BOARD OF HIGHER EDUCATION

REQUEST FOR COMMITTEE AND BOARD ACTION

COMMITTEE: Academic Affairs **NO**: AAC 13-22

COMMITTEE DATE: April 23, 2013

BOARD DATE: April 30, 2013

APPLICATION OF SPRINGFIELD TECHNICAL COMMUNITY COLLEGE TO AWARD THE ASSOCIATE IN SCIENCE IN ARCHITECTURE & BUILDING TECHNOLOGIES

MOVED: The Board of Higher Education hereby approves the application of **Springfield Technical Community College** to award the **Associate in Science in Architecture and Building Technologies.**

Upon graduating the first class for these programs, the College shall submit to the Board a status report addressing its success in reaching program goals as stated in the application and in the areas of enrollment, curriculum, faculty resources, and program effectiveness.

Authority: Massachusetts General Laws Chapter 15A, Section 9(b)

Contact: Aundrea Kelley, Deputy Commissioner for P-16 Policy and Collaborative Initiatives

BOARD OF HIGHER EDUCATION
APRIL 2013
Springfield Technical Community College
Associate in Science in Architecture & Building Technologies

INTENT AND MISSION

Springfield Technical Community College (STCC) is proposing an Architecture and Building Technology (ARBT) Associate in Science program. The proposed program is intended to produce graduates who are academically prepared to transfer to baccalaureate institutions where they may pursue an undergraduate major in Architecture, Building and Construction Technology, or related fields. The proposed program is also meant to be responsive to the needs of local businesses by providing skilled and capable personnel prepared to enter the workforce as CAD-capable architectural draftspersons, assistant construction estimators, deputy building code officials, or retail construction material representatives. The proposed program aligns with the colleges' mission as a leader in technology dedicated to creating new opportunities for students.

The proposed Associate in Science in Architecture & Building Technologies proposal has obtained all necessary governance approvals on campus and was approved by the STCC Board of Trustees on November 26, 2012. The required letter of intent was circulated on October 23, 2012. No comments were received.

NEED AND DEMAND

National and State Labor Market Outlook

The United States Census Bureau's *Employment Projections by Industry: 2008-2018* lists "Architectural, engineering, and related services" as among the top twenty largest growth industries in the country (with Construction listed as the industry with the largest projected growth in this ten year period). According to the Department of Labor's *Occupational Outlook Handbook*, employment of architects nationally is projected to grow 24 percent from 2010 to 2020, faster than the average for all occupations. A 2012 *SmartMarket Report* by McGraw Hill Construction projects that, as the national economic picture improves and construction activity rebounds from the recession, architecture and construction-related workforce shortages are likely to result from several factors, including retirements of the baby boomer generation, and a skills-gap of incumbent workers in the area of green design and construction. As campus buildings age, school districts and universities will build new facilities or renovate existing ones. The population of sun-belt states continues to grow, and residents will need new places to live and work. Demand for architects with knowledge of green or sustainable design, is projected because of the emphasis on the efficient use of resources, energy and water conservation, waste and pollution reduction, etc.[1]

[1] Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2012-13 Edition*, Architects. http://www.bls.gov/ooh/architecture-and-engineering/architects.htm. Visited September 5, 2012

The number of establishments in Massachusetts offering architectural services is 802 employing 7,495 people. An additional 1,145 firms comprised self-employed people. Connecticut reported 271 establishments with 2,391 employees. Occupational Projections published by the Massachusetts Executive Office of Workforce Development predict an increase of 8.3% in employment of architects in Architectural, Engineering, and Related Services from 2008 to 2018. The Springfield, Massachusetts-Connecticut Metropolitan New England City and Town Statistical Area indicates that employment in the industry that includes Architectural Services is expected to grow by 7.2% in the same time period.

Student Demand

STCC cites a survey done for the American Institute of Architects, reporting that degree attainment data for architects reflected 45% of architects held baccalaureate degrees, while 36% attained Master degrees and only 5% of the survey respondents held an accredited pre-professional architecture degree. Based on this information, STCC suggests that transferability of the proposed Associate level program credits toward the baccalaureate degree will add value for students.

