

# Analysis of the Built Environment Curricula a Step in Harmonizing the Professions

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**Abstract** *The professions of the built environment have evolved from a singular source of power of a planning, designing, and building to the extent of a transdisciplinary collaboration among stakeholders. There was no distinction in the practice of architecture and engineering in the Philippines. The Public Act No. 2985 enacted on February 23, 1921, known as the Engineering and Architecture Law created the separation of the Board for Engineers and Architecture, respectively. Republic Act 545 for Architecture and RA 544 for Civil Engineering regulated the practice of both professions. In 2004, RA 9266 or the Architecture law superseded RA 545 but the legality of the provisions of the IRR was questioned by the Philippine Institute of Civil Engineering. The issues on the responsibility of designing have not been resolved and the professions of the built environment have continuously grown. The professions of the built environment are the different branches of engineering, landscape architecture, interior design, and environmental planning. The paper aims to examine the curriculum of the architecture, civil engineering, and interior design, whether the students are prepared to work and collaborate with the practitioners in the built environment. Social cohesion was used in identifying issues on the responsibility of each profession. Harmonizing the curriculum and integrating subjects allowing the students to work together will provide a clearer demarcation of the professions and prepare them for their career choices.*

**Keyword:** *Architecture and Engineering Education, Integrated Curriculum, Built Environment, Social Cohesion, Harmonized Curriculum*

## 1. Introduction

The profession of the built environment has evolved from a singular source of power of a planning, designing, and building to a multidisciplinary and at a certain extent a transdisciplinary collaboration of stakeholders and shareholders. During the Spanish Colonization period there was no distinction in the practice of architecture and engineering not even with the creation of the school Escuela Practica y Artes Oficios de Manila which granted the title Maestro de Obras in 1890. In 1902, architects, engineers and surveyors founded the first professional organization, however, in 1911 the engineers withdrew and formed their own association. After 100 years of separating the architecture and engineering professions through the Public Act. No 2985 enacted February 23, 1921 (Engineers and Architect Law) the issues of encroachment on the responsibilities of the professions have not been addressed. In 2004, Republic Act No. 9266 known as An Act Providing for a more responsive and comprehensive regulation for the Registration, Licensing and Practice of Architecture, Repealing for The Purpose Republic Act No. 545, As Amended, Otherwise Known as "An Act To Regulate The Practice Of Architecture In The Philippines, and for other purposes." The act was known as "Architecture Law of 2004". However, the Philippine Institute of Civil Engineers (PICE) and legal counsel Engr./Atty. Leo Cleto Gamolo filed a case at the Regional Trial Court of Manila prohibiting the Department of Public Works and Highways then Secretary Hermogenes Ebdane and the building officials, district engineers from implementing two provisions of the law particularly Sections 302.3 and 302.4 which they believed deprived the civil engineers the right to prepare, sign and seal plans and specifications of building structures and infrastructures for the issuance of the building permits. To date, the case is pending for decision before the Supreme Court. The construction industry has produced beautiful edifices that continue to cater to the needs of the people despite the long legal battle of the professionals in the built environment. In the congressional hearing sponsored by Congressman Christopher V.P. De Venecia as the lead convenor of the Arts and Culture and Creative Industries Bloc (ACCIB) and the Chairman of the Special Committee of Creative Industry and Performing Arts which was participated in by the actors of the built environment particularly the architects, civil engineers, interior designers, landscape architects, environmental planners, representing their organization or as individuals and other stakeholders wherein during the consultative meeting there were several issues that were discussed including the seeming encroachment of the scope of works of these professionals. The awareness and understanding of the different professions that engage in design is blurred. While there are laws that govern the profession it is still very much subjective to individuals. The problem of acceptance might be rooted on how this professionals were taught in the university. The courses Bachelor of Science courses of Architecture, Interior Design, Landscape Architecture, Civil Engineering, Environmental Planning and other allied professions are governed and guided by a Commission on Higher Education Memorandum Order (CMO) particularly to the Policies, Standards and Guidelines (PSG) of these programs. The PSG are outputs of long consultation and deliberation of the Technical Panel of the specific programs. The paper aims to assess and analyze the existing curricula of the BS Architecture, BS Interior Design, and BS Civil Engineering with an end in view of identifying the subjects and time where the 3 programs can have integrated courses and/or activities that can provide them a better understanding of their professions and its allied course in the built environment.

