



CONNECTICUT STATE COLLEGES & UNIVERSITIES

BOARD OF REGENTS FOR HIGHER EDUCATION

BOR ACADEMIC AND STUDENT AFFAIRS COMMITTEE

AGENDA

Friday March 2, 2012, 9:30 a.m. to 11:30 a.m. -- 39 Woodland St., Hartford, CT 06105

ACTION ITEMS

1. Approval of Nominations for Honorary Doctoral Degrees

2. Approval of BOR Policy for the Nomination of Honorary Degree Recipients

3. Academic Program Approvals*

a) New Degree Programs

Accreditation

- Bachelor of Science in Civil Engineering, *Central Connecticut State University*

Licensure and Accreditation

- Associate in Science in Computer Game Design, *Manchester Community College*

- Bachelor of Science in Robotics and Mechatronics Engineering Technology, *Central Connecticut State University*

- Bachelor of Arts in Women's and Gender Studies, *Eastern Connecticut State University*

b) Modifications to Existing Programs

- Modification Changing Degree Title from Bachelor of Arts to Bachelor of Science for the Kinesiology and Exercise Science Program, *University of Connecticut*

- Eliminating the Ph.D. Program in Adult Education to Create a New Ph.D. Program in Learning, Leadership and Educational Policy, *University of Connecticut*

- Modifications to the Ph.D., M.A. and Sixth-Year Certificate Programs in Educational Psychology in the Neag School of Education, *University of Connecticut*

INFORMATION ITEMS

4. Programs Modifications Not Requiring BOR Action **

Community College System

- Certificate in Entrepreneurship Linked to A.S. in Business Administration, *Tunxis Community College*

- Certificate in Finance Linked to A.S. in Business Administration - Finance Option, *Tunxis Community College*

- Stand Alone Certificate in Homeland Security (9 Cr), *Tunxis Community College*

- Course Requirement Modifications in the Associate in Science in Human Services, *Northwestern Connecticut CC*

Connecticut State University System

- Establishment of an Accelerated Path to the Bachelor of Science and Master of Science (4+1) Degrees in Chemistry, *Southern Connecticut State University*

- Online Offering of an Existing Advanced Graduate Certificate Program in Women's Studies, *Southern Connecticut State University*

- Modification to the Bachelor of Science in Meteorology to Strengthen Requirements, Create a Single Broadcast Option and Eliminating Theoretical and Operational Options, *Western Connecticut State University*

- Modification Strengthening Requirements in the Bachelor of Arts in Earth and Planetary Sciences, *Western Connecticut State University*

- Modification of the Master of Science in Education to Create a Curriculum Leadership Option with Specializations in Curriculum for the Classroom Teacher, Curriculum for the Content Area, and Teacher Leader, *Western Connecticut State University*

(continued)

University of Connecticut:

- Location Modification to Offer the English Major at the Avery Point Campus
- Renaming 12-cr Women's Studies Graduate Certificate to Feminist Studies Graduate Certificate
- Renaming an existing Area of Concentration in the existing M.A. in Educational Psychology degree program from Cognition and Instruction to Cognition, Instruction, and Learning Technology
- Merging two existing areas of concentration Cognition and Instruction and Educational Technology in the Sixth-Year Graduate Certificate program, into one Certificate Program under the name Cognition, Instruction, and Learning Technology
- Online Offering of an Existing 12-cr Graduate Certificate in Geographic Information Systems
- Renaming the Plant Science Concentration to Turfgrass Science and Agronomy Concentration
- New 12-cr Graduate Certificate in Clinical and Translational Research in the School of Medicine at the University of Connecticut Health Center
- New 15-cr Occupational Safety and Health (OSH) Undergraduate Certificate for Non-Degree Students
- New 15-cr Web Technology Certificate for Non-Degree Students
- New 15-cr Concentrations on Nonprofit Leadership within the Bachelor of Professional Studies
- New 15-cr Concentration on Employment and Labor Studies within the Bachelor of Professional Studies

DISCUSSION ITEMS

- 5. Overview of Current Program Review Policies at BOR Institutions and Discussion of Oversight and Review by the BOR**
- 6. Briefing on Current Pending Legislation Concerning Academic Issues***
 - a) Transfer Bill
 - b) Remediation Bill
- 8. Adjourn**

* Information attached

** Below-Threshold Items Not Requiring External Review: Detailed documentation on file and available on request

CONNECTICUT BOARD OF REGENTS FOR HIGHER EDUCATION

APPLICATION FOR ACREDITATION OF A LICENSED PROGRAM (Public Higher Education Institutions) - 01/20/12

SECTION 1: GENERAL INFORMATION

Institution: Central Connecticut State University	Date of Submission to BOR Office: Feb 14, 2012
Most Recent NEASC Institutional Accreditation Action and Date: "Continued in accreditation", March 6, 2009 ¹	
Program Characteristics Name of Program: Civil Engineering Degree: Title of Award (e.g. Master of Arts) Bachelor of Science Date of Program Initiation: June 18, 2009 Anticipated Date of First Graduation: May 16, 2012 Modality of Program: X On ground Total # Cr the Institution Requires to Award the Credential (i.e. include program credits, GenEd, other): 129 to 137 ²	Program Credit Distribution # Cr in Program Core Courses: 53 ³ # Cr of Electives in the Field: 10 ⁴ # Cr of Free Electives: 0 # Cr Special Requirements (include internship, etc.): 24 or 25 ⁵ <u>Total # Cr in the Program (sum of all #Cr above): 87 to 88</u> From "Total # Cr in the Program" above, enter #Cr that are part of/belong in an already approved program(s) at the institution: 46 or 47
CIP Code No. 140801 Title of CIP Code Civil Engineering CIP Year: 2000 X DHE#: 15032	
Institution's Unit and Location Offering the Program: School of Engineering and Technology, Main campus, New Britain	
Program Accreditation: <ul style="list-style-type: none"> If seeking specialized/professional/other accreditation, name of agency and intended year of review: EAC of ABET ⁶ If program prepares graduates eligibility to state/professional license, please identify: EIT and PE ⁷ 	
Institutional Contact for this Proposal: Zdzislaw B. Kremens	Title: Dean, School of Engineering and Technology Tel.: (860) 832-1800 e-mail: kremensz@ccsu.edu

Annotations:

- ¹ The next NEASC comprehensive evaluation is scheduled for Fall 2018.
- ² Students meeting foreign language requirement prior to enrollment can complete requirements for award of degree with 129 or 130 credits, with the variation based on a materials analysis course selection. Students who must take 6 credits of foreign language, and who elect to take CM 356, may need 137 credits to complete requirements for award of degree.
- ³ Program core courses include: 35 credits (12 courses) with CE designation, 6 credits (2 courses) with ME designation, 15 credits (5 courses) with ENGR designation, 8 credits (2 courses) with MATH designation, and 10 credits (3 courses) with other designations. The program General Education requirements include: 9 credits (3 courses) of Arts and Humanities, 6 credits (2 courses) of Social Sciences, 3 credits (1 course) of Behavioral Science, 8 credits (2 courses) of Natural Science (calculus-based Physics), 6 credits (2 courses) of Communication Skills (including Composition), 8 credits (2 courses) of Mathematics (Calculus I and II), and 2 or 3 credits (1 course) of Fitness/Wellness. Students without demonstrated foreign language proficiency will need to complete 6 credits (2 courses) of a foreign language.
- ⁴ Electives in the field include 4 credits (1 course) of science elective (Biology, Geology or Biomolecular Science), 3 or 4 credits (1 course) of materials science, and 6 credits (2 courses) of directed technical electives (designated courses in engineering or mathematics).
- ⁵ Students must register to take the 8-hour NCEES Fundamentals of Engineering examination as a condition for completion of the senior projects class.
- ⁶ The Civil Engineering program is preparing to obtain accreditation from the Engineering Accreditation Commission of ABET, Inc. A "Request for Evaluation" was submitted to ABET, Inc. on January 20, 2012. ABET accreditation can only be completed following the first award of degrees from the Civil Engineering program, because assessment must include an evaluation of the program's graduates. The initial program self-assessment study is scheduled to be submitted to ABET, Inc. in June 2012. Upon ABET accreditation of the Civil Engineering program, the accreditation will be retroactive to include the first graduates in May 2012.
- ⁷ Program graduates successfully completing the 8-hour Fundamentals of Engineering examination will be granted an Engineer-in-Training (EIT) certificate by the Connecticut State Board of Examiners for Professional Engineers and Land Surveyors. Additionally, upon completion of 4-years of professional engineering experience, and successful completion of an 8-hour Principles and Practices of Engineering examination, graduates of the program can be licensed as Professional Engineers by the Connecticut State Board. Professional Engineering licensure can normally be transferred to other states.

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SECTION 2: UPDATE OF PROGRAM CHANGES AND ENROLLMENTS

Program Outline : Bachelor of Science in Civil Engineering

Mission

The mission of the civil engineering program is to provide students with a broad and thorough education in civil engineering fundamentals, applications, and design that prepares them for the practice of civil engineering at the professional level with confidence and skills necessary to meet the technical and social challenges of the future. The program provides a broad and thorough education in mathematics, physics, chemistry, engineering mechanics, and civil engineering, coupled with application of modern engineering tools. Graduates will attain the skills for entry-level civil engineering positions leading to professional engineering registration, and will have a solid undergraduate foundation in general civil engineering principles, enabling continued education at advanced levels.

Admission Requirements

In addition to CCSU admissions standards, the undergraduate Civil Engineering (CE) program has the following requirements:

- Completion of, or eligibility to enroll in, MATH 152 (Calculus I) and
- Completion of, or eligibility to enroll in, ENG 110 (Freshman Composition)

First year students can meet the mathematics eligibility requirement by:

- A Scholastic Aptitude Test (SAT) Mathematics score of 600 or higher, and completion of a two-semester high school pre-calculus or calculus course with a grade of B or better. Both the SAT of 600 and the high school course are required.
- Completing the Advancement Placement exam for Calculus AB, with a minimum score of 3. These students will be granted credit for MATH 152.

Students who do not meet the mathematics eligibility criteria may meet the MATH 152 requirement by taking CCSU's Mathematics Placement Exam given by CCSU's Learning Center.

Curriculum

The Bachelor of Science in Civil Engineering is a program of study that requires 129-137 credits of undergraduate work, including a two-term senior project capstone requirement completed through oral and written reports. Non-transfer students who meet foreign language requirements with high school credits can complete the program with 129 or 130 credits. Required courses include General Education, Major Requirements, and Additional Requirements, as detailed below.

<i>General Education</i>		<i>42-49 credits</i>
Study Area I	Lit., Phil or Fine Arts	9
Study Area II	Social Science (History/Econom)	6
Study Area III	Behavioral Sciences	3
Study Area IV	Physics 125, Physics 126	8
Skill Area I	Eng 110	3
Skill Area I	ENGR 290 Tech Writing & Present	3
Skill Area II	Math 152, Math 221 (Calculus)	8
Skill Area III	Foreign Lang & International	0-6
Skill Area IV	PE 144 or ENGR 150 (x-fer only)	2-3

Major Requirements *53 credits*

4 courses (12 credits) Engineering Fundamentals
(ENGR 150 - Intro to Engineering, ENGR 251 – Statics,
ENGR 252 – Dynamics, and ENGR 257 - Mechanics of Materials)

2 courses (6 credits) Mechanical Engineering
(ME 258 – Thermodynamics, and ME 354 - Fluid Mechanics)

12 courses (35 credits) Civil Engineering
(CE 253 - Intro to Engr. Surveying, CE 375 - Hydraulic Engr.,
CE 397 - Structural Analysis, CE 451 - Soil. Mech & Found w/Lab,

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CE 454 - Intro to Transportation Engr,
CE 458 - GPS Mapping or CE 357 - Advanced Surveying,
CE 470 - Structural Steel Design, CE 471 - Reinforced Conc. Structures,
CE 475 - Hydrology & Storm Drainage, CE 476 - Environmental Engr.,
CE 497 - Prof. Practice & Sr Proj Reserch, and CE 498 - Senior Design Project)

Additional Requirements

34-35 credits

5 courses (16 credits) Additional science and mathematics

(CHEM 161 - General Chemistry I and CHEM 162 - Chem Lab,
MATH 226 - Linear Algebra and Probability, MATH 335 - Differential Equations, and
BIO 121 or BMS 102/103 or ESCI 121 - Science elective w/lab)

4 courses (12 or 13 credits) Additional engineering and technology

(CET 236 - Circuit Analysis, ETC 122 - Intro CAD for AEC,
ENGR 240 - Spreadsheet & Engr. Prob. Solv. Tools, and
ETM 356 - Materials Analysis or CM 356 - Materials of Const.)

2 courses (6 credits) Directed Technical Electives

Curriculum Revisions

In 2010, a new course ENGR 290 - Engineering Technical Writing and Presentation (3 credits) was added to the Civil Engineering curriculum. The course was developed in cooperation with the English Department, and met the requirements for Skill Area I (Communications) of the CCSU general education curriculum. The new course and an additional directed technical elective replaced COMM 140 (public speaking) and ENG 403 (technical writing) in the program requirements.

Beginning in the Spring 2012 semester, the prerequisites for many courses were revised to require that a grade of C- or higher for program critical courses used as a prerequisite in a subsequent course. Prior to this date, the course needed to be repeated prior to graduation for a grade lower than C-, but a subsequent course could be taken with a grade of D or higher. The curriculum revisions changed minimum grade requirements when the following courses are used as a prerequisite: CE 375, CE 397, ENGR 150, ENGR 251, ENGR 252, ENGR 257, ME 258, ME 354, MATH 221 and PHYS 125.

Curricular and Other Program Changes

In 2010, a new course ENGR 290 - Engineering Technical Writing and Presentation (3 credits) was added to the Civil Engineering curriculum.

Beginning in Spring 2012, students must complete most program core courses with a C- or better. The prerequisites for many courses have been changed so the C- grade is included as a course prerequisite.

Compliance with Special Requirements Given at the time of Program Licensure

From the Board of Governors for Higher Education, minutes of the meeting June 17, 2009: "After discussion, J. Reynolds moved that the Board of Governors license a program in civil engineering, leading to the Bachelor of Science degree, offered by Central Connecticut State University, for a period of three years, until June 30, 2012. M. Werle seconded; the motion passed unanimously."

No other program requirements have been identified in the minutes of the Board of Governors for Higher Education.

Special Requirements included in the CCSU CE Application for Licensure

Page 14 of the CCSU, School of Engineering and Technology, *Application for Licensure of a Program of Higher Learning Within an Accredited Connecticut Institution of Higher Learning, Bachelor of Science in Civil Engineering* (2009) contained the following:

"The Civil Engineering program will replace the Civil Engineering Technology program that is currently offered by the Department of Engineering. The Civil Engineering Technology program will be phased out and terminated when students in the existing program meet graduation requirements or transfer to the Civil Engineering program."

Additionally, on page 26 of the *CCSU CE Application for Licensure*:

"With implementation of recent changes to the NCEES Model Law, ETC students may not only face added professional hurdles but may not be able to obtain the registration essential for civil engineering professional

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practice.”

The 2011-2013 CCSU Undergraduate Catalog contains the following admissions timetable:

“The CCSU Department of Engineering will be phasing-out the Civil Engineering Technology program over the next few years and transitioning to the Civil Engineering program. The department will continue to admit students to the Civil Engineering Technology program under the following schedule:

Status of admitted student	Last start date of study
a. High school graduate/first year	Fall 2010
b. Community college transfer (with 30 semester credits at date of entry)	Fall 2011
c. Community college transfer (with a two-year associates degree in Engineering Science or Technological Studies)	Fall 2012”

Other Narrative Background to be Considered Since Licensure Approval

Central Connecticut State University, Application for Licensure of a Program Of Higher Learning within an Accredited Connecticut Institution of Higher Learning, Bachelor of Science in Civil Engineering was submitted in 2009. That document contained an extensive presentation of program need, and the information continues to be appropriate for this application for accreditation.

