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## MEMORANDUM

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TO: Curriculum Committee

FROM: Jack Kirby 

DATE: April 17, 2013

SUBJECT: Curriculum Proposal #12-13-62, REVISION #1  
AS Architectural Engineering  
Final Faculty Senate Approval 4/3/2013

I recommend approval of the attached REVISION #1 of Curriculum Proposal #12-13-62 from the College of Science and Technology, Department of Technology. This proposal is now ready for Faculty Senate.






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## MEMORANDUM

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TO: Curriculum Committee

FROM: Jack Kirby 

DATE: April 1, 2013

SUBJECT: Curriculum Proposal #12-13-62  
AS Architectural Engineering

I recommend approval of the attached Curriculum Proposal #12-13-62 from the College of Science and Technology, Department of Technology.

This proposal adjusts the AS Architectural Degree to come in line with the changes in the BS Architectural Degree for the forthcoming professional architectural degree. These revisions also help FSU to better align with the National Architectural Accrediting Board student performance criteria.

c: Dr. Christina Lavorata  
Dr. Anthony Gilberti  
Mr. Phillip Freeman  
Mr. Kirk Morphew  
Ms. Evie Brantmayer  
Ms. Leslie Lovett



**CURRICULUM PROPOSAL** (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

Proposal Number: 12-13-62

School/Department/Program: Science and Technology/Technology/Architecture

Preparer/Contact Person: Philip Freeman, Kirk Morphew

Telephone Extension: x4237, x4628

Date Originally Submitted: \_\_\_\_\_

Revision (Indicate date and label it  
Revision #1, #2, etc.): REVISION # 1 04/17/2013

Implementation Date Requested: Fall 2013

- I. **PROPOSAL.** Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

*The A.S. Architectural Engineering Technology degree comprises the first two years of the pre-professional B.S. Architecture degree. This two-year degree has been revised as result of revision of the four-year degree program in support of a proposed professional degree at Fairmont State that would be accredited by the National Architecture Accrediting Board. In this proposal course content is revised, credit hours, titles and pre-requisites are changed. New courses are added and some courses are removed from the curriculum to reflect program foci; and program electives are redefined. The curriculum has been revised to better align with the National Architecture Accrediting Board (NAAB) student performance criteria.*

- II. **DESCRIPTION OF THE PROPOSAL.** Provide a response for each letter, A-H, and for each Roman Numeral II-V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s)

1. A.S. Architecture deletions:

\*ARCH 2200 Graphics (3 Credits)  
\*ARCH 2225 Architectural CADD (3 Credits)  
\*ART 1111 Art Fundamentals (3 Credits)  
CIVL 2210 Light Construction (4 Credits)  
COMP 1101 Applied Technical Programming (3 Credits)  
COMM 2200 Communication (3 Credits)  
MATH 1101 Applied Technical Math I (3 Credits)  
MATH 1102 Applied Technical Math II (3 Credits)  
PHYS 1102 Introduction to Physics II (4 Credits)

Total hours deleted. 29

*\*To Be Removed From Catalog*

B. Addition of course(s) or credit(s) to program(s)

1. A.S. Architecture additions:

ARCH 1000 Design Fundamentals I (4 Credits)  
 ARCH 1050 Design Fundamentals II (4 Credits)  
 ARCH 2060 Building Technology I (4 Credits)  
 MATH 1112 College Algebra (3 Credits)  
 MATH 1115 Trigonometry and Elementary Functions (3 Credits)  
 PHED 1100 Fitness and Wellness (2 Credits)  
 Electives (7 Credits)

Total hours added. 27

**C. Provision for interchangeable use of course(s) with program(s)**

ARCH 2000 Design I	<b>Substitutes for</b>	ARCH 2210 Design I
ARCH 2010 Architectural History I	<b>Substitutes for</b>	ARCH 1130 Architectural History I
ARCH 2020 Architectural History II	<b>Substitutes for</b>	ARCH 1160 Architectural History II
ARCH 2050 Design II	<b>Substitutes for</b>	ARCH 2250 Design II
ARCH 2060 Building Technology I	<b>Substitutes for</b>	CIVL 2210 Light Construction

**D. Revision of course content.** Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

*Revised catalog course descriptions for all the required courses shown in Section E are included in Appendix B.*

**E. Other changes to existing courses** such as changes to title, course number, and elective or required status.

Course number		Course title		Prerequisites		Credits	
Old	New	Old	New	Old	New	Old	New
ARCH 1130	ARCH 2010	Architectural History I	No change	None	No change	3	No change
ARCH 1160	ARCH 2020	Architectural History II	No change	ARCH 1130	ARCH 2010	3	No change
ARCH 2200	ARCH 1000	Graphics	Design Fundamentals I	None	No change	3	4
ARCH 2225	ARCH 1050	Architectural CADD	Design Fundamentals II	None	ARCH 1000,	3	4
ARCH 2210	ARCH 2000	Design I	Design I: Foundation	ARCH 1160, 2225, ART 1111	ARCH 1050	4	No change
ARCH 2250	ARCH 2050	Design II	Design II: Foundation	ARCH 2210	ARCH 2000	4	No change

**F. Creation of new course(s).** For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU, PC&TC, or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.