Duplication

No other community college in central or western Massachusetts offers an Architecture and Building Technology program. Massasoit, Mass Bay and Bristol Community Colleges in the eastern part of the state are the only community colleges in the system to offer similar programs. A private institution in Boston, the Benjamin Franklin Institute of Technology, also offers an AS degree in Architectural Technology.

ACADEMIC AND RELATED MATTERS

Admission

Admission to STCC requires a high school diploma or its equivalent. Applicants who have had previous college experience must submit all college transcripts whether or not they are seeking transfer credit. Transfer credits for courses in which the student has received a "C" or better and which are similar in content to those required in the student's program at STCC are considered.

Program Enrollment Projection

	# of Students Year 1	# of Students Year 2	# of Students Year 3	# of Students Year 4
New Full Time	**20**	**20**	**25**	**25**
Continuing Full Time	**0**	**12**	**19**	**22**
New Part Time	**15**	**15**	**15**	**15**
Continuing Part Time	**0**	**8**	**16**	**18**
Totals	**35**	**55**	**75**	**80**

Program Effectiveness

Goal	Measurable Objective	Strategy For Achievement	Timetable
Provide ARBT students with ongoing opportunities to learn about UMass/Amherst, Boston Architectural College, Fitchburg State University and Baypath College degree programs and transfer options.	Program and transfer information will be provided to ARBT students through transfer counseling, face-to-face discussions with Admissions counselors and faculty from those institutions.	Annual luncheons will be coordinated between ARBT students and transfer institutions for the purpose of facilitating student contact with Admissions counselors.	Ongoing, beginning in Spring of 2014
Establish Articulation (or MassTransfer) Agreements with Bachelor Degree granting institutions such as UMass Amherst, the Boston Architectural College, Baypath College, and Fitchburg State University that would allow our graduates to seamlessly transition into these institutions and continue their education.	Executed articulation agreements with 4-year institutions that afford ARBT graduates seamless transfer opportunities.	ARBT Chair will meet with Program Chairs at the transfer institutions to draft articulation agreements; also, STCC will request MassTransfer agreements with UMASS and Fitchburg State University	Begin process in Fall of 2013, with agreements in place by the 2014/15 Academic Year.
Build a strong connection with Western Massachusetts industry leaders in the fields of design and construction (with a goal of creating opportunities for students to gain professional experience).	Student site visits to current projects, discussions with industry leaders in classroom and ARBT student club meetings. Inclusion of industry leaders in Advisory Board meetings and program reviews.	ARBT Chair will meet with industry leaders in fields of architecture, design and construction to build support for the ARBT program, solicit guest speakers for	Ongoing; beginning in Fall 2013

		ARBT Student Club meetings, develop student work experience opportunities, and solicit new Advisory Board members	
Work with industry leaders to remain on the "cutting edge" of new technologies and market shifts.	Faculty affiliation with American Institute of Architects (AIA) and the Massachusetts Board of Realtors, and attendance at professional conferences and construction industry trade shows such as *Build Boston* (the largest regional conference and trade show for the design and construction industry in the US).	Faculty will be encouraged (and provided support) to attend conferences and workshops involving new technologies	Ongoing, beginning in 2013/14 Academic Year
Educate and train ARBT students in new technologies and emerging markets.	Annual reviews of (and adjustments to) the ARBT curriculum with the guidance of the Program Advisory Board, to retain currency and relevancy. Development of program options within the ARBT curriculum such as Sustainable Design, Solar Energy, Historic Preservation and ADA/Stretch Code Requirements.	Faculty will work with Advisory Board, Dean of Engineering Technologies, and the Curriculum Committee to implement curricular updates as necessary.	Ongoing, beginning in 2014/15 Academic Year. New program options developed in 2015/16 Academic Year.
Establish a vibrant evening program for our working students, taught by educators with professional experience and credentials that would allow our students to earn an Associate's Degree entirely at night.	All courses in the curriculum to be offered as both day and evening classes (including those not currently offered at night: specifically, ARBT-150, 260 and 265)	Recruit and hire adjunct faculty from a large pool of regional professionals who are dedicated to educational excellence	Phase-in new evening offerings in the 2015/16 Academic Year
Expand full-time faculty (and content expertise) via faculty additions	One additional full-time faculty member by Fall 2015	Position will be posted and a search committee established in spring 2015	Fall 2015

