Programme Specification

A. Basic Information:	
Programme Title	**Architectural Engineering**
Parent Department	**Architectural Engineering Department**
Programme Nature	**Single:** √ **Double:** ☐ **Multiple:** ☐
Coordinator	**Prof. Dr.Mahmoud Zaki**
External Evaluator(s)	**Prof. Dr.**
Review Date	\ \2017
Date of Approval	

B. Professional Information:

1. Programme Aims

The aims of this programme are to:

This Programme aims at qualifying the student to handle all aspects related to the **Architectural Engineering** considering many theoretical and practical points in order to:

1) Enhance the architectural engineering thinking and support the decision making
2) Acquire the basic science that is related to architectural engineering, urban issues, planning and computer-aided design.
3) Encourage producing an architectural design coinciding with moral and social aspects with other architectural influencing issues like style, historic background, and contemporary trends,
4) Choosing of the suitable analytic methodology for maintaining appropriate relations between building elements and also gaining environmental benefits from taking advantage of the natural and geographic characteristics of the site.
5) Recognize the meaning of the architectural role as the leader of design project to create a sustainable environment.
6) Presentation of an accepted picturesque value of the building, internally and externally.
7) Enhance the creative thinking to and investigative skills, visualize conceptualize skills to design robust architectural

2. Programme Intended Learning outcomes

A. Knowledge and understanding:

By the end of this programme students should be able to:

A1. Outline the principles, theories and applications of mathematics and Sciences.

A2. Name the benefits and applications of communications technology

A3. Obtain the systems of translating design knowledge, generative design knowledge, control systems or design reasoning techniques.

A4. Describe of various materials in architectural and structural documents, and testing of different material

A5. Outline the principles of architectural design and its values aspects , architectural & engineering drawing, design process, contemporary approaches in architecture and the different approaches in scientific methods and design methodology in architecture.

A6. List the steps of architectural engineering thinking for decision making, problem solving and data collection and analysis regarding moral and humanity requirements

A7. Explain the Egyptian code and standards for behaviour of materials and quality control.

A8. Define the principles of economic management and ethic considerations of business, projects and feasibility studies, building acquisition and operational costs.

A9. Write and read technical expressions, statements and technical reports in the field of engineering and architectural design

A10. Mention the building technologies, construction systems, Masonry construction, Sanitary Installations in buildings, Types of Foundations and working details.

A11. List the main stages of the engineering-science development and its benefits for society environment

A12. List the principles of human architectural approaches, the interaction between human behaviour, built environment and natural environment.

A13. Enumerate the various necessary theoretical backgrounds relevant to the design process and the characteristics of the various architectural styles.

A14. Outline the principles of various necessary theoretical backgrounds concerning the application of   computer science and its applications architectural field, theory of modelling in architectural, multi-dimensional visualization and the various aspects of the CAD packages.

A15. Identify the processes of spatial change in the built and natural environment to enhance and develop the environmental design and planning skills

A16. List the theories, histories and legislations of planning, urban planning, urban design, an interdisciplinary approach to landscape design and ruler development.

A17. Describe of various diminutions of housing problem, policies, and practise that could be carried out to solve this problem

A18. Identify the principles of sustainable design, climatic consideration, energy consumption, efficiency in building and their impacts on the environment.

B. Intellectual skills:

By the end of this programme students should be able to:

B1.   Differentiate the stages of engineering science development to think in a creative way for suitable choices and decisions.

B2.   Develop computer-based methods for analyzing problems and appropriately use of (ICT) tools to a variety of engineering problems.

B3.   Analyze the chemical and physical features and pollution which affecting on the built environment.

B4. Conclude suitable decisions concerning the feasibility studies of projects and building economics.

B5. Integrate appropriate mathematical and mechanical methods in problem solving and design.

B6. Analyse the performance, characteristics and production methods of built components especially from the environmental point of view.

B7. Integrate different forms of knowledge, ideas from other disciplines and manage information retrieval to create solutions for architectural and planning projects.

B8. Develop three –dimensional and engage images of places & times with creative thinking skills which are essential for architectural , planning and urban design .