## 2. Objective of the Study

The objective of the study is to find a harmonious ground to prepare the students for the real world engagements of the professional in the built environment through a balanced design of the curricula. Harmonizing the curriculum and integrating subjects that would allow the students to work together will provide a clearer demarcation of the professions.

It will describe the curriculum of the 4 programs based on the CMO-PSG of the courses in the study. The study will explore the possibilities of integrating the courses and will explain the phenomena on how it will be useful in the work place. The research will attempt to forecast phenomenon that can affect the education of the country specifically on the programs of the built environment. The ultimate purpose is to convince the authorities of higher education to design an integrated curricula.

## 3. Scope and Delimitation

The built environment constitutes several disciplines from science to social science and trades and crafts. The study will be limited to the 4 courses namely, BS Architecture, BS Civil Engineering, BS Environmental Planning and BS Interior Design, without prejudice of expanding the study.

## 4. Genesis of Architecture and Engineering

The etymology of architecture can be traced from the Greeks, *Architekton* which is comprised of two parts *archi* means to be the first, who commands and *teuton* meaning mason or builder. It evolved as *Arhitectus* in Latin and in the Middle of the French period. (Kostof, 2000)

it was known as *Architecte*. In 1560, the term *Architect* was used and accepted and was defined as a person who is skilled in the art of building, one who designs and plans the structure and supervised its construction. The genesis of the word engineer came from Old French *engineor* in the middle of the 14<sup>th</sup> century which means maker of war-engines. The addition of the term civil referred to the public works which was recorded in the 1600. In fact, until 1832, engineer means a “locomotive driver “. The distinction of civil engineers was introduced and accepted in the 19<sup>th</sup> century.

## 5. Professionalizing the Architecture and Engineering

The first school of architecture was established in 1648, the *Académie des Beaux-Arts* in Paris founded by Cardinal Mazarin. In 1863, it gained its independence and was renamed as *L'École des Beaux-Arts* and admitted its first batch of women enrollees in 1897. In 1707 the first engineering school was established by the *Czech Technical University*. Other accounts on the beginnings of civil engineering as a distinct and separate discipline can be traced in France in 1761 as *Bridge and Highways Corps* and eventually evolved as the *École Nationale des Ponts et Chaussées* (“National School of Bridges and Highways”) in 1747. In the United States of America, *Massachusetts Institute of Technology* pioneered the first architecture school in 1865 along with courses in civil engineering, mechanical, mining and geology and chemical engineering.

In the attempt to professionalize the architecture and engineering professions in the Philippines several laws were passed. The Public Act. No. 2985 enacted on February 23, 1921, *Engineers and Architect Law* created the separation of the Board for Engineers and Architecture, respectively. Republic Act 545 for Architecture and RA 544 for Civil Engineering regulated the practice of both professions. In 2004, the Architecture law superseded RA 545 but the legality of the IRR particularly Sections 302. 3 and 302.4 was questioned by the Philippine Institute of Civil Engineering to be declared null and void. The section in question pertains to the preparing, signing and sealing of plans to be solely the responsibility of the architect. The profession of Interior Design was regulated in February 23, 1998 through the Republic Act No. 8534 “An Act Regulating the Practice Of Interior Design In The Philippines”. The issues on the responsibility of designing have not been resolved and the professions of the built environment have grown and will continuously expand. To mention some of the professions of the built environment are the different branches of engineering, landscape architecture, interior design, and environmental planning.

## 6. Framework of the Built Environment

The genesis of the built environment stemmed from the needs of man to protect themselves from harm that may be inflicted by another person, animals or inclement weather. The shelter provided them security and stability from their needs, grew their wants and desires which was evident from the additional spaces they have incorporated in their abode. The evolution of the built environment is elucidated by Karakul 2011 process of the historic environment that has encapsulated the evolution from addressing the basic needs of man which is shelter to the different building typologies as man progresses and answers their needs and wants.