Curriculum (Attachment A)

The proposed ARBT program requires students to complete 65 credit hours. The second year of study will build directly upon the one year Certificate of Completion program that requires 29 credit hours. During the first semester of study, students will be required to complete *Architectural Design I: Process Design/2D*, *Architectural CAD I*, *Technical Math I*, *Basic Drawing* (or *Basic Design*), and *English Composition I*. The second semester will build upon that coursework with classes in *Architectural Design II: Process Design/3D, Architectural CAD II*, *Construction Estimating*, *College Physics (*or *Physical Science I)*, and *Drawing and Composition (*or *Basic Design II)*. During the second year of study, students will complete *Architectural Design III: Public/Commercial*

*Spaces, Building Codes and Principles (*or *Construction Materials and Methods), Introduction to Digital Photography,* and general education courses including *English Composition II*, *General Psychology*, *Introduction to Sociology*, one history elective, one laboratory science elective, and one arts and humanities elective. The capstone course, *Architectural Design IV: Portfolio/Capstone Project* will be required in the fourth semester of study.

Field Resources and Internships

No internships or field work are planned in the proposed ARBT program. The Capstone Project is intended to support student presentation skills by developing their portfolio of projects. The portfolios are presented and reviewed by design professionals.

RESOURCES AND BUDGET

Faculty and Administration (Attachment C)

The proposed ARBT Program will be housed in a new Architecture and Building Technology Department. The Dean of the School of Engineering Technologies will oversee the department, and a department chair will be named to guide its operations. Strategies will be implemented to ensure a schedule of faculty reviews, and department meetings. It is expected that Professor Warren Hall will serve as the Department Chairperson for the proposed Architecture and Building Technology program. The qualifications for this position include an advanced degree in Design or Architecture studies, experience teaching Architectural design at an institution of higher education, and understanding of and experience with building codes and principles and construction logistics.

In anticipation of future enrollment increases, and to broaden curricular options to include the areas of Sustainable Design, Solar Energy, Historic Preservation and ADA/Stretch Code Requirements, STCC plans to recruit and hire an additional full time faculty member in the Fall of 2015. Currently there are 4 part time and 1 full time faculty members.

Affiliations and Partnerships

An advisory board composed of principals from established architectural firms in Western Massachusetts has been assembled. The five members of this board and their affiliations are as follows:

- Bill Austin, Austin Design, Colrain, MA
- Kerry Dietz, Dietz Architects, Springfield, MA
- Thomas Hartman, Coldham and Hartman Architects, Amherst, MA
- Margo Jones, Margo Jones Architects, Greenfield, MA
- Greg Zorzi, Studio One Architects, Springfield, MA

This board will meet at least annually to review and assess the program's continued relevancy and quality. The board's recommendations will then be incorporated into the program's curriculum.

Library and Information Technology; Facilities and Equipment

Technologies, facilities, financial resources and equipment currently in existence within the School of Engineering Technologies will be used to meet the needs of the Architecture and Building Technology Associate Degree program. Additional resources are not required at this time.

Fiscal (Attachment B)

Budget Narrative

Expenses: The Architectural Technology component of the College's Civil Engineering Department includes one full-time faculty member and three adjunct faculty, hired through the Division of Continuing Education (DCE). Full-time faculty costs, with benefits (estimated at a 27% fringe rate), under Year one reflect projected expenditures in fiscal year 2014. Year four reflects the addition of a second full-time faculty member beginning in the 2016-2017 academic year. The role of this second faculty member is intended to add expertise for new courses in the areas of sustainable design, historic preservation, and ADA/Stretch Code requirements, and support anticipated increased enrollments. Full-time faculty salaries for years two, three, and four assume projected collective bargaining increases at 3.5%.