B9. Compare performance of design alternatives and manage the broad constituency of interests to reach optimum design and planning solutions .

B10. Integrate the relationship of structure , construction elements and building materials into design process to deepen thoughts for resolving structural and constructional problems.

B11. Integrate fulfilling functional, social, technical, spatial and civilization needs and understanding style, value of beauty in addition to integrate community design parameters into design projects.

B12. Develop the duties and Responsibilities towards building laws, and formulate opinions appropriately which affecting architecture profession & practice.

C. Professional and practical skills:

At the end of this programme students should be able to:

C1. Apply mathematical, computational and dynamics formulas and theories to solve architectural engineering problems, modelling and design with its fundamental theories and design vocabularies.

C2. Implement knowledge, understanding, conceptions and definitions to evaluate and improve design.

C3. Prepare architectural design as a creative process for resolving spatial issues on different design levels.

C4. Solve different application problems related to architectural generation which considered aesthetics in design and human& social needs.

C5. Apply related activities and skills in workshops and the field training such as a complete collection of working drawings which are applicable for real execution on a given projects in addition to Analyse and conclude on experimental results

C6. Classify& choose the recent communications techniques and an appropriate range of media used in developing required computer programmes related with urban , architectural design and planning projects

C7. Apply safety consideration and recognize risks for safe operation

C8. Apply the project management methods and skills in construction & architectural design and execution problem solving , within the framework of potentials and resources and limitations of time and cost.

C9.   Apply the professional responsibility for the architect , the important building , laws and follow codes and standards according to the Egyptian code to achieve quality assurance and prepare technical reports .

C10.   Design an integrated design project to combine the collective outputs of the previous architectural and urban studies in developing innovative and appropriate solutions of architectural and urban problems.

C11.   Apply the local and international trails of upgrading urban environment as a socio-economic urban approach to solve the problems of deterioration zones in developing country

C12.   Use the student's background of the realms and scope of humanities, social and cultural studies with emphasis on the relationship between socio-cultural contexts and architecture, in addition to show theory of behaviour setting and theory of participation

D. General and transferable skills:

By the end of this programme students should be able to:

D1.   Collect suitable data about different topics related to architectural.

D2.   Cooperate and work in a teamwork under different stresses

D3.   Build their personality and communication Skills needed to present and demonstrate architectural works.

D4.   Communicate with correct language oral and written and increase the ability of oral presentations and developing the cogency Ability.

D5.   Read manuals, books and literatures correctly with critic view.

D6.   Increase the ability of student at Information Technology area to show suitable IT capabilities.

D7.   Get high self-confidence for leadership and motivation capabilities.

D8.   Magnifying at handling different duties and tasks within the required time efficiently with the least possible resources

D9.   Be qualified for self and continuous learning

D10.   Be knowledgeable in the discipline, prepared for the future, and competitive in a global society

D11.   Be trained for practical requirements help

3. Programme Academic standards

3.A National Academic Standards (NARS):

National Academic Reference Standards (NARS)

3.B External references standards (Benchmarks):

National Academic Reference Standards (NARS)

3.C Comparison of provision to references standards:

National Academic Reference Standards (NARS)