The School of Engineering and Technology information in the on-line CCSU 2011-2013 *Undergraduate Catalog* contains a major section describing Cooperative Technology Programs and the “Engineering Science Pathway/Degree Program” within the “Connecticut College of Technology” that was created by Public Act 92-126. The Engineering Science Curriculum documents a 63-credits program that allows individuals to begin their studies at a community or technical college and transfer directly to CCSU's School of Engineering and Technology.

The Engineering Science Curriculum includes arts, humanities, social science, behavioral science, composition and communication subjects that can be transferred to the general education courses required for completion of the Civil Engineering program. It is anticipated that 5 of these general education courses (15 credits) will be transferred with the Engineering Science program. To further facilitate transfer of courses from Connecticut community colleges, the Department of Engineering has prepared a course number list with 16 core and special requirements courses (with 56 credits) that can be directly transferred to specific courses in the CCSU Civil Engineering program. The list includes 4 mathematics courses (16 credits), 4 science courses (16 credits), 6 general engineering courses (18 credits), and 2 civil engineering courses (6 credits).

Students who begin their studies at a Connecticut community college and follow the Engineering Science Curriculum will find that their courses will transfer to CCSU's Civil Engineering program, even if they do not complete the full two years of the Engineering Science associated degree program. A Spring 2012 records review of students enrolled in the Civil Engineering program showed that 40% had completed at least one semester of course work at a Connecticut community college.

Enrollment and Credentialing Information

ACTUAL Enrollment	First Term Year 1 (F09)		First Term Year 2 (F10)		First Term Year 3 (F11)	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Internal Transfers	19	2	16	3	14	0
New Students	3	0	21	2	9	2
Returning Students	0	0	19	1	42	8
ACTUAL Headcount Enrollment	22	2	56	6	65	10
ACTUAL FTE per Year	22.7		58.0		68.3	
PROJECTED FTE (at Licensing)	17.7		37.0		55.3	
ACTUAL-PROJECTED	5.0		21.0		13.0	
Size of First Grad Class	10		Date of First Graduation		16-May-12	

CT Board of Regents for Higher Education

ACCREDITATION OF A LICENSED PROGRAM - RESOURCES AND COST ESTIMATES 1/20/12 Form

Institution Central Connecticut State University
 Licensed Program Civil Engineering

Date Feb. 7, 2012

ACTUAL Enrollment	First Term Year 1 (F09)		First Term Year 2 (F10)		First Term Year 3 (F11)	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Internal Transfers ¹	19	2	16	3	14	0
New Students	3	0	21	2	9	2
Returning Students	0	0	19	1	42	8
ACTUAL Headcount Enrollment	22	2	56	6	65	10
ACTUAL FTE per Year	22.7		58.0		68.3	
PROJECTED FTE (at Licensing)	17.7		37.0		55.3	
ACTUAL-PROJECTED	5.0		21.0		13.0	
Size of First Credentialed Group	10		Date of Award of First Credential		16-May-12	

Estimated Program Revenue	Year 1 (F09/S10)		Year 2 (F10/S11)		Year 3 (F11/S12)	
	Full Time at \$7417	Part Time at \$350	Full Time at \$7861	Part Time at \$375	Full Time at \$8055	Part Time at \$384
Tuition (Do not include internal transfers)	\$22,242	\$0	\$314,440	\$4,500	\$410,805	\$15,360
Program Specific Fees	\$0	\$0	\$0	\$0	\$0	\$0
Other Rev. (Annotate in text box below)	\$0		\$0		\$0	
ACTUAL Program Revenue	\$22,242		\$318,940		\$426,165	
PROJECTED Rev. (at Licensing)	\$67,420		\$149,484		\$231,548	
Dif. ACTUAL-PROJECTED	-\$45,178		\$169,456		\$194,617	

Estimated Expenditures* ²	Year 1 (F09/S10)		Year 2 (F10/S11)		Year 3 (F11/S12)	
	Number (as applicable)	Expenditure	Number	Expenditure	Number	Expenditure
Administration (Chair/Coordinator)	0.1	\$7,500	0.2	\$15,400	0.3	\$23,700
Faculty (full-time, total for program) ³	1.0	\$74,800	1.5	\$114,150	2.0	\$154,800
Faculty (part-time, total for program)	1.0	\$8,500	1.0	\$8,700	2.0	\$17,800
Support Staff	0.2	\$7,000	0.2	\$7,200	0.2	\$7,400
Library Resources Program		\$1,000		\$1,000		\$2,000
Equipment (List if needed) Labs		\$3,000		\$20,000		\$50,000
Other (ABET Accreditation) ⁴		\$2,000		\$2,000		\$18,000
Estimated Indirect Costs (e.g. student services, operations, maintenance)		\$10,000		\$15,000		\$20,000
Total Annual Expenditures		\$113,800		\$183,450		\$293,700

* Note: Capital outlay costs, institutional spending for research and service, etc. can be excluded.

Please provide any necessary annotations:

¹ Internal transfers are primarily from the Mechanical Engineering and Civil Engineering Technology programs, and from "undeclared technology" - a non-degree designation for students planning to transfer to a degree program.

² The Department of Engineering administers the Civil Engineering, Mechanical Engineering, Civil Engineering Technology, Mechanical Engineering Technology, and Manufacturing Engineering Technology BS programs, and the Engineering Technology - Civil/Construction and Mechanical/Manufacturing MS programs.

³ Three full-time Civil Engineering faculty teach CE (Civil Engineering) courses and courses with ENGR, ET, ETC and CM designations. In F09/S10 two CE courses were offered, in F10/S11 seven CE courses were offered, and in F11/S12 twelve CE courses were offered.

⁴ The Civil Engineering program is preparing to obtain accreditation from the Engineering Accreditation Commission of ABET, Inc. A "Request for Evaluation" was submitted to ABET, Inc. on January 20, 2012. ABET accreditation can only be completed following the first award of degrees from the Civil Engineering program, because assessment must include an evaluation of the program's graduates. The initial program self-assessment study is scheduled to be submitted to ABET, Inc. in June 2012. Upon ABET accreditation of the Civil

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Details of Curriculum Changes for a Licensed Program with Changes as Noted (to be use as needed)**						
Course Number and Name ¹	L.O. # ²	Pre-Requisite	Cr Hrs	Course Number and Name	L.O. #	Cr Hrs
Program Core Courses				Other Related/Special Requirements		
ENGR 150 Intro to Engineering	---	None	3	CET 236 Circuit Analysis	I.a	3
ENGR 251 Statics	I.a, II.a	PHYS 125	3	Chem 161,162 General Chem. I	I.b	4
ENGR 252 Dynamics	I.a, II.a	ENGR 251	3	ETC 122 Intro CAD for AEC	1.g	3
ENGR 257 Mechanics of Materials	I.a, II.a	ENGR 251	3	ENGR 240 Spreadsheet & Engr.	1.k	3
ME 258 Thermodynamics	I.a, II.a	PHYS 125	3	Problem Solv. Tools		
ME 354 Fluid Mechanics	I.a, II.a	MATH 355	3	Math 226 Linear Algebra & Prob.	---	4
CE 253 Intro to Engr. Surveying	I.d, II.c	MATH 152	3	Math 335 Differential Equations	---	4
CE 375 Hydraulic Engr.	I.j, I.e	ME 354	3	ETM 356 Materials Analysis	1.g	3
CE 397 Structural Analysis	I.e, II.b	ENGR 257	3	(or CM 356 Materials of Const.)		(or 4)
CE 451 Soil. Mech & Found w/Lab	II.b, II.c	ENGR 257	4			
CE 454 Intro to Trans Engr	I.e, I.h, I.j	CE 253	3	Registration for the 8-hr NCEES	I.a, I.e	0
CE 458 GPS Mapping	I.k, II.c	CE 253	3	Fundamentals of Engineering exam	I.f, I.k	
or CE 357 Advanced Surveying		CE 253		is required for completion on CE 498.	II.a, II.b	
CE 470 Structural Steel Design	I.c, II.d	CE 397	3	Most students will take the FE exam	& II,d	
CE 471 Reinforced Conc. Structures	I.c, II.d	CE 397	3	in the fall semester.		
CE 475 Hydro & Strom Drainage	I.k, II.d	CE 375	3		Total=	24
CE 476 Environmental Engr.	I.e, I.h, I.j	CE 375	3			or 25
CE 497 Prof. Practice & Sr Proj Res.	*	CE 375/397	2			
CE 498 Senior Project (Capstone)	*	CE 375/397	2			
* L.O. = I.c, d, e, f, g, I, h, and II.b, d, e, f						
			Total =	53		
Core Course Prerequisites (included in General Education)				Elective Courses in the Field		
Physics 125 Physics I (Calculus based)			4	Science elective w/lab	I.b	4
Physics 126 Physics II (Calculus based)			4	(BIO 121 - Biology,		
Math 152 Calculus I			4	BMS 102/103 - Biomolecular Sci.,		
Math 221 Calculus II			4	or ESCI 121 – Geology)		
ENGR 290 – Engr. Technical Writing and Presentation***			3	Directed Technical Elective		3
Total =			19	Directed Technical Elective***		3
				Total=	10	
** Courses were not changed from the curriculum in the Application for Licensure except as noted.						
*** Added to CE program in 2010						
**** General Education includes the "Core Course Prerequisites" plus "Total Other Credits"						
Total Other Credits Required to Issue Credential (e.g. GenEd/Liberal Arts Core/Liberal Ed Program)****						23 to 30
Other Narrative Background Since Licensure Approval (As needed, consider other changes such as program need and demand, transfer agreements developed, etc.)						
In 2010, the University hired Dr. Bin (Brenda) Zhou for a tenure- track position in the Department of Engineering. Dr. Zhou has an educational and professional engineering background in transportation engineering and planning. She teaches the Introduction to Transportation Engineering course in the Civil Engineering program, and has taught transportation related courses in our Master of Science in Engineering Technology program. The University has recently initiated a faculty search for						

¹ Modify format as needed. Please use ~~Strikeout~~ text to indicate elimination and **Bold** text to mark the substitution.

² Learning Outcome

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a new civil engineering position for the Department of Engineering. It is anticipated that the new faculty member will be available to teach civil engineering program classes beginning in the Fall 2012 semester.

Learning Outcomes - L.O. (Please list up to seven of the most important student learning outcomes for the program, and any changes introduced)

The *Criteria for Accrediting Engineering Programs* (Effective for Reviews During the 2012-2013 Accreditation Cycle, by the Engineering Accreditation Commission of ABET, Inc.) includes eleven student outcomes (I.a through k) applicable to engineering programs. In addition, the ABET, Inc. "Program Criteria For Civil And Similarly Named Engineering Programs" contains additional curriculum criteria that describe student outcomes applicable to civil engineering programs (II.a through f). Assessment of these learning outcomes will be included in the program self-study prepared with the initial ABET accreditation application. The ABET accreditation process begins when the first students graduate from the Civil Engineering program.

Part I - Civil Engineering graduates will have:

- a) an ability to apply knowledge of mathematics, science, and engineering to solve civil engineering problems and design civil engineering projects [Short title: Mathematics, science and engineering knowledge];
- b) an ability to design and conduct experiments, as well as to analyze and interpret data [Short title: Experiments];
- c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability [Short title: Design];
- d) an ability to function on multidisciplinary teams [Short title: Teams];
- e) an ability to identify, formulate, and solve engineering problems [Short title: Engineering problems];
- f) an understanding of professional and ethical responsibility [Short title: Professional & ethical responsibility];
- g) an ability to communicate effectively [Short title: Communication];
- h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context [Short title: Global, economic, environmental & societal context];
- i) a recognition of the need for, and an ability to engage in life-long learning [Short title: Life-long learning];
- j) a knowledge of contemporary issues [Short title: Contemporary issues]; and
- k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice [Short title: Techniques, skills & tools].

Part II - Civil Engineering graduates will have the additional ability to:

- a) apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of science [Short title: CE mathematics and science];
- b) apply knowledge of four technical areas appropriate to civil engineering [Short title: CE technical areas];
- c) conduct civil engineering experiments and analyze and interpret the resulting data [Short title: CE experiments];
- d) design a system, component, or process in more than one civil engineering context [Short title: CE Design];
- e) explain basic concepts in management, business, public policy, and leadership [Short title: CE management, business & public policy]; and
- f) explain the importance of professional licensure [Short title: CE professional licensure].

Purposes and Objectives

The CCSU Department of Engineering has designed the Civil Engineering Program to support the University's and School's Missions in response to the University's commitment to provide access to higher education for all citizens in this state who can benefit from the University's offerings. Detailed descriptions of the program purposes and objectives are contain on pages 4 through 12 of the CCSU, School of Engineering and Technology, Application for Licensure of a Program of Higher Learning Within an Accredited Connecticut Institution of Higher Learning, Bachelor of Science in Civil Engineering (2009) The purposes

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and objectives described in the CCSU CE Application for Licensure remain valid for this Application for Accreditation, including the following:

Brief Mission Statements:

School of Engineering and Technology

The School of Engineering and Technology at CCSU provides educational opportunities in an array of engineering, technological and scientific disciplines. The teaching and research of our faculty focus on both theory and its practical application to solving problems. We prepare students to meet dynamic engineering, technological and scientific challenges as leaders and members of engineering, technical, management, research, biomedical, and educational teams.

Bachelor of Science in Civil Engineering – Mission

The mission of the civil engineering program is to provide students with a broad and thorough education in civil engineering fundamentals, applications, and design that prepares them for the practice of civil engineering at the professional level with confidence and skills necessary to meet the technical and social challenges of the future. The program provides a broad and thorough education in mathematics, physics, chemistry, engineering mechanics, and civil engineering, coupled with application of modern engineering tools. Graduates will attain the skills for entry-level civil engineering positions leading to professional engineering registration, and will have a solid undergraduate foundation in general civil engineering principles, enabling continued education at advanced levels.

Program Objectives:

The Bachelor of Science in Civil Engineering graduates will develop in-depth, applied skills and gain industry-relevant experience within the academic environment through classroom lecture, laboratory experimentation, demonstrations, and course projects.

1. Graduates will be prepared in advanced mathematics through calculus and differential equations, calculus-based physics, chemistry, and at least one additional area of science. Upon graduation, students will have acquired the knowledge to apply the fundamental engineering sciences common to most engineering disciplines (such as statics, dynamics, thermodynamics, and mechanics of materials). Additionally, they will have knowledge of at least four technical areas appropriate to civil engineering (such as engineering surveying, structural engineering, water resources engineering, transportation engineering, geotechnical engineering and environmental engineering).
2. Graduates will have acquired relevant professional practice experience within the academic environment through course projects, laboratory experimentation, classroom lectures and demonstrations.
3. Graduates will possess effective communication skills in oral, written, visual and graphic modes for interpersonal, team, and group environments.
4. Graduates will have gained appreciation for the responsibility of the contemporary engineer to demonstrate professionalism and ethics, respect for diversity, and awareness of sustainability and international issues.

Administration

Detailed descriptions of the program administration were included on pages 30 and 31 of the “CCSU CE Application for Licensure”.