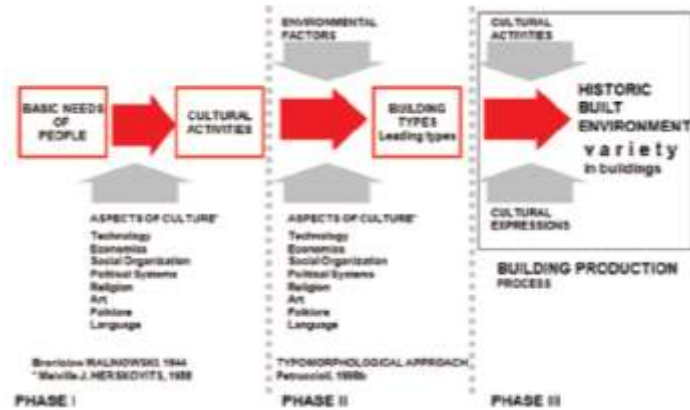


Figure 1: Formation Process of Historic Built Environments Source : Karakul 2011

Men using wood, sticks, stones, muds, reeds, and bricks build their own houses. As the building typology evolved, spaces became more complex and materials needed more processing and assembly is more intricate that warrants more people to plan, design and execute projects. The construction process from its conception to its completion can be best defined through the Tuckman's theory. Bruce Tuckman, a Psychological Researcher in 1965 developed the group development theory on performance identifying 4 stages namely forming, storming, norming, performing, and has expanded the process by adding two more stages which are adjourning and norming and re-norming (Kreher, 2011; Miller 2003) These stages provide a concrete visualization of the construction process from conceptualization to design documents and finally the construction. The structures in an area are collectively defined as the built environment. Figure 2: Construction Process, Milestones and People Involved in the Built Environment show the activities involved, significant development and people concerned. This is evident on the scale of people and diversity involved in the construction from professional, technical experts and skilled and unskilled workers.

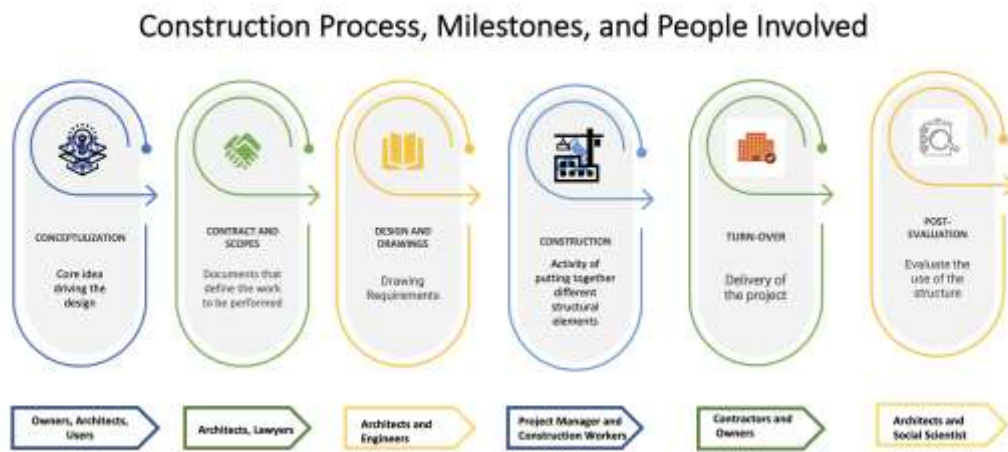


Figure 2: Construction Process, Milestones and People Involved in the Built Environment

### 7. Education in the Philippines for the Professions of the Built Environment

The Commission on Higher Education oversees the degree programs of the universities and colleges for both private and public institutions and grants a special order to those who completed the degree requirement. The creation of the commission was through Republic Act No. 7722, which mandated to set the minimum standards for programs and the institution of higher learning. Technical panel of the different disciplines craft and formulated the policies, standards, and guidelines (PSG) of the degrees offered in the institution. CHED grants autonomous status to institutions which display excellence in the field of teaching, research and extension. These institutions can develop innovation in their programs and advance courses even without PSG.

In 2017, most if not all the programs under CHED underwent curriculum revision. The subject of the research are the following programs, BS Architecture program under CMO 61 series 2017, BS Civil Engineering under CMO 92 s 2017, BS Environmental Planning CMO 60, S. 2017 and BS Interior Design under CMO 44 series 2017. The technical panel are given the liberty to formulate the PSG of the program however the general parts of a PSG are introduction, authority to operate, general provisions, program specifications, curriculum, required resources, compliance of HEIs, Transitory, Repealing and Effectivity Provisions.

The tertiary education of the built environment in the Philippines has remained to be compartmentalized. Unlike the medical education, part of the requirement before they are granted their respective degrees are engaged in an internship program. Their institutions facilitate their training with training hospitals. Although there are programs that include on-the-job training the preparation of the engagement with other professions is not apparent in the curriculum.

