CSCU

BOR ACADEMIC AND STUDENT AFFAIRS COMMITTEE
AGENDA
Friday, October 5, 2018 at 9:30 a.m.
61 Woodland Street, Htfd., CT – Board Room (ground floor)

1. Approval of Minutes
   a. September 7, 2018 – *Page 1*

2. Action Items
   a. New Programs
      i. Massage Therapy – AS – Asnuntuck CC – *Page 11*

   b. State University Centers and Institutes: Seven-Year Reports
      i. Continuation of a Center/Institute
         a) Central CSU
            1) Center for East Asian Studies – *Page 23*
            2) Institute for Technology and Business Development – *Page 42*

         b) Eastern CSU
            1) Church Farm Center for Arts and Sciences – *Page 61*

         c) Southern CSU
            1) Center for Nanotechnology – *Page 75*

         d) Western CSU
            1) Center for Compassion, Creativity and Innovation – *Page 143*
            2) Center for the Study of Culture and Values – *Page 156*

      ii. Discontinuation of a Center/Institute
         a) Central CSU
            1) Biotechnology Institute – *Page 168*

   c. Policy Amendments
      i. Academic Program Review – Low Completers (DRAFT) – *Page 183*
      ii. Academic Program Approval – Below Threshold – *Page 190*

   d. CSCU Student Success Key Performance Indicators (KPIs) – Annual Process – *Page 197*

3. Executive Session (Campus Safety and Security)

CT BOARD OF REGENTS FOR HIGHER EDUCATION

ACADEMIC & STUDENT AFFAIRS COMMITTEE

Meeting – September 7, 2018
9:30 a.m. – 61 Woodland Street, Hartford

MINUTES

Regents Present: Merle Harris, Naomi Cohen, Aviva Budd (via teleconference), William Lugo

Regents Absent: None

Staff Present: Jane Gates, Elsa Núñez, Vicki Bozzuto (GCC/CSCU), Pat Bouffard, Mike Buccilli, Greg DeSantis, Bill Gammell, Ken Klucznik, Lesley Mara, Nancy Melnicsak, Arthur Poole, Pat Ryiz, Mike Stefanowicz, Erika Steiner, Heidi Zenie (TRCC/CSCU)

Other Attendees: Missy Alexander (WCSU), Robin Avant (HCC), Sara Brinkerhoff (MxCC), Paul Broadie II (HCC/GCC), Michelle Coach (ACC), Tuesday Cooper (MCC), Ilene Crawford (SCSU), David Dauwalder (CCSU), Sharifa Douglas (HCC), Amy Feest (TxCC), Patricia Fennessy (CT Career and Technical Education System), Rafaele Fierro (TxCC), Annalisa Fischer (Yale New Haven Hospital), Michele Howard-Swan (ACC), Susan Lugli (MxCC), Mark Kosinski (GCC), Susan Maxwell (Yale New Haven Hospital), Steve Minkler (MxCC), Shane Murphy (WCSU), Sue Passini (ACC/TxCC), Kirk Peters (TxCC), Angel Pickett (GCC/Yale), Robert Prezant (SCSU), Mark Salka (ECSU), Sheila Solernou (GCC), Elizabeth Steeves (HCC), Judy Wallace (MxCC), Ena Williams (Yale New Haven Hospital)

The meeting was called to order by Chair Merle Harris at 9:30 a.m.

Chair Harris remembered Regent Larry DeNardis who passed away on August 24, 2018. She talked about his accomplishments in higher education and in the state and federal government. She noted his service to the CT Board of Regents and the BOR Academic and Student Affairs Committee. She asked the ASA Committee and guests to join her in a moment of silence to honor Regent DeNardis.

1. Approval of Minutes from June 11 and August 9, 2018

A motion to approve the minutes from the June 11, 2018 meeting and the August 9, 2018 meeting was made by N. Cohen and seconded by A. Budd. Regent Budd noted that she attended the June 11, 2018 ASA Committee Meeting. Her name was inadvertently omitted from the minutes. Chair Harris called for a vote to approve the minutes from the June 11, 2018 meeting, amended with Regent Budd's name added, indicating that she attended the meeting, and the minutes from the August 9, 2018 meeting. A vote was taken and the minutes from the June 11 meeting, as amended, and the August 9 meeting were unanimously approved.

2. Consent Items
   a. Discontinuations

A motion to approve the consent items was made by N. Cohen and seconded by A. Budd. A vote was taken and the consent items were unanimously approved.

Consent items were:

i. Photography – AS – Northwestern CT CC
ii. Photography – Certificate – Northwestern CT CC
iii. Restaurant Management – Certificate – Three Rivers CC
iv. Business Administration – Certificate – Three Rivers CC
v. Small Business and Entrepreneurial Studies – Certificate – Three Rivers CC
vi. Hotel Management – Certificate - Three Rivers CC
vii. Advertising, Sales and Promotion – Certificate - Middlesex CC
viii. Customer Service Management - Certificate - Middlesex CC
ix. Marketing – AS - Middlesex CC
x. Behavioral Science – AA – Naugatuck Valley CC
xi. New Media Communication – AS – Tunxis CC
xii. Computer Information – PC Applications (EJ01) – Certificate – Housatonic CC
xiii. Computer Information – PC Repair Technology (EJ02) – Certificate – Housatonic CC
xiv. Business Office Technology: Administrative Support Assistant (EJ09) – Certificate – Housatonic CC
xv. Web Design Graphics Foundation (EK06) – Certificate – Housatonic CC

3. Informational Item: Comparative Enrollments: 2013-2014 Cohort – Follow-up Report

Arthur Poole, Director of Educational Opportunity, presented. A report on Comparative Enrollments in the 2013-2014 New Academic Programs was presented at the June 11, 2018 Academic and Student Affairs Committee meeting. The projected enrollments for the 2013-2014 new programs were compared to the 2017 actual enrollments. Of the 17 programs established by the community colleges, 16 did not meet or exceed their projected three-year enrollments. At the June 11 meeting, the ASA Committee expressed concern regarding the institutions' failure to meet enrollment projections and requested that the Committee be provided with additional information regarding the 2013-2014 programs at the ASA Committee meeting on September 7, 2018. Institutions were asked to provide reasons why the projected enrollment was not met and the financial impact of not meeting the projected enrollment. They were also asked to provide an improvement plan. Director Poole developed a chart, which mirrored these concerns, requesting an Explanation, Improvement Plan and the Financial Impact. The following institutions provided data: Gateway CC, Manchester CC, Middlesex CC, Northwestern CT CC, Quinebaug Valley CC and Eastern CSU. Because of the late date of the appointment of an Interim Academic Dean, Capital CC's report was distributed at the September 7 meeting.