The first new Civil Engineering students enrolled and began taking classes in the fall 2009 semester. First year students normally included Introduction to Engineering (ENGR 150), Calculus I (MATH 152) and Freshman Composition (ENG 110) in their first semester courses. Following a first year mostly devoted to general studies, mathematics and physical science, Civil Engineering students would take Engineering Mechanics I – Statics (ENGR 251) and Introduction to Surveying (CE 253). First-year students entering the program in the fall 2009 semester have an expected graduation in the spring 2013 semester.

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Following the program licensure approval, 19 students transferred to the Civil Engineering program in the fall 2009 semester. Eight of these transfer students had completed the engineering courses that were in the first year program for CCSU Mechanical Engineering students, and their transfer to the Civil Engineering program in fall 2009 gave them sophomore level status. Additional students with first and second year course work have subsequently transferred into the Civil Engineering program. Ten students are scheduled to graduate from the Civil Engineering program at completion of the spring 2012 semester.

The Civil Engineering program is administered by the Department of Engineering. The engineering faculty in the Department of Engineering will advise the students enrolled in the program.

- Dr. Zdzislaw B. Kremens, Dean of the School of Engineering and Technology, is responsible for the administration of the departments, faculty, staff and programs within the School of Engineering and Technology.
- Dr. Alfred A. Gates, Chair, Department of Engineering, is responsible for the administration of all the programs offered by the department.
- Dr. Clifford Anderson, PE, D.WRE is the program coordinator for the Civil Engineering program.

The School of Engineering and Technology submitted a "Request for Evaluation" of the Civil Engineering program to the Engineering Accreditation Commission of the ABET, Inc. on January 20, 2012 (formerly the Accreditation Board for Engineering and Technology, Inc., EAC of ABET). The proposed program curriculum, program monitoring and administration were specifically designed to meet the most recent criteria adopted by EAC of ABET, Inc. for civil engineering programs. The formal accrediting process cannot be initiated until a program has its first graduates, but ABET, Inc. will normally grant retroactive accrediting approval that includes the first graduating class.

CCSU requires an annual assessment of its programs in addition to the assessment requirements of the professional accreditations. The procedure for internal evaluation of the Civil Engineering program conforms to the University's requirements and EAC of ABET's assessment standards. Annual assessment reports for the 2009-2010 and 2010-2011 academic years have been submitted for University committee review.

The School of Engineering and Technology has well-established standards (Policy and Procedures) for appointment of Industrial Advisory Boards, and the roles and responsibilities in the assessment process of the academic programs offered by the school. A Civil Engineering Industrial Advisory Board has been appointed. Its members have private industry and government agency experience that provides expertise and knowledge of current engineering practice. They will help the program create alliances with regional industries and government agencies. The Board assists and recommends to faculty and administration matters concerning:

- Student recruitment,
- Evaluation and suggesting modifications of existing programs and courses, and
- Analysis of needs and development of new courses and programs to meet the identified needs.

Program revision, curriculum and course revisions must be approved by the Department of Engineering faculty before being submitted for curriculum review by other departments. The School of Engineering and Technology has curriculum procedures and policies, which call for inter-departmental consultations, review and consensus prior to approval by the Dean. Finally, the University has well-established procedures for University Curriculum Committee, Faculty Senate and the University administration approval of course and curriculum additions or revisions.

SECTION 3: ENROLLMENT, CREDENTIALLING AND FINANCIAL CONSIDERATIONS

Program Resources and Cost Estimates

It is expected that enrollment in the Civil Engineering program will increase beyond the 65 full-time students and 10 part-time students enrolled in the Fall 2011 semester. Many students that come into the program are first enrolled in "undeclared technology" while they complete the pre-calculus or freshman composition requirements that will allow them to enroll in civil engineering. In the Fall 2011 semester, there were 53 "undeclared technology" students, and at least 10 of these students were taking classes that would facilitate transfer to the Civil Engineering program. It is anticipated that full-time enrollment in

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the Civil Engineering program will increase by 10 to 15 students each year for the next two to three years.

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SECTION 1: GENERAL INFORMATION

Institution: Manchester Community College	Date of Submission to BOR Office: 2-6-2012	
Most Recent NEASC Institutional Accreditation Action and Date: 2007; fifth-year report; accepted		
Program Characteristics Name of Program: Computer Game Design Degree: Title of Award (e.g. Master of Arts) A.S. Anticipated Program Initiation Date: Fall 2012 Anticipated Date of First Graduation: May 2014 Modality of Program: X On ground Total # Cr the Institution Requires to Award the Credential (i.e. include program credits, GenEd, other): 64	Program Credit Distribution # Cr in Program Core Courses: 37 # Cr of Electives in the Field: 3 # Cr of Free Electives: 24 General Education # Cr Special Requirements (include internship, etc.): <u>Total # Cr in the Program</u> (sum of all #Cr above): 64 From "Total # Cr in the Program" above, enter #Cr that are part of/belong in an already approved program(s) at the institution: 52	
Type of Approval Action Being Sought: X Licensure and Accreditation BOR-Assigned CIP Code No.: 500411 Title of CIP Code: Game and Interactive Media Design		
Program Discontinued: Computer Game Design Option, Multimedia Studies A.S. CIP: 099999 DHE#: 15351 Accreditation Date: 2009 Phase Out Period 2 yrs Date of Program Termination Dec 31, 2014		
Institution's Unit Location Offering the Program: Liberal Arts Division, Main Campus		
Institutional Contact for this Proposal: Dr. Joanne Russell	Title: Dean of Academic Affairs	Tel.: 860 512 2603 e-mail: JRussell@mcc.commnet.edu

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SECTION 2: PROGRAM PLANNING ASSESSMENT (For BOR Review Only)

Alignment of Program with Institutional Mission, Role and Scope

The purpose of the Computer Game Design program is to provide students who are interested in a career in this multi-billion dollar industry comprehensive instruction in all aspects of computer game design, programming and production. The specific program objectives include:

- To provide instruction in all production aspects of game design and production including animation, sound design, game level design, 3D modeling, and computer graphics.
- To connect the media creation aspects of game design with the computer science programming necessary to produce functioning gameplay.
- To integrate creative thinking and technical skills in the development of original gaming concepts
- To offer an overview of the games industry including tracking industry trends, preparation of production proposals and budgets, and the development and responsibilities of production teams.

The target audience for this program includes both full and part time students with an interest in pursuing a career as a designer or producer in the game industry as well as media professionals (in communications, advertising, design, and web technology) who wish to extend their skills in the realm of game development.

Addressing Identified Needs

The state already has several companies that identify themselves primarily as game design/production facilities. The state has seen a significant rise in the number of film and TV productions that are based in Connecticut. The rise in recent years (and the projections for the near future) can be attributed to the favorable business climate that was created when the Connecticut state legislature created a tax credit for production companies in the entertainment industry. The electronic gaming industry, as one of the largest segments of entertainment in the world, also received the tax credit benefit and brings \$48 million to the state annually (New Haven Register on August 10, 2010).

The Computer Game Design program proposal grew out of MCC's Multimedia Studies program and shares many of that program's course work, faculty and technology resources. For example, the program coordinator for Multimedia Studies prepared this proposal and will serve as program coordinator for the new program upon its approval. Much of the technology (computer labs and software) already in place for Multimedia Studies classes will be employed in many of the new core courses for the new program. In addition to Multimedia Studies the program proposal has received support from MCC's Computer Science department who helped identify the courses in programming that are relevant to the game world.

Transfer and Articulation Considerations

Of the state universities only Eastern Connecticut State University offers any game course work, currently a minor in game development as part of their Computer Science degree. A recent survey was conducted to investigate plans for game courses at any other Connecticut colleges and universities. Of 19 institutions contacted (including all state universities and UConn) only Quinnipiac and Sacred Heart were able to declare any efforts in this discipline. Quinnipiac University launched a new program (Fall, 2011) in Game Design and Development. A conversation has already been initiated with the director of that program to discuss the potential for transfer of MCC credit to that program. Sacred Heart University offers a Game Design & Development Track to their Computer Science degree. It should be noted that the emphasis at Sacred Heart is on computer programming. Most institutions in the country take either a creative approach (digital art, animation, level design, 3D modeling, etc.) or a computer programming approach. MCC has chosen the creative direction because of its already strong foundation in coursework in the digital arts as offered through our Multimedia Studies program. The proposed program will be unique in the CONNSCU system.

Employment Considerations

Employment opportunities available to students upon completion of the program in Connecticut look very promising. As mentioned above, the state has experienced growth in companies that identify themselves primarily as game design/production facilities. Another favorable indication of potential growth for game production in Connecticut is the projection by the state labor department in the category of "Multimedia Artists

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and Animators.” This listing appears under both the “Fastest Growing Occupations” and the “Highest Paying Occupations” with an average annual salary of over \$63,000 for multimedia artists. The types of jobs listed under this category include computer graphics specialists, digital imaging workers, animators, 3D modelers, web professionals, designers, video special effects artists, and illustrators. The skills for all of these categories are addressed in the course offerings of the game design curriculum.

Cost Effectiveness and Availability of Adequate Resources

The resources required for this program will include allocations for new software (mainly for the 4 new core courses) and for the continual upgrading of that software and software already employed in the already-running technology-based courses. No new equipment is proposed or necessary at this time since MCC's computer labs are equipped with the workstations needed for the core classes. We do anticipate the need for some new adjunct faculty for the new courses. Funding for these needs will come from the college's usual operating and capital budgets.

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APPLICATION FOR NEW PROGRAM APPROVAL **PRO FORMA** ¹ BUDGET - RESOURCES AND EXPENDITURE PROJECTIONS

<i>Institution</i>	Manchester Community College	<i>Date</i>	2/6/2012
<i>Proposed Program</i>	Computer Game Design, A.S.		

PROJECTED Enrollment	First Term Year 1		First Term Year 2		First Term Year 3	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Internal Transfers (from other programs)	15*	15	5	5	5	5
New Students (first time matriculating)	15	20	20	30	25	35
Continuing (students progressing to credential)						
Headcount Enrollment	15	35	25	35	30	40
Total Estimated FTE per Year	32.5		42.5		50	

*Internal transfers in year 1 from Computer Game
Design Option, Multimedia Studies

PROJECTED Program Revenue	Year 1		Year 2		Year 3	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Tuition* (Do not include internal transfers)	\$54,330	\$36,720	\$72,440	\$55,080	\$90,550	\$64,260
Other Rev.** (Annotate in text box below)	\$8,700		\$12,180		\$14,790	
Total Annual Program Revenue	\$99,750		\$139,700		\$169,600	

*Tuition is calculated at full time: \$1811 /semester for two semesters; part time \$918 /semester for two semesters

**Studio fees (\$87 per studio course) are calculated at 2 studio courses per semester for FT and 1 studio course per semester for PT

PROJECTED Expenditures*	Year 1		Year 2		Year 3	
	Number (as applicable)	Expenditure	Number	Expenditure	Number	Expenditure
Administration (Chair or Coordinator)*	no additional	\$0		\$0		\$0
Faculty (Full-time, total for program)**	re-allocation	\$0		\$0		\$0
Faculty (Part-time -total for program)	24WLU	\$34,448	24WLU	\$34,448	24WLU	\$34,448
Support Staff	no additional	\$0		\$0		\$0
Library Resources Program	additional industry-related periodicals	\$700		\$1,000		\$1,000
Equipment (List as needed)	required new software	\$15,000		\$5,000		\$5,000
Other (e.g. student services)	no additional	\$0		\$0		\$0
Estimated Indirect Cost (e.g. student services, operations, maintenance)	calculated at \$500 per FTE per semester	\$32,500		\$42,500		\$50,000
Total ESTIMATED Expenditures		\$82,648		\$82,948		\$90,448

* Note: Capital outlay costs, institutional spending for research and service, etc. can be excluded.

Expenditures*

Please provide any necessary annotations:

*The Coordinator of Multimedia Studies and Graphic Design will also be the coordinator of the proposed Computer Game Design Program.

** A search is currently underway for a new full time faculty member in Multimedia Studies with a specialty in Game Design. In 2011, two psychology professors retired; one is being re-filled and one has been re-allocated as the full-time Instructor in Multimedia Studies. This was possible because of shifts in Introductory Psychology course enrollments due to changes in prerequisites (eligibility for English 101 required).

¹ This PRO FORMA budget provides reasonable assurance that the program can be established and is sustainable. Some assumptions and/or formulaic methodology may be used and annotated in the text box.

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SECTION 3: PROGRAM QUALITY ASSESSMENT

Learning Outcomes - L.O. (Up to seven of the most important student learning outcomes for the program)

Graduates of the Computer Game Design program will:

1. Meet educational standards for entry-level and advanced level employment in the area of game design and development.
2. Demonstrate an understanding of the production pipeline for game development (concept, storytelling, character development, level design, programming decisions, network distribution, etc.).
3. Integrate creative/artistic skills (drawing, animation, storytelling, level design, etc.) with the computer science programming skills necessary for the development of interactive media.
4. Demonstrate the software skills necessary for game development and for potential employment in the game development field.

Program Administration

At present the full-time faculty member involved with the proposed program is Prof. Ed Hogan (also the author of this proposal). Prof. Hogan holds an MFA from the University of Hartford and serves as the program coordinator for MCC's Graphic Design program and Multimedia Studies program (along with that program's Computer Game Design Option). He has worked at MCC since 1990 when he was hired to run the Graphic Design program. Within the Multimedia Studies program there is one other full-time faculty member (Prof. Maura O'Connor) and there are seven adjunct faculty that teach core courses such as computer graphics, web design, animation, and interactive design.

Faculty

There is a FT faculty member in place and a search underway for an additional FT faculty member in Multimedia Studies with a specialty in game design. The two FT faculty will teach half of the credits in the program, with the other half will be taught by adjunct faculty. All adjuncts hold master's degrees in their respective areas of specialization and most are also working professionals who bring their field experience to their coursework to create a richer learning environment for our students.

Special Resources

- New software necessary for the program includes the following:
25 copies of Smith-Micro's *Poser*; 25 copies of YoYo Games' *GameMaker*; 25 copies of Pixel Logic's *Z-Brush*; 25 copies of Adobe's *Edge*
- Four new periodical subscriptions for the library

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Curriculum

(New courses are marked with an asterisk on their course name. Descriptions of new courses are attached. Courses delivered fully online are marked with a double asterisk **)

Course Number and Name	L.O. # ¹	Pre-Requisite	Cr Hrs	Course Number and Name	L.O. #	Cr Hrs
Program Core Courses				Other Related/Special Requirements		
DGA* 240/ CST* 254: Web Page Design	4	DGA*111 or COM*213	3			
DGA*224 Digital Painting*	3	DGA*111	3			
DGA* 274: Game Design with Flash	1,2	DGA*261 or COM*186	3			
DGA* 265 Character Animation*	3	DGA*261	3			
CSC*247 Game Development in C++	1,2	CSC*125	3			
DGA*276 3D Animation & Rigging*	3	DGA*271	3			
DGA*275 Game Level Design*	1,2	DGA*109	3			
Core Course Prerequisites				Elective Courses in the Field		
DGA* 109: Introduction to Computer Games			3	Elective computer studio course <i>Studio (computer) electives can include: DGA*214: Advanced Computer Graphics II; DGA* 216: Advanced Computer Graphics III; DGA* 273: 3D Computer Modeling II; DGA *262: Computer Animation II; ART* 250: Digital Photography; ART* 281: Digital Photography II; CSC* 226: Object-Oriented Programming Using Java</i>	3	
DGA* 111: Introduction to Computer Graphics			3			
CSC* 125: Programming Logic and Design with C++			4			
DGA* 261: Computer Animation			3			
DGA* 271: 3-D Computer Modeling I			3			
Total Other Credits Required to Issue Credential (e.g. GenEd/Liberal Arts Core/Liberal Ed Program)						24

Program Outline

The Computer Game Design AS degree program provides the necessary set of skills for the creative development of games including storytelling, character development, game environment design, 2-dimensionsal and 3-dimensional animation, game level design, computer programming and digital art creation. To accomplish this, the program requires 21 credits of core courses in computer game design, animation, and programming. These courses are supported by 16 credits of skill development in computer gaming, graphics, animation and modeling. The student may choose one 3-credit computer studio elective. Twenty-four credits in general education complete the degree program. Students must meet the residency requirement (25% of coursework or 16 credits) and complete program requirements with a minimum GPA of 2.0 to graduate.