Actual Standards	Reference Standards National Academic Reference Standards (NARS)
Knowledge and Understanding	
Graduates from architecture engineering should be able to:	The graduates of the engineering programs should be able to demonstrate the knowledge and understanding of:
a1	a) Concepts and theories of mathematics and sciences, appropriate to the discipline.
a2	b) Basics of information and communication technology (ICT)
a4	c) Characteristics of engineering materials related to the discipline.
a3 and a5	d) Principles of design including elements design, process and/or a system related to specific disciplines.
a6	e) Methodologies of solving engineering problems, data collection and interpretation
a7	f) Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
a8	g) Business and management principles relevant to engineering.
a2, a3,a10, a11 and a14	h) Current engineering technologies as related to disciplines. l) Contemporary engineering topics.
a6, a8,a11 and a12	i) Topics related to humanitarian interests and moral issues. k) Professional ethics and impacts of engineering solutions on society and environment
a9 and a2	j) Technical language and report writing
a5	a) Principles of architectural design, and the preparation and presentations of design projects in a variety of contexts, scales, types and degree of complexity.
a10, a7	b) principles of building technologies, structure & construction methods, technical installations, properties of materials, and the way they may influence design decision.
a10, a7and a8	c) Fundamentals of building acquisition, operational costs, and of preparing construction documents and specifications of materials, components, and systems appropriate to the building.
a16	d) Theories and legislations of urban and regional planning.
a12,a15 and a16	e) The processes of spatial change in built and natural environment; patterns and problems of cities; and positive & negative impacts of urbanization.
a12,a16 and a19	f) The significance of urban spaces and interaction between human behaviour, built environment and natural environment.
a13, 14 and a16	g) Theories and histories of architecture, planning, urban design, and other related disciplines.
a14	h) Physical modelling, multi-dimensional visualization, multimedia applications, and computer-aided design.
a10 and a8	i) The role of architecture profession relative to the construction industry and the overlapping interests of organizations representing the built environment.

a16 and a17	j) Various dimensions of housing problem and the range of approaches, policies, and practices that could be carried out to solve this problem.
a12, a15 and a18	k) Principles of sustainable design, climatic considerations, and energy consumption and efficiency in building and their impacts on the environment.
Intellectual Skills	
b2 and b5	a) Select appropriate mathematical and computer-based methods for modelling and analysing problems
b1	b) Select appropriate solutions for engineering problems based on analytical thinking.
	c) Think in a creative and innovative way in problem solving and design.
b7	d) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
b6	e) Assess and evaluate the characteristics and performance of components, systems and processes.
b2	f) Investigate the failure of components, systems, and processes.
b1,b5 and b9	g) Solve engineering problems, often on the basis of limited and possibly contradicting information.
b2	h) Select and appraise appropriate ICT tools to a variety of engineering problems.
b3, b4	i) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
b4	j) Incorporate economic, societal, environmental dimensions and risk management in design.
b6	k) Analyze results of numerical models and assess their limitations.
b2	l) Create systematic and methodic approaches when dealing with new and advancing technology
b1, b2, b3, b4 and b5	a) Integrate different forms of knowledge, ideas from other disciplines, and manage information retrieval to create new solutions.
b8	b) Think three-dimensionally and engage images of places & time with innovation and creativity in the exploration of design.
b9	c) |Predict possible consequences, by- product and assess expected performance of design alternatives.
b9	d) Reconcile conflicting objectives and manage the broad constituency of interests to reach optimum solutions.
b10	e) Integrate relationship of structure, building materials, and construction elements in to design process.
b11	
	f) Integrate community design parameters in to design projects.
b11,b12	g) Appraise the spatial, aesthetic, technical and social qualities of design within the scope and scale of wider environment.
b9,b11	h) Discuss, search and formulate informed opinions appropriate to specific context and circumstances affecting architecture profession & practice.
	i) Analyse the range of patterns and traditions that have shaped and sustained cultures and the way that they can inform design process.
Professional and Practical Skills	
c1	a) Apply knowledge of mathematics, science, information technology, design,

	business context and engineering practice integrally to solve engineering problems.
c2	
	b) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
c3	c) Create and/or re-design a process, component or system, and carry out specialized engineering designs.
c4	
	d) Practice the neatness and aesthetics in design and approach.
c5	
	e) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyse and interpret results.
c6	
	f) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
c1	
	g) Apply numerical modelling methods to engineering problems.
c7	
	h) Apply safe systems at work and observe the appropriate steps to manage risks.
c8	
	i) Demonstrate basic organizational and project management skills.
c9	
	j) Apply quality assurance procedures and follow codes and standards.
c4	
	k) Exchange knowledge and skills with engineering community and industry.
c9	
	l) Prepare and present technical reports.
c6	
	a) Produce and present architecture, urban design, and planning projects using appropriate range of media and design-based software.
c5	
	b) Produce professional workshop and technical drawing using traditional drawing and computer-aided drawings techniques.
c5	
	c) Use appropriate construction techniques and materials to specify and implement different designs;
c8	
	d) Participate professional competence in developing construction processes.
c11	
	e) Demonstrate professional competence in developing innovative and appropriate solutions of architectural and urban problems.
c3	f) Display imagination and creativity.
c10	g) Respect all alternative solutions; change in original plan of the project, differences in style, culture, experience and treat others with respect.
c12	h) Provide leadership and education to client particularly with reference to sustainable design principles.
c12	i) Respond effectively to broad constituency of interests with consideration of social and ethical concerns.
c4	j) Contribute positively to aesthetic, architecture and urban identity, and cultural life of the community.
General and Transferable Skills	
d1 and d2	a) Collaborate effectively within multidisciplinary team b) Work in stressful environment and within constraints
d3	c) Communicate effectively
d6	d) Demonstrate efficient IT capabilities
d4,d7	e) Lead and motivate individuals