Provost Gates stated that all Provosts and Academic Deans have access to a software program, Chmura JobsEQ, which provides 24-hour online access to labor market data, which should assist institutions in providing more accurate workforce data to determine enrollment projections. Representatives of the company provided a webinar on the program at the August 15 Academic Council meeting.

Questions/Discussion centered on:

i. *New Format:* The Regents approved of the new format for the Comparative Enrollments Report and data requested. They particularly liked the depth of detail

provided by Capital CC. Director Poole stated that he would relay this to the Academic Council at its meeting on September 12. Provost Gates stated that it will be required that the Provosts/Academic Deans provide financial impact data on new programs and will be encouraged to use the JobsEQ software for projections.

ii. *Current Process:* Members of the Committee again questioned the big gap between the enrollment projections and actual enrollment.

iii. *Frequency of Reporting:* Should new programs be reviewed more frequently? Annually? Chair Harris responded that three years is a good point as it takes time to build enrollments, but since it takes two to three years to get the message out about the new program and build enrollments, institutions should carefully consider first year projections. Suggestions from the Committee included: 1) Review the program after a year if the program is at low or no enrollment, 2) Identify best practices of successful programs and identify types of programs that are not meeting goals.

iv. *New Programs:* Should we put a moratorium on new programs? Chair Harris responded that new programs are important; therefore, we can't have a complete moratorium on new programs. Other institutions are ahead of CSCU in the number of new and on-line programs. Programs, such as JobsEQ, should provide data to make projections more accurate.

v. *Using the Reports:* What do we do with the reports? How long do we continue a program when we are not meeting our goals?

vi. *Marketing Plan:* The program documentation should include a marketing plan.

Director Poole summarized the discussion stating that the documentation will be revised to require a marketing plan for new programs. He will request Fall 2014-2015 data on new programs from the Provosts and Academic Deans. Capital CC's Comparative Enrollments response will be used as a model in the future.

4. Action Items

a. Acceptance of Academic Program Review for 2017-2018

Director Arthur Poole presented the Academic Program Review for 2017-2018. The Academic Program Review Policy states that every academic program must undergo a review every seven years. For this year, modified forms were used. The revision added a provision for reporting on the assessment of student learning outcomes and the option to summarize assessments of general education competencies. 87 programs were reviewed this cycle. 27 reviews were incomplete. Some institutions requested a longer timeframe to complete the form due to changes in campus Academic and Student Affairs leadership and external accreditation schedules. 12 of the 87 programs were terminated or suspended as a result of the review process. Programs are categorized as awarding less than 5 degrees, between 5 to 50 degrees, and more than 50 degrees. For the community colleges, degrees are categorized as associate only, certificate only, or both. For the CSUs, degrees are categorized as undergraduate and graduate. Chair Harris asked when an institution decides to have an external program review. Director Poole responded that all institutions are encouraged to complete external program reviews. Chair Harris agreed that an out-of-state external review is better and more objective than an in-state review. Provost Missy Alexander, WCSU, revised WCSU's process to require that all programs have an external review. Dr. Shane Murphy, Chair of the Psychology Dept. at WCSU, presented the External Review Process of WCSU's Psychology Program.

Questions/comments from the Committee centered on:

i. *What programs are at the five-enrollee level?* Director Poole mentioned two programs at enrollments of less than five students, the Pathways to Teaching Careers and language degrees, but deemed these programs essential.

ii. *Do we need additional information besides the summary?* This question was discussed after a motion was taken to accept the report.

iii. *Who reviews the report internally? Who makes decisions regarding the programs?* Program representatives can be invited to ASA Committee meetings to provide greater detail or the institution can be asked to complete a data sheet.

Elizabeth Steeves, Chair of the Math/Science Dept. and Professor of Chemistry, HCC, spoke regarding the Pathway to Teaching Careers degree and her review process. The Low Completers report is due to Director Poole in October. Respondents will be asked to detail the plan and how the institution is going to improve it.

Chair Harris asked for a motion to accept the Academic Program Review for 2017-2018. Regent Budd asked if the Regents can make the resolution subject to requests for more information. **A motion to accept the Academic Program Review for 2017-2018 was made by N. Cohen and seconded by A. Budd.** Chair Harris asked if there is additional information that the Committee is requesting. Regent Budd asked what the cutoff point is and for other benchmarks created by the institutions. Chair Harris stated that the current benchmark is an average of five graduates and that the policy would have to be amended if this were to change. Regent Cohen recommended voting on the resolution, but suggested putting an item on the next ASA Agenda to review the policy and identify what kind of data the Committee requires. **Chair Harris called for a vote to accept the Academic Program Review for 2017-2018. A vote was taken to accept the report and the vote was unanimous.** Chair Harris suggested a review of the Academic Program Review policy for the next ASA Committee Meeting and suggested that the Academic Council also review the policy. Provost Gates stated that the policy was amended to include the Low Completer Report which will be submitted to the ASA Committee soon.

b. Modifications

i. Communication – AS – Manchester CC [Name Change]

Chair Harris asked for a motion to approve the modification [Name Change] to the Manchester CC AS in Communications [Name Change]. The motion was made by N. Cohen and seconded by A. Budd. Chair Harris called for a vote to approve the modification to the Manchester CC AS in Communications. A vote was taken to accept the program modification and the vote was unanimous.

ii. Educational Leadership and Administration – 6th Yr. Diploma - Additional Off-Campus Instructional Location (Cheshire) - SCSU

Chair Harris asked for a motion to approve the additional off-campus instructional location (Cheshire) for the SCSU Educational Leadership and Administration – 6th Yr. Diploma program. The motion was made by N. Cohen and seconded by A. Budd. Chair Harris called for a vote to accept the additional off-campus instructional location (Cheshire) for the SCSU Educational Leadership and Administration – 6th Yr. Diploma program. A vote was taken to accept the additional off-campus instructional location (Cheshire) and the vote was unanimous.