¹ From the Learning Outcomes enumerated list provided at the beginning of Section 3 of this application

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New Courses

DGA*224 Digital Painting

This course will focus on the use of digital imaging software to create rich, complex compositions and original imagery. Topics will include color theory, shading and light, essentials of two-dimensional design, familiarity with “painterly” styles and techniques, creation of custom brush shapes, and output formats. The course will use specific software to develop artistic, representational skills for creating imagery for use in illustration, environments and objects for computer games, and other forms of artistic expression. Prerequisites: DGA* 111 or DGA* 212 or COM* 213 or permission of the instructor. (3 credits)

DGA* 265 Character Animation

This course will continue the animation instruction that began in DGA 261 with a focus on creating and animating characters. Using Adobe Flash as the primary animation tool students will concentrate on the study and analysis of animated characters, the graphic design of character development, drawing techniques for character representation, character motion based on human and animal locomotion, lip-syncing for character dialogue, and storytelling and narrative development. This course will focus on two-dimensional character animation. Prerequisite: DGA 271 or permission of instructor. (3 credits)

DGA*276 3D Animation & Rigging

This course is a continuation of DGA 271 3D Computer Modeling I with a focus on animation within a three-dimensional virtual environment. Essential 3D animation techniques will be included as well as fundamental techniques of model rigging for animated deformation. Topics will include animating surface textures and lights, 3D character development and animation, rigging with bone structures, particle system animation, special effects creation, and post-production compositing with video software. Prerequisite: DGA271 or permission of instructor (3 credits)

DGA*275 Game Level Design

This course is a comprehensive introduction to the design of multi-level games. Topics will include general game theory, analysis of existing games, development of game narratives and storytelling, modes of game distribution, and level design. The focus of the course is the development of increasingly complex games through the creation of levels of varying gameplay. The course will employ a “game engine” for project work that will allow students to concentrate on design issues with a minimal amount of programming experience. Prerequisite: DGA 109. (3 credits)

Full-Time Faculty Teaching in this Program

Faculty Name and Title	Institution of Highest Degree	Area of Specialization/Pertinent Experience
Professor Edward Hogan Program Coordinator, Graphic design and Multimedia Studies (Program Coordinator)	MFA, University of Hartford	Multimedia Studies and Graphic Design
Professor Maura O'Connor	MFA Vermont College	Graphic Design
To be hired (search completed Spring 2012))	Master's Degree	Multimedia Studies with a specialization on game design

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SECTION 1: GENERAL INFORMATION

Institution: Central Connecticut State University		Date of Submission to BOR Office: 2/7/2012	
Most Recent NEASC Institutional Accreditation Action and Date: 10 Years Review, 2009			
Program Characteristics Name of Program: Bachelor of Science in Robotics and Mechatronics Engineering Technology Degree: Title of Award: Bachelor of Science Anticipated Program Initiation Date: Fall 2012 Anticipated Date of First Graduation: Spring 2016 Modality of Program: X On ground Total # Cr the Institution Requires to Award the Credential 130		Program Credit Distribution # Cr in Program Core Courses: 39 # Cr of Electives in the Field: 0 # Cr of Free Electives: 1-7 # Cr Special Requirements (include internship, etc.): 42 <u>Total # Cr in the Program</u> (sum of all #Cr above): 82-88 From "Total # Cr in the Program" above, enter #Cr that are part of/belong in an already approved program(s) at the institution: 42	
Type of Approval Action Being Sought: Licensure OR <input checked="" type="checkbox"/> Licensure and Accreditation BOR-Assigned CIP Code No 150405			
Institution's Unit and Location Offering the Program: School of Engineering and Technology, Central Connecticut State University, 1615 Stanley St New Britain, CT 06032			
Other Program Accreditation: <ul style="list-style-type: none">Agency and intended year of review: TAC of ABET 2016			
Institutional Contact for this Proposal: Dr. Carl Lovitt		Title: Provost and Vice President for Academic Affairs	Tel.: (860) 832-2230 e-mail: lovittcar@ccsu.edu

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SECTION 2: PROGRAM PLANNING ASSESSMENT

Alignment of Program with Institutional Mission, Role and Scope

The proposed RMET program has been designed specifically to support the missions of CCSU and the School of Engineering and Technology. The creation of this program is in response to these missions and to provide access to higher education for all citizens in this State who can benefit from our offerings. The School of Engineering and Technology, designated as a Center for Excellence in Technology, has a long tradition of providing quality education including the application of engineering theory and principles, with technological and applied student learning experiences within its classrooms and laboratories. Finally, we have a longstanding commitment to provide research and internship experiences for our students, curricular components that make our graduates particularly qualified for careers in the fields of robotics and mechatronics, or for graduate work and research. This aligns this program with the university and school missions of being responsive to industry and workforce needs, as described in the following section.

Addressing Identified Needs

- *How does the program address CT workforce needs and/or the wellbeing of CT society/communities?*

Recent surveys by Connecticut Business & Industry Association and the New Haven Manufacturing Association indicate that as many as 87% of the state manufacturing companies have difficulties finding highly-qualified workers for their operations. Additionally, the CBIA found that about 64% of surveyed manufacturers have difficulty finding qualified engineers, and that about 20% lack technical, problem-solving, scientific, and computer skills. This proposed program will address these issues both by producing graduates of an engineering discipline previously underrepresented in the state's educational system, and by utilizing an engineering technology program that emphasizes hands-on learning, problem-solving, and research using specific technical equipment and computer software. The Connecticut Department of Economic and Community Development (DECD) can currently account for over 4500 manufacturing companies in the state, 90 percent of which can be categorized as "high-technology" in their operations and/or products. The Connecticut Center for Economic Analysis as well as Connecticut Technology Council both recommend and promote the need to offset the high cost of doing business in Connecticut with the latest technology in products, engineering, distribution, manufacturing, and communications. Overall, these and other sources indicate that Connecticut's manufacturers are in need of an engineering workforce that has knowledge of high-technology fields, as well as hands-on skills to be competent. This translates to a need for students that are both familiar and adept with high-technology manufacturing, which includes an extensive array of robotics and mechatronics applications. This proposed program was designed specifically to provide graduates with a competitive advantage in these workforce needs.

- *How does the program make use of the strengths of the institution and of its distinctive character and/or location?*

The proposed program will complement the diverse and robust programs already established in the School of Engineering and Technology. Additionally, the RMET program will replace the existing Electromechanical specialization under the Industrial Technology program, and utilize both new courses and courses currently in existence throughout the School of Engineering and Technology. This also provides the RMET program with three existing full-time professors with experience in RMET core courses. The School of Engineering and Technology facilities, laboratories, classrooms and equipment have been recently remodeled, reconstructed, and equipped with state-of-the-art technology. These facilities and laboratories can now effectively serve the proposed RMET program. The current knowledge base, technologies, and laboratory facilities of the School of Engineering and Technology are prepared to allow the RMET program to begin immediately with new courses and hands-on laboratory components.

- *Please describe any transfer agreements with other institutions under the BOR that will become instituted as a result of the approval of this program*

The "Connecticut College of Technology" pathway program is an articulation agreement that allows a student to begin engineering, engineering technology or technology studies at any of the twelve Connecticut Community Colleges, and transfer this credit to a four-year institution with the goal of completing a baccalaureate degree. Currently the Technological Studies Pathway has the following options: – Engineering Technology, Industrial Technology, Technology Education, and Biomolecular Sciences. These Pathway programs lead either to CCSU, the University of Hartford or Charter Oak State College. The proposed Robotics and Mechatronics Engineering Technology program at CCSU will offer an additional option for students utilizing the Technological Studies- Engineering Technology option. CCSU will maintain the transfer academic standards, established in the current Engineering Technology Curriculum of the Technological Studies Pathway program. This

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curriculum consists of coursework in engineering, mathematics, sciences and general education. In addition to the 69-credit core of courses, a grade average of "B" with no grade less than a "C" is required for continuation at CCSU. Once the RMET program is licensed, the articulation agreement will be in effect with all Connecticut Community Colleges.

- Please indicate what similar programs exist in other institutions within your constituent unit ¹, and how unnecessary duplication is being avoided

Other than Fairfield University's B.S. in Automated Manufacturing Engineering, this proposed program is distinct both at CCSU and throughout the State of Connecticut. CCSU has programs in mechanical and manufacturing engineering technology that make use of a few similar courses and, indeed, some engineering technology courses will be utilized in the RMET program. Careful review of existing ET and other courses at CCSU has ensured that the new "ROBO" courses are unique in their curricula and learning methods.

- Please provide a description/analysis of employment prospects for graduates of this proposed program

The projected employment data presented in Table 1-1 are perhaps the most direct evidence of workforce and employment trends in key mechatronics-utilizing fields. These two fields, which stand out as having a significant projected growth, are Industrial Engineering and Mechanical Engineering. It is anticipated that graduates of this program will be competitive in these fields when specific mechatronics skills are desired.

Table 1-1. Job Openings and Growth for CT Engineering Disciplines

Position	Total Openings		% Change	Annual Openings	
	2008	2018		Total	Growth
Engineering Managers	4,288	4,317	0.7%	90	3
Electronics Engineers	1,273	1,264	-0.7%	29	0
Industrial Engineers	3,720	4,232	13.8%	146	51
Mechanical Engineers	5,366	5,666	5.6%	168	30
Engineers, All Other	1,985	1,963	-1.1%	41	0
TOTAL	16,632	17,442	4.9%	474	84

Table 1-2 presents employment data for various Connecticut industries, published by the Connecticut Department of Labor, Office of Research.² The selected industries are among those which most likely utilize robotics and mechatronics. This is not, of course, a complete study of all industries that utilize robotics and mechatronics, but they are definitely representative ones. The data indicate the size of industries in Connecticut that have a potential interest in hiring specialists and engineers in robotics and mechatronics. Table 1-2 presents the number of employees in 2008 by industry and the 2018 projections, as well as percentages of total labor force in those industries.

Table 1-2. Current and Projected Employment in Industries Utilizing Robotics and Mechatronics Technologies

Industry	2008	2018
Transportation and Warehousing	43,829 (2.41%)	44,874 (2.36%)
Professional, Scientific, & Technical Services	92,705 (5.10%)	103,735 (5.46%)
Manufacturing	187,249 (10.30%)	177,173 (9.32%)
Utilities & Telecommunications	19,809 (1.10%)	20,341 (1.07%)
Agriculture	4,831 (0.27%)	4,922 (0.26%)
TOTAL OF ABOVE	348,423 (19.16%)	351,045 (18.46%)
TOTAL FOR STATE	1,818,684 (100%)	1,901,637 (100%)

¹ Constituent units are: the Connecticut Community College System, the Connecticut State University System, Charter Oak State College, and the University of Connecticut

² From Connecticut DOL, Office of Research, *State of Connecticut Occupational Projections: 2008-2018* [online], 2011: <http://www1.ctdol.state.ct.us/lmi/ctindustry.asp>.

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An analysis of this data yields both strong and weak points in the immediate future for industry in Connecticut. Manufacturing is a major component of industry in Connecticut, but it is one sector of industry that will contract in number of employees; however, indicators predict that a continuously larger proportion of manufacturing jobs will require very high skills and four-year degrees. Transportation, warehousing, and storage of goods are sectors of industry that will grow, according to these figures. It is anticipated that Connecticut manufacturers will seek to reduce costs by reducing labor, thus increasing opportunities for cost-saving automation. Professional, scientific, and technical services jobs areas are significant fields for robotics and mechatronics graduates and they are also projected to expand. In addition, various other service industries, which benefit from the utilization of mechatronics technologies, are projected to expand. All those changes in Connecticut's industries will provide growing opportunities for graduates of the proposed program.

Cost Effectiveness and Availability of Adequate Resources

(Please provide a one-paragraph narrative on the attached MExcel Pro-Forma Budget)

Regular revenue for the RMET program is expected to come from tuition, which is expected to grow steadily in this very marketable program. With the exception of additional equipment expenditures due to expanded laboratory usage, the RMET program will largely utilize existing SE&T and Department of Manufacturing & Construction Management resources in the short-term for major equipment, faculty, and support staff. Being part of the existing Department of Manufacturing & Construction Management and a replacement for the current IT-EMEC program, existing permanent and part-time faculty will be utilized in the short term. Additionally, staff for laboratory technical support and information technology are currently in place as part of the School of Engineering and Technology. The budget does include expenses for the acquisition of new equipment and for the maintenance of the current equipment. New equipment and components will occasionally be needed to keep up with technology and curriculum changes as determined by faculty and the RMET Industrial Advisory Board. Current equipment will also require preventive maintenance and repairs, including consumable items, software upgrades, replacement of damaged components, and other contingencies that normally arise in a hands-on laboratory environment.

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APPLICATION FOR NEW PROGRAM APPROVAL PRO FORMA ¹ BUDGET - RESOURCES AND EXPENDITURE PROJECTIONS

Institution Central Connecticut State University **Date** 2/14/2012
Proposed Program Bachelor of Science in Robotics and Mechatronics Engineering Technology

PROJECTED Enrollment	First Term Year 1		First Term Year 2		First Term Year 3	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Internal Transfers (from other programs) ¹			1	1	2	2
New Students (first time matriculating)	9	2	10	2	12	3
Continuing (students progressing to credential)	0	0	9	2	20	5
Headcount Enrollment	9	2	20	5	34	10
Total Estimated FTE per Year	9.6		21.5		37	

PROJECTED Program Revenue	Year 1		Year 2		Year 3	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
(FT=\$8,055 and PT= \$384)						
Tuition (Do not include internal transfers)	\$72,495	\$4,608	\$161,155	\$3,840	\$298,035	\$0
Program-Specific Fees	\$0	\$0	\$0	\$0	\$0	\$0
Other Rev. (Annotate in text box below)						
Total Annual Program Revenue	\$77,103		\$164,995		\$298,035	

PROJECTED Expenditures ²	Year 1		Year 2		Year 3	
	Number (as applicable)	Expenditure	Number	Expenditure	Number	Expenditure
Administration (Chair or Coordinator)	0.1	\$7,900	0.2	\$15,800	0.3	\$23,700
Faculty (Full-time, total for program) ³	1.0	\$77,400	1.5	\$116,100	2.0	\$154,800
Faculty (Part-time -total for program)	1.0	\$8,900	1.0	\$8,900	2.0	\$17,800
Support Staff	0.2	\$7,400	0.2	\$7,400	0.2	\$7,400
Library Resources Program		\$1,000		\$1,000		\$1,000
Equipment (List as needed)		\$5,000		\$5,000		\$20,000
Other (ABET Accreditation)		\$2,000		\$2,000		\$18,000
Estimated Indirect Cost (e.g. student services, operations, maintenance)		\$10,000		\$15,000		\$20,000
Total ESTIMATED Expenditures		\$119,600		\$171,200		\$262,700

* Note: Capital outlay costs, institutional spending for research and service, etc. can be excluded.