d8	f) Effectively manage tasks, time, and resources
d1 and d9,d10	g) Search for information and engage in life-long self learning discipline
d11	h) Acquire entrepreneurial skills
d5	i) Refer to relevant literatures

4. Curriculum Structure and contents:

4.A   Programme duration :   **10** semesters **(5 years)**

4.B   Programme structure:

4.B.1   Number of contact hours per week:

Level – 1	First term:	Lectures	17	Lab/Tot.	13	Total	30
	Second term:	Lectures	17	Lab/Tot.	13	Total	30
Level – 2	First term:	Lectures	20	Lab/Tot.	10	Total	30
	Second term:	Lectures	17	Lab/Tot.	13	Total	30
Level – 3	First term:	Lectures	18	Lab/Tot.	12	Total	30
	Second term:	Lectures	17	Lab/Tot.	13	Total	30
Level – 4	First term:	Lectures	17	Lab/Tot.	13	Total	30
	Second term:	Lectures	18	Lab/Tot.	12	Total	30
Level – 5	First term:	Lectures	18	Lab/Tot.	12	Total	30
	Second term:	Lectures	14	Lab/Tot.	16	Total	30
Overall Contact hours		Lectures	173	Lab/Tot.	127	Total	300

4.B.2   Number of contact hours   Compulsory 288   Elective 12   Optional None

4.B.3   Number of contact hours of basic sciences courses: 68.   22.7%

4.B.4   Number of contact hours of courses of social sciences and humanities: 8   2.6%

4.B.5   Number of credit hours of specialized courses: 216   72%

4.B.6   Number of credit hours of other courses: 8   2.6%

4.B.7   Practical/field training (Summer training)   4*2 weeks   Two field training after 2nd and 3rd years

4.B.8   Programme levels (in credit hours system):   Not applicable

5. Courses contributing to the programme

Level One (Preparatory Year/General Engineering)

Level 1	Semester 1	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
PME0101	Compulsory	Engineering Mathematics (1) a	4	2	6	
PME0102	Compulsory	Engineering Physics (1) a	4	2	6	
PME0003	Compulsory	Engineering Mechanics	2	2	4	
MPD0001	Compulsory	Engineering Drawing and Projection	2	3	5	
PME0104	Compulsory	Engineering Chemistry	3	2	5	
CCE0101	Compulsory	Computer Technology	2	2	4	

First Term (Supplementary and Elective courses): **none**

Level 1	Semester 2	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
PME0201	Compulsory	Engineering Mathematics (1) b	4	2	6	
PME0202	Compulsory	Engineering Physics (1) b	4	3	7	
PME0003	Compulsory	Engineering Mechanics	2	2	4	
MPD0001	Compulsory	Engineering Drawing and Projection	1	4	5	
MPD0202	Compulsory	Production Engineering	2	2	4	
***02H1	Compulsory	Technical English	2		2	
***02H2		History of Engineering and Technology	2		2	

Second Term (Supplementary and Elective courses): **none**

Level Two (Architectural Engineering: First Year)