Number	Course Title	Credits	Prerequisites	Ownership	Status
ARCH 2060	Building Technology I	4	Co-Req ARCH 2000	FSU	Required

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog.

*Appendix B contains the catalog course descriptions for the proposed new course.*

3. Include, as an appendix, a detailed course outline consisting of at least two levels.

*Appendix C contains the two-level course outlines for the proposed new course.*

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

*Appendix C also contains the Outcome Competencies and Methods of Assessment for the proposed new courses.*

- G.** Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

1. Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

*Total hours for completion of this program degree are decreased by 5 credit hours to 60*

2. Include proof that this proposal satisfies your program requirements and general studies
3. Include proof that your proposal satisfies the general studies requirements using AT LEAST 15 credit hours outside of your major.

*See Appendix A*

### **III. RATIONALE FOR THE PROPOSAL.**

- A. **Quantitative Assessment:** Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

*The Associate of Science in Architectural Engineering Technology comprises most of the first two years of the four-year Bachelor of Science in Architecture Degree. The Bachelor of Science in Architecture is considered to be a preparatory/pre-professional degree by the National Architectural Accrediting Board (NAAB) leading to an accredited first-professional degree, such as the Master of Architecture. As a preparatory/pre-professional degree, the curriculum needs to align with preparatory Student Performance Criteria (SPC) established by the NAAB. The A.S. AET degree has been revised as a result of revisions to the baccalaureate degree program in architecture*

- B. **Qualitative Assessment:** Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

*This curriculum revision is necessary as a component of the four-year degree program which has been revised to better align with current expectations of the NAAB and trends of the profession.*

- IV. Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal.

By signing here, you are indicating your college's/school's notification of this proposal.

<i>Fine Arts</i>	<i>Peter Lach</i>	<i>Peter Lach</i>

- V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal.

*We anticipate that this curriculum revision will not affect any course to be added or deleted from the general studies requirements.*

- VI. ADDITIONAL COMMENTS.

No Additional Comments

## APPENDIX A

### A.S. Degree in Architectural Engineering Technology Current Program

<b>Required Major Courses</b>		<b>HRS</b>
ARCH 1130	Architectural History I	3
ARCH 1160	Architectural History II	3
ARCH 2210	Design I	4
ARCH 2225	Architectural CADD	3
ARCH 2250	Design II	4
ART 1111	Art Fundamentals	3
CIVL 2210	Light Construction	4
COMP 1101	Applied Technical Programming	3
MATH 1102	Applied Technical Mathematics II	3
MECH 1100	Statics	3
PHYS 1101	Introduction to Physics I	4
PHYS 1102	Introduction to Physics II	4
<b>TOTAL Required Major Courses</b>		<b>41</b>
Major Electives		6-7
Minor Electives		0
<b>TOTAL HOURS FOR MAJOR</b>		<b>47-48</b>
<b>Required General Studies Courses</b>		
First Year Experience		12
ENGL	1104 Written English I	3
ENGL	1108 Written English II	3
MATH		3
COMM	2200,2201 OR 2202 Communication	3
Cultural / Civilization Exploration		3
Artistic / Creative Expression		3
<b>TOTAL GENERAL STUDIES HOURS</b>		<b>18</b>
<b>TOTAL HOURS</b>		<b>65-66</b>

A.S. Degree in Architecture  
Proposed Program

Required Major Courses		Hours	II Proficiency in the Major
ARCH 1000	Design Fundamentals I	4	
ARCH 1050	Design Fundamentals II	4	
ARCH 2000	Design I: Foundation	4	
ARCH 2010	Architectural History I	3	
ARCH 2020	Architectural History II	3	
ARCH 2050	Design II: Foundation	4	
ARCH 2060	Building Technology I	4	
MATH 1115	Trigonometry	3	
MECH 1100	Statics	3	
<b>Total Hours for Major</b>		<b>32</b>	