Annotations:

¹ Internal transfers are primarily from the Industrial Technology, Mechanical Engineering Technology and Computer Engineering Technology programs, and from "undeclared technology" - a non-degree designation for students planning to transfer to a degree program.

² The Department of Manufacturing and Construction Management (MCM) administers the Construction Management and Industrial Technology BS programs, and the Construction Management and Technology management MS programs.

³ 1 full-time and 1 part-time (MCM) faculty, the first year, 1.5 full-time and 1 part-time in the second year and 2 full-time and 2 part-time faculty in the third year will teach ROBO courses and courses with EMEC, TM and CM designations.

¹ This PRO FORMA budget provides reasonable assurance that the program can be established and is sustainable. Some assumptions and/or formulaic methodology may be used and annotated in the text box.

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SECTION 3: PROGRAM QUALITY ASSESSMENT

Learning Outcomes - L.O. (Please list up to seven of the most important student learning outcomes for the program and concisely describe assessment methodologies to be used in measuring the outcomes. If the program will seek external accreditation or qualifies graduates to opt for a professional/occupational license, please frame outcomes with attention to such requirements. With as much detail as possible, please map these learning outcomes to courses listed under the "Curriculum" section of this application.)

The RMET program seeks TAC of ABET accreditation. Thus, RMET student learning outcomes (SLO) were developed based on TAC of ABET general learning outcomes, as well as TAC of ABET program-specific learning outcomes. Sixteen Student Learning Outcomes have been adopted for the RMET program. The first eleven SLO's represent the mandatory TAC of ABET general learning outcomes. Additionally, five RMET student learning outcomes use symbols RM1 through RM5 (RM is for Robotics and Mechatronics) representing TAC of ABET program-specific learning outcomes.

1. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities
2. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
3. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
4. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
5. an ability to function effectively as a member or leader on a technical team
6. an ability to identify, analyze and solve technical problems
7. an ability to apply written, oral, and graphical communication using current techniques and standards in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature
8. an understanding of the need for and an ability to engage in self-directed continuing professional development
9. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
10. a knowledge of the impact of engineering technology solutions in a societal and global context
11. a commitment to quality, timeliness, and continuous improvement

RM 1. an ability to apply concepts of automatic control, including measurement, feedback and feedforward regulation for the operation of continuous and discrete systems

RM 2. an ability to select sensors and design and implement automation systems utilizing analog and/or digital control devices and microprocessor systems

RM 3. an ability to apply the concepts of chemistry, physics, electricity/electronics, mechanics, fluid mechanics, and heat transfer to measurement and process control systems

RM 4. an ability to understand and utilize programmable logic controllers (PLCs), distributed control systems (DCS) and supervisory control systems for control of manufacturing and processing systems

RM 5. an ability to utilize modern and effective management skills for performing investigation, analysis, and synthesis in the implementation of automatic control systems

Please refer to Table 1 in the last page of the form for mapping between curriculum courses and SLO's. The green color indicates that concepts of the SLO are introduced in the course. The yellow color indicates that students are developing the SLO in the course. The red color indicates that the SLO is assessed in the course, through exit interview, or by a professional exam.

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Program Administration

The Robotics and Mechatronics Engineering Technology program was designed by faculty of the Manufacturing and Construction Management Department. The University Curriculum Committee, Faculty Senate and administration have provided valuable input during the development of the curriculum and supported an application for Connecticut licensure and accreditation.

Dr. Zdzislaw B. Kremens, Dean of the School of Engineering & Technology, has provided constructive leadership based on the School of Engineering & Technology's strategic plan, space utilization and departmental program objectives. The remodeling of facilities and allocation of equipment and OE (Operating Expenses) budgets based on program growth and laboratory requirements have categorically supported the engineering technology programs.

The Robotics and Mechatronics Engineering Technology Program will be administered by the Department of Manufacturing and Construction Management (MFCM). Dr. Jacob Kovel, Chairperson, is responsible for the administration of all the programs offered by the MFCM department.

Faculty

The full-time faculty members for the robotics and mechatronics engineering technology program are, Dr. Eric Daniel Kirby, Dr. Ravindra Thamma and Dr. Haoyu Wang. All of the full-time faculty members have extensive industrial and academic experience in their respective areas.

Eric Daniel Kirby, Assistant Professor, full time, Ph.D. 2005, Industrial Education & Technology, Iowa State University. Areas of specialization: AGV systems, digital manufacturing, quality control, design of experiments, and machining. Dr. Kirby will teach: MFG 216, ROBO 110, ROBO 240, ROBO 330, ROBO 470, ROBO 496, and ROBO 497

Ravindra Thamma, Associate Professor, full time, Ph.D. 2004, Industrial Education & Technology, Iowa State University. Areas of specialization: Robotics, industrial automation, mechatronics, control systems, and electronics. Dr. Thamma will teach: ROBO 110, ROBO 310, ROBO 350, ROBO 380, ROBO 460, ROBO 480, ROBO 496, and ROBO 497

Haoyu Wang, Assistant Professor, full time, Ph.D. 2004, Mechanical Engineering, Syracuse University. Areas of specialization: mechanical design, assembly modeling, CAD/CAE, GD&T, Robotics, and Biomechanics. Dr. Wang will teach: ROBO 110, ROBO 220, ROBO 350, ROBO 370, ROBO 480, ROBO 496, and ROBO 497

No new faculty members will need to be hired to teach in this program, and no adjuncts will be necessary.

Special Resources (Provide a brief description of resources that would be needed specifically for this program and how they will be used, e.g. laboratory equipment, specialized library collections, etc. Please include these resources in the Resources and Cost Analysis Projection sheet for BOR review)

The robotics, mechatronics, control systems, process controls, and fluid power laboratory equipment are housed in Nicolas Copernicus Hall in room NC 118-00, NC 118-01 and NC 118-04, containing state of the art equipment and computers. Most of the major courses in the proposed Robotics and Mechatronics Engineering Technology program will utilize laboratories NC 118-00, NC 118-01 and NC 118-04 for teaching and student research activities. A list of available equipment in these laboratories is presented in Table 2.

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Table 2 List of Relevant Equipment

CONTROL SYSTEMS EQUIPMENT (Laboratory NC 118-00)	
ITEM	APPROXIMATE VALUE
Micrologic, Compactlogic, ControlLogic, Panelview HMI, PowerFlec AC Drive	\$36,000
Automation Studio I/O	\$5,000
Pneumatic Controllers	\$9,000
Process Control System	\$75,000
Process Instrumentation Control System Trainer	\$75,000
Total	\$200,000
FLUID POWER EQUIPMENT (Laboratory NC 118-04)	
ITEM	APPROXIMATE VALUE
Pneumatic Trainer	\$1000
Pneumatic Components	\$7,000
Amatrol Fluid Trainer Components	\$13,000
Amatrol Fluid Trainer	\$35,000
Total	\$56,000
INSTRUMENTS (Laboratory NC 118-00)	
ITEM	APPROXIMATE VALUE
A set of 10 benches each equipped with: Oscilloscope, DMM, Function Generator, Logic Probes, Power Supply	\$27,000
Total	\$27,000
DATA ACQUISITION SYSTEM (Laboratory NC 118-00)	
ITEM	APPROXIMATE VALUE
NI USB Data Acquisition Boards	\$2000
NI Elvis I	\$12,000
Total	\$14000
ROBOTICS (Laboratory NC 118-01)	
ITEM	APPROXIMATE VALUE
Fanuc LR MATE 200iC Robots	\$99,000
Boe Bot	2000
Mobile Robot Robotino	\$8,000
Cognex Vision System	\$13,000
Lights for vision system	\$1,000
Mitsubishi RVM1 Robots	\$30,000
Total	\$153,000
MECHANICAL COMPONENT TRAINER (Laboratory NC 118-04)	
ITEM	APPROXIMATE VALUE
Mechanical Component Trainer	\$20,000
Total	\$20,000
MOTORS TRAINER (Laboratory NC 118-00)	
ITEM	APPROXIMATE VALUE
Dissectible Motors Trainer 10 Sets	\$96,000
Servo Motor Trainer	\$18,000
Total	\$114,000
All Equipment	
Total	\$584,000

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Curriculum

Course Number and Name	L.O. # ³	Pre- Requisite	Cr Hrs	Course Number and Name	L.O. #	Cr Hrs
Program Core Courses				Other Related/Special Requirements		
ROBO 110 Introduction to Robotics and Mechatronics	1,3,4,5,6,8,9,11, RM5		3			
ROBO 220 Parametric Modeling and Simulation	1,5,6,7,11		3			
ROBO 240 Electro-Mechanical Converters and Drivers	1,3	CET 236	3			
ROBO 310 Data Acquisition & Processing	1,2,3,4,RM1,RM2	CET 323 and CET 363	3			
ROBO 330 Fluid Power Systems	1,2,3,4,9,10	ET354	3			
ROBO 350 Applied Control Systems I	1,2,3,4,5,8,9, RM1,RM2,RM4	ROBO310 and MATH221	3			
ROBO 370 Mechanisms for Automation	1,2,3,4,5,6,9,10	ROBO220; MATH226; MFG216; ET252 and ET357	3			
ROBO 380 Mechatronics	1,2,3,4,6,9,RM1,R M2,RM3,RM4,RM5	ROBO240; ROBO330; ROBO350; ROBO370 and CET453	3			
ROBO 460 Applied Control Systems II	1,2,3,4,5,6,9,RM1, RM4	ROBO350; MATH355; and ETM358	3			
ROBO 470 Robotics Systems Engineering and Analysis	6,8,9,10,11	ROBO110	3			
ROBO 480 Industrial Robotics	1,2,3,4,5,6,9,10, 11,RM1,RM2,RM5	ROBO380 and ROBO460	3			
ROBO 496 Industrial Internship	1,2,3,4,5,6,7,8,9,10 ,11,RM1,RM2,RM3 ,RM4,RM5	Senior Standing and Permission of Instructor	3			
ROBO 497 Capstone Senior Project	1,2,3,4,5,6,7,8,9,10 ,11,RM1,RM2,RM3 ,RM4,RM5	Senior Standing and Permission of Instructor	3			
Core Course Prerequisites				Elective Courses in the Field		
CET 236 - Circuit Analysis			3			
CET 323 - Electronic Circuits			3			
CET 363 - Digital Circuits			3			
CET 453 – Microprocessors			3			
ET 251 - Applied Mechanics I-Statics			3			
ET 252 - Applied Mechanics II – Dynamics			3			
ET 354 - Applied Fluid Mechanics			3			
ET 357 - Strength of Materials			3			
ETM 358 - Applied Thermodynamics			3			
MFG 216 - Manufacturing Processes			3			
Total Other Credits Required to Issue Credential (e.g. GenEd/Liberal Arts Core/Liberal Ed Program)					61	

³ From the Learning Outcomes enumerated list provided at the beginning of Section 3 of this application

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Program Outline (Summary of program requirements including total number of credits for the degree, special admission requirements, capstone or special project requirements, etc. Indicate any requirements and arrangements for clinical affiliations, internships, and practical or work experience)

The proposed RMET program of study will require 130 credits of undergraduate work including a one-semester senior project capstone requirement and a 480-hour summer internship in a relevant industry. This includes the General Education courses that meet all relevant requirements, totaling 42 to 48 credits. RMET program Major Requirements make up 39 credits of introductory and applied robotics and mechatronics courses. Additional 42 credits of required courses in the areas of mathematics, electronics, engineering mechanics, and manufacturing provide prerequisite theory and skills for the major requirements. Finally, up to seven credits of free electives are allowed, to enable students to take courses that meet their professional interests as well as to fulfill total credit requirements *and must maintain a GPA of 2.00.*

Table 3. Curriculum

General Education	Crs	Major Requirements (39 Credits)	Crs
STUDY AREAS:		ROBO110 Introduction to Robotics and Mechatronics	3
I. Arts & Humanities (9 credits)		ROBO220 Parametric Modeling and Simulation	3
English Literature	3	ROBO240 Electro-Mechanical Converters and Drivers	3
PHIL or Fine Arts	3	ROBO310 Data Acquisition & Processing	3
English Literature or PHIL or Fine Arts	3	ROBO330 Fluid Power Systems	3
		ROBO350 Applied Control Systems I	3
II. Social Sciences (6 Credits)		ROBO370 Mechanisms for Automation	3
History	3	ROBO380 Mechatronics	3
ECON or ET399.	3	ROBO460 Applied Control Systems II	3
		ROBO470 Robotics Systems Engineering and Analysis	3
III. Behavioral Sciences (3 Credits)		ROBO480 Industrial Robotics	3
Anthropology or Psychology or Sociology	3	ROBO496 Industrial Internship	3
		ROBO497 Capstone: Senior Project	3
IV. Natural Sciences (8 Credits)			Total 39
PHYS 125 or PHYS 121	4	Additional Requirements (42 Credits)	
CHEM 161 General Chemistry I	3	CET236 Circuits Analysis	3
CHEM 162 General Chemistry I - LAB	1	CET323 Electronic Circuits	3
		CET363 Digital Circuits	3
SKILL AREAS:		CET453 Microprocessors	3
I. Communication Skills (6 credits)		ET251 Applied Mechanics I - Statics	3
ENG 110-Freshman Composition	3	ET252 Applied Mechanics II - Dynamics	3
COMM 140-Public Speaking	3	ET354 Applied Fluid Mechanics	3
II. Mathematics		ET357 Strength of Materials	3
MATH 119 Pre-Cal. with Trig.	4	ETM358 Applied Thermodynamics	3
MATH 152-Calc I	4	MATH221 Calc II	4
III.a Foreign Language (0-6 Credits)		MATH226 Linear Algebra and Probability for Engineers	4
	0-6	MATH355 Introduction to Differential Equations	4
		MFG216 Manufacturing Processes	3
			Total 42
III.b International (6 Credits)		Free Electives (1-7 Credits)	
IV. University Requirements (2 Credits)			Crs
PE 144-Fitness/Wellness	2	FREE ELECTIVES	
			Total Upto 7
Total 42-48			
		Total Credits = 130	

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Full-Time Faculty Teaching in this Program (Note: If you anticipate hiring new faculty members for this program you may list "to be hired" under name and title. Provide required credentials, experience, and other responsibilities for each new position anticipated over the first three years of implementation of the program)

Faculty Name and Title	Institution of Highest Degree	Area of Specialization/Pertinent Experience	Other Administrative or Teaching Responsibilities
Dr. Eric Daniel Kirby	Iowa State University	Mechanical Design, manufacturing and systems engineering	
Dr. Ravindra Thamma	Iowa State University	Robotics, industrial automation, mechatronics, control systems, and electronics.	
Dr. Haoyu Wang	Syracuse University	Mechanical Design, CAD/CAM, Robotics, Biomechanics	

Table 1: Matrix mapping course objectives to SLO's

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SECTION 1: GENERAL INFORMATION

Institution: Eastern Connecticut State University	Date of Submission to BOR Office: Feb 7, 2012	
Most Recent NEASC Institutional Accreditation Action and Date: 10-year Accreditation. May 31, 2011		
Program Characteristics Name of Program: Women's and Gender Studies Degree Title: Bachelor of Arts Anticipated Program Initiation Date: Immediately upon approval Anticipated Date of First Graduation: May 2012 Modality of Program: X On ground Total # Cr the Institution Requires to Award the Credential (<i>i.e.</i> include program credits, GenEd, other): 120	Program Credit Distribution # Cr in Program Core Courses: 21 # Cr of Electives in the Field: 12 # Cr of Free Electives: # Cr Special Requirements (<i>include internship, etc.</i>): 3 in experiential learning (such as an internship) <u>Total # Cr in the Program</u> (<i>sum of all #Cr above</i>): 36 From "Total # Cr in the Program" above, enter #Cr that are part of/belong in an already approved program(s) at the institution: 36	
Type of Approval Action Being Sought: Licensure OR <input checked="" type="checkbox"/> Licensure and Accreditation		
BOR-Assigned CIP Code No. 050207 Title of CIP Code Women's Studies CIP Year: 2010		
Institution's Unit and Location Offering the Program: School of Arts and Science, Eastern Campus		
Institutional Contact for this Proposal: Dr. Rhona Free	Title: V.P. Academic Affairs	Tel.: 860.465.5246 e-mail: free@easternct.edu

SECTION 2: PROGRAM PLANNING ASSESSMENT (*To be Used for BOR Review Only*)

Alignment of Program with Institutional Mission, Role and Scope

Alignment with University's Mission

Eastern Connecticut State University is Connecticut's public liberal arts university. Focusing on a critical arena of human activity, the proposed Women's and Gender Studies major offers a sustained consideration of the ways in which the concept of gender shapes social experiences in a liberal arts context. Women's and Gender Studies majors graduate with analytical skills that prepare them for future careers in law, social work, public health, the media, public policy, the creative arts, nonprofit organizations, and academia.