### 7.1. Paradigm Shift in Education

19<sup>th</sup> century education in the Philippines shadowed the model of the United States education. Teacher centered education was the focus on how learning is delivered. However after World War II there is a tremendous shift on the education system around the globe. From the teacher-centered to student centered, this is the core of the Outcomes-based Education (OBE) pioneered by William G. Spady (Spady, 1994). A strong paradigm shift that radically changed in the nucleus and the practice how the different disciplines are now taught. Although OBE started in the US in 1994, it was not until 2012 when CHED issued CMO 46 – Policy and Quality Assurance (QA) in Philippine Higher Education through an outcomes based and typology -based QA. This change has unprecedentedly demanded a higher level quality and a more responsive meaningful education process and system for the graduates to be globally competitive. To provide a clearer road map, Cohen et.al (2000) in their insights in research fundamentally seek to:

1. Discover remedies to new issues that were previously studied.
2. Elucidate present and ensuing directions
3. Underline the significant and results of varied linkages.
4. Recognize the changes of proficiency.

### 7.2. Transition from Disciplinary to Multi-Disciplinary and Trans-Disciplinary Education

Scholars during the classical period practiced more than one discipline (Hofmeeter, van der Liden 2018, Eckert,2016). The Romans, in their tomb stones engrave were the professions of the deceased. During the classical period of the Greeks and the Romans most scholars carried several titles and practices diverse disciplines and professions. The formation of disciplinary education coincides with the industrialization period. Disciplines are kinds of collectivities that include a large proportion of persons holding degrees with the same differentiating specialization name, which are organized in part into degree-granting units that in part give degree-granting positions and powers to persons holding these degrees; persons holding degrees of this particular specialized kind are employed in positions that give degree-granting powers to them, such that there is an actual exchange of students between different degree-granting institutions offering degrees in what is understood to be the same specialization (Turner, 2000, quoted by Chettiparamb, 2007)

The Four Classes of Interdisciplinary Engagement according to the Organization for Economic Co-operation and Development (OECD, 1972), were listed, to wit:

1. Multidisciplinary comparison of the different fields, sometimes without recognizable link between them, e.g. music + mathematics + history.
2. Pluridisciplinary contrast of different expertise, which are probably connected with each other, e.g. mathematics + physics, or French + Latin + Greek: “classical humanities” in France.
3. Interdisciplinary defines the interplay of varied authorities. This interconnection may be measured from plain transmission of ideas to the reciprocal fusion of organizing ideas, methodologies, procedures, epistemologies, terminologies, data towards the establishment of research and education in a reasonably wide scale. An interdisciplinary group is made up of individuals trained in different specialties with varying concepts, terms, methods and data formed by the same endeavor trying to resolve an issue with relentless intercommunication.
4. Transdisciplinary the formation of a habitual arrangement of principles for a group of disciplines.

The transition from disciplinary education to the myriads of discipline as discussed in the different scholarly written researcher has become more glaring to address the different challenges of society.

## 8. Social Cohesion Theory

The research paper used the social cohesion theory to analyze the curriculum of the 3 programs in the built environment. Social cohesion is the act where people are integrated and bonded to address a common concern, vision or mission in spite of their diversity (Larsen 2013, UNDP). Meoka and Busari, 2017, Green et.al 2009 enumerated integral features of social cohesion such as the sense of belonging that cultivates respect of law, inclusivism, and identity. The ability to respect diversity and reverence to the opinion of others. There is a sense of cooperation for a common good. United Nations Development Plan crafted the Social Cohesion Framework in 2015 for a stronger community. The framework identified four areas to create cohesiveness in the built environment through identifying the focus of the curriculum of the 3 programs.

- 1) Social Relationships – This pertains to the involvement of the stakeholder and shareholders in the conceptualization, development, and construction of a project.

- 2) Connectedness – Refers to the ability to link and harmoniously work together and contribute their skills, knowledge and expertise to achieve a common goal.
- 3) Orientation towards the common good – The ultimate goal of the construction team is to be able to deliver a quality structure on an agreed budget and time.
- 4) Equality- Indicates the opportunity to be heard, recognized and contribute in the development of the project.