Adjunct faculty members teach, on average, 18 sections annually. Courses in ARBT are not expected to be offered during summer session. Costs are assessed at an estimated $3,000 per section for lecture classes, $4,300 per section for lab classes with three lab hours, $5,017 per section for lab classes with four lab hours, $6,450 per section for lab classes with six lab hours. Years two, three, and four costs reflect an anticipated collective bargaining increase of 3.5% for those years.

General administrative costs of $3,000 include such items as travel, assessment, publication, and conference fees for faculty professional development. Annual funding for purchase, upkeep and maintenance of facilities/space/equipment is estimated at $2000. Marketing of the program will be handled through the college's office of Marketing and Public Relations general funding.

Income: Tuition income for years one, two, three, and four are estimated at the Commonwealth tuition rate of $25 per credit. It is estimated that the Architectural Technology Department will generate approximately 884 credit hours in the first year. These credit hours increase due to the additional students projected to be in the program in successive years.

At this initial level (884 credits hours), general education fees ($121 per credit) generated by the department will produce $106,964 in revenues. Fee revenues for years two, three, and four have been factored by applying an estimated annual general education fee increase of $4.00 per credit.

EXTERNAL REVIEW AND INSTITUTIONAL RESPONSE

The proposed program was reviewed by Dr. David Damery, Associate Professor and Director of Building and Construction Technology at the University of Massachusetts

Amherst and Donald Hunsicker, Head, School of Design Studies at Boston Architectural College. The reviewers supported the proposed ARBT program and felt it can add value in an area not currently served in western Massachusetts. They also underscored that the program will position graduates very well for transfer into related BS or BA programs.

The review team made several recommendations including:

- An additional focus on sustainable principles in building science, energy efficiency and passive solar design
- Differentiation of I and II leveled courses in the catalog descriptions and state specific learning objectives in all syllabi
- Outreach to local Home Builder and Remodeler Associations and the Northeast Retail Lumber Association for advisory members
- Long range planning for additional resources to upgrade and replace technologies and equipment in the future

STCC responded that the plan for an additional faculty member would significantly contribute to an additional focus on sustainable principles for the areas described in the recommendation. The college also concurred that the proposal neglected to include the existing, specific learning outcomes for students in the General Studies/ Architectural Transfer option and provided the student outcomes in the proposed ARBT program. STCC also committed to reach out to the association leaders in the Fall 2013 and invite their participation on the Advisory Panel. Long range planning to upgrade and replace equipment will be included in the Academic Deans annual assessment of capital needs and submitted to the Chief Financial Office

STAFF ANALYSIS AND RECOMMENDATION

Staff thoroughly reviewed all documentation submitted by **Springfield Technical Community College** and the external reviewers. Staff recommendation is for approval of the **Associate in Science Program in Architecture & Building Technologies.**

Upon graduating the first class for these programs, the College shall submit to the Board a status report addressing its success in reaching program goals as stated in the application and in the areas of enrollment, curriculum, faculty resources, and program effectiveness.

Curriculum Outline (Attachment A)

Required (Core) Courses in the Major (Total # courses required = 9)		
Course Number	Course Title	Credit Hours
ARCH-110 (or CIVL-115)	**Building Codes and Principles (or Construction Materials and Methods)**	**3**
CIVL-125	**Architectural CAD I**	**3**
CIVL-225	**Architectural CAD II**	**3**
ARBT-150 (now ARCH-150)	**Architectural Design I: *Design Process/2D***	**4**
ARBT-155 (now ARCH-250)	**Architectural Design II: *Design Process/3D***	**3**
ARBT-260 (now ARCH-350)	**Architectural Design III: *Public/Commercial Spaces***	**3**
ARBT-265 (now ARCH-450)	**Architectural Design IV: *Portfolio/Capstone Project***	**4**
GRPH-170	**Introduction to Digital Photography**	**3**
CIVL-220	**Construction Estimating**	**3**
	Sub Total Required Credits	**29**
Distribution of General Education Requirements Attach List of General Education Offerings (Course Numbers, Titles, and Credits)		# of Gen Ed Credits
Arts and Humanities, including Literature and Foreign Languages		
ENGL-100	**English Composition I**	**3**
ENGL-200	**English Composition II**	**3**
ARTS-147 (or 146)	**Basic Drawing (or Basic Design)**	**3**
ARTS-149 (or 246)	**Drawing and Composition (or Basic Design II)**	**3**
Elective	**Arts and Humanities Elective**	**3**
Mathematics and the Natural and Physical Sciences		
MATH-132	**Technical Math I**	**4**
PHYS-130 (or 125)	**Physics I (or Physical Science I)**	**4**
Elective	**Lab Science Elective**	**4**
Social Sciences		
PSYC-100	**General Psychology**	**3**
SOCL-100	**Introduction to Sociology**	**3**
Elective	**History Elective**	**3**
	Sub Total General Education Credits	**36**
Curriculum Summary		
Total number of courses required for the degree	**20**	
Total credit hours required for degree	**65**	
Prerequisite, Concentration or Other Requirements: None		