Eastern is in the process of instituting a new Strategic Plan which emphasizes the importance of diversity, interdisciplinarity, and rigor in academic programs. The Strategic Plan promotes a "learning community supportive of our differences and similarities through the dimensions of race, ethnicity, national origin, learning styles, ability, gender, sexual orientation, individual thought and global perspectives." The Curriculum of the new major supports such a learning community. In addition, Women's and Gender Studies is consistent with the Strategic Plan's focus on social justice. Indeed, the new major has been designed to be consonant with the goals of the Strategic Plan. Many members of the Women's Studies Advisory Board have served on planning committees and sub-committees. They have carefully reviewed this proposal to make sure that it is in agreement with the strategic planning process.

The proposed Women's and Gender Studies Major, grounded in diversity goals and initiatives, and consonant with the goals for program excellence and global awareness enumerated in Eastern's Strategic Plan, will offer students an alternative liberal arts perspective to the traditional, canonical perspective. It will enable them to understand how the concept of gender shapes social experience and how lives are shaped by a range of social, economic and political structures which operate in a global context. It will prepare them, as well, for employment opportunities in a rapidly shifting economy. There is currently no other interdisciplinary major program that is designed to meet these student needs.

Program Objectives

Graduates will have an understanding of how human experiences are shaped by a range of social, economic, and political structures, and how these structures operate in a global context. Although gender is a key category of analysis in this major, students will also be aware of the way gender is embedded in different forms of sexual, racial, class, and global hierarchies. Because of their awareness of social justice, Women's and Gender Studies majors will be empowered to structure their lives

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intelligently and to contribute to their communities in a socially responsible manner.

The major requires that students take multi-disciplinary courses that address knowledge areas in the study of women and gender. Students who complete the major will take cross-disciplinary coursework (including an advanced theoretical course), a course in sexualities studies, and at least two courses in race, class, culture and gender (one of which will have a global or international emphasis). In addition, there will be a relevant research and experiential learning component.

Program Need

A major in Women's and Gender Studies, because it focuses on diversity issues in an increasingly diverse society, prepares students for jobs in sectors that demand sensitivity to these issues. Because students are engaged in analyzing social inequities and challenging social injustice, they are uniquely prepared for jobs that demand civic engagement and activism. Women's studies, because of its multi-disciplinarity, enables student to engage critically on many levels. Its goals are to produce critical thinkers who can confront social injustice both in a macro and micro level--in workplaces and in family life. In the proposed program, students will take courses totaling at least 36 credits from a variety of departments. The Women's and Gender Studies major allows students to obtain a broad background in issues related to women, gender, race, class, sexuality, and diversity and encourages them to become lifelong learners. There is no major program in Women's and Gender Studies within the public higher education constituent units in Connecticut (UConn's comparable "Women's Studies" major is presently undergoing a titular change to "Women's, Gender, and Sexuality Studies"). There are nearly two hundred colleges in the U.S. that offer interdisciplinary bachelor's degrees in Women's and/or Gender Studies. However, the number of such programs is very limited in New England. At present, New England students who wish to pursue a major in Women's and Gender Studies have only four private Connecticut colleges or universities (Connecticut College, Hartford College for Women, St. Joseph's College and Trinity College) that offer an undergraduate degree in Women's and Gender Studies. The Women's and Gender Studies major offers opportunities for students to learn about the legal, economic, historical and institutional contexts of gender in the United States and around the world. This field of study has also historically provided structural, academic, and social support to nontraditional and first generation students. The Women's and Gender Studies major offers an opportunity for all students not only to learn those histories, but to critique the roles that gender and other social categories have in shaping society. Students who are familiar with this subject matter and the critical thinking skills within this field will be better able to address issues of social equality. This major allows students to think critically about an education that relates to issues of social justice and civic responsibility, which are chief aims of Eastern's Liberal Arts mission. Students in existing Women's Studies classes at Eastern have expressed a strong interest in a Women's and Gender Studies major. Courses are in high demand, requiring the overloading students who initially take the course to meet an Liberal Arts Core requirement and who later continue coursework in Women's Studies. The university anticipates that the Women's and Gender Studies will attract students interested in law, social work, public health, the media, public policy, the creative arts, nonprofit organizations, and academia. This group will include students from other New England states that do not have comparable programs in public universities and colleges. Students may wish to double major and develop further expertise in the field of Women's and Gender Studies as part of their career training, particularly those students who plan to work with traditionally underserved communities and populations. The content of this major will help students to navigate the global economy after graduation through its emphasis on analyzing power, identity, and social justice.

A study by Luebke and Reilly, Women's Studies Graduates: The First Generation addressed the gainful employment of the first generation of Women's Studies graduates in the '90s. More recently, Professor Amber E. Kinser, East Tennessee University, has conducted a study, included in the National Women's Studies Association publication Women's Studies Program Administrators Handbook, of positions attained by Women's Studies graduates by synthesizing alumni reports from Women's Studies programs across the country. She and her graduate students found baccalaureate students employed in over 200 occupations, which are too numerous to list here but may be found on the National Women's Studies Association website <http://www.nwsa.org> under the link for program administrators. A partial list of such jobs includes: AIDS Project worker, Battered Women's Center Administrator, Breast Cancer Support Group Facilitator, Assistant Director, Alumni Association, Arts fundraiser, Business systems analyst, Case Manager and Team Coordinator at the New England Center for Children, Corporate event planner, Coordinator of Lesbian/Bisexual Services Writer, Health Educator, Homeless Shelter Coordinator, Hospital Administrator, Information technology industry analyst relations, Law clerk, Lead Organizer, The White House Project: Mobilizing you women and single women to engage in politics, Legal Assistant, Library Reference Technician, Owner, Sales Management Consulting Firm, Planner for Juvenile Females for the state, Policy analyst on equity in public schools, Program Director for the American Heart Association, Rape Assistance and Awareness Program worker, Service and Support Administrator, Board of Mental Retardation and Mental Disabilities, Small Business owner, Teach for America

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Volunteer, Web Design, Writing and Editing for Reuters, and YMCA Youth Programs Director. Thus, Women's Studies baccalaureates lead to a broad variety, of jobs and services in the public sector and that many of the jobs in the services sector aid underserved or marginalized populations. It is also evident in this survey that Women's Studies graduates often assume positions, such as "Director" that involve highly evolved leadership skills; they develop a great degree of initiative as well as a commitment to justice and equality and engagement in social activism They feel deeply connected to the communities in which they live and work to effect positive change in those environments. Women's Studies graduates are also employed in business, communication, technology, and academic settings. Many go on to graduate school in the following areas: Clinical Psychology, Cultural Studies, English, Film, International Studies, Law, Library Science, Social Work and/ or Sociology, Philosophy, Public Policy, History, and Women's Studies. The specific mention of the field on this partial list (culled from Kinser's survey, the data for which were collected in 2005) is noteworthy. Eastern also has a strong history of students whose experience in Women's Studies has led them to pursue additional graduate experience in the field, including at schools like Clark, University of Rhode Island, Central Connecticut State University, and Ohio State. Students have represented Eastern particularly well in the master's program in Women's Studies at Southern Connecticut State University, where they have planned academic conferences, programs for community engagement, and publications of two academic journals. Currently, there are thirty-one master's programs nationally in Women's Studies. There are also sixteen doctoral programs in Women's Studies in the United States, with additional dual degree programs .

Cost Effectiveness and Availability of Adequate Resources

This major program boosts anticipated revenue without additional costs (enclosed pro forma budget). The projected expenditures are administrative and maintain current funding for the minor program . One faculty member serving as coordinator at ¼ time.

Connecticut Board of Regents for Higher Education

APPLICATION FOR NEW PROGRAM APPROVAL PRO FORMA ¹ BUDGET - RESOURCES AND EXPENDITURE PROJECTIONS

Institution

Eastern Connecticut State
University

Date

7-Feb-12

Proposed Program

Women's and Gender
Studies, B.A.

PROJECTED Enrollment	First Term Year 1		First Term Year 2		First Term Year 3	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Internal Transfers (from other programs)	6		6		6	
New Students (first time matriculating)	6		8		10	
Continuing (students progressing to credential)			12		20	
Headcount Enrollment	12	0	26	0	36	0
Total Estimated FTE per Year	12		14		36	

PROJECTED Program Revenue	Year 1		Year 2		Year 3	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Tuition (Do not include internal transfers)	\$24,744		\$82,480		\$123,720	
Program-Specific Fees						
Other Rev. (Annotate in text box below)	\$26,586		\$88,620		\$132,930	
Total Annual Program Revenue	\$51,330		\$171,100		\$256,650	

PROJECTED Expenditures*	Year 1		Year 2		Year 3	
	Number (as applicable)	Expenditure	Number	Expenditure	Number	Expenditure
Administration (Chair or Coordinator)	1/4 time	\$20,000	1/4 time	\$20,000	1/4 time	\$20,600
Faculty (Full-time, total for program)					1/16 time	\$6,250
Faculty (Part-time -total for program)						
Support Staff	1/20 time	\$4,000	1/20 time	\$4,000	1/20 time	\$4,120
Library Resources Program						
Equipment (List as needed)						
Other (e.g. student services)						
Estimated Indirect Cost (e.g. student services, operations, maintenance)						
Total ESTIMATED Expenditures		\$24,000		\$24,000		\$30,970

* Note: Capital outlay costs, institutional spending for research and service, etc. can be excluded.

Annotations: Revenue figures include tuition and fees for new students (but not for new internal transfers) plus those for all continuing students (even if they entered the program in a prior year as an internal transfer). Tuition is entered at \$4,124 per year and Other Rev. (fees) at \$4,431 per year. Faculty expenditures are for supervision of internships.

¹ This PRO FORMA budget provides reasonable assurance that the program can be established and is sustainable. Some assumptions and/or formulaic methodology may be used and annotated in the text box.

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SECTION 3: PROGRAM QUALITY ASSESSMENT

Learning Outcomes - L.O.

1. Students will demonstrate the ability to critically and comparatively evaluate issues related to gender in multicultural and global contexts.
2. Students will understand the interdisciplinary scholarship on women, gender, race, class, and sexuality and be able to offer theoretical and practical approaches to feminist thinking.
3. Students will be trained to conduct research using appropriate interdisciplinary methods.
4. Students will demonstrate the ability to communicate orally and in writing at a professional level. Students will be encouraged to present their work at conferences and venues appropriate for undergraduate research.
5. Students will demonstrate understanding of power relationships, social structures, and other social and cultural factors related to the field of women and gender studies.
6. Students will be encouraged to develop community engagement and experiential learning projects that are informed by feminist theories in the classroom.

Assessment Methodologies:

Internal evaluation: As part of the assessment of this program, majors in their senior year will complete an exit interview and written statement reflecting on this major, identifying what questions and areas of study have been most important to them. Students will also articulate the methodology they have used to address these questions. These reports, which will be regularly read and evaluated by a Women's and Gender Studies program evaluation sub-committee according to an agreed-upon evaluation rubric, will allow us to continue to develop and adapt our major. Also, alumnae/i will be polled about job or graduate placements.

Program Administration

The Director of Women's Studies receives, at present, three credits of reassigned time to administer the minor. The current director, Maureen McDonnell, has a Ph.D. in English and Women's Studies. The Women's and Gender Studies program is administered with the advice and consent of the Women's Studies Advisory Board.

Adjunct Faculty

Fifteen-per-cent of program credits will be taught by adjunct faculty. Adjuncts will need to have a Master's Degree, preferably in Women's and Gender Studies. Adjuncts with a Master's in an affiliated field must have a Women's and Gender Studies graduate certificate or undergraduate minor in that field.

Special Resources

No new resources are required for implementing this major. At present the J. Eugene Smith Library at Eastern provides excellent research support in Women's and Gender Studies through books, journals and online databases. The current Women's Studies Director has regularly ordered books, films and, when possible, periodicals through the library budget allotment to the Women's Studies minor. In addition, each major that cross-lists courses with Women's Studies also orders appropriate library texts and materials. Over the twenty-eight years of the Women's Studies minor's existence, the library has built a fine collection of appropriate texts and databases. We would hope that the library allocation would increase as the program develops into a Women's and Gender Studies major. A copy of the Smith Library's excellent frequently updated and includes an online database for work in Women's Studies is appended. In addition, students will have access to the libraries of the other CSU campuses, the state library and the UConn Library. Eastern's current classroom facilities and equipment are adequate to support the major.

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Curriculum

Course Number and Name	L.O. # ¹	Cr Hrs	Course Number and Name	L.O. #	Cr Hrs
Program Core Courses (Gateway Courses)			Related/Special Requirements		
Introduction to Women's Studies (WST 260)	1,2,5,6	3	One Sexualities Course from this list: <ul style="list-style-type: none"> • WST/SOC 208: Gay, Lesbian and Bisexual Lives • WST/PSY 315: Psychology of Gender • WST/ PSY 322: Human Sexuality 	1-3, 5-6	3
Feminist Theories (WST 351)	1-6	3	One Race, Culture, and Gender course (United States emphasis) from this list: <ul style="list-style-type: none"> • WST/PSC 326: Politics of Race, Class, and Gender • WST/SOC 347: Black Women's Studies 	1-3, 5-6	3
			One Race, Culture, and Gender course (Global or International emphasis): <ul style="list-style-type: none"> • WST/ANT 300: Women and Work 	1-3, 5-6	3
			One course with an Historical Perspective course from this list: <ul style="list-style-type: none"> • WST/ART 355: Women in the Visual Arts • WST/ENG 307: Medieval Women Mystics • WST/ENG 356: Women Writers to 1900 • WST/HIS 244: Immigrant Women • WST/HIS 317: Women and Family in Western Society • WST/HIS 363: Women and Modern History 	1-3, 5-6	3
			One capstone course that is writing-intensive: WST 480: Independent Study : The Liberal Arts Core third tier writing-intensive course requirement will be met by an independent study advised by a Women's and Gender Studies faculty member. Students will produce theses to be read by a second reader approved by the Women's Studies Advisory Committee. With permission of the Director of Women's Studies, the requirement may be met by a discipline-based substitute, such as a departmental senior seminar; the thesis resulting from such work will then be read by a second reader approved by the Women's Studies Advisory Committee	1-5	3
			One experiential learning course: WST 490: Internship. The experiential learning component may be undertaken in Women's and Gender Studies or in a disciplinary area relevant to the Women's and Gender Studies major and signed off by the director.	1-6	3
Total 24 Cr: 6 Cr Gateway Courses, 15 Cr in Required Courses in the Field and 3 Cr Experiential Learning					

¹ From the Learning Outcomes enumerated list provided at the beginning of Section 3 of this application

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Additional Electives in the Major	12	
ENG 266 Mini-Lit on Women Writers	1	
EN G 228 Poetry of Women	3	
ENG 357 20th Century Women Writers	3	
ENG 365 Special Topics: Women Writers	3	
PSC 227 Women and Politics	3	
SOC 212 Sociology of Families	3	
SOC 240 Sociology of Gender and Sex Roles	3	
SOC 310 Women and Crime	3	
Total Other Credits Required to Issue Credential (e.g. GenEd/Liberal Arts Core/Liberal Ed Program): 120 Cr		

Program Outline

The Women's and Gender Studies Major entails 36 credits of related course requirements from a range of disciplines. The gateway course and prerequisite to the major is WST 260: Introductions to Women's Studies. Coursework includes this gateway course, Feminist Theories, two courses in Race, Culture and Gender (one with a U.S. emphasis, one with a global or international emphasis), one course with a historical perspective, a capstone course that is writing-intensive, a course in experiential learning, and 12 elective credits. A student who double majors in Women's and Gender Studies and another field of study may count 8 courses towards both majors. Students must earn a C in all major courses and must earn at least 12 credits at the 300 level.