## 8. Analysis

Architecture and Civil Engineering are the two programs that were professionalized in 1921 and in 1950, Republic Acts 544 and 545 regulating the Civil Engineering and Architecture, respectively were enacted. The examinations were in the aegis of the Civil Service Commission until the creation of the Professional Regulation Commission. The Professional Regulation Commission came to fore as a national regulatory body by virtue of Presidential Decree (P.D.) No. 223 dated June 22, 1973, signed into law by President Ferdinand E. Marcos. It was known before as the Office of the Boards of Examiners created by Republic Act No. 546 on June 17, 1950, under the Civil Service Commission (CSC). The PRC officially functioned on January 4, 1974 upon the assumption into office of the appointed Commissioners and Associate Commissioners

The Interior Design was professionalized through Republic Act No. 8534 on February 23, 1998 “An Act Regulating the Practice of Interior Design in the Philippines”. The act included provision to be given the license as stipulated in Article V Practice of Interior Design Section 26. *Registration Without Examination.* – Any of the following persons may register as interior designer without examination:

- (a) All interior designers registered under the Specialty Board of Interior Design;
- (b) All interior designers who have taken at least sixty (60) units of interior design for the last ten (10) years prior to the effectivity of this law and who can show proof of practice;
- (c) All registered and duly licensed architects who had been practicing interior design for ten (10) years prior to the effectivity of this law and who can show proof of practice. However the first board exam was given in 1993 by the Specialty Board of Interior Design under the Board of Architecture. However, these provisions were superseded by Republic Act 10350 enacted in July 23, 2012. The grandfathers clause was repealed by RA 10350 and only graduates of BS Interior Design in a CHED recognized school can take the exam.

The practice of Environmental Planning was under the scope of Architecture until the enactment of Republic Act 10587 on May 27, 2013 “An Act Regulating The Practice Of Environmental Planning, Repealing For The Purpose Presidential Decree Numbered One Thousand Three Hundred And Eight, Entitled "Law Regulating The Environmental Planning Profession In The Philippines, and for other purposes.” Professionals practicing the profession were allowed to register without the examination under the grandfathers clause. However, since there are no programs on Environmental Planning the law provided the following conditions for the examinees:

A holder of any of the following degrees from schools, colleges or universities duly recognized and accredited by the CHED:

1. A graduate in environmental planning, urban/city and regional planning, or town and country planning or its equivalent;
2. A Post-Graduate Diploma in Environmental Planning, city and regional planning or its equivalent, and with at least one (1) year of on-the-job training as required herein;
3. A Bachelor’s Degree in Environmental Planning, city planning or urban and regional planning, or town and country planning, or its equivalent, and with two (2) years of on-the-job training as required herein;
4. A masters or doctorate degree in either architecture, engineering, ecology, economics, geography, geology, public administration, business administration, sociology, social science, law, environmental science, environmental management, development management, natural resources planning and development, and related disciplines acceptable to the Board, and with three (3) years of on-the-job training as required herein: *Provided*, That a person falling under this paragraph shall be allowed to take the licensure examination only within the next five (5) years from the effectivity of this Act;
5. A bachelor’s degree in architecture, engineering, economics, public administration, law, social work and community development or sociology and other related disciplines acceptable to the Board and with five (5) years of on-the-job training as required herein: *Provided*, That a person falling under this paragraph shall be allowed to take the licensure examination only within the next five (5) years from the effectivity of this Act; and
6. Incumbent holders of planning positions in the national, regional or local government offices or agencies including government-owned and controlled corporations and have been engaged in development planning functions acceptable to the Board: *Provided*, That they are holders of professional civil service eligibility and they have undergone at least eighty (80) hours of in-service training or distance learning in developmental planning from a government agency, school or institution recognized by proper authorities: *Provided, further*, That a person falling under this paragraph may be allowed to take the licensure examination only within the next five (5) years after the effectivity of this Act. However, they allowed the provision until 2019 since the CMO of the program of BS Environmental Planning was signed in 2017.

In the early 19<sup>th</sup> century the delineation of the practice of architecture and civil engineering was not defined until 1950 and the professions of Interior Design and Environmental Planning were extracted from the architecture profession.

For purposes of clarity on the similarities and differences of the 3 programs under study Table 1. Checklist Matrix of the Policies, Standards and Guidelines of the programs BS Architecture, BS Civil Engineering, BS Environmental Planning, and BS Interior Design.

