work and train students to think profoundly. Also, Brown and Jennings (2003) suggested that intangible social structures must be addressed in LA curriculums to link our perceptions and actions with what are desirable, appropriate and possible in the design process. Such specific aspects provide useful insight, which may benefit new LA curriculums.

Currently, there are two academic LA programs for a bachelor's degree in Saudi Arabia. These are the King Abdulaziz University's (KAU) LA curriculum and the Imam Abdulrahman Bin Faisal University's (IAU) LA curriculum. In 1976, KAU established its first bachelor program in LA in Saudi Arabia with the assistance of Harvard University (School of Environmental Design, 1992). This LA program was not only the first in Saudi Arabia, but was also the first in the Middle East region (Faculty of Engineering, 1987). The establishment of the first Saudi LA curriculum was primarily to meet the future needs and development of Saudi Arabia (School of Environmental Design, 1992) as during the 1970s, the country experienced significant urban growth as a consequence of its

economic growth (Gukasyan et al., 2016). In 1992, the second Saudi bachelor of LA curriculum was established at King Faisal University (KFU) in Dammam, which became the Imam Abdulrahman Bin Faisal University (IAU, 2019). As Saudi Arabia comprises broad and diverse regions, the development of the IAU's LA curriculum was perceived essential to provide the Eastern region of Saudi Arabia with such a design specialty that can help resolve local and regional built environment issues (KFU, 2002). However, both LA curriculums are only provided for male applicants, since their establishment. According to statistics gathered from the Ministry of Education (2019), the Saudi higher education system did not witness any development of new bachelor curriculums in LA since the establishment of the second curriculum in 1992. This is in contrast to the number of new bachelor curriculums in architecture, interior design and architectural engineering, which were established in Saudi Arabia during the last two decades (Table 1).

At present, there is no official LA association in Saudi Arabia (IFLA, 2020) to monitor the profession, neither a specialized board to develop the accreditation rules and procedures in order to conduct the accreditation process such as LAAB or NAAB. However, Saudi Arabia has the National Commission for Academic Accreditation and Assessment (NCAAA), which is the only official national body to accredit academic programs of all types and at all levels. Obtaining national accreditation requires undergoing a number of steps including the preparation of a program self-study report and the submission of two program annual reports and the completion of a set of courses specification and reports (NCAAA, 2020). NCAAA's documents for accreditation are designed without exception to suit all academic programs. The national accreditation aims to ensure that all academic programs follow one standard to enhance the quality of education, but without assessing the specific scientific content of each academic program. Thus, a Saudi LA curriculum still requires to be assessed by a specialized foreign body such as IFLA or LAAB to ensure that its content follows the international standard in LA education.

Although there is much to know about LA education in literature, there is extremely few studies about LA curriculums and education in Saudi Arabia. For example, Addas (2018) examined the implications and objectives of the Saudi's Quality of Life Program (QLP) against the role of landscape architecture as a profession. His study highlighted the need for the establishment of new academic programs in LA to support the objectives of the QLP, that are related to the improvement of the standard of living of Saudi's cities. Another study by Alhajaj and Sobaihi (2018) focused on the comparison of thirteen international curriculums of LA to each other and with the KAU's LA curriculum to define its global position. The international LA curriculums that were selected in the study, including the KAU's LA curriculum, were all established in the 70's. The comparison was based on IFLA's twelve areas required for LA education. The study concluded that KAU's LA curriculum had a comparable content to other international curriculums, but with significant increase in its percentage for general university requirements. study only focused on core courses and did not investigate elective courses in these curriculums, and whether they compensated any lack in the core courses. In addition, other studies on LA in Saudi Arabia were focused on studying different aspects of the Saudi's built environment (Filor, 1988; Bahammam, 1995; Al-Hathloul and Mughal, 1999; Saleh, 2000). Thus, previous LA studies showed a lack of knowledge about many aspects of LA education in Saudi Arabia.

Table 1. Current Saudi bachelor degree curriculums in specializations related to the built environment including LA and their period of establishment.

Specialization	Total number of programs	Available for male applicants	Available for female applicants	Curriculums' Establishment Period					
				1960s	1970s	1980s	1990s	2000s	2010s
Landscape Architecture	2	2	0	0	1 (KAU)	0	1 (IAU)	0	0
Architecture	12	9	3	1	2	2	0	4	3
Urban / City Planning	4	4	0	0	1	3	0	0	0
Interior Design	17	3	14	0	0	3	1	8	5
Building / Architectural Engineering	13	11	2	0	1	1	0	6	5

The purpose of this study is to investigate how the current Saudi bachelor of LA curriculums at KAU and IAU consider IFLA's twelve areas for LA education in order to explore differences, which will highlight the focus of the LA field in each curriculum. The study is the first of its kind to investigate the current Saudi LA curriculums against a set of globally recognized areas for education.

The significance of this study can be explained through two points. First, it extends the limited knowledge about the Saudi LA curriculums by highlighting the main focus of each curriculum and areas of strength and weakness, which can later lead to the creation of plans for improvement or reform. Second, it demonstrates to what extent the current Saudi LA curriculums comply with the international LA educational requirements, especially that Saudi Arabia has no official LA association or board to monitor or review LA education and its development in the country.

2. Saudi LA Curriculums

As mentioned above, this study is about the current two Saudi bachelor of LA curriculums at KAU and IAU. In terms of KAU's current bachelor of LA curriculum, it is a five-year one-track curriculum with a total of 155 credit hours (FAP, 2020). The curriculum structure consists of one compulsory foundation year, which is designed to introduce the general university requirements, and four years for the specialization of LA. Each semester of the LA four years offers one LA studio and a range of theoretical courses. The final year of KAU's LA curriculum includes the graduation project and enables students to be ready for upcoming professional practice. Enrollment in elective courses is allowed from the third year first semester and above (Fig. 1).

