

Program: Architectural Engineering Technology (ArET)

REVISED ArET Assessment Plan Jan 2019.DOCX

Mission Statement: The mission of the Architectural Engineering Technology program is to produce graduates that have mastered the combination of philosophy of building design and technology of construction systems and materials. The ArET program will provide skills relating to Building Information Modeling (BIM) which is a growing initiative in the industry that enhances the entire lifecycle of buildings from design to construction to post-occupancy.

Communication of Outcomes: Once approved, the department of Built Environment will develop a program website to disseminate all pertinent information regarding assessment objectives and outcomes measurement.

Objective 1: Students will employ concepts of architectural theory and design in a design environment.						
Student Learning Outcomes	Courses/Educational Strategies	Assessment Method(s)	Source(s) of Assessment	Target for Student Achievement	Time of Data Collection	Person(s) Responsible
1.1 Students will synthesize information and generate multiple concepts and/or multiple design responses to programmatic requirements.	CNST 480-P IAD 151-P	Models and Journals	IAD 151			Payne
1.2 Students will demonstrate creative thinking and originality through presentation of a variety of ideas, approaches, and concepts.	IAD 110-I, IAD 151-P	Models and Journals	IAD 151			Payne

Objective 2: Students will utilize instruments, methods, software, and techniques that are appropriate to produce A/E documents and presentations						
2.1 Students will produce competent contract documents.	IAD 152-I, IAD 310-P, IAD 351-P	Final Project	IAD 310 IAD 351			Arrington-Bey and Payne
2.2 Students will deliver effective presentations concerning complete project delivery.	COMM 101-I, CNST 480-P, IAD 152-I, IAD 310-P	Presentations, Final Project Binders	CNST 201 CNST 480			McNabb
2.3 Students will write technical business letters and reports using professional English.	ENG 107-I, IAD 353-P, CNST 351-P	HW, Final Reports	IAD353 CNST351			Arrington-Bey and MacDonald
2.4 Students will identify detail hierarchies, scale, and content.	CNST 106-I, CNST 214-P, IAD 151-P	Models	IAD 151			Payne

Objective 3: Students will utilize measuring methods that are appropriate for field, office, or laboratory						
3.1 Students will effectively apply the elements and principles of design to two-dimensional design solutions.	IAD 151-I, IAD 351-P	Visual Journals, Process Binders	IAD 151, IAD 351			Payne, Payne
3.2 Students will effectively apply the elements and principles of design to three-dimensional design solutions.	IAD 151-I, IAD 351-P	Visual Journals, Models, Process Binders	IAD 151, IAD 351			Payne, Payne
3.3 Students will demonstrate layout and alignment control using surveying equipment.	CNST 420-P	HW	CNST 420			MacDonald
3.4 Students will use surveying skills to organize and develop a site.	CNST 420-I, CNST 480-R	Final Project	CNST 480			MacDonald
3.5 Students will analyze static forces in structures.	CNST 318-I	HW, Exam	CNST 318			Wilkinson
3.6 Students will apply soil mechanics to excavations and foundations.	CNST 318-I	HW	CNST 318		F2017	Wilkinson

Objective 4: Students will apply fundamental computational methods and elementary analytical techniques in sub-disciplines related to architectural engineering						
4.1 Students will analyze heat flow through wall assemblies.	CNST 213-I IAD-360-I	HW, Exam	CNST 213 IAD 360		F2016	Ellingson Hale
4.2 Students will solve problems using trigonometry as it relates to surveying.	CNST 420-P	HW	CNST 420		F2018	MacDonald

Objective 5: Students will perform economic analyses and cost estimates related to design, construction, and maintenance of building systems						
5.1 Students will create quantity takeoffs for residential and commercial projects.	CNST 214-I, CNST 214-R CNST480-P	HW	CNST 214 CNST480		F2017	McNabb MacDonald
5.2 Students will identify and apply labor and equipment productivity factors.	IAD220-I, CNST 214-R	Exam	CNST 214		F2017	McNabb
5.3 Students will identify and estimate direct and indirect job costs.	CNST 214-I, CNST 480-R	Final Project	CNST 480		S2019	MacDonald
5.4 Students will use estimating software applications to prepare and submit construction bids.	CNST 214-P, CNST 450-R	HW	CNST 214		F2017	McNabb
5.5 Students will explain capital equipment depreciation and how this is used by construction companies.	CNST 214-R	HW, Test	CNST 214		F2017	McNabb
5.6 Students will estimate project cash flow and identify payment processes and the affects of time value of money.	CNST 201-R	HW	CNST 201			Bawinkel

Objective 6: Students will select appropriate materials and practices for building construction						
6.1 Students will demonstrate typical fabrication and installation methods for specified materials and products.	CNST 111-I, CNST213-R	Lab Exercises	CNST 111, CNST213	First round of data will be the baseline.	F2018	Hale, Bawinkel
6.2 Students will demonstrate basic principles of BIM.	CNST106-I CNST206-R IAD310/351-P	Final Projects	CNST106 CNST206 IAD310/351	First round of data will be the baseline.		McNabb, McNabb, Payne
6.3 Students will apply the NEC for proper installations of electrical systems.	CNST213-P		CNST213	First round of data will be the baseline.	F2018	Bawinkel
6.4 Students will demonstrate how the LEED rating system is applied to buildings.	IAD360-P		IAD360	First round of data will be the baseline.	S2019	Hale
6.5 Students will compare the composition and properties of building materials.	CNST111-I, IAD160-I		CNST111, IAD160	First round of data will be the baseline.		Hale, Hale
6.6 Students will understand construction terms, units of measurement, material grade stamps, actual and nominal sizes of materials, and define tolerances.	CNST111-I, IAD160-I		CNST111, IAD160	First round of data will be the baseline.		Hale, Hale
6.7 Students will apply conformance references established by testing laboratories to building construction practices.	CNST111-I, IAD 310-P		CNST111, IAD310	First round of data will be the baseline.		Hale, Arrington- Bey
6.8 Students will apply the IBC and IRC building code manuals and standards.	CNST 206-P, IAD 310-P	Final Project	CNST206, IAD 310	First round of data will be the baseline.		McNabb, Arrington- Bey

Objective 7: Students will apply principles of building codes, regulations , and ethics in architectural practice						
7.1 Students will apply appropriate federal, state/provincial, and local codes.	IAD 310-P, IAD351-P	Final project	IAD 310, IAD351	First round of data will be the baseline.		Arrington-Bey, Payne
7.2 Students will apply appropriate standards and accessibility guidelines.	IAD 310-P, IAD351-P	Final project	IAD 310, IAD351	First round of data will be the baseline.		Arrington-Bey, Payne
7.3 Explain why bid shopping is unethical.	CNST 201-R,	Exam	CNST 201	First round of data will be the baseline.		Bawinkel
7.4 Explain why front-end loading is unethical.	CNST 201-R	HW, Exam	CNST 201	First round of data will be the baseline.		Bawinkel