Table 1 Checklist Matrix of the Policies, Standards and Guidelines of the programs under study.

Program	BS Arch	BS Interior Design	BS Envi Planning	BS Civil Engineering
CMO No.	CMO 61, S. 2017	CMO 44, S. 2017	CMO 60, S. 2017	CMO 92, S. 2017
Program Objective	✓	✓	✓	✓
Number of Years	5	4	4+1	4
Specific Profession/Career /Occupation for Graduates	✓	✓	✓	
Administration Dean -Qualification	✓	✓		✓
Dean Teaching Load	✓			
Duties	✓	✓		✓
Chairperson Dept.Head or Asso Dean	✓	✓	✓	✓
Teaching Load	✓			✓
Admin Support	✓			
Faculty Gen Qualification	✓	✓	✓	✓
Faculty load – Full time	✓	✓	✓	✓
Partime	✓	✓	✓	✓
Duties	✓	✓		✓
Library	<b>CMO S 2017 Minimum Requirements for libraries of Higher Institutions Common to All Programs</b>			
Studio/Laboratory and Physical Facilities	✓	✓	✓	✓
Instructional Space	✓			✓
Laboratory Instruction	✓			✓
Office Space	✓			✓
Audio Visual Facilities	✓			✓
Students Services	✓			✓
Guidance	✓			✓
On the Job Training Program	✓			
Co-curricular Activities	✓			
Community Service	✓			
Publications	✓			✓
Student Records	✓			✓
Academic Standards	✓			✓
Requirements for New Program or for Transforming of Existing programs to OBE Framework				
Reference: <b>Handbook on Typology, Outcomes-based Education, and Institutional Sustainability Assessment</b> <a href="https://docs.google.com/viewer?a=v&amp;pid=sites&amp;srcid=ZGVmYXVsdGRvbWFpbXjYXJhZ2Fkb3dubG9hZHN8Z3g6NWNmMTFiYzE2MzFiZGnkMQ">https://docs.google.com/viewer?a=v&amp;pid=sites&amp;srcid=ZGVmYXVsdGRvbWFpbXjYXJhZ2Fkb3dubG9hZHN8Z3g6NWNmMTFiYzE2MzFiZGnkMQ</a>				
No. of Pages CMO and Attachments	34/56	20/41	15/83	23/186

Table 1 shows that not all items in the CMO are provided for by the programs. The areas listed in the BS Architecture program are not apparent in the 3 programs under study. While the CMO of architecture has explicitly discussed the on-the job training. It is not included in the minimum requirements as compared to the civil engineering curriculum.



Table 2. Comparative matrix on the curriculum of the 3 programs; BS Architecture, BS Civil Engineering, BS Environmental Planning and BS Interior Design provide a backbone on the analysis to harmonize these programs based on their respective CMOs.

Table 2 Comparative Matrix of the 4 Programs

Program	BS ARCHITECTURE	BS INTERIOR DESIGN	BS ENVIRONMENTAL PLANNING	BS CIVIL ENGINEERING
Total Units	205	133	168	171
Total years	5	4	4+1 (MS)	4
General Education Courses	32	45	45	24
Physical Education	0	0	0	0
NSRF	0	0	0	0
Abac Courses	15			6
Professional Courses	111	111	30	49

BS ARCHITECTURE	BS INTERIOR DESIGN	BS ENVIRONMENTAL PLANNING	BS CIVIL ENGINEERING
Architectural Design Courses 41 units	Interior Design Courses 68 units	Research Methods and Thesis Courses 16 units	Civil Engineering Research, Matrix Analysis of Structures 4 units
Architectural Interiors 3 units	Furniture design and construction competency course 6 units		
Graphic and Drafting Courses 16 units	Graphic and Drafting Courses 18 units	CAD and GIS Courses 11 units	Engineering Drawing, Computer Fundamentals and CAD 1 unit
Building Technology 18 units	Materials of design and decoration competency course 18 units		Civil Engineering Technology, Orientation 2 units Principles in Reinforced Concrete, Steel Design 7 units Building Systems Design 3 units Quantity Surveying 2 Construction Materials and Testing 3 units Statics, Dynamics of Rigid Bodies, Mechanics of Deformable Bodies 9 units
Statics of Rigid Bodies 3 units			
Strength of Materials 3 units			
Surveying 3 units		Surveying/Mapping 3 units	Foundation on Surveying 4 units Route Surveying and Geomatics 2 units Geotechnical engineering 4 units