The IAU's bachelor of LA curriculum is also a five-year one-track program with a total of 170 credit hours. The IAU's LA curriculum differs in its

Year	First Semester	C.H.	Second Semester	C.H.
KAU Foundation Year	Math	3	Statistics	3
	Physics	3	Chemistry	3
	English (1 & 2)	2	Biology	3
	Computer	3	English (3 & 4)	4
			Communication	3
LA -Year 1	LA Studio 1 - Basic Elements of LA Design	4	LA Studio 2 - Basic Analysis & Design	4
			Architecture & Heritage	2
	Introduction to Town Planning	2	Urban Design	2
	Freehand Drawings	3	Env. & Man	2
	Introduction to Env. Design	2	Computer for Env. Design	2
	Geomatics for Env. Design	2	Surveying for Env. Design	2
	Arabic (1)	3	Islamic Studies (1)	2
LA -Year 2	LA Studio 3 - Design Process in LA	5	LA Studio 4 - Detailed Design in LA	5
	Plants in LA	3	Planting Design in LA	3
	LA Construction Technology 1	3	LA Construction Technology (2)	2
	Computer Applications in LA 1	2	Site Planning	2
	Arabic (2)	3	Islamic Studies (2)	2
			KAU – Free Course	2
LA -Year 3	LA Studio 5 - Urban Design in LA	5	LA Studio 6 - Landscape Planning	5
	Planting Technology	2	Soil & Hydrology	3
	Planning & Management	3	Professional Practice	2
	Field Training (1)	1	Landscape of Man	3
	Islamic Studies (3)	2	Islamic Studies (4)	2
	Elective (1 course)	3	KAU – Free Course	1
LA -Year 4	LA Studio 7 - Professional Studio	5	LA Studio 8 - Graduation Project	6
	Graduation Project Research	2	Elective (3 courses)	8
	Field Training (2)	2	KAU – Free Course	2
	Elective (2 courses)	5		
	KAU – Free Course	2		

Elective Courses			
	C.H.		C.H.
Natural Resources Techniques	3	Computer Applications in LA - 2	3
Special Studies in LA	3	Advanced GIS in LA	3
Project Management in LA	3	Towards Islamic LA	2
Advanced Site Planning	2	Sustainable Ecotourism	3
Contemporary Trends in LA	2	Land Reclamation	2
LA Construction Technology - 3	3	Desert LA	2
Advanced Plants Material in LA	3	Indoor LA	2
Advanced Planting Design	3	Landscape Ecology	2
Irrigation in LA	2		

Figure 1. KAU's LA curriculum courses and its elective list

structure than the KAU's LA curriculum. Students in the first year of the IAU's LA curriculum are enrolled in the preparatory year of the Engineering track. According to the IAU's LA curriculum, the first year offers two general basic design studios with other general university courses (IAU, 2020). The second year of the curriculum is designed as a common year for all students enrolled in LA and other specializations of the College of Architecture and Planning (e.g. Architecture, Planning, Building Technology) undertaking the same courses. This second year of the curriculum is primarily designed to establish a foundation in design as well as teach the theories and use of software for two- and three-dimensional design, as well as the necessary skills related to free-hand and engineering drawing. The third year of the curriculum is considered as the gateway to LA courses (IAU, 2020). The last year prepares students for professional practice. It also includes the graduation project, which allows students to apply all knowledge and skills that were learned in previous study years. The last year in the LA curriculum allows students to undertake electives (Fig. 2).

3. Methodology - Research's Approach

Deming and Swaffield (2011), in Landscape Architecture Research, highlighted that new knowledge can be produced by classification strategies, which sort and group data into a system of organization through using typical patterns, themes, properties or behaviors. A classification strategy is one of the most essential research methods, which is used nearly in every discipline. "Classification may be used to reveal and refocus attention on specific, meaningful patterns and themes hiding within data" (Deming and Swaffield, 2011, p.127). In this respect, a classification approach was adopted in this study to categorize each Saudi's LA curriculum according to IFLA's (2012) twelve areas

Year	First Semester	C.H.	Second Semester	C.H.
IAU Foundation Year	English (1)	0	English (2)	7
	Math (1)	3	English for Academic Purpose	3
	Studio 1 – Basic Design	3	Math (2)	3
	Learning Research Skills	2	Studio 2 – Basic Design	3
	Health & Physical Education	1	Physics	3
	Arabic Language Skills	2	Communication Skills	2
			Computer Skills	2
Common Collage Year	Studio 3 – Architectural & Interior design	4	Studio 4 – Urban & Landscape Design	4
	Concept Structure	3	Construction Sys. & Materials	3
	Surveying	2	Env. Control (Thermal)	2
	Environmental Design (1)	2	Environmental Design (2)	2
	CAD Applications	2	CAD & GIS Applications	2
	Design Methods	2	Site Planning	2
	Intro. to Islamic Culture	2	Social Systems in Islam	2
	Technical English Writing	1		
LA - Year 1	LA Studio 1 – Site Design	5	LA Studio 2 – Site Planning	5
	Landscape Plants	3	Planting Design	3
	LA Graphics Skills	2	Site Engineering (1)	3
	Landscape Design Principles	2	Computer Applications in LA	2
	History of LA (1)	2	History of LA (2)	2
	Environmental & Ecology, Sys.	2	Environmental Management	2
			Practical Training	0
LA - Year 2	LA Studio 3 – Urban Landscape Design	6	LA Studio 4 – Landscape Planning	6
	Site Construction Materials & Techniques	3	Site Construction Documents	3
	Site Engineering (2)	3	Contemporary Issues in LA	2
	Irrigation Systems Design	2	Research & Programming	2
	Urban Landscape Design Principles	2	Landscape Planning	2
	Economic Systems in Islam	2	Political & Social Sys. In Islam	2
LA - Year 3	LA Studio 5 – Professional	6	LA Studio 6 – Graduation Project	7
	Graduation Project Studies	3	Professional Practice	3
	LA Project Management	2	Elective (3 courses)	6
	Elective (3 courses)	6		

Elective Courses

	C.H.		C.H.
Human Behavioral Factors in LA	2	Environmental Assessment	2
Parks & Recreation	2	Independent Study	2
Climate & Landscape in Hot-arid Zones	2	Special Topics in Landscape Planning	2
Special Issues in Garden Design	2	Soil Science & Hydrology	2
Tourism & Outdoor Recreation	2	Ornamental Horticulture	2
Special Topics in LA	2	Technical Issues in Landscape Design	2
Ecology & Built Environment	2	Remote Sensing Applications in LA	2
Coastal Landscape Management	2	Advanced Computer Applications	2
Landscape Ecological Planning & Design	2	Special Topics in Landscape Technology	2

Figure 2. IAU's LA curriculum courses and its elective list

required for LA education. This was to investigate how these curriculums consider IFLA's areas in their structures in order to explore differences, which will highlight the focus of the LA field in each curriculum.