Level 2	Semester 1	Course Title	Lec.	Prac.	Exer.	Total Hours
	Obligatory:					
ARE1101	Compulsory	Architecture Design (1) a	2	6	8	
ARE1102	Compulsory	Building Construction& Materials(1) a	2	3	5	
ARE1103	Compulsory	History& theory of architecture (1) a	3	1	4	
ARE1104	Compulsory	Shades and Shadows	2	3	5	
EEC1101	Compulsory	Computer in architecture (1)	2	2	4	
CSE1151	Compulsory	Theory of Structure	2	2	4	

First Term (Supplementary and Elective courses): **none**

Level 2	Semester 2	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
ARE1201	Compulsory	Architecture Design (1) b	2	6	8	
ARE1202	Compulsory	Building Construction& Materials(1) b	2	3	5	
ARE1203	Compulsory	History& theory of architecture (1) b	3	1	4	
ARE1204	Compulsory	Visual Training	1	4	5	
ARE1205	Compulsory	Surveying	2	2	4	
CSE1252	Compulsory	Properties & Strength of Materials	2	2	4	

Second Term (Supplementary and Elective courses): **none**

Level Three (Architectural Engineering: Second Year)

Level 3	Semester 1	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
ARE2107	Compulsory	Architecture Design (2) a	3	2	5	
ARE2108	Compulsory	Building Construction& Materials(2) a	3	2	5	
ARE2109	Compulsory	History& theory of architecture (2) a	3	3	6	
ARE2110	Compulsory	History& theory of Planning	4	2	6	
ARE2111	Compulsory	Environmental Control	3	1	4	
CSE2153	Compulsory	Concrete & Steel Construction	3	1	4	

First Term (Supplementary and Elective courses): **none**

Level 3	Semester 2	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
CSE 2204	Compulsory	Architecture Design (2) b	2	6	8	
CSE 2205	Compulsory	Building Construction& Materials(2) b	2	4	6	
CPW 2202	Compulsory	History& theory of architecture (2) b	3	1	4	
CSE 2207	Compulsory	Computer in Architecture (2)	2	2	4	
CSE 2208	Compulsory	Landscape	3	1	4	
CIH 2204	Compulsory	Sanitary Installations	3	1	4	

Second Term (Supplementary and Elective courses): **none**

Level Four (Architectural Engineering: Third Year)

Level 4	Semester 1	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
ARE3115	Compulsory	Architecture Design (3) a	2	6	8	
ARE3116	Compulsory	Working Drawings& Construction Methods a	2	4	6	
ARE3117	Compulsory	History & theories of Architecture (3)	3	1	4	
ARE3118	Compulsory	Urban Planning	3	2	5	
ARE3119	Compulsory	Development of Rural Communities	3	1	4	
ARE3120	Compulsory	Scientific Methods & Operation Research	2	1	3	

First Term (Supplementary and Elective courses): **none**

Level 4	Semester 2	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
ARE3215	Compulsory	Architecture Design (3) b	2	6	8	
ARE3216	Compulsory	Working Drawings& Construction Methods	2	4	6	
ARE3221	Compulsory	Urban Design (1)	3	2	5	
ARE3222	Compulsory	Housing (1)	3	1	4	
ARE3223	Compulsory	Technical Installations	3	1	4	
CSE3254	Compulsory	Foundation	2	1	3	

Second Term (Supplementary and Elective courses): **none**

Level Five (Architectural Engineering: Forth Year)

Level 5	Semester 1	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
ARE4124	Compulsory	Architecture Design (4)	2	6	8	
ARE4125	Compulsory	Working Drawings, Quantities & Specifications	2	4	6	
ARE4126	Compulsory	History & theories of Architecture (4)	3	1	4	
ARE4127	Compulsory	City Planning	2	2	4	
ARE4128	Compulsory	Urban Design (2)	2	2	4	
ARE4129	Compulsory	Housing (2)	3	1	4	

First Term (Supplementary and Elective courses): **none**

Level 5	Semester 2	Course Title	Lec.	Prac.	Exer.	Total Hours
Code	Obligatory:					
ARE4230	Compulsory	Project Management & Economic Feasibility Studies	3	-	3	5
ARE4231	Compulsory	Building Laws and Legislation	1	1	2	5
ARE4245	Compulsory	Graduation Project	4	12	16	8
ARE4234	Elective	Elective (1) method of upgrading & conservation	2	1	3	4
ARE4239	Elective	Elective (2) environmental planning and design	3	0	3	4
ARE4243	Elective	Elective (3) thinking trends in contemporary architecture	3	0	3	4