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Full-Time Faculty Teaching in this Program

Note: All faculty have teaching responsibilities in affiliated departments and have earned doctorates in their fields

Faculty Name and Title	Institution of Highest Degree	Area of Specialization/Pertinent Experience	Other Administrative or Teaching Responsibilities
Cara Bergstrom-Lynch, Assistant Professor of Sociology	University of Michigan	Sociology	
Michèle Boškovic, Professor of Modern and Classical Language Studies	University of Connecticut	French Studies	
Meredith Clermont-Ferrand, Professor of English	University of Massachusetts, Amherst	English	
Alita Cousins, Assistant Professor of Psychology	University of New Mexico	Psychology	
Mary Curran, Associate Professor of Geography	University of Kentucky	Geography	
Anne Dawson, Professor of Art History	Brown University	Art History	
Kimberly Dugan, Associate Professor of Sociology	Ohio State University	Sociology	
Ann Higginbotham, Professor of History	University of Indiana	History	
Mary Kenny, Associate Professor of Anthropology	Columbia University	Anthropology	
Anna Kirchmann, Professor of History.	University of Minnesota	History	
Nicole Krassas, Professor of Political Science	University of Iowa	Political Science	
Margaret Letterman, Associate Professor of Psychology	Oklahoma State University, Stillwater	Psychology	
Jennifer Leszczynski, Associate Professor of Psychology	West Virginia University	Psychology	
Eunice Matthews-Armistead, Associate Professor	City University of New York: Graduate Center	Social Work	
Maureen McDonnell, Associate Professor of English	University of Michigan	English and Women's Studies	Program Coordinator
Theresa Severance, Associate Professor of Sociology	Bowling Green State University	Sociology	
Delar Singh, Associate Professor of Special Education	University of Pittsburgh	Special Education	

June 23, 2011

TO: Members of the Board of Trustees

FROM: Peter J. Nicholls, Provost

RE: Changing the Masters Degree in Kinesiology from a M.A to a M.S.

RECOMMENDATION:

That the Board of Trustees approve the changing of the Masters Degree in the Kinesiology Field of Study from a Masters of Arts to a Masters of Science.

BACKGROUND:

Over the past 25 years, the Department has undergone a significant shift in emphasis away from physical education pedagogy and administration toward a basic science and applied science research mission. The change in degree designation from M.A. to M.S. was approved by the faculty for the exercise science concentration in October 2007, and for the sport management concentration in January 2011. The Graduate Faculty Council Executive Committee approved the change in March 2011.

The proposed change from a M.A. to a M.S. degree will: 1) correct the current inconsistency in degrees offered in the department in going from the baccalaureate (B.S.) to the masters (M.A.) degree, 2) greatly benefit the overall recognition and marketability of the department's masters degree students, and 3) allow the department to actively compete with peer institutions (including Pennsylvania State University, University of Texas, Texas A & M University, University of Georgia, University of Illinois, University of Florida), that offer the M.S. degree to students in their kinesiology programs.

The proposed change in degree designation requires no change in courses offered, curriculum, credit hours, class locations, or instructors. No special infrastructure support will be requested or required.

AN APPLICATION FOR A PROGRAM MODIFICATION TO CHANGE
THE M.A. DEGREE IN KINESIOLOGY TO A M.S. DEGREE

The Graduate School
The University of Connecticut

Submitted to:

The Board of Regents for Higher Education
State of Connecticut

Prepared by:

Carl M. Maresh
Board of Trustees Distinguished Professor
Department Head, Kinesiology

January 25, 2012

RATIONALE FOR THE REQUESTED PROGRAM MODIFICATION

Currently in the Kinesiology Field of Study there are two graduate degree designations, M.A. and Ph.D. degrees in Exercise Science and Sport Management. The M.A. degree reflects the historical placement of our program within the School of Education, where all other master's degree programs are M.A. Over the past 25 years, the department has undergone a significant shift in emphasis away from physical education pedagogy and administration toward both a basic and applied science research mission. Furthermore, the four undergraduate degree options that we offer (Athletic Training, Exercise Science, Sport Management, and Strength & Conditioning) are Bachelor of Science degrees, demonstrating an inconsistency in the degree classifications in going from the baccalaureate (B.S.) to the master's (M.A.) degree.

We are requesting that our master's degree programs in the Kinesiology Field of Study be changed to the M.S. degree. This change was approved for the exercise science concentration by our department faculty at its October 31, 2007 meeting. We were unaware at that time, however, that all programs within a given Field of Study must have the same degree designation. At our January 28, 2011 faculty meeting we approved this change in degree designation for the sport management concentration.

The overall recognition and marketability of our master's degree students will greatly benefit from this change in degree designation, a change that was supported by a vote of the Graduate Faculty Council Executive Committee on March 2, 2011.

Exercise Science (15151). Students who enter this program have a strong science background and the courses that comprise the master's plan of study are predominately science courses. A sampling of these include: Research Techniques and Experimental Designs in Exercise Science, Exercise Metabolism, Thermal Physiology, Laboratory Analytical Techniques, Muscle Physiology, Physiology of Human Performance, and Exercise Endocrinology. The statistics courses that these students take are offered through the Department of Educational Psychology or the Department of Statistics. Furthermore, the analytical techniques that these students might learn through their research experiences include, among others: spectrophotometry, high performance chromatography, plate readers, immunoassays, skeletal muscle histochemistry and image analysis, receptor assays, gel protein electrophoresis, Western blot analyses, flow cytometry, cell culture, and increasingly, molecular biological techniques such as polymerase chain reaction of DNA samples. All of these students complete a master's thesis, and most of these are published in the scientific literature. Several of our exercise science faculty members hold joint appointments in other departments, including: Nutritional Sciences (Armstrong, Kraemer, Maresh and Volek), Physiology and Neurobiology (Armstrong, Kraemer, Pescatello and Maresh), and at the UConn Health Center (Kraemer, Maresh).

Sport Management (15152). In terms of curricula, our baccalaureate (B.S.) and master's degrees in Sport Management are very similar, except, of course, for the extent of difficulty, scope, and depth. Similar to our Exercise Science counterparts in Kinesiology, faculty in Sport Management follow the scientific method of discovery and often utilize a positivistic research paradigm. We engage in research through a variety of quantitative research methods and statistics (e.g., multivariate analysis of variance, factor analysis, structural equation modeling) to answer an array of research questions. However, some sport management faculty also utilize post-positivism, constructivism, and critical/ideological paradigms and engage in qualitative and/or mixed method research endeavors when the research question calls for those types of analyses. Sport Management researchers often collaborate with their exercise science counterparts. Currently such projects include instrument development for athletic training and parental influence on youth physical activity levels. We also engage in interdisciplinary projects with programs across campus. Currently we

have collaborations with faculty in the College of Agriculture and Natural Resources (Nutritional Sciences). It is important to note that our peer institutions which offer a master's degree in Sport Management, and with which we actively compete for graduate students (including Pennsylvania State University, University of Texas, Texas A & M University, University of Georgia, University of Illinois, University of Florida), all offer the M.S. degree.

Enrollment and Graduation Data. Enrollments in the Exercise Science and Sport Management master's degree programs during the 2009-2010 academic year were 33 students and 17 students, respectively; during the 2010-2011 academic year, these enrollments were 34 students and 14 students, respectively. There were 14 graduates from the Exercise Science master's degree program in 2010 and 20 graduates in 2011. There were 12 graduates from the Sport Management master's degree program in 2010 and 10 graduates in 2011. During the current 2011-2012 academic year there are 32 students enrolled in the Exercise Science program and 22 students enrolled in the Sport Management program. We project that these numbers will remain consistent during 2012-2013 and 2013-2014.

Since both the Exercise Science and the Sport Management master's degrees are two-year programs, current students will switch from the MA to the MS degree in either the first or second year of their respective programs.

RELATIONSHIP OF THE MODIFICATION TO THE EXISTING APPROVED PROGRAM

The M.S. degree program for both exercise science and sport management will be identical to the existing M.A. degree program.

COST ANALYSIS

No additional costs or additional faculty are required for this change in degree designation.

Department Head: Carl M. Maresh, Board of Trustees Distinguished Professor

Exercise Science Graduate Faculty

Professors: Armstrong, Casa, Denegar, Kraemer, Maresh, Pescatello

Associate Professor: Volek

Assistant Professors: DiStefano, Joseph

Sport Management Graduate Faculty

Associate Professors: Bruening, Burton, Fink (currently up for promotion to Full Professor)

Assistant Professor: Mazerolle (currently up for promotion to Associate Professor)

AN APPLICATION FOR
A PROGRAM MODIFICATION TO A PHD DEGREE PROGRAM IN
LEARNING, LEADERSHIP AND EDUCATION POLICY

The Graduate School
The University of Connecticut

Submitted to:

The Board of Governors for Higher Education

State of Connecticut

April 22, 2011

1. PROVIDE A DESCRIPTION AND RATIONALE FOR THE PROGRAM MODIFICATIONS

The proposal is to integrate our two existing doctoral fields of study in the *Department of Educational Leadership – Adult Learning* and *Educational Administration* into a single doctoral field of study under a new name – Learning, Leadership, and Education Policy (LLEP). This new field of study will have two new areas of concentrations in (a) *Adult Learning* and (b) *Leadership and Policy*. These two concentration areas provide Ph.D. students with the opportunity to link their professional and academic goals to scholarship, faculty resources, and curriculum that are designed to meet their interests in adult learning, educational leadership, education policy, and higher education.

The Concentration in Adult Learning is designed to prepare individuals who choose to focus on the theoretical principles and practice of adult education and learning, and human resource development in a variety of sectors, including education, business, industry, government, non-profit, and health care. The Concentration in Leadership and Policy is designed for individuals who demonstrate a commitment to research and scholarship in the areas of leadership theory, systemic organizational change, and policy analysis in educational contexts.

These two distinct but complementary areas of concentration are necessary because they offer those students who wish to pursue a Ph.D. degree the opportunity to draw from their current careers, prior experiences, and previous education to achieve their academic objectives and long-term professional goals. With one concentration primarily focusing on learning theory, and the other on theories of policy and leadership, students can maintain distinct academic identities while simultaneously applying lenses of social justice and organizational change to their work in and with complex organizations.

The new program name, the two concentrations, and the curricular changes reflect the increasingly interdisciplinary direction of our department and our current faculty expertise, as well as the vision we have for the future of the Department of Educational Leadership. The new single and integrated Ph.D. –“Learning, Leadership, and Education Policy” (LLEP) – is thus a crucial and accurate indication of the proposed modification.

Reasons for the proposed changes:

1. *To capitalize on the existing departmental resources that emphasize the pragmatic turn toward more interdisciplinary needs of students and faculty interests.* Across the two existing doctoral programs, there are similar courses, cross-listed faculty, similar needs for resources, and very similar research and professional placements of graduates. This is evident in the department’s recent doctoral dissertations, conference presentations, grant applications, and published articles.

2. *To increase collaboration among faculty with related interests, and between faculty and students.* This will result in increased research, scholarly productivity, and grant activity within the department.

3. *To maximize the educational experiences of the graduate students in the new program and to prepare students for the current and future positions in educational leadership and policy and adult education.* By providing them with flexible and broadly applicable plans of study, our Ph.D. students will be better prepared to respond to the growth in the field of education. The integrated course work will prepare Ph.D. students for academic and administrative positions in schools of education, and leadership or research positions in schools, universities, government, think tanks, business, and non-profit agency settings.

In summary, as this particular field of study grows and changes, so do the needs and expectations of our students and those who employ them. Maintaining our current department and separate Ph.D. programs does not allow for an adequate response to these demands. Other universities have made similar departmental shifts, including the University of Georgia, University of Maryland, and Vanderbilt University. The Department of Educational Leadership at the University of Connecticut will be among these forward-looking universities as they effect positive change in leading schools, institutions of higher education, nonprofits, and business and industry through innovating their academic programs to optimize student learning outcomes.

2. WHAT IS THE RELATIONSHIP OF THE MODIFICATION TO THE EXISTING APPROVED PROGRAM?

The proposed program, Learning, Leadership, and Education Policy, will replace the two existing Ph.D. programs – *Adult Learning* and *Educational Administration* – in the Department of Educational Leadership. Therefore, two Ph.D.s will be merged into one, with concentrations in (a) Adult Learning and (b) Leadership and Policy to integrate and synergize the courses, professional practice, and research across the department.

To facilitate such a modification the following is proposed.

At a minimum, all students in the LLEP program will complete:

- 9 or more credit hours of research methods courses offered by EDCI, EDLR, and EPSY
- 9 or more credit hours of courses in their area of concentration
- 15 credit hours of GRAD 6950 (Dissertation Research)
- 18 credit hours of core courses

18 Hours of Core Courses
EDLR 6313 Educational Policy and Politics
EDLR 5204 Organizational Learning
EDLR 5201 Influences on Adult Learning

EDLR 6467 Social Justice Leadership, Equity, and School Change
EDLR 6050 Research Designs in Educational Leadership
EDLR 6051 Research Methods in Educational Leadership

3. PROVIDE AN HISTORICAL CONTEXT FOR THE PROPOSED CHANGE

Initially the Department of Educational Leadership offered three Ph.D. programs. These included Ph.D.s in Educational Administration, Adult Learning, and Professional Higher Education Administration. Several years ago the Professional Higher Education Administration degree was closed for admissions and eliminated due to a lack of tenure track faculty in this area. That left the Educational Administration (EDAD) and Adult Learning (AL) Ph.D. degrees. The number of EDAD faculty declined significantly between 2000-2007 due to retirements and career moves on the part of senior faculty. Since then the EDAD faculty has been restored to sufficient levels. Moreover, the new EDAD faculty has connected professionally and disciplinarily with the Adult Learning and Higher Education Student Affairs faculty, which has resulted in deliberate attempts to integrate curricular programming, research, and teaching. One key manifestation of that integration is the proposed alignment of Ph.D. programs in educational administration and adult learning. This proposed alignment, or creation of a single Ph.D., also will achieve more efficiency than was otherwise possible through our more compartmentalized and siloed programs.