Required Courses Outside the Major		Hours	General Studies Attribute
MATH 1112	College Algebra	3	IB Quantitative Literacy
ENGL 1104	Written English I	3	IC Written Communication
ENGL 1108	Written English II	3	IE Information Literacy
ART 1120	Art Appreciation	3	VIIA Fine Arts
	Citizenship Elective	3	III Citizenship
PHED 1100	Fitness and Wellness	2	V Health and Well-being
	Ethics Elective	3	IV Ethics
PHYS 1101	Physics I	4	VIID Natural Sciences
<b>Total Hours Courses Outside the Major</b>		<b>24</b>	
<b>Free Electives</b>		<b>4</b>	
<b>Total Hours</b>		<b>60</b>	





## Appendix B

Old Catalog Course Description	New Catalog Course Description
<p><b>ARCH 1130 Architectural History I</b>, 3 hrs. This course covers architectural history from prehistoric times to the Gothic period. The emphasis will be on the historical, social and technological factors behind the structures discussed.</p>	<p><b>ARCH 2010 Architectural History I</b>, 3 hrs. This course covers architectural history from prehistoric times to the Gothic period. The emphasis will be on the historical, social and technological factors behind the structures discussed. Offered: Fall Semester</p>
<p><b>ARCH 1160 Architectural History II</b>, 3 hrs. This course is a continuation of architectural history covering the Renaissance period to the present. The emphasis will be on the historical, social and technological factors behind the structures discussed. PR: ARCH 1130</p>	<p><b>ARCH 2020 Architectural History II</b>, 3 hrs. This course is a continuation of architectural history covering the Renaissance period to the present. The emphasis will be on the historical, social and technological factors behind the structures discussed. PR: ARCH 2010</p>
<p><b>ARCH 2200 Graphics</b>, 3 hrs. This course is an introduction to architectural presentation drawings. The course emphasizes rendering techniques and perspective drawing.</p>	<p><b>ARCH 1000 Design Fundamentals I</b>, 3 hrs. This course addresses the basic graphic communications skills necessary to express architectural form using traditional hand methods. Topics include freehand, multi-view, paraline, perspective and shade/shadow drawing. Offered: Fall Semester</p>
<p><b>ARCH 2225 Architectural CADD</b> 3 hrs. Introduction to computer-aided drafting and design. Will include an introduction to the basic drawing processes of the computer and subsequent application to design solutions in architecture. Introduction to computer-aided drafting and design. Will include an introduction to the basic drawing processes of the computer and subsequent application to design solutions in architecture.</p>	<p><b>ARCH 1050 Design Fundamentals II</b>, 3 hrs. This course is an introduction to digital media used in architectural graphics. Principles of digital image manipulation and Building Information Modeling (BIM) will be introduced. PR: ARCH 1000 Offered: Spring Semester</p>
<p><b>ARCH 2210 Design I</b> 4 hrs. Introduction to developing design methodology and its integration into the process of design. Topics include form studies and theory, and incorporation of these into the design of architectural elements. Introduction of sketching, graphic and modeling skills to communicate design concepts. Emphasis on developing the student's presentation skills. PR: ARCH 1160, 2225, ART 1111</p>	<p><b>ARCH 2000 Design I: Foundation</b>, 4 hrs Introduction to basic principles of architectural design. Areas to be explored include: design theory, methods and processes; presentation drawing techniques; fundamentals of model making; and the application of the above to actual design projects. PR: ARCH 1050 CR: ARCH 2060 Offered: Fall Semester</p>
<p><b>ARCH 2250 Design II</b> 4 hrs. A continuing study of design methodology as applicable to the design of simple structures. Emphasis on tectonics, as well as the nature of materials and the site. Further development of sketching, graphic and modeling skills as students learn to understand, interpret, and represent spaces and receive further training in presentation skills. Students will develop a first-year design portfolio. PR: ARCH 2210.</p>	<p><b>ARCH 2050 Design II: Foundation</b>, 4 hrs. A continuing study of design methodology as applicable to the design of simple structures. Emphasis on tectonics, as well as the nature of materials and the site. Further development of sketching, graphic and modeling skills as students learn to understand, interpret, and represent spaces and receive further training in presentation skills. Students will develop a first-year design portfolio. PR: ARCH 2000 Offered: Spring Semester</p>
Old Catalog Course Description	New Catalog Course Description

	<p><b>ARCH 2060 Building Technology I, 4 hrs.</b> Students will study practices utilized in the erection of residential buildings including architectural materials, methods and use, and structural, mechanical, and electrical systems. CR: ARCH 1000 Offered: Fall Semester</p>
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**Number & Title of Course:**

ARCH 2060 Building Technology I, 4 credits

**Course Description:**

Students will study practices utilized in the erection of residential buildings including architectural materials, methods and use, and structural, mechanical, and electrical systems

**Course Goals:**

This course will develop a fundamental understanding of the various components of a building project's systems and will familiarize the student with the creation of construction documents.