c. New Programs

i. Digital Marketing – Occupational Certificate – Middlesex CC

A motion to approve the Digital Marketing Occupational Certificate was made by N. Cohen and seconded by A. Budd. Steven Minkler, Interim Campus CEO and Dean of Academic Affairs, and Susan Lugli, Assoc. Professor and Program Coordinator of Business Administration and Marketing, presented the program for MxCC. The proposed Digital Marketing Occupational Certificate is a 27-credit career path under the New Media Production AS degree program. It is offered as a standalone certificate for students not seeking the AS degree or students may take the certificate as part of the New Media Production AS degree. Last year, MxCC consolidated three separate associate degrees into a new Media Production AS degree with embedded certificates. Media production has been identified as a high-growth area in CT with an estimated 11.7% growth trajectory through 2020. MxCC has been identified as a Center of Excellence in media production which entitles the college to have workforce development funding directed to its media program. In addition, the nationally acclaimed Corporate Media Center, which affords students hands-on real-world experiential learning opportunities, is located on the MxCC campus. An industry advisory board supports MxCC's media programs. MxCC plans to launch this new program in January 2019.

Questions/discussion centered on:

a) *Program Budget* – The budget does not include a tuition increase. MxCC did not want to make that assumption when developing the program budget.
b) *Marketing Plan* – How will the program be marketed? MxCC has limited funds for marketing. Currently, the program will be marketed via social media and to high school students via open houses during spring break. Advertisements are another option, but there is a cost. Chair Harris stated that there are discussions about developing a coordinated marketing program across the state.

Chair Harris called for a vote to approve the new Middlesex CC Digital Marketing Occupational Certificate program. A vote was taken to approve the new program and the vote was unanimous.

ii. Magnetic Resonance (MR) – Post-Primary Certificate – Middlesex CC

A motion to approve the Magnetic Resonance (MR) – Post-Primary Certificate was made by N. Cohen and seconded by A. Budd. In addition to Dr. Minkler, Judy Wallace, Program Coordinator, Radiologic Technology, Computed Tomography & Mammography Programs, presented this program. The Magnetic Resonance (MR) Post-Primary Certificate is a 21-credit program for students who already hold an associate degree in a primary certification. Required didactic coursework is online and clinical courses will be taken at clinical affiliates throughout the state. The program will have a selective admissions process and will run only if a minimum enrollment threshold is met. MxCC is offering the program to address employment needs and in response to requests from healthcare agencies in the college's service area. By 2026, open positions will increase for MR Technologists by 13%. MxCC and Middlesex Hospital Health Systems (MHHS) will enter into a clinical program partnership which will take advantage of MHHS' marketing and promotional assistance to recruit students statewide, and use of its imaging centers and instructors. Currently, there are no equivalent programs in the CSCU system.

Chair Harris called for a vote to approve the new Middlesex CC Magnetic Resonance (MR) Post-Primary Certificate program. A vote was taken to approve the new program and the vote was unanimous.

iii. Surgical Technology – AS – Gateway CC

A motion to approve the AS in Surgical Technology program was made by N. Cohen and seconded by A. Budd. President Paul Broadie and Sheila Solernou, Nursing/Allied Health Director, presented for GCC. The AS in Surgical Technology has 62 credits. It addresses the need for Surgical Technologists at the local, state and national levels. Employment is expected to grow 12% by 2026. In New Haven, where GCC is located, there are currently 25 openings for surgical technologists at Yale-New Haven Hospital (YNHH). GCC will have a four-way partnership with Housatonic CC, Eli Whitney Vocational Technical High School and Yale-New Haven Hospital (YNHH). GCC will serve as a satellite program of the HCC Surgical Technology program and will share resources, including the Program Coordinator. Housatonic CC will award the Surgical Technology AS degrees. The two institutions will also share one accreditation status. The program's Clinical Coordinator will be funded by YNHH and GCC will use Eli Whitney Vocational Technical School's laboratories, classroom/office space and equipment. Prospective students are already waitlisted for the program. Sheila Solernou, Division Director, Allied Health and Nursing, GCC, introduced and thanked the Surgical Technology Program Team in attendance.

Chair Harris called for a vote to approve the new Gateway CC AS in Surgical Technology program. A vote was taken to approve the new program and the vote was unanimous.

iv. Certified Phlebotomy Technician – Certificate – Asnuntuck CC

A motion to approve the Asnuntuck CC Certified Phlebotomy Technician Certificate was made by N. Cohen and seconded by A. Budd. Michelle Coach, Interim Dean of Academic Affairs, and Michele Howard-Swan, Asst. Professor and Allied Health Coordinator, presented the three Asnuntuck CC programs. The Certified Phlebotomy Technician Certificate program is currently offered as a non-credit program through Continuing Education and Workforce Development. ACC seeks to change this program to a credit program which will qualify students for financial aid. 45 students are currently enrolled in the non-credit program. Enrollment is expected to increase when the for-credit program is added. Students will have the opportunity to take the Certified Phlebotomy Technician (CPT) exam which will qualify them to work in any state as a Phlebotomy Technician. By 2016, the demand for Phlebotomy Technicians will increase by 25%. No new resources are required since ACC has suitable areas for patient care, diagnostic testing instruction and a laboratory area. Questions centered on COSC's program review and the need to revamp the non-credit curriculum, enrollment projections and faculty qualifications.

Chair Harris called for a vote to approve the new Asnuntuck CC Certified Phlebotomy Technician Certificate program. A vote was taken to approve the new program and the vote was unanimous.

v. Health Information Management Technician – Certificate - Asnuntuck CC

A motion to approve the Asnuntuck CC Health Information Management Technician Certificate was made by N. Cohen and seconded by A. Budd. ACC proposes to offer the Health Information Management Technician Certificate, currently a non-credit program, as a credit program. The Health Information Management Technician Certificate is a 28-credit program. Plans are to develop a transfer agreement to COSC's Bachelor's degree in Health Management Information Science upon BOR approval of the certificate. By 2016, the demand for health information technicians will increase by 13%. On average, 26 students are enrolled in this certificate program each semester, but enrollment is projected to increase with the proposed credit-based program. The program qualifies students to sit for the Certified Professional Coder-A exam. Students with this certification will be able to work in any state as a Professional Medical Coder. The Committee posed questions on projected enrollment and whether QVCC's program was the same as ACC's proposed program.