There appears to be a strong demand for a modification to our existing field of study in that it addresses the needs of a variety of doctoral students, including those interested in educational leadership, education policy, adult learning, and higher education. Annually, education majors constitute one of the largest groups of graduates from Connecticut's universities. This group of individuals, as well as business and allied health graduates is a natural pool for the proposed modified Ph.D. program.

Furthermore, projections by the Connecticut Department of Labor indicate that jobs for which such a program would prepare students are likely to be in high demand in the next decade. The proposed doctoral program would prepare students to enter positions in higher education, industry, or research. These sectors are projected to grow considerably by 2018. The number of education professors is projected to grow by 16.3%. Similarly, the number of survey researchers is projected to grow by 18.9% and the number of administrators at pre-K to 12 schools is expected to grow by 8.0-10.0%. The number of human resource professionals is estimated to increase by 13.7% (<http://www1.ctdol.state.ct.us/lmi/projections2008.asp>). The growth in these positions, all of which require or give preferential treatment to those with a doctorate, suggests that there would be strong demand in the coming years for a program such as the one we propose.

Today, the need for this merged Ph.D. program is demonstrated by the steady stream of inquiries we receive from individuals interested in pursuing a Ph.D. in educational leadership, education policy, and higher education. Each year, we receive 20-25 inquiries. These come not only from

Connecticut but also from Rhode Island and Massachusetts. Given the University's location in Storrs, such a program would be uniquely positioned to draw students from these three states.

Given these figures, along with the demonstrated effectiveness and demand for the Ph.D. in Adult Learning, we estimate at least 15 applications for the Ph.D. in Learning, Leadership, and Education Policy each year.

4. ENROLLMENT INFORMATION

a. Provide the enrollments in the current program's specialized courses for the past two years

Program	2009-10 Year 1	2010-11 Year 2
Ph.D. Educational Administration (EDAD)	0 ¹	0 ²
Ph.D. Adult Learning (AL)	28	33
<i>Total</i>	28	33

b. Provide estimates of the enrollments in the proposed modified program for the next two years

Concentration	Year 1	Year 2
Leadership and Policy	8	14
Adult Learning	35	35
<i>Total</i>	43	49

5. RESOURCES

a. Provide statement of the costs of the existing program and the projected costs for the modified program, including any new costs.

The program will take advantage of the existing resources in the Department of Educational Leadership. Costs should remain equivalent. No additional resources are required and as such no "cost-coverage" plan is included in this application.

b. Provide a list of all faculty who will be associated with this modified program. Include for each person: (i) degrees held and in what subject(s);

¹ This number is reflective of the current moratorium on admissions to the EDAD Ph.D., as we continue to make plans for reorganization and alignment.

² This number is reflective of the current moratorium on admissions to the EDAD Ph.D., as we continue to make plans for reorganization and alignment.

(ii) current and prospective teaching assignments; (iii) their full- or part-time status; and (iv) whether they have an exclusive appointment with the off-campus program.

*All faculty are located on Storrs Campus and all are full time with one exception.

Current Adult Learning Faculty

Alexandra Bell, Associate Professor, Ph.D. in Adult Learning
Robin Grenier, Assistant Professor, Ph.D. in Adult Education
Marijke Kehrhahn, Associate Professor, Ph.D. in Adult Learning

Current Educational Administration Faculty

Casey Cobb, Associate Professor, Department Head, Ph.D. in Educational Leadership & Policy Studies
Morgaen Donaldson, Assistant Professor, Ed.D. in Administration, Planning, and Social Policy
Marlon James, Assistant Professor, Ph.D. in Curriculum and Instruction
Tammy Kolbe, Assistant Research Professor, Ed.D. in Educational Leadership and Policy Analysis
Kimberly LeChasseur, Assistant Research Professor, Ph.D. in Urban Education
Anysia Mayer, Assistant Professor, Ph.D. in Education Policy
Richard Schwab, Professor, Ph.D. in Educational Administration
Shuana Tucker, Assistant Professor, Ph.D. in Educational Policy Studies
Anjalé Welton, Assistant Research Professor, Ph.D. in Educational Policy and Planning

Additional Faculty in the Department of Educational Leadership

Jennifer Lease Butts, Associate Extension Professor, Ph.D. in Human Development, and Student Affairs Administration
Michele Femc-Bagwell, Assistant Professor in Residence, Ph.D. in Educational Administration
Sue Saunders, Extension Professor, Ph.D. in Counseling and Student Personnel Services
Robert Villanova, Assistant Research Professor, Ph.D. in Educational Administration (part-time status)

Prospective Teaching Assignments

Alexandra Bell – Research Methods, Adult Learning Theories
Casey Cobb – Leadership, Policy, Evaluation
Morgaen Donaldson – Policy, Leadership, Human Resource Development, Research Methods
Robin Grenier – Research Methods, Adult Learning Theories, Human Resource Development
Marijke Kehrhahn – Human Resource Development, Adult Learning Theories, Leadership
Jennifer Lease Butts – Research Methods, Leadership, Policy
Sue Saunders – Leadership, Policy, Human Resource Development
Marlon James – Leadership, Policy
Tammy Kolbe – Leadership, Policy
Kimberly LeChasseur – Leadership, Policy
Anysia Mayer – Leadership, Policy, Human Resource Development, Research Methods

Richard Schwab – Leadership, Policy
Shuana Tucker – Leadership, Policy
Anjalé Welton – Leadership, Policy

Curricula vitae of each of the proposed program faculty are in Appendix A.

c. Describe the library facilities available to the students enrolled in this modified program.

The University of Connecticut Library System holds the largest public collection of research materials in the State of Connecticut. The University Library System is composed of the Homer Babbidge Library, the Music Library, the Pharmacy Library and Learning Center, and the Historical Manuscripts and Archives Division on the Storrs campus, and Regional Campus Libraries in Hartford, Waterbury, Stamford, Torrington and Avery Point. Specialized subject collections in law, medicine and dentistry, social work, business and insurance, and marine sciences are located at various regional campuses. All collections are available to students of the University and together are capable of supporting advanced research in all fields of study offered by the University.

The Homer Babbidge Library at Storrs provides seating for 3,000 readers. This building contains the major portion of the University's book collection with 2 million volumes of the system's total (excluding Health Center and Law Libraries) of over 2.6 million volumes. Current serial subscriptions total approximately 9,700 at the Homer Babbidge Library and 20,700 for the entire University library system.

Reference and Electronic Information: The Library is committed to teaching students to use electronic information resources and to promoting electronic access to information worldwide. Its reference collection contains more than 30,000 print and electronic indexes, bibliographies, dictionaries, encyclopedias, and other sources that enable researchers to locate information. The Reference Department contains more than 200 CD-ROM databases, and current UConn students, faculty and staff may access major fulltext online services such as LEXIS/NEXIS, Dow Jones, and FirstSearch. The Library also provides Internet access and maintains a gopher server at *spirit.lib.uconn.edu* and World Wide Web site at Spirit, the Library's information server. Curators are available for individual consultation and can also arrange presentations for classes and seminars.

The Map and Geographic Information Center (MAGIC) is a library of digital geospatial information. Faculty and students within the Department of Natural Resources Management & Engineering routinely use and depend heavily on MAGIC's services. All of the data available through FTP are in the public domain, licensed data are available only on the campus of the University of Connecticut in Storrs, Connecticut. MAGIC collects data that primarily relate to Connecticut. All of the TIGER derived data for Connecticut are available in TIGER native ASCII (ZIPed), MapInfo for Windows (MIF), ARC/INFO (E00). Data from

the State's Department of Environmental Protection, the U.S. Geological Survey, U.S. Bureau of the Census and other federal agencies are also available.

d. Indicate what provisions have been made for student access to adequate instructional facilities, equipment, academic advising, and other necessary instructional support services.

These will remain in place as they currently exist.

6. PROFESSIONAL ACCREDITATION (IF APPLICABLE)

N/A

Curriculum - Ph.D. in Learning Leadership and Educational Policy

(The new program eliminates the Ph.D. in Adult Learning, CIP 131201, DHE #01006)

Course Number and Name	Credit Hours	Course Number and Name	Credit Hours
<i>Research Methods (three courses)</i>	9	<i>Core Courses</i>	18
EDCI 6000 Qualitative Methods of Educational Research	3	EDLR 6313 Educational Policy and Politics	3
EPSY 5605 Quantitative Methods in Research I	3	EDLR 5204 Organizational Learning	3
EDLR 6052 Qualitative Methods of Educational Research II	3	EDLR 5201 Influences on Adult Learning	3
EPSY 5607 Quantitative Methods in Research II	3	EDLR 6467 Social Justice Leadership, Equity, and School Change	3
EPSY 5613 Multivariate Analysis in Educational Research	3	EDLR 6050 Research Designs in Educational Leadership	3
EPSY 6601 Methods and Techniques of Educational Research	3	EDLR 6051 Research Methods in Educational Leadership	3
EPSY 5621 Construct of Evaluation Instruments	3		
<i>Courses in Area of Concentration</i>	9	<i>Thesis</i>	15
DLR 5099 Independent Study	3	GRAD 6950 Dissertation Research	15
EDLR 5202 Workplace Learning	3		
EDLR 5203 The Brain, Experience, and Adult Learning	3		
EDLR 5207 Methods of Facilitating Adult Learning	3		
EDLR 5307 Contemporary Educational Policy Issues	3		
EDLR 5308 Psychological Foundations of Education	3		
EDLR 6201 Strategic Applications of Adult Learning Principles	3		
EDLR 6302 School District Policy, Politics, and Governance	3		
EDLR 6464 Seminar: Leadership and School Organizations	3		




University of Connecticut
Office of the Provost

Peter J. Nicholls
*Provost & Executive
Vice President
for Academic Affairs*

September 28, 2011

TO: Members of the Board of Trustees

FROM: Peter J. Nicholls, Provost 

RE: Modifications to the Doctor of Philosophy. M.A. and Sixth-Year Certificate Programs in Educational Psychology in the Neag School of Education

RECOMMENDATION:

That the Board of Trustees approve the modifications to the Doctor of Philosophy, M.A. and Sixth-Year Certificate Programs in Educational Psychology in the Neag School of Education

BACKGROUND:

The Department of Educational Psychology in the Neag School of Education conducted a program review in the 2010-2011 academic year. The faculty agreed that the current degree structure has caused various levels of confusion among faculty, students, and the University administration. It is not clearly aligned to form effective pathways for graduate students who may wish to pursue their terminal degrees in a seamless manner, from their master's Field of Study through their doctoral Field of Study.

As instructional technology has become an important and critical literacy skill in education, a closer collaboration between the faculty in cognition and instruction, and those in educational technology will provide the Neag School with a strong edge on the national platform by merging the two fields into a coherent one.

Therefore, the Neag School of Education proposes the following eight modifications:

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An Equal Opportunity Employer

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web: <http://provost.uconn.edu>



University of Connecticut

Office of the Provost

Peter J. Nicholls
*Provost & Executive
Vice President
for Academic Affairs*

Doctoral level:

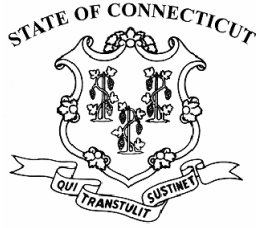
1. Merge two existing Fields of Study – “Educational Technology” and “Special Education” – into another existing Field of Study, (“Educational Psychology”), under the name of “Educational Psychology.”
2. Convert and merge an existing Field of Study – “Educational Technology” – and an existing Area of Concentration – “Cognition and Instruction” – into a new Area of Concentration, under the name of “Cognition, Instruction, and Learning Technology.”
3. Convert the existing Field of Study – “Special Education” – to an Area of Concentration under the same name.

M.A. level:

4. Merge two Fields of Study – “Educational Technology” and “Special Education” – with another existing Field of Study (“Educational Psychology”), under the name of “Educational Psychology.”
5. Convert an existing Field of Study – “Educational Technology”-- to an Area of Concentration, under the name of “Educational Technology.”
6. Convert an existing e Field of Study – “Special Education” – into an Area of Concentration, under the name of “Special Education.”
7. Rename an existing Area of Concentration – “Cognition and Instruction” – to “Cognition, Instruction, and Learning Technology.”

Sixth-Year Level:

8. Merge two existing Areas of Concentration – “Cognition and Instruction” and “Educational Technology” – into one Certificate Program under the name of “Cognition, Instruction, and Learning Technology.” The third existing Area of Concentration – “Special Education” – will remain unchanged.



General Assembly

February Session, 2012

Raised Bill No. 5030

LCO No. 145

00145_____HED

Referred to Committee on Higher Education and Employment
Advancement

Introduced by:
(HED)

***AN ACT CONCERNING THE DEVELOPMENT OF A GENERAL
EDUCATION CORE OF COURSES TO ALLOW FOR THE SEAMLESS
TRANSFER FROM THE REGIONAL COMMUNITY-TECHNICAL
COLLEGE SYSTEM TO THE CONNECTICUT STATE UNIVERSITY
SYSTEM AND THE UNIVERSITY OF CONNECTICUT.***

Be it enacted by the Senate and House of Representatives in General
Assembly convened:

1 Section 1. (NEW) (*Effective July 1, 2012*) The regional community-
2 technical college system, the Connecticut State University System and
3 The University of Connecticut, in consultation with the Advisory
4 Council on Student Transfer and Articulation established under
5 section 10a-19a of the general statutes, shall develop a general
6 education core of courses for which thirty academic credits shall be
7 given by each regional community-technical college as part of its
8 liberal arts and sciences programs and any other degree program
9 designated as a transfer program. A student who graduates from any
10 such transfer program and transfers to the Connecticut State
11 University System or The University of Connecticut shall transfer
12 thirty academic credits toward the general education core curriculum
13 requirements of the Connecticut State University System or The

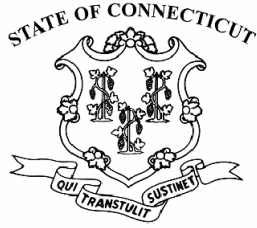
14 University of Connecticut.

This act shall take effect as follows and shall amend the following sections:

Section 1	<i>July 1, 2012</i>	New section
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Statement of Purpose:

To require the development of a general education core of courses to allow for the seamless transfer from the regional community-technical college system to the Connecticut State University System and The University of Connecticut.



General Assembly

February Session, 2012

Raised Bill No. 40

LCO No. 449

00449_____HED

Referred to Committee on Higher Education and Employment
Advancement

Introduced by:
(HED)

***AN ACT CONCERNING OPEN ACCESS TO COLLEGE LEVEL
COURSES.***

Be it enacted by the Senate and House of Representatives in General
Assembly convened:

1 Section 1. (NEW) (*Effective July 1, 2012*) (a) Any student enrolled at a
2 public institution of higher education may take an entry level course in
3 a college level program offered by such institution. Such institution
4 may recommend a student for remediation, but shall not require
5 students to take remedial courses or enroll in a precollege remedial
6 program.

7 (b) Public institutions of higher education shall offer remedial
8 support in the classroom to students who demonstrate shortcomings in
9 any entry level courses in a college level program.

This act shall take effect as follows and shall amend the following
sections:

Section 1	<i>July 1, 2012</i>	New section
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Statement of Purpose:

To allow all students open access to entry level courses in a college level program and prohibit public institutions of higher education from forcing any student to enroll in a remedial course.

[Proposed deletions are enclosed in brackets. Proposed additions are indicated by underline, except that when the entire text of a bill or resolution or a section of a bill or resolution is new, it is not underlined.]