**Course Outcomes:**

After completing this course, the student will be able to:

- Describe the basic practices utilized in the erection of residential and small industrial buildings.
- Describe the process by which buildings are built, including, but not limited to the following: the design professional's role, the role of the building contractors and trades, the legal constraints, economic constraints, and the process through which a building is brought from an abstract idea to a concrete reality. In addition, the student should be able to explain how these people relate to one another.
- Describe the process in which materials are combined to form a building system (or component) and the relationship of these systems that form the overall structure. Specifically, an understanding of basic site work, footings and foundation systems, framing systems, interior and exterior wall systems, roofs, doors and windows, and interior and exterior finishes.
- Describe the properties of the following materials and how they are typically used in construction: concrete, wood, steel, light gauge metal, brick, glass, stone and masonry.
- Describe and implement the basic construction documents used for residential construction.
- Use the equipment involved in producing construction documents.
- Use the standard "language" (e.g., lines, symbols, abbreviations, etc.) for representing architectural graphics.

**NAAB Student Performance Criterion/a addressed:**

B2 Accessibility	B3 Sustainability	B4 Site Design
B5 Life Safety	B7 Financial Considerations	B8 Environmental Systems
B9 Structural Systems	B10 Building Envelope Systems	
B11 Building Service Systems	B12 Building Materials and Assemblies	
C7 Legal Responsibilities		

**Topical Outline** (include percentage of time in course spent in each subject area):

Architectural Materials and Methods (40%) Civil/Site Work (5%) Structural Systems (10%)  
 HVAC Systems (10%) Plumbing Systems (10%) Electrical Systems (10%)  
 Sustainability (5%) Construction Cost Controls (5%) Building and Zoning Codes (5%)

**Assessment:**

Quizzes, Tests, Graphic and Oral Presentations

**Prerequisites:**

Co-Requisite: ARCH 2000 Design I: Foundation

**Textbooks/Learning Resources:**

Edward Allen et. al. *Fundamentals of Residential Construction*

**Offered** (semester and year):

Fall, Annually

**Faculty assigned**

Kirk L Morpew, Associate Professor of Architecture

## **Detailed Outline for ARCH 2060 Building Technology I:**

### **I. Context**

- A. The Context for Construction
- B. The Construction Community: Builders, Contractors, and Developers
- C. The Design Community

### **II. Materials**

- A. The Material Wood
- B. Masonry
- C. Concrete

### **III. Wood light Frame Construction**

- A. Rough Site Work
- B. Foundations
- C. Floor and Wall Framing
- D. Roof Framing
- E. Finishing the Roof
- F. Windows and Exterior Doors
- G. Finishing the Exterior Walls
- H. Plumbing
- I. Heating and Cooling
- J. Electrical Wiring
- K. Thermal Insulation
- L. Fireplaces and Stoves
- M. Interior Surfaces
- N. Finishing the Interior
- O. Finish Sitework

### **IV. Alternative Construction Systems**

- A. Multifamily Construction
- B. Low-Tech Energy Construction
- C. Loadbearing Masonry and Concrete Construction

- D. Timber Frame Construction
- E. Light-Gauge Steel Construction
- F. Panelized Construction