Program Budget (Attachment B)

One Time/ Start Up Costs		***Annual Expenses*** ***(SALARIES AT 3.5% ANNUAL INFLATION)***			
	Cost Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**
	Full Time Faculty *(Salary & Fringe)*	$89,152	$92,272	$152,651	$157,994
	Part Time/Adjunct Faculty *(Salary & Fringe)*	$103,337	$106,953	$110,696	$114,570
	Staff				
	General Administrative Costs	$3,000	$3,000	$3,000	$3,000
	Instructional Materials, Library Acquisitions				
	Facilities/Space/Equipment	$2,000	$2,000	$2,000	$2,000
	Field & Clinical Resources				
	Marketing				
	Other (Specify)				
	TOTALS	$197,489	$204,225	$268,347	$277,564

One Time/Start-Up Support		***Annual Income*** (***FEES AT $4/PER CREDIT ANNUAL INCREASE)***			
	Revenue Sources	**Year 1**	**Year 2**	**Year 3**	**Year 4**
	Grants				
	Tuition	$22,100	$28,500	$34,900	$36,500
	Fees	$106,964	$142,500	$180,084	$194,180
	Departmental				
	Reallocated Funds				
	Other (specify)				
	TOTALS	$129,064	$171,000	$214,984	$230,680

Faculty Form (Attachment C)

Summary of Faculty Who Will Teach in Proposed Program							
Please list full-time faculty first, alphabetically by last name. Add additional rows as necessary.							
Name of faculty member (Name, Degree and Field, Title)	**Check if Tenured**	**Courses Taught Put (C) to indicate core course. Put (OL) next to any course currently taught online.**	**Number of sections per year**	**Division of College of Employment**	**Full- or Part- time in Program**	**Full- or part-time in other department or program (Please specify)**	**Sites where individual will teach program courses**
Fontaine, Raymond A.S. in Graphic Arts Technology; B.A. in English; Professor	☒	• Introduction to Digital Photography (C)	[2]	School of Engineering Technologies	Part-time	Yes, full-time in Graphic Arts Technology	• Main Campus
Hall, Warren, Assoc. AIA M.S. in Design; Professor & Program Coordinator	☒	• Building Codes and Principles (C) • Architectural Design I: *Design Process/2D* (C) • Architectural Design II: *Design Process/3D* (C) • Architectural Design IV: *Portfolio/Capstone Project* (C) • Construction Estimating (C) • Construction	[1] [4] [2] [1] [2] [1]	School of Engineering Technologies School of Continuing Education	Full-time	Yes, part-time in Civil Engineering Technology	• Main Campus

		Materials and Methods					
DeForge, Jennifer B.A. in University Without Walls (with concentration in Sustainable Architecture); Instructor	☐	• Architectural CAD I (C)	[1]	School of Continuing Education	Part-time	No	• Main Campus
Nardi, Alfonso, RA, AIA B.S. in Architecture; Instructor	☐	• Architectural Design III: *Public/Commercial Spaces* (C)	[1]	School of Continuing Education	Part-time	No	• Main Campus
Vetrano, Robert Instructor	☐	• Architectural CAD I (C) (OL) • Architectural CAD II (C) (OL)	[4] [4]	School of Continuing Education	Part-time	Yes, part-time in Civil Engineering Technology	• Main Campus