Chair Harris called for a vote to approve the new Asnuntuck CC Health Information Management Technician Certificate program. A vote was taken to approve the new program and the vote was unanimous.

vi. Certified Administrative Medical Office Skills – Certificate - Asnuntuck CC

A motion to approve the Asnuntuck CC Certified Administrative Medical Office Skills Certificate was made by N. Cohen and seconded by A. Budd. ACC proposes to offer the Certified Administrative Medical Office Skills Certificate, currently a non-credit program as a credit program. The Certified Administrative Medical Office Skills Certificate is a 15-credit program. By 2016, the demand for Certified Medical Administrative Assistants will increase by 21%. Seven students are currently enrolled in this certificate program; but, enrollment is projected to increase with the proposed credit program. The program qualifies students to sit for the Certified Medical Administrative Assistant exam. This certificate program is also offered at QVCC. The Committee posed questions on projected enrollment.

Chair Harris called for a vote to approve the new Asnuntuck CC Certified Administrative Medical Office Skills Certificate program. A vote was taken to approve the new program and the vote was unanimous.

vii. Civic Engagement – Certificate – Tunxis CC

A motion to approve the Tunxis CC Civic Engagement Certificate was made by N. Cohen and seconded by A. Budd. Amy Feest, Interim Dean of Academic Affairs, and Rafaele Fierro, Professor of History and Political Science, presented this program for TxCC. The Civic Engagement Certificate is a 30-credit certificate program and is part of Tunxis' Civic Engagement Institute's mission to make Tunxis a civically engaged campus and to integrate civic engagement into the College's curriculum. The certificate, with its multi-disciplinary curriculum will be paired with the student's Associate's degree. The certificate can be considered "a gap exploratory year" allowing students to explore multiple subject areas. Students in the program will be required to take a semester-long three-credit internship focusing on research and hands-on activities in the community. Studies have shown that students who participate in civic engagement have higher grade point averages, higher retention rates and are more likely to complete their college degrees. Currently no transfer agreements exist between TxCC and the CSUs or private

institutions for graduates of this program. The proposed program will use existing resources and currently employed faculty and volunteers. The Civic Engagement Institute will seek federal grants and private funding to help pay stipends for students participating in internships (currently unpaid).

Questions/discussion centered on:

a) *Internships* – Do internships exist absent of this degree? Who supervises students in internships? TxCC has internships in other programs; however, they offer a different student experience. Internships will be set up between TxCC and community agencies which will work together to establish the parameters of the internship.
b) *Transfer Pathway* – There is no formal transfer pathway to four-year institutions. Chair Harris expressed concerns that graduates of this program will have a degree that is not transferrable. Students cannot graduate with 120 credits, will need to take more courses and may run out of financial aid.
c) *Advisement* – This type of program will require great student advising which is not always done. TxCC is trying to remedy the advising situation.
d) *Employability* – There is no guarantee of employability or no clear career path for graduates of this program.

Chair Harris called for a motion to table the Tunxis CC Civic Engagement Certificate. A motion to table the certificate program was made by N. Cohen and seconded by A. Budd. A vote to table the Tunxis CC Civic Engagement Certificate was taken and was unanimous.

Chair Harris encouraged the Tunxis CC representatives to rework the program and resubmit it to the ASA Committee for consideration.

d. College of Technology (COT) Program Replications

i. <u>CNC Machine Technologies – AS and Certificate – Housatonic CC</u>

A motion to approve the Housatonic CC CNC Machine Technologies Certificate and AS degree was made by N. Cohen and seconded by A. Budd. President Paul Broadie and Robin Avant, Interim Dean of Academic Affairs, presented this program for Housatonic CC which is requesting approval to replicate the Technology Studies: CNC Machine Technologies, AS degree and the CNC Machine Technologies Certificate program established at Asnuntuck CC and subsequently replicated by Tunxis CC. The certificate program is 34 credits and the AS degree program is 66 credits, which include 32 credits in General Education. Graduates with an AS degree from HCC can transfer to CCSU to earn a bachelor's degree. HCC has a strong relationship with its industrial partners. The College Connections dual enrollment for credit program allows high school students at the junior level to train in the manufacturing field until they graduate. Upon completion of the program, students will have earned 18 college credits and completed the first semester of the two-semester program. HCC has hired two full-time manufacturing instructors. Existing faculty and adjunct faculty will teach in the program. A full-time program coordinator will manage and oversee the program operations and faculty.

Chair Harris called for a vote to approve the Housatonic CC CNC Machine Technologies Certificate and AS degree program. A vote was taken to approve the replicated program and the vote was unanimous.

e. Institutional Accreditations
   i. Northwestern CC – Interim 5th Year Report
   A motion to accept NEASC's actions of April 20, 2018 regarding the interim (fifth-year) report of Northwestern CT CC and to grant continued state accreditation of Northwestern CT CC until December 31, 2023 was made by N. Cohen and seconded by A. Budd. A vote was taken to accept the report and the vote was unanimous.

4. Informational Items
   a. Key Performance Indicators (KPI) Metrics - GANTT Chart
   Greg DeSantis, Interim Executive Director, Student Success and Academic Initiatives, and Bill Gammell, Director, Policy, Research and Strategic Planning presented on this initiative. 23 Key Performance Indicators (KPI's) have been identified to measure student success at CSCU's twelve community colleges. The Student Success Key Performance Indicators and proposed formal process will be presented to the ASA Committee, in draft form, at the October 5 meeting for approval and submission to the BOR. This initiative is a joint effort of the Student Success Center and the Office of Research and System Effectiveness. Following approval, a report will be presented to the ASA annually, in October, and will focus on the Students First and the Guided Pathways initiatives.