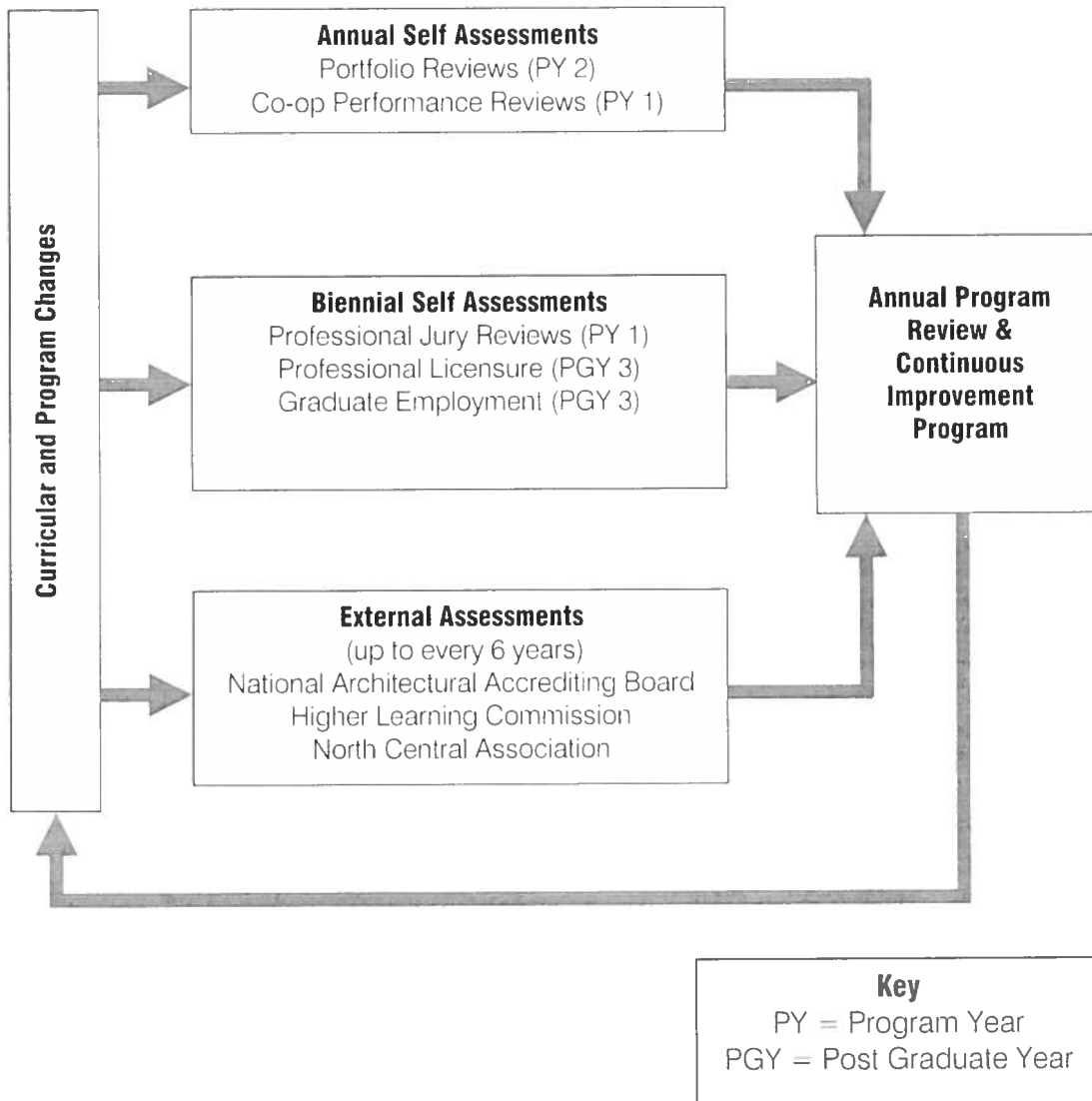
## Appendix C

### Outcome Competencies and Methods of Assessment

The following flowchart and table represent the assessment plan and schedule for proposed courses.

Learning Outcomes	Assessment Tool	Benchmark	Collection Timeline & Responsibility
1. apply critical thinking skills to creatively solve a variety of design problems with respect to culture, context, systems, materials, sustainable principles, and contribute to the development of new knowledge. *NAAB Realm A,B & C, Perspective A	PY 1: Co-op performance review by employers  PY1: Professional Jury Review  PY 2: Portfolio review	≥ 90% satisfactory  ≥ 90% competency in 80% of topic areas  ≥ 90% competency in 80% of topic areas	annually by faculty  alternate years by faculty  annually by faculty
2. demonstrate how architectural history, theory, and practice may inform design decisions in a diverse, global society. *NAAB Realm A, Perspective B	PY 1: Co-op performance review by employers	≥ 90% satisfactory	annually by faculty
3. transition to internship and licensure and gain employment in professional design offices and design and construction-related fields. *NAAB Realm C, Perspective C	PGY 3: Graduate employment  PGY 3: Architecture Registration Examination	≥ 80% Graduates employed in architecture related field  ≥ 80% licensed	every 5 years by staff
4. assume the role of an architect as a collaborator, communicator, and leader while observing the diverse needs of clients, populations, and communities in a global society. *NAAB Realm C, Perspective D	PY 1: Co-op performance review by employers	≥ 90% satisfactory	annually by faculty
5. make informed, ethical, and responsible contributions in a diverse and global society to serve the public good. *NAAB Realm B & C, Perspective E	PY 1: Co-op performance review by employers	≥ 90% satisfactory	annually by faculty

## Assessment Events and Tools



\**Realm A: Critical Thinking and Representation*  
*Realm B: Integrated Building Practices, Technical Skills & Knowledge*  
*Realm C: Leadership and Practice*  
 NAAB Perspectives A-E: see I.1.3

*PY = Program Year*  
*PGY = Post Graduate Year*