BS ARCHITECTURE	BS INTERIOR DESIGN	BS ENVIRONMENTAL PLANNING	BS CIVIL ENGINEERING
Theory of Structures 3 units			Theory of Structures 3 units
Building Utilities 8 units	Interior Construction and Utilities competency 12 units		Engineering Utilities 6 units Hydraulics 3 units
Theory and History of Architecture 12 units	History of arts and interior design competency course 16 units	History of Planning 3 units	
Planning 8 units	Color Theory II 2 units	Introduction to National Policy 3 units	
Professional Practice, Business Management, and Ethics - 20 units	Professional practice, ethics, and business management 12 units	Planning Principles and Processes 3 units Technical Writing 3 units Land Use and Transportation Planning 6 units Infrastructure Planning 4 units Local and International Planning 3 units Urban Design 3 units Plan Opportunities/Specification 3 units Planning Implementation 3 units Physical Planning and Building Regulation 3 units	Principles of Transportation Engineering 3 units Highway and Railroad Eng. 3 units CE Law, Ethics, and Contracts 2 units
Practicum 8 units	Practicum 4 units	Planning Office Operation 3 units	On-the-job Training 4 units
Topical Design 2 units		Applied Meteorology and Climate Change 3 units Environmental Investigation 8 units Disaster Risk Reduction and Management 3 units Housing and Human Settlement 3 units	
Housing and Human Settlements Planning 2 units		Economic, Financial, Social Planning, and Development 10 units	Engineering Management, Engineering Economics 5 units
Construction Management 3 units		Project Development and Management 3 units	Construction Methods and Project Management 3 units
Sustainable Architecture and Research 3 units			Specification 18 units
Comprehensive Course 8 units			

Based on the matrix presented above only the 5-year program of BS Architecture has the most number of units with 205. BS Interior Design has 133 units while BS Environmental Planning and BS Civil Engineering have 168 and 171 respectively. The BS/MS Environmental Planning is a 4+1 program the extra one year will provide the graduates a masters degree if they elect to continue the program. However, they cannot take the licensure exam for Environmental Planning if they will not complete the masters degree.

The CMO of BS Architecture and BS Civil Engineering has presented the Summary of Curriculum using the same classification while the BS Interior Design has more simplified presentation. The CMO of the BS Environmental Planning did not provide a summary of the curriculum instead presented a sample of the subjects to be taken by the students per year level and per semester.

### 9. Conclusion and Suggestions

The cohesion of the 4 programs cannot be denied that in order to complete a project at least 2 of the programs have to collaborate. For complex projects all four degrees need to act as a team and cooperate with each other. The cohesion of the programs can be achieved through a multi-disciplinary and trans-disciplinary education. There is clear-cut evidence through several research that the world has shifted the education paradigm to a disciplinary teaching and learning to a multidisciplinary and transdisciplinary instruction. However, the CMO of the programs are not cohesive in form and substance.

There is a need to re-craft the curriculum on a holistic perspective rather than a compartmentalized development where the Technical Panel conducts consultative meetings by program. Touch points are programs and activities where the students of the

courses can work together. Based on the curriculum of the 4 programs it is very difficult to identify the touchpoints where students can have curricular and co-curricular activities that would involve the programs.

Social cohesion in the built environment can be achieved using the following elements:

1. Social relationships- the architect is almost always taking the lead in construction of structures. However, in the scale of community, urban and regional planning, the Environmental Planners provide the master development plans. The civil engineers provide the structural plan for the buildings but take the lead in the development of roads. The design of the bridges in the Philippines are usually done by the civil engineers however in other countries the architects conceptualized the bridges' design since they are recognized on the importance of the aesthetics of the bridges because they serve as the gateway to an area.
2. Connectedness- the professions of the built environment are closely linked to be able to achieve a well-planned, aesthetically pleasing, and structurally stable structure in a properly delineated area.
3. Orientations- the emphasis on the responsibilities and point of engagement of the professions should be introduced in the tertiary level through a well-planned and coordinated curriculum
4. Equity – it can be achieved among the professions of the built environment if there is delineation of their respective responsibilities which are set clearly even while the students are still in the schools and universities.

It is humbly submitted that for the professionals to work with great efficiency and effectivity they should be trained to work together in the universities. This can be achieved through a unified transdisciplinary curriculum.

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