   There were no questions on the following items:

   b. NEASC Progress Report
      i. Gateway CC

   c. Promotion and Tenure – Transmittal Letter to CSCU Presidents

   d. Common Placement Scores in Math

   e. Below Threshold
      i. Athletics Administration – Specialization – Southern CSU
      ii. Healthcare Management – Minor – Eastern CSU
      iii. Music Industry and Leadership – Concentration – Eastern CSU
      iv. Leadership – Graduate Certificate – COSC
      v. Nonprofit Leadership – Graduate Certificate – COSC
      vi. Organizational Development – Graduate Certificate – COSC
      vii. Computer Information –Database Technology - Certificate – Housatonic CC
      viii. Computer Information – Networking Technology - Certificate – Housatonic CC
      ix. Computer Information – Software Development - Certificate – Housatonic CC
      x. Computer Information – Software Testing and Quality Assurance - Certificate – Housatonic CC
      xi. Computer Information – Web Development - Certificate – Housatonic CC
      xii. Liberal Arts and Sciences – Pre-Nutrition – AS - Option – Housatonic CC
      xiii. General Studies – Online Option – Housatonic CC
      xiv. Family Engagement – Certificate – Housatonic CC
      xv. Fine Arts – Art Therapy – Transfer Pathway - Option – Housatonic CC
      xvi. Fine Arts – Photography – Option – Housatonic CC
      xvii. Fine Arts – Illustration – Option – Housatonic CC

No vote is taken on Below Threshold programs. The programs will be submitted to the Office of Higher Education.

Chair Harris asked for a motion to adjourn the meeting. The motion was made by N. Cohen, seconded by A. Budd and unanimously approved. The meeting was adjourned at 12:05 p.m.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

New Program Approval

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve the licensure and accreditation of a Massage Therapy program leading to an Associate degree at Asnuntuck Community College.

A True Copy:

_____

Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM

Licensure and accreditation of a new Massage Therapy program leading to an Associate degree at Asnuntuck Community College

BACKGROUND

Summary

The proposed program is currently offered as a non-credit certificate through the institution's Continuing Education and Workforce Development division. However, the enrolled students cannot avail themselves of federal financial aid. Upon passing the Massage Board Licensing Exam, students will be able to work in any state performing the duties of a massage therapist. The institution currently has a 100% pass rate. JobsEQ, the online software that provides quality labor market data, forecasts a high demand for massage therapists in the institution's service area for the next ten years.

Rationale

An experienced faculty will make the necessary curricular adjustments to offer the program for credit. The occupation is moving towards an associate degree as its minimum requirement. The proposed program would be the only one in the state.

Resources

The institution is already equipped with the requisite physical resources; additional adjunct faculty will be hired. Given enrollment data as a noncredit program, it is expected that enrollment as a credit program will be even larger. Projected revenue will exceed projected expenditures by the second year of the initial t three-year period.

RECOMMENDATION

Following its review and deliberative process, it is the recommendation of the Academic Council that the Board of Regents approve the establishment of a new Massage Therapy program leading to an Associate degree at Asnuntuck Community College. The System's Provost and Senior Vice President for Academic and Students Affairs concurs with this recommendation.

10/05/2018 – BOR Academic & Student Affairs Committee
10/18/2018 – Board of Regents

CONNECTICUT BOARD OF REGENTS FOR HIGHER EDUCATION
Connecticut State Colleges & Universities
*APPLICATION FOR **NEW PROGRAM APPROVAL***

SECTION 1: GENERAL INFORMATION	
Institution: Asnuntuck Community College	Date of Submission to CSCU Office of the Provost:
Most Recent NEASC Institutional Accreditation Action and Date: March 3, 2016	
Program Characteristics Name of Program: Massage Therapy Degree: Title of Award *(e.g. Master of Arts)* Associates Degree Certificate: *(specify type and level)* Anticipated Program Initiation Date: Spring 2019 Anticipated Date of First Graduation: Spring 2021 Modality of Program: X On ground Online Combined If "Combined", % of fully online courses? Total # Cr the Institution Requires to Award the Credential *(i.e. include program credits, GenEd, other)*: 60-61	Program Credit Distribution # Cr in Program Core Courses: 39 # Cr of Electives in the Field: 21-22 # Cr of Free Electives: # Cr Special Requirements *(include internship, etc.)*: Total # Cr in the Program *(sum of all #Cr above)*: **60-61** From "Total # Cr in the Program" above, enter #Cr that are part of/belong in an already approved program(s) at the institution: 60-61
Type of Approval Action Being Sought: Licensure or x Licensure and Accreditation - (see NOTE below) CIP Code No. *(optional)* : 51.3501 Title of Massage Therapist	
If establishment of the new program is concurrent with discontinuation of related program(s), please list for each program: Program Discontinued: CIP: OHE#: Accreditation Date: Phase Out Period Date of Program Termination	
Institution's Unit *(e.g. School of Business)* and Location *(e.g. main campus)* Offering the Program:	
Other Program Accreditation: • If seeking specialized/professional/other accreditation, name of agency and intended year of review: • If program prepares graduates eligibility to state/professional license, please identify: Massage Therapy license for State of Connecticut and State of Massachusetts *(As applicable, the documentation in this request should addresses the standards of the identified accrediting body or licensing agency)*	

Institutional Contact for this Proposal: Michelle Coach	Title: Interim Dean of Academic Affairs	Tel.: 860-253-3141 e-mail: mcoach@asnuntuck.edu

CSCU REVIEW STATUS *(For System Office Use Only - please leave blank)*
Notes regarding Application: Log of Steps Toward Approval: Date of Approval: Date for Inclusion in BOR-ASA Meeting Package: Comments:

NOTE: Institutions shall seek approval of new programs either as *Licensure* or simultaneous *Licensure and Accreditation*:

a. *Licensure*, normally granted for a period of three years, authorizing the enrollment of students and their advancement toward the completion of degree requirements; or

b. *Licensure and Accreditation*, simultaneously authorizing the enrollment and award of credentials to students. The accreditation action is considered renewed with each regional accreditation of the institution. Simultaneous licensure and accreditation is generally sought for new degree and certificate programs that are closely related to a set of already existing programs and aligned with institutional strengths.

New degree programs are normally submitted for licensure only, to be accredited after three years. Certificates normally are licensed and accredited simultaneously.

SECTION 2: PROGRAM PLANNING ASSESSMENT

Alignment of Program with Institutional Mission, Role and Scope

(Please provide objective and concise statements)

Asnuntuck Community College is currently offering this certificate through Continuing Education and Workforce Development (CE/WD). Students cannot utilize financial aid to pay for this certificate through CE/WD. On average, about 8 students are enrolled in this certificate each semester. Upon completing the Massage Therapy Associates degree, the students will be able to work in both Connecticut as well as Massachusetts. The student must pass the Massage Board Licensing Exam (MBLEx) prior to obtaining Connecticut licensure. Asnuntuck Community College currently has a 100% pass rate on this exam.

Asnuntuck currently has employers waiting for the students to graduate. This is at a ratio of five jobs for every one student. In addition, the national trend in Massage Therapy is moving into the Associate Degree programs. Currently, a Massage Therapy degree program does not exist in the CSCU system, or even in the state. Below information from JobsEQ, shows the demand over the next ten years.

Industry Distribution for Occupations Linked to Massage Therapy/Therapeutic Massage in ACC (Hartford CT, Tolland CT, Hampden MA)

NAICS Code	Industry Title	Current Occupation Employment	10-Year Sep Demand	10-Year Growth Demand	10-Year Total Demand
6113	Colleges, Universities, and Professional Schools	950	764	165	929
6213	Offices of Other Health Practitioners	383	425	87	512
8121	Personal Care Services	382	418	74	492
6112	Junior Colleges	107	83	10	93
6221	General Medical and Surgical Hospitals	77	63	11	74
7211	Traveler Accommodation	30	30	-1	29
7139	Other Amusement and Recreation Industries	23	23	1	24
6115	Technical and Trade Schools	20	15	1	17
6211	Offices of Physicians	16	17	4	21
6214	Outpatient Care Centers	11	10	4	14
	-All Others-	49	44	7	50

Source: JobsEQ®

Moving the Massage Therapy Certificate to credit would enable the college to achieve the following Board of Regents/Asnuntuck strategic goals:

- **Student success:** Graduate more students with the knowledge and skills to achieve their life and career goals
- **Innovation and Economic Growth:** Create educational environments that cultivate innovation and prepare students for successful careers in a fast changing world
- **Affordability and Sustainability:** Maximize access to higher education by making attendance affordable and our institutions financially sustainable

Cost Effectiveness and Availability of Adequate Resources

(Please complete the PRO FORMA Budget – Resources and Expenditure Projections on page 6 and provide a narrative below regarding the cost effectiveness and availability of adequate resources for the proposed program. Add any annotations for the budget form.)

The Massage Therapy program is an already supported degree in the Continuing Education/ Workforce Development area. The program is expected to generate income with a minimum of 12 students per semester enrolled part-time or full-time after the initial year of enrollment. The second year has enrollment increase in numbers with marketing, and the clinic will bring in $2500 per student. These numbers are according to the trends seen in CE/WD. The numbers will increase with the availability of financial aid for the students. At this current time, the students need to take personal loans to attend the program. The closest credit program is in the Berkshires of Massachusetts.

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 in 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)*

1. Perform a full body massage using and integrating effleurage, petrissage, vibration, friction and tapotement
2. Demonstrate knowledge of Anatomy and Physiology.
3. Distinguish the origin, insertion and actions of the muscles of the upper and lower body.
4. Describe Pathologies and how to work safely and effectively with those using massage therapy.
5. Demonstrate knowledge of the principles of Massage therapy.
6. Differentiate the physiological effects of massage therapy on all of the 11 body systems.
7. Demonstrate knowledge and understanding of massage ethics and how to handle ethical dilemmas.
8. Examine business practices of massage therapy; distinguish between the various types of employment.
9. Apply kinesthetic concepts and how they apply to massage therapy.

Program Administration *(Describe qualifications and assigned FTE load of administrator/faculty member responsible for the day-to-day operations of the proposed academic program. Identify individual for this role by name or provide time frame for prospective hiring)*

The current Coordinator of Allied Health will oversee and administer the program.

Faculty *(Please complete the faculty template provided below to include current full-time members of the faculty who will be teaching in this program and, as applicable, any anticipated new positions/hires during the first three years of the program and their qualifications)*

How many new full-time faculty members, if any, will need to be hired for this program?

0

What percentage of the credits in the program will they teach?

0%

What percent of credits in the program will be taught by adjunct faculty?

100%

Describe the minimal qualifications of adjunct faculty, if any, who will teach in the program

Master's Degree and/or minimum qualifications for experience, as per Board of Regents guidelines.

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 Expenditures Projections spreadsheet)*

No new resources are required since ACC is already equipped with area suitable for client care and instruction. A Massage Therapy laboratory area equipped with: Massage tables, Massage chairs, bolsters, hydrocullator, freezer/ ice packs. ACC owns a washer / dryer as well as sheets, pillows, blankets, and a locking filing cabinet for client records. Supplies are ordered as needed, 2-3 times per year.

Curriculum

*(Please list courses for the proposed program, including the core/major area of specialization, prerequisites, electives, required general education courses (undergraduate programs), etc. Using numerals, map the Learning Outcomes listed in the previous section to relevant program courses in this table. Mark any new courses with an asterisk * and attach course descriptions. Mark any courses that are delivered fully online with a double asterisk ** Please modify this format as needed)*

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*		
MED*116 Anatomy and Physiology for Medical Assistants	2	N/A	4			
MAS*101 Massage Theory and practice	5,6,7	N/A	3			
MAS*104 Massage Therapy I	1,5,6	Declaration of Massage Therapy Major	4			
MAS*148 Massage Therapy II	1,5,6	MAS*104 Massage Therapy I	4			
MAS*248 Massage Therapy III	2	MAS*148 Massage Therapy II	4			
MAS*133 Pathology 1	4,6	Declaration of Massage Therapy Major	3			
MAS*233 Pathology 2	4,6	Declaration of Massage Therapy Major	3			
MAS*122 Musculoskeletal Anatomy	2,3	N/A	4			
MAS*222 Kinesiology for Massage Therapy	2,3,6,9	MAS*122 Musculoskeletal Anatomy	3			
MAS*170 Massage Business and Ethics	7,8	Declaration of Massage Therapy Major	3			
MAS*260 Massage Therapy Clinical Internship	1,2,3,4,5,6,7,8,9	MAS*248 Massage Therapy III	4			
Core Course Prerequisites				Elective Courses in the Field		

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

General Education Requirements				
ENG*101 Composition	3			
COM*173 Public Speaking	3			
Social and Behavioral Sciences: ANT*, PSY*, ECN* HIS*, POL*, SOC*	6			
Math 104 or higher	3-4			
Fine Arts Electives: ART*, DGA*, GRA*THR* or see catalog for select ENG* courses	3			
Science	3			
Total Other Credits Required to Issue Credential *(e.g. GenEd/Liberal Arts Core/Liberal Ed Program):*				

Program Outline *(Please provide a 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. For example: "The Finance Major entails 18 credits of Related Course requirements from a range of disciplines (6 credits of which apply to the Liberal Arts Core (LAC), or institution's GenEd program), 24 credits of courses in Business (3 credits of which apply to the LAC/GenEd), 18 credits of coursework in Finance (including a 6-credit internship), and 9 elective credits from a list that includes courses in Economics, Finance, and Business. Students must take a minimum of 24 credits of coursework for the major at the institution and must maintain a GPA of 2.5.")*

Curriculum

Program Core Courses

There are no prerequisites to these classes, but there is a proposed course sequence:

FIRST SEMESTER – 14 credits

MAS*101 Massage Theory and Practice, 3 credits

This course will discuss therapeutic massage by exploring professional touch, the history of massage and review of scientific research into the effects of massage therapy including indications, contraindications, universal precautions, health related issues and wellness education. Professional environment. Students will learn the physiological as well as psychological effects of touch.

MAS*133 Pathology 1, 3 credits

Through lectures, discussion, and demonstration students will learn: pathologies of the Integumentary, Musculoskeletal, Nervous and Cardiovascular systems. In addition, learn the indications and contraindications for pathologies of the fore mentioned system as they relate to massage therapy. Pre-requisite: Declaration of Massage Therapy Major

MAS*104 Massage Therapy I, 4 credits

Through lectures, discussion, and demonstration students will learn: How to set up and adjust the massage table, proper body mechanics, effects and usage of efflurage, petrissage, and compressions, proper draping of back, gluteals, anterior and posterior legs, chest, and abdominals. Pre-requisite: Declaration of Massage Therapy Major

MED*116 Anatomy and Physiology for Medical Assistants, 4 credits

This course is a basic study of the structure and functions of the human body. It is designed to provide the fundamental knowledge of how each system functions. The anatomy and physiology of the integumentary system will be discussed. The skeletal system and the muscular system will be covered in detail. Blood, cardiovascular system, lymph system, and the digestive system will also be discussed. Disorders and medical treatments particular to each system will be highlighted.

SECOND SEMESTER- 14 credits

MAS*148 Massage Therapy II, 4 credits

*Through lectures, discussion, and demonstration students will learn: further techniques. How to set up and adjust the massage table, proper body mechanics, effects and usage of massage therapy, including cross fiber, friction, tapotement, and vibration. Pre-requisite: MAS*104*

MAS*122 Musculoskeletal Anatomy, 4 credits

Through lectures, discussion, students will learn the basic structure and functions of the Skeletal and Muscular anatomy of the upper and lower body. Students will learn the muscle names, origin, insertion, actions and commonalities of the muscles.

MAS*233 Pathology 2, 3 credits

Through lectures, discussion, and demonstration students will learn: pathologies of the Lymphatic, Respiratory, Digestive, Endocrine, Urinary, Reproductive systems, as well as Principles of cancer. In addition, learn the indications and contraindications for each pathology as they relate to massage therapy. Pre-requisite: Declaration of Massage Therapy Major

MAS*170 Massage Business and Ethics, 3 credits

This course presents an overview of the contemporary Massage Therapy business world, focusing on operation, finance, marketing, planning, personnel management, client confidentiality, and client file/record maintenance. Emphasis is also placed upon licensing requirements and business ownership and entrepreneurship in the Massage Therapy practice. Basic Corporate entities such as "C", "S", and Professional corporations will be discussed. This course also acquaints massage therapy students with State and National law and ethics guidelines, ethical practices and basic personal psychology concepts. Students will also be introduced to the concepts of self-assessment and self-esteem in an effort to assist them in understanding the process involved with making the changes necessary in their lives to facilitate success in their chosen career. Pre-requisite: Declaration of Massage Therapy Major

Third SEMESTER- 11 credits

MAS*248 Massage Therapy III, 4 credits

*Through lectures, discussion, and demonstration students will learn: How to set up and adjust side lying position, proper body mechanics, effects and usage of trigger point, myofascial release, and hydrotherapy. Pre-requisite: MAS*148*

MAS*222 Kinesiology for Massage Therapy, 3 credits

*Through lectures, discussion, students will learn the basic structure and functions of the anatomy, biomechanics and muscles types including the principles of the human movement. In addition, students will learn the neuromuscular concepts and principles. Students will also learn how these concepts apply to massage therapy. Pre-requisite: MAS*122*

MAS*260 Massage Therapy Clinical Externship, 4 credits

*Throughout this clinical internship students will complete 100 hours of massage on clients from the general public. Student will have the opportunity to apply knowledge obtained throughout the Massage Therapy program in a true therapeutic environment. Pre-requisite: MAS*148*

***Special Requirements** include co-curriculum activities – structured learning activities that complement the formal curriculum – such as internships, innovation activities and community involvement.

NOTE: The PRO FORMA Budget on the last page should provide reasonable assurance that the proposed program can be established and is sustainable. Some assumptions and/or formulaic methodology may be used and annotated in the "Cost Effectiveness …" narrative on page 2.

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
Suzanne M. Passini Diploma- Massage Therapy B.S. – Psychology Enrolled in M.S. Organizational Effectiveness and Leadership Licensed Massage Therapist	Charter Oak State College	Qualified for ALL classes	Coordinator
Michele Howard-Swan M.S. – Physiology and Neurobiology B.S. – Biology Certified Medical Assistant	UCONN	Qualified for anatomy courses	Program Coordinator

CONNECTICUT BOARD OF REGENTS FOR HIGHER EDUCATION

Connecticut State Colleges & Universities

*APPLICATION FOR **NEW PROGRAM APPROVAL***

PRO FORMA Budget - Resources and Expenditures Projections (whole dollars only)

PROJECTED Enrollment	First Year						Second Year						Third Year					
	Fall Semester		Spring Semester		Summer		Fall Semester		Spring Semester		Summer		Fall Semester		Spring Semester		Summer	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Internal Transfer (from other programs																		
New Students (first time matriculating)	15		15				25	15	25				25	25	25			
Continuing Students progressing to credential																		
Headcount Enrollment																		
Total Estimated FTE per Year[1]	17.5		17.5				29.17	13.75	29.17				29.17	22.92	29.17			
PROJECTED Program Revenue	First Year						Second Year						Third Year					
	Fall Semester		Spring Semester		Summer		Fall Semester		Spring Semester		Summer		Fall Semester		Spring Semester		Summer	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
Tuition[2]	$32,880		$32,880					$87,090		$56,175				$109,100		$56,200		
Tuition from Internal Transfer[2]																		
Program Specific Fees (lab fees, etc.)																		
Other Revenue (annotate in narrative)								$37,500[7]						$62,500[7]				
Total Annual Program Revenue	$32,880		$32,880				$124,590		$56,175				$171,600		$56,200			

PROJECTED Program Expenditures[3]	First Year	Second Year	Third Year
Administration (Chair or Coordinator)[4]			
Faculty (Full-time, total for program)[4]			
Faculty (Part-time, total for program)[4]	$79,330	$115,370	$121,612
Support Staff (lab or grad assist, tutor)			
Library Resources Program			
Equipment (List in narrative)			
Other[5]			
Estimated Indirect Costs[6]			
Total Expenditures per Year	$66,666	$115,370	$121,612

NOTE: Existing regulations require that: "an application for a new program shall include a complete and realistic plan for implementing and financing the proposed program during the first cycle of operation, based on projected enrollment levels; the nature and extent of instructional services required; the availability of existing resources to support the program; additional resource requirements; and projected sources of funding. If resources to operate a program are to be provided totally or in part through reallocation of existing resources, the institution shall identify the resources to be employed and explain how existing programs will be affected. Reallocation of resources to meet new and changing needs is encouraged, provided such reallocation does not reduce the quality of continuing programs below acceptable levels."

1 1 FTE = 12 credit hours for undergraduate programs; 1 FTE = 12 credit hours for graduate programs; both for Fall & Spring

2 Revenues from all courses students will be taking.

3 Capital outlay costs, instructional spending for research and services, etc. can be excluded.

4 If full-time person is solely hired for this program, use rate time; otherwise, use a percentage. Indicate if new hires or existing faculty/staff.

5 e.g. student services. Course development would be direct payment or release time; marketing is cost of marketing that program separately.

6 Check with your Business Office – community colleges have one rate; the others each have their own. Indirect Cost might include such expenses as student services, operations and maintenance.

7 $2500 is generated per student with clinic fees.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Continuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve continuation of the East Asian Center at Central Connecticut State University until December 31, 2025.

A True Copy:

_____

Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Continuation of the East Asian Center at Central Connecticut State University

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the East Asian Center's 2018 Sunset Report – a 16-page document.

The East Asian Center was originally established as the China Resource Center on February 6, 1998 (BR 98-09) and renamed the East Asian Studies Center on November 6, 2003 (BR 03-61) by the CSU Board of Trustees. The Center was authorized by the Board of Regents on November 21, 2013 to continue until December 31, 2018. The mission of the Center is to promote, support and enhance academic success and excellence among international Asian and Asian American students at CCSU.

PRINCIPAL ACTIVITIES/ACCOMPLISHMENTS
The Center has developed a number of on-going activities to monitor and support students' academic advancement including advisement, mentoring and tutoring. The Center sponsors a number of annual and periodic events to welcome, orient, socialize, enrich and otherwise support participating students. The Center also conducts workshops and makes presentations to inform audiences of students, faculty, and community residents.

STUDENT INVOLVEMENT
The Center employs four strategies to support Asian and Asian-American students at CCSU. The Academic Performance Analysis allows the Center's director to identify students who are in "good standing" in their academic performance. The Mentoring Program provides tutorials and other support to students in need upon their request. The Early Academic Alert System identifies students having difficulties for subsequent counseling/advising or some other intervention. The Faculty Club Members of the Faculty Club are tapped to respond to students' needs. The Center tracks students' participation/involvement in these strategies and attendance at Center-sponsored events. It is instructive to note that the Center's student survey indicates that an overwhelming majority of respondents are "satisfied" or "strongly satisfied" with the sense of community forged in part by the Center. Students also responded positively to other items on the survey. However, a slight majority are "strongly dissatisfied" or "dissatisfied" with the statement – I find CCSU to be a friendly and supportive campus.

BUDGET

Summary of Revenues and Expenses					
	FY 2014	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**
Beginning Balance		$1,120	$1,491	$1,512	$1,512
Total Revenues	$22,901	$22,589	$22,239	$22,239	$22,225
Total Expenses	$21,781	$22,218	$22,218	$22,239	$22,225
Revenues Less Expenses	$1,120	$371	$21	$0	$0
Ending Balance	$1,120	$1,491	$1,512	$1,512	$1,512

Summary of Projected Revenues and Expenses					
	FY 2019	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Beginning Balance	$1,512	$1,547	$1,582	$1,617	$1,652
Total Revenues	$22,260	$22,260	$22,260	$22,260	$22,260
Total Expenses	$22,225	$22,225	$22,225	$22,225	$22,225
Revenues Less Expenses	$35	$35	$35	$35	$35
Ending Balance	$1,547	$1,582	$1,617	$1,652	$1,687

The Center is supported with the institution's operational funds**.**

ASSESSMENT/EVALUATION

The Center monitors students' academic performances and attempts to respond appropriately to their successes and difficulties. Center activities are assessed through attendance rates and responses and/or feedback from participants using formal and informal tools. The results of the student survey mentioned above will be shared with appropriate CCSU committees and the Center will continue to seek new and improved means to address students' concerns.

RECOMMENDATION

President Zulma R. Toro has reviewed or been briefed on the evaluation of the East Asian Center and recommends that the Board of Regents authorize its continuation. She comments further that she will work with the Center's director to make changes in the mission of the Center and develop a five-year strategic plan.

10/05/17 – BOR-Academic and Student Affairs Committee
10/18/17 – Board of Regents

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (apoole@commnet.edu) with a copy to Patricia Ryiz (pryiz@commnet.edu).

Name of University:	Central Connecticut State University
Name of Center/Institute:	East Asian Center (EAC)
Director/Coordinator:	Dr