	ARE4232	Renovation and Urban Upgrading
Elective Course (1)	ARE4233	Environmental and Urban Conservation
	ARE4234	**Method of Upgrading and Conservation**
	ARE4236	Building Technology & Construction Systems
Elective Course (2)	ARE4237	Building Economics
	ARE4238	**Computer in Architecture**
	ARE4240	Architecture Criticism
	ARE4241	Architecture, Civilization and Heritage
	ARE4242	**Architecture and Human Studies Research**
	ARE4243	**Thinking Trends in Contemporary Architecture**
	ARE4244	**Interior Architecture**

6. Programme admission requirements

Successively pass the preparatory year according to the roles of the faculty

7. Regulations for progression and programme completion

Preparatory – to fourth year

- Successive grades in each year (maximum failure in 2 courses+2 humanity courses)

- Failure courses must be passed in the following year

- Successive grade in the "Graduation Project" in final (fourth) year as a graduation constraint

- Failure courses after the fourth year can be examined in the September reset exam; else, the student has to examine these courses in the following year

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8. Methods of intended learning outcomes assessment

Assessment Method	ILOs assessed
Written Examination	a-Knowledge and Understanding b- Intellectual Skills c- Professional and Practical Skills
Oral Assessment	a-Knowledge and Understanding b- Intellectual Skills c- Professional and Practical Skills d- General and Transferable Skills
Practical Examination	Professional and Practical Skills d- General and Transferable Skills
Semester work	a-Knowledge and Understanding b- Intellectual Skills c- Professional and Practical Skills d- General and Transferable Skills

9. Evaluation of programme

Evaluator	Tool	Sample
1. Senior students	Questionnaire	About 40 %
2. Alumni	Opinion poll	A number of graduate students extracting certificates or other documentations
3. Stakeholders(Employers)	Personal meeting and Questionnaire	Some of the Employers
4. External Evaluator(s)(External	Reports	External examiners of the fourth year students and

Examiner(s))		External Evaluator of the program
5. Others		

Name	**Signature**	**Date**
Programme Coordinator:		
Head of Department: **Prof. Mahmoud Zaki**		
Dean of the Faculty:		

2.2 Template for Programme Matrix

Department: **Architectural Engineering**		**Faculty**: Engineering	**University**: Tanta
Total # Courses: 77		**Total Hours per week**: 30	
Lecture hrs: 12.4	**T/P hrs and Practical hrs:** 16.7		**Total hrs:** 30
Graduation Projects: **1.** **2.** **3.** **4.** **5.** 6. 7. 8. 9. 10.			

ILOs Course	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16	a17	a18	a19	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12
PME0101	X																							X							
PME0102	X			X																		X									
PME0003	X																							X							
MPD0001					X																						X				
PME0104	X																							X		X					
CCE0101														X							X										
PME0201	X																							X							
PME0202	X			X												X								X							
PME0003	X																							X							
MPD0001					X																						X				
MPD0202								X				X				X											X				
***02H1									X											X											
***02H2		X				X						X								X				X							
ARE1101				X					X						X												X	X			
ARE1102				X					X	X																	X				X
ARE1103													X																	X	
ARE1104					X									X												X	X				
EEC1101		X	X											X				X			X										
CSE1151				X																						X			X		
ARE1201				X																							X	X			
ARE1202				X					X																				X		
ARE1203													X																	X	
ARE1204					X									X													X				X
ARE1205								X							X													X			
CSE1252				X			X																				X		X		
ARE2107					X																						X	X			
ARE2108				X						X																			X		