At the beginning, the author of this study collected data on the two curriculums from two sources: first, Saudi LA departments websites; and second, their up to date printed program manuals and course descriptions. This type of data assisted the author to identify the two LA curriculum's general university courses, core courses and electives, as well as understand their learning objectives. After this step, the courses of each curriculum were systematically categorized based on their primary focus and degree of fit with IFLA's twelve areas required for LA education. The systematic categorization process relied on carefully examining every course's title, description and objectives (Table 2). The categorization revealed that some theoretical courses and design studios fall under more than one of IFLA's twelve areas. For this reason, credit hours' distribution criteria were developed to systemize the distribution of curriculum courses' credit hours based on how they match IFLA's twelve areas (Table 3). In addition,

Table 2. IFLA's twelve areas for education used for categorization and title of courses and topics that may cover the area.

IFLA's Twelve Areas Required for Education		Title of courses and topics that may cover the area	Explanations / Justifications
1	History of cultural form and an understanding of design as a social art	History of Architecture or LA or courses, which teach design as a social art	
2	Social, political, economic and natural systems	Introduction to Environmental Design, Environment and Man	
3	Natural sciences such as geology, hydrology and biology	Biology, Geology or Soil and Hydrology	
4	Plant material and horticultural applications	Planting Materials, Planting Design, Planting Technology and Plants in LA	
5	Site engineering including materials, methods, technologies, construction documentation and administration, and applications	Site Engineering, Construction Technology in LA, Construction Systems and Materials or Site Construction Documents	
6	Theory and methodologies in design, planning and research	General design studios, Design Processes in LA Studio, Design Theory in Architecture or LA, Graduation Project Research or Contemporary Trends in LA	The reason for inclusion of design studios under this area because they apply methodologies, which include collecting data, conducting site analysis and synthesis, analyzing case studies and developing design ideas.
7	Landscape design, management, planning and science at all scales and applications	LA Design or Planning Studios, Project Management in LA, Site Planning, Landscape Design Principles, Landscape planning or Urban Design in LA	
8	Ecological studies and principles of sustainability	Landscape Ecology, Ecological Systems, Ecology and Built Environment, Sustainable Cities and Communities or Sustainable Ecotourism	
9	Information technology and computer applications	Geomatics for Environmental Design, Computer Applications in LA or CAD and GIS Applications	
10	Public policy and regulation	Topics include: Local or international planning regulations, building codes, land subdivision regulations, lands conservation policies and public policies related to the protection and development of natural or built environments	Most undergraduate LA curriculums do not assign a separate course for teaching public policy and regulation. Thus, the methodology investigated its coverage in the curriculum's courses according to the listed topics.
11	Communications and public facilitation	LA Graphics Skills, Communication Skills, Freehand Drawings or Technical Writing and first year basic design studios	The reason for inclusion of the first year basic design studios under this area is because they fundamentally focus on teaching the visual communication language through hand drawings and graphics.
12	Ethics and values related to the profession	Professional Practice, Ethics in Practice or Field Training Preparation	

Table 3. Criteria used for credit hours distribution.

	Cases of courses or design studio covering IFLA's areas			
Program's theoretical courses, general design studios, specialized LA design studios and elective courses.	A course or design studio with a major emphasis on one area only	A course or design studio with major focus nearly on two areas	A course or design studio, which covered two areas but with a major emphasis on one area more than the other	A course or design studio, which covered three areas but with a major focus on one area more than the other two
Distributed weight	100% of the course allocated credit hours were given to the matched area.	50% of the course allocated credit hours were given to each matched area.	75% of the course allocated credit hours will be given to the area that has the major focus and 25% for the secondary one.	50% of the course allocated credit hours will be given to the area that has the major focus and 25% for each of the two secondary areas.

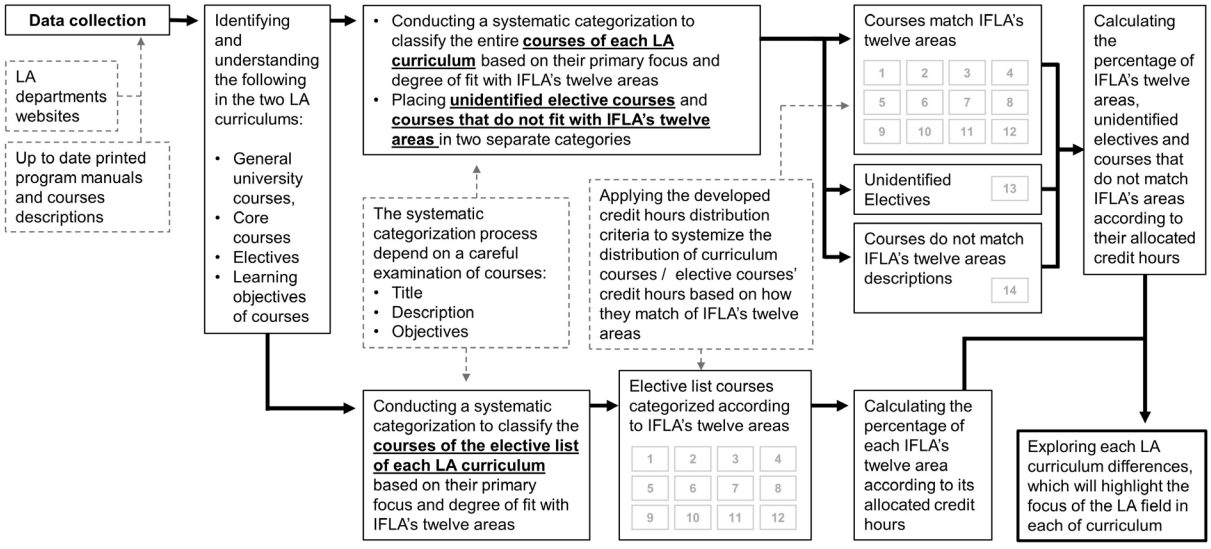

Figure 3. Research Approach Diagram

each LA curriculum's unidentified electives and courses that did not fit with any of IFLA's twelve areas descriptions (e.g. some general university courses such as: Math, Physics, Chemistry, English Language, Arabic Language, Health and Physical Education, Islamic Studies, and all free university courses) were placed under two separate new areas in order to have a clear view about the courses that only match IFLA's areas. This step increased the number of areas to fourteen (IFLA's twelve areas plus one area for electives and another one for courses that did not match IFLA's areas). Upon the categorization of curriculum courses and the weighted distribution of their credit hours according to IFLA's twelve areas, the percentage of each area was calculated based on the following equation:

$$(ATC/CTC)*100$$

- where ATC = represents the total sum of credit hours for each area;
- CTC = denotes the curriculum's total credit hours.

In addition, the courses in the elective list of each LA curriculum were also categorized based on their primary focus and degree of fit with IFLA's twelve areas through applying the previous steps used to categorize courses of both LA curriculums. Also, the same above calculation procedure was applied to identify the percentage of each IFLA's area after the courses of each elective list were categorized (Fig. 3). Phone calls conversation and direct interviews with the curriculums' coordinators and courses instructors were used to gain additional insight and information for courses that were difficult to be categorized through their descriptions and objectives.

4. Findings

The findings have indicated that the two LA curriculums showed a similarity in the areas that achieved the highest percentages. In the KAU's LA curriculum, Area (7) of landscape design, management, planning, and science at all scales and application achieved the highest percentage (22%), followed by Area (6) of theory and methodologies in design, planning and research, and Area (5) of site engineering, both attained the same percentage (7%). However, Area (10) of public policy and regulation obtained zero percentage, and Area (8) of ecological studies and principles of sustainability attained a very low percentage (1%). Similarly, the IAU's LA curriculum achieved its highest percentages in the same three areas of the KAU's curriculum but with higher percentages. Area (7) achieved the highest percentage (23%), followed by Area (6) at (17%), and Area (5) at (13%). The IAU's LA curriculum obtained zero percentages in Area (3) of natural sciences and Area (10) of public policy and regulation. Area (2) of social, political, economic and natural systems obtained a very low percentage (1%) (Table 4).

Although IAU's LA curriculum has an overall 170 credit hours, which is higher than the KAU's LA curriculum by 15 credit hours, this curriculum has completely disregarded Areas (3 and 10). This issue could be avoided if the percentages of the Area (6) or the courses that have no contribution to IFLA's twelve areas (18%) was slightly reduced and employed to increase other areas with low percentages including the ones with no percentages at all (Fig. 4). In addition, KAU's LA curriculum has an issue in covering Area (8), which obtained a very low percentage, and Area (10) that obtained zero percentage. This issue is attributed to the significant higher percentage assigned to courses that have no contribution to IFLA's twelve areas required for the LA education (25%), in comparison to the IAU's curriculum (18%). It must be highlighted that this category of courses (not fitting IFLA's twelve areas required for the LA education) in KAU's LA curriculum achieved higher than Area (7), that achieved the highest percentage (22%) among IFLA's twelve areas (Fig. 5).

In addition, comparing other areas with moderate percentages in both LA curriculums, shows that Area (9) of information technology and computer applications and Area (11) of communication and public facilitation came next after the three highest Areas (7, 6 and 5) in both curriculums. Areas (9 and 11) are regarded higher than Area (8) of ecological studies and principles of sustainability, which has an important component for LA education, particularly landscape planning.

The percentage analysis for the provided elective courses in both Saudi LA curriculums indicated that IAU's LA curriculum focused on eight areas only, while KAU's LA curric-

Table 4. IFLA's twelve areas' percentages according to core courses categorization in both Saudi LA curriculums.

IFLA's Twelve Areas, Electives and Courses (do not fit IFLA's twelve areas descriptions)	Core Courses			
	KAU		IAU	
	C.H*	%	C.H*	%
1. History of cultural form and an understanding of design as a social art	3	2%	4	2%
2. Social, political, economic and natural systems	3	2%	2.5	1%
3. Natural sciences such as geology, hydrology and biology	6	4%	0.5	0%
4. Plant material and horticulture applications	7.25	5%	4.5	3%
5. Site engineering including materials, methods, technologies, construction documentation and administration, and applications	10.5	7%	22	13%
6. Theory and methodologies in design, planning, and research	11	7%	28.5	17%
7. Landscape design, management, planning and science at all scales and applications	33.25	22%	40	23%
8. Ecological studies and principles of sustainability	1.5	1%	3	2%
9. Information technology and computer applications	9	6%	8	5%
10. Public policy and regulation	0.5	0%	0.5	0%
11. Communication and public facilitation	10	6%	11.5	7%
12. Ethics and values related to the profession	5	3%	3	2%
Electives	16	10%	12	7%
Courses do not fit IFLA's twelve areas descriptions	39	25%	30	18%
Program total credit hours	**155 C.H**		**170 C.H**	

*** Credit hours**

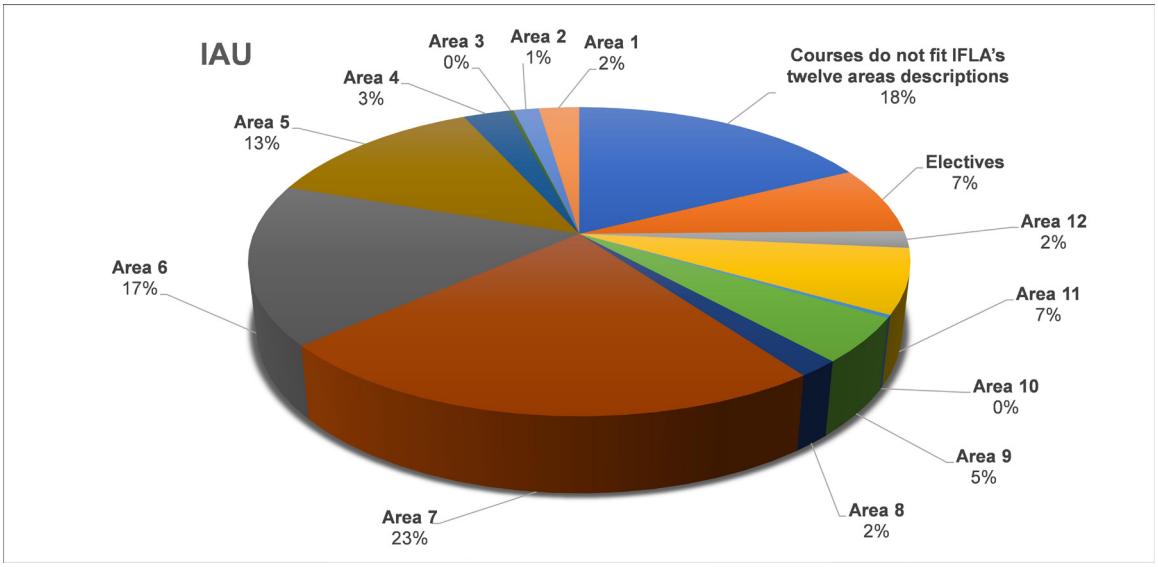

Figure 4. IAU's LA curriculum (core courses) and the differences in IFLA's twelve areas

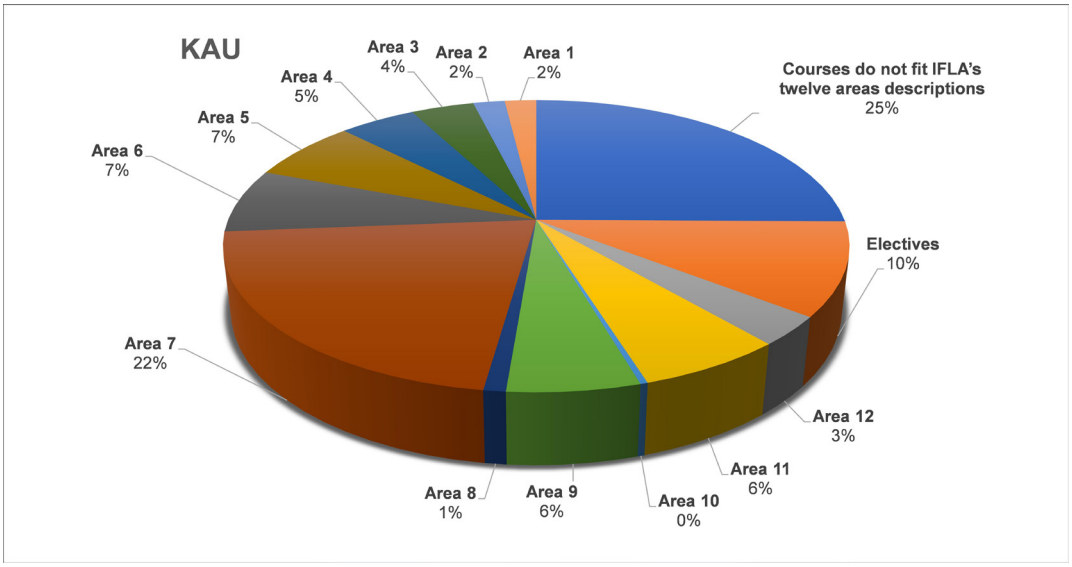

Figure 5. KAU's LA curriculum (core courses) and the differences in IFLA's twelve areas

ulum covered six areas out of the twelve. It was also found that Area (7) had achieved the highest percentage in both LA curriculums for electives with (34%) for KAU and (42%) for IAU (Table 5).

Electives of the KAU's LA curriculum increased the percentage of Area (8) of ecological studies and principles of sustainability to become (16%), in comparison to the (1%) obtained in core courses. Also, the percentage of Area (4) of plant material and horticulture applications was increased to become (12%) after being given (5%) in core courses. However, Area (10) continued with zero percentage. It must be said that there was a chance to compensate such a lack in Area (10) and other areas with low percentages in the KAU's LA curriculum. This could be achieved by establishing new courses to cover these areas, instead of creating more courses to serve Area (9) of information technology and computer applications, which obtained (21%) in electives while it already gained a reasonable percentage in the core courses (Fig. 6).

Table 5. IFLA's twelve areas' percentages according to elective courses categorization in both Saudi's LA curriculums.

IFLA's Twelve Areas Required in LA Education		Electives			
		KAU		IAU	
		C.H*	%	C.H*	%
1.	History of cultural form and an understanding of design as a social art	0	0%	0	0%
2.	Social, political, economic and natural systems	0	0%	0.5	1%
3.	Natural sciences such as geology, hydrology and biology	0	0%	2	6%
4.	Plant material and horticulture applications	5.25	12%	2.5	7%
5.	Site engineering including materials, methods, technologies, construction documentation and administration, and applications	6	14%	4	11%
6.	Theory and methodologies in design, planning and research	1	3%	4	11%
7.	Landscape design, management, planning and science at all scales and applications	14.75	34%	15	42%
8.	Ecological studies and principles of sustainability	7	16%	4	11%
9.	Information technology and computer applications	9	21%	4	11%
10.	Public policy and regulation	0	0%	0	0%
11.	Communication and public facilitation	0	0%	0	0%
12.	Ethics and values related to the profession	0	0%	0	0%
Total electives credit hours provided by LA department		**43 C.H**		**36 C.H**	

*** Credit hours**

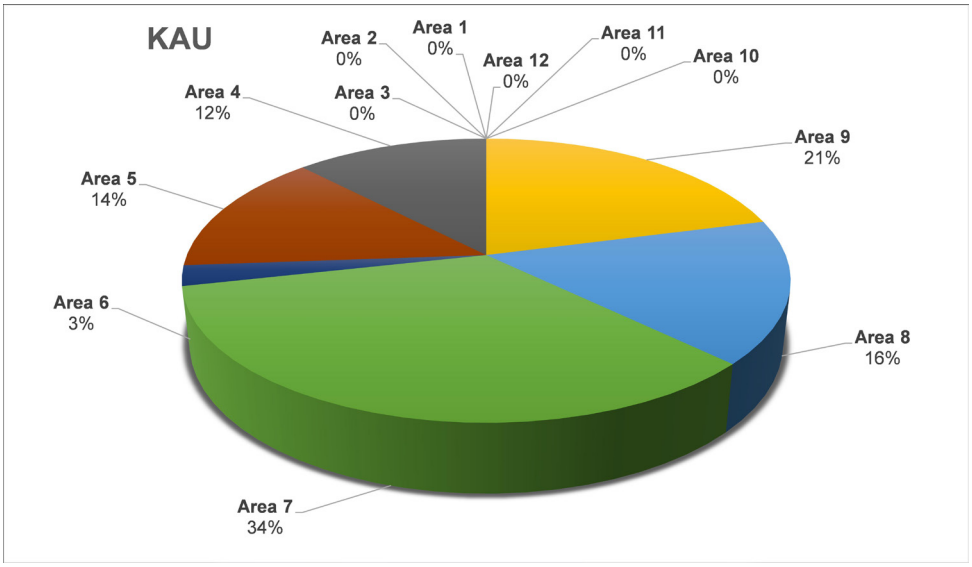

Figure 6. KAU's LA curriculum (electives) and the differences in IFLA's twelve areas

IAU's LA curriculum compensated the lack in Areas (3, 4, 8 and 9) in electives by allocating (6%, 7%, 11% and 11%) respectively. However, similarly to the KAU's LA curriculum, Area (10) continued to remain with zero percentage in the IAU's LA curriculum. It has to be mentioned here that more courses were created for Areas (5 and 6) in electives, which were already high in core courses, instead of having courses to compensate the lack in Area (10) and other areas that obtained very low percentages in core courses (Fig. 7).

5. Discussion and Conclusion

The present study explores how each Saudi's LA curriculum, including its elective courses list, distributes the credit hours according to the twelve areas required for education set by IFLA. Both curriculums direct their primary focus towards the Area (7) landscape design, followed by the Area (6) theory and methodologies and Area (5) site engineering. The study finds that both Saudi LA curriculums, to a large extent,

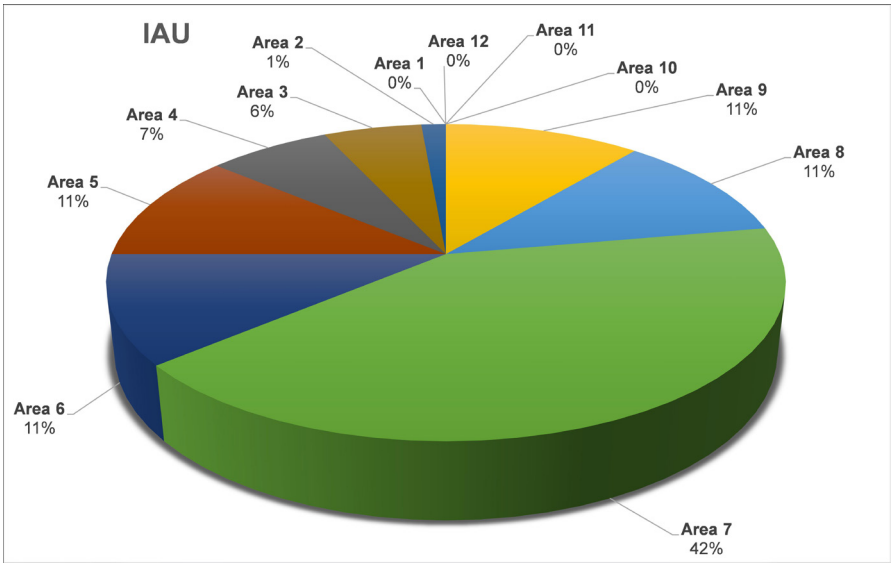

Figure 7. IAU's LA curriculum (electives) and the differences in IFLA's twelve areas

comply with IFLA's (2012) recommendations, which indicate that LA curriculums must consider the twelve areas for education without identifying the minimum coverage for each area.

This study confirms previous research (Gottfredson, 2014) and views (Deming and Swaffield, 2011), which highlighted that design methodology and principles are considered as a central part in the education of LA programs. Both LA curriculums achieved second highest in the Area (6) of theory and methodologies in design, and planning and research. This is mainly attributed to the number of design and planning studios in both curriculums that teach various methodologies in collecting data in urban and natural settings. Design studios also teach design processes, which are described as a search for possibilities (Lynch and Hack; 1984) to create a change (Steinitz, 1995). Both LA curriculums do not consider the teaching of the application of research and scholarly methods because these are required only at a master's level, as highlighted by LAAB (2016).

Findings of this study confirm previous research (Alhajaj and Sobaihi, 2018) as it highlights that both LA curriculums show weaknesses in Area (10) of public policy and regulation. Previous research (Alhajaj and Sobaihi, 2018) highlighted that the problem with this area is not only linked to the Saudi LA curriculums, but it has also been found in many international LA curriculums. Area (10) needs to be reassessed in both LA curriculums as IFLA (2012) stressed that in order to enhance the ethical framework for decision making, the education of LA must concentrate on the awareness of financial and political motivations behind clients' requirements within the context of public policy and the environment. This means that teaching public policy and regulations of a specific place, city or country is integral, as they will make students aware about the impact of such regulations and policies on the project or the study validity. The teaching of public policy and regulations in both current curriculums could be incorporated in low doses in other courses of the curriculums instead of being provided in the form of stand-alone courses. However, this point requires further research.

Previous research indicated the importance of ecological studies in LA curriculums (Makhzoumi, 2000; Celik, 2013; Irwan, 2014). This contrasts with this study's findings, which highlight low percentages for Area (8) of ecological studies and principals of sustainability in the core courses of both LA curriculums. Although this Area is compensated in the electives, it should have more coverage in the core courses in order to strengthen the curriculum outcomes and benefit all students. The lack of components of ecological studies and principals of sustainability in both KAU and IAU's LA curriculums could be related to the fact that these curriculums are taught under the Faculty / College of Architecture and Planning but not under other colleges, such as the Faculty of Agriculture

or Forestry, which could have given more importance to teaching such an Area. Further research is needed to investigate whether the background of the faculty or school has a degree of influence on including such an area with a high portion. Similarly, the teaching of sustainability and its principals could have also been given more attention in the education of LA in both curriculums, in order to support the Saudi Vision 2030 (2020) which is concerned with making the built environment of Saudi cities sustainable and healthier. This is because sustainability is an important approach for urban sustainable development and regeneration (Newman and Jennings, 2008; Gehl, 2010).

In addition, findings confirm previous research (Alhajaj and Sobaihi, 2018), which indicated that KAU's LA curriculum has a very high percentage of courses that do not fit IFLA's twelve areas in compression with other international LA curriculums. This study also finds that the percentage of these courses in KAU's LA curriculum is higher than IAU's LA curriculum. This issue results in decreasing the coverage of many of IFLA's areas, which are essential for the education of LA. Thus, these courses, which are mainly introduced to the KAU's LA curriculum through the general university requirements, have to be reviewed and reduced to a minimum in order to enhance the effectiveness of this curriculum.

The study also finds that both curriculums provide a relatively acceptable percentage for elective courses when compared to other Areas' percentages. However, electives in both LA curriculums should be diverse in the sense that they should cover areas and aspects that are not provided with a sufficient coverage in the core courses. This step must be considered in order to enhance the benefits of electives, which play an important role in the development of students' personal and professional abilities (Movchan and Zarishniank, 2017), as well as their special interests (NAAB, 2014).

The present study has two of limitations. First, the study was limited to investigate the distribution of each curriculum's credit hours' weight according to IFLA's twelve areas through a systematic review of courses' titles, descriptions and objectives. Second, the study did not examine whether both curriculums have achieved their learning outcomes or contributed positively to the practice of the profession.

The present study contributes to knowledge through two points. First, it explores the major focus of the oldest LA programs in the Middle East and the current LA curriculums in Saudi Arabia. The study provides an intensive examination of both Saudi LA curriculums as it investigates the extent of their consideration of IFLA's twelve areas and their elective lists. The investigation of both LA curriculums highlight issues related to the weak areas that should be reviewed. It also shows the focus in both elective lists and explores the possibility of creating elective courses that support and compensate for any weaknesses in the LA curriculums. Secondly, the research approach which was used in this study can provide LA program directors and coordinators with an alternative method and easy tool to review and assess contents of LA curriculums to ensure their compliance with the international standards. The research approach shows clearly how data including courses' titles, descriptions and objectives can be used to categorize an LA curriculum and its elective courses list according to the important twelve areas in LA education. The developed credit hours' distribution criteria show an explicit process for systemizing the distribution of curriculum courses' credit hours based on how they match IFLA's twelve areas. Other academic programs can use such a research approach to explore specific aspects of their curriculums through classifying or comparing them to a set of recognized educational areas or criteria in their fields.

Finally, the present study specifically highlights the necessity for future research on the coverage of public policy and regulation, as well as ecological studies and sustainability aspects in the core courses of international LA curriculums. It also indicates investigating whether there is a need for a minimum coverage requirement for each of the IFLA's twelve area in LA curriculums, in order to achieve their specific educational objectives highlighted in the mission.

Funding: This research received no external funding.

Author Contributions: The author confirms his responsibility for the following: study concept and design, data collection, analysis and results interpretation, and the preparation of the

manuscript and its graphics and diagrams.

Acknowledgments: The author is very thankful to all the associated personnel in any reference that contributed to this research.

Conflicts of Interest: The author declares no conflict of interest.

6. References

Abern, J., France, R., Hough, M., Burley, J., Turner, W., Schmidt, S., Hulse, D., Badenhope, J., and Jones, G., "Integrating Ecology "across" the Curriculum of Landscape Architecture", in Ecology Design: Frameworks for Learning, eds B. Johnson and K. Hill, Washington, Island Press, (2002), 397-414.

Addas, A., "Landscape architecture and the Saudi Arabia Quality of Life Program", Emirates Journal for Engineering Research, 24, (3), (2018), 1-8.

Alhajaj, N., and Sobaihi, M., "Landscape architecture: The first Saudi program and its global position", Middle East Journal of Education, 4, (2), (2018), 12-24.

Al-Hathloul, S., and Mughal, M., "Creating identity in new communities: case studies from Saudi Arabia", Landscape and Urban Planning, 44, (4), (1999), 199-218.

American Society of Landscape Architecture (ASLA), What is landscape architecture? (2019), https://www.asla.org/aboutlandscapearchitecture.aspx (accessed 20 June 2020).

Bahammam, O., The social needs of the users in public open space: The involvement of socio-cultural aspects in landscape design of the outdoor urban environment in Ar-Riyadh, Saudi Arabia, Doctoral dissertation, University of Edinburgh, (1995), 317.

Brown, K. D., and Jennings, T., "Social Consciousness in Landscape Architecture Education: Toward a Conceptual Framework", Landscape Journal, 22, (2), (2003), 99-112.

Celik, F., "Ecological Landscape Design", in Advances in Landscape Architecture, eds M. Ozyavuz, IntechOpen, (2013), 325-350.

Celik, F., "Basic design education in landscape architecture", International Journal of Architectural Research, 8, (1), (2014), 176-183.

Deming, M. E., and Swaffield, S., Landscape Architecture Research, Hoboken, John Wiley and Sons, Inc, (2011), 256.

Faculty of Engineering, Faculty of Engineering, Annual Report 1986 – 1987, Jeddah, King Abdulaziz University, (1987), 197.

Faculty of Architecture and Planning (FAP), Bachelor of Landscape Architecture Study Plan, (2020), https://land.kau.edu.sa/Pages-prog.aspx# (accessed 3 March 2020).

Filor, S., "Landscape Architecture in Saudi Arabia", Landscape Research, 13, (2), (1988), 23-28.

Francis, M., "A case study method for landscape architecture". Landscape Journal, 20, (1), (2001), 15-29.

Gehl, J., Cities for People, Washington, Island Press, (2010), 269.

Gottfredson, J. A., Design process in landscape architecture: Developing a learning guide for the design workshop archives at Utah State University, Master Thesis, Utah State University, (2014), 88.

Gukasyan, G. L., Aifary, A. K., Semenovich, V. S. and Mantsev, V. V., "State Economic Policy and Reform in the Oil-exporting Countries on the Example of Saudi Arabia, the UAE and Iraq", International Journal of Economics and Financial Issues, 6, (4), (2016), 1534-1541.

Holden, R., and Liversedge, J., Landscape Architecture: An Introduction, London, Laurence King, (2014), 208.

International Federation of Landscape Architects (IFLA), IFLA/UNESCO Charter for Landscape Architectural Education, (2012), https://media.voog.com/0000/0044/0363/files/2_IFLA-Charter-for-Landscape-Architectural-Education-Revised-2012.pdf (accessed 25 Jan 2020).

International Federation of Landscape Architects (IFLA), Member Associations, (2020), https://www.iflaworld.com/members (accessed 3 March 2020).

Imam Abdulrahman Bin Faisal University (IAU), Landscape Architecture Department, (2019), https://www.iau.edu.sa/en/col-

leges/college-of-architecture-and-planning/departments/landscape-architecture-department (accessed 12 December 2019).

Imam Abdulrahman Bin Faisal University (IAU), Bachelor of Landscape Architecture – Year Description, (2020), https://www.iau.edu.sa/en/colleges/college-of-architecture-and-planning/programs/bachelor-of-landscape-architecture (accessed 25 Jan 2020).

Irwan, S. N. R., Ecology is the Basic Education for Landscape Architecture. Symposium Asia-Pacific Landscape Architectural Education in the 21st Century, (2014), 1-7.

King Faisal University (KFU), Documenting the Achievements, Dammam, King Faisal University, (2002), 417.

Landscape Architectural Accreditation Board (LAAB), Accreditation Standards for First-Professional Programs in Landscape Architecture. American Society of Landscape Architects, (2016), https://www.asla.org/uploadedFiles/CMS/Education/Accreditation/LAAB_ACCREDITATION_STANDARDS_March2016.pdf (accessed 10 June 2020).

Lynch, K., and Hack, G., Site Planning (3rd ed.), Cambridge, The MIT Press, (1984), p. 499.

Makhzoumi, J. M., "Landscape ecology as a foundation for landscape architecture: application in Malta". Landscape and Urban Planning, 50, (1-3), (2000), 167-177.

Ministry of Education., Higher Education, (2019), https://www.moe.gov.sa/en/Pages/default.aspx (accessed 25 December 2019).

Movchan, L., and Zarishniak, I., "The role of elective courses in students' professional development: foreign experience", Comparative Professional Pedagogy, 7, (2), (2017), 20-26.

National Architectural Accrediting Board (NAAB), Guide to the 2014 Conditions for Accreditation and Preparation of an Architecture Program Report, (2014), http://cadc.auburn.edu/files/uploads/2014-Conditions-Final-Approved-Guide-and-Instructions.pdf (accessed 27 December 2019).

National Commission for Academic Accreditation and Assessment (NCAAA), Steps for Program Accreditation, (2020), https://etec.gov.sa/en/productsandservices/NCAAA/AccreditationProgrammatic/Pages/Stepsof-Accreditation.aspx (accessed 11 June 2020).

Newman, P., and Jennings, I., Cities as Sustainable Ecosystems: Principles and Practices, Washington, Island Press, (2008), 284.

Saleh, M., "Value Assessment of Cultural Landscape in Alckas Settlement, Southwestern Saudi Arabia", AMBIO: A Journal of the Human Environment, 29, (2), (2000), 60-66.

Saudi Vision 2030, Saudi Vision: Kingdom of Saudi Arabia, (2020), file:///C:/Users/96650/Downloads/Saudi_Vision2030_EN%20(1).pdf (accessed 4 June 2020).

School of Environmental Design, The Improved Program of the School of Environmental Design, Jeddah, King Abdul-Aziz University, (1992), 94.

Steinitz, C., "Design is a verb, design is a noun", Landscape Journal, 14, (2), (1995), 188-200.

doi:10.33948/JAP-KSU-33-2-5

مناهـج عـمارة البيئـة في المملكـة العربيـة السـعودية مـن منظـور الاتحـاد العالمـي لمعماريـي البيئـة

نواف رشيد الحجاج

استاذ مساعد

قسـم عـمارة البيئـة، كليـة العـمارة والتخطيـط، جامعـة الملـك عبدالعزيـز - ص. ب. ٨٠٢٠١ جـدة ٢١٥٨٩، المملكـة العربيـة السـعودية

nalhajaj@kau.edu.sa

قدم للنشر في ٧/ ١١/ ١٤٤١هـ؛ وقبل للنشر في ٢٠/ ١٢/ ١٤٤١هـ.

ملخص البحث. تبحث الدراسة الحالية مدى تطبيق منهجَي عمارة البيئة الحاليين لدرجة البكالوريوس في المملكة العربية السعودية، للمجالات الاثني عشر الأساسية والمرتبطة بتعليم تخصص عمارة البيئة، والمحددة من الاتحاد العالمي لمعماريي البيئة؛ وذلك لمعرفة الاختلافات والتركيز الرئيس للمنهجين. قامت الدراسة بتصنيف المواد الخاصة بكل منهج عمارة بيئة بناءً على تركيزها الأساس ومدى مطابقتها للمجالات الاثني عشر للاتحاد العالمي لمعماريي البيئة، وذلك من خلال الفحص الدقيق لمسميات المواد ومحتوياتها وأهدافها. استنتجت الدراسة أن كلا المنهجين حققا أعلى تطبيق في ثلاثة مجالات من أصل اثني عشر مجالاً، والتي اشتملت على: التصميم في عمارة البيئة، والنظريات والمنهجية، وكذلك العمليات الإنشائية في المواقع. وجدت الدراسة كذلك أن لدى منهجَي عمارة البيئة ضعفاً كبيراً في تغطية المجال الخاص بالسياسات العامة والأنظمة، وكذلك وجود تغطية غير متزنة للمجالات الاثني عشر في المواد الاختيارية. بالإضافة، وجدت الدراسة أن أحد هذين المنهجين قد خصص نسبة مرتفعة للساعات المعتمدة لمواد لا تتوافق مع المجالات الاثني عشر للاتحاد العالمي لعمارة البيئة. إن طريقة البحث المستخدمة في هذه الدراسة تقدم لمديري البرامج والباحثين في تخصص عمارة البيئة أو في أي مجال تعليمي آخر؛ طريقة بحث سهلة وفعالة لمراجعة المناهج وتقييمها، بناءً على أي معايير عالمية خاصة بالتعليم. كما توصي الدراسة بالبحث مستقبلاً في الحد الأدنى المطلوب من تغطية مجالات التعليم الاثني عشر للاتحاد العالمي لعمارة البيئة في مناهج هذا التخصص.

الكلمات المفتاحية: منهج، عمارة البيئة، المملكة العربية السعودية، الاتحاد العالمي لمعماريي البيئة، مجالات التعليم.