17

ARE2109										X														X	
ARE2110													X											X	
ARE2111												X			X			X			X			X	
CSE2153			X			X		X													X		X		
ARE2207				X																		X	X		
ARE2208			X					X														X			
ARE2209							X			X												X			
ARE2212	X										X						X								
ARE2213													X									X	X		
ARE2214								X													X				
ARE3115				X																		X	X		
ARE3116			X					X														X			
ARE3117										X													X		
ARE3118												X	X									X	X		
ARE3119													X							X		X			
ARE3120				X															X						
ARE3215				X																		X	X		
ARE3216			X					X															X		
ARE3221													X						X			X	X		
ARE3222														X								X			X
ARE3223						X				X						X					X				
CSE3254			X					X													X		X		
ARE4124				X																		X	X		
ARE4125			X			X	X																X		
ARE4126										X													X		
ARE4127												X	X									X			
ARE4128													X		X							X	X		
ARE4129														X								X			
ARE4230							X												X						
ARE4231							X						X												X

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
ARE4245	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARE4232													X			X									X			
ARE4233													X			X									X			
ARE4234													X			X									X			
ARE4235													X			X									X			
ARE4236		X	X					X		X			X	X		X					X	X			X		X	
ARE4237		X	X					X		X			X	X		X					X	X			X		X	
ARE4238		X	X					X		X			X	X		X					X	X			X		X	
ARE4239		X	X					X		X			X	X		X					X	X			X		X	
ARE4240				X	X				X											X	X		X	X			X	
ARE4241				X	X				X											X	X		X	X			X	
ARE4242				X	X				X											X	X		X	X			X	
ARE4243				X	X				X											X	X		X	X			X	
ARE4244				X	X				X											X	X		X	X			X	
Field training																												X

ILOs / Course	c Professional and Practical Skills												d General and Transferable Skills										
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11
PME0101	X															X							
PME0102							X							X									
PME0003	X															X							
MPD0001		X																		X			
PME0104							X							X									
CCE0101						X								X				X					
PME0201	X															X							
PME0202							X							X									
PME0003	X															X							
MPD0001		X																		X			
MPD0202							X							X							X		X
***02H1		X														X	X						
***02H2		X			X						X						X	X					
ARE1101	X	X											X	X	X							X	X
ARE1102		X		X									X	X									
ARE1103	X			X										X				X					
ARE1104				X	X															X			
EEC1101						X														X			
CSE1151				X														X					
ARE1201	X	X											X	X	X							X	X
ARE1202		X		X									X	X									
ARE1203	X			X										X				X					
ARE1204					X															X			X
ARE1205							X														X		
CSE1252							X									X	X						
ARE2107	X	X	X										X	X	X							X	X
ARE2108					X									X				X		X			
ARE2109	X			X										X				X					

ARE2110				X		X				X	X		X		X	X							
ARE2111				X						X						X							
CSE2153				X													X						
ARE2207	X		X							X	X	X										X	X
ARE2208					X						X					X				X			
ARE2209	X			X							X					X							
ARE2212				X		X												X					
ARE2213										X											X		X
ARE2214								X		X													
ARE3115	X		X							X	X	X										X	X
ARE3116					X		X													X	X		
ARE3117	X			X													X						
ARE3118						X				X	X	X											
ARE3119								X		X	X	X											
ARE3120									X				X	X				X					
ARE3215	X		X							X	X	X										X	X
ARE3216					X		X													X	X		
ARE3221						X				X	X	X											
ARE3222						X				X													
ARE3223								X		X	X						X			X			X
CSE3254		X					X			X													X
ARE4124	X		X							X	X	X										X	
ARE4125					X		X													X	X		
ARE4126	X			X														X					
ARE4127						X				X											X		
ARE4128						X				X											X		
ARE4129						X				X											X		
ARE4230	X		X					X					X	X	X					X	X		
ARE4231									X														X
ARE4245	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
ARE4232	X		X					X					X					
ARE4233	X		X					X					X					
ARE4234	X		X					X					X					
ARE4235	X		X					X					X					

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
ARE4236					X											X		
ARE4237					X											X		
ARE4238					X											X		
ARE4239					X											X		
ARE4240		X	X													X		
ARE4241		X	X													X		
ARE4242		X	X													X		
ARE4243		X	X													X		
ARE4244		X	X													X		
Field training				X							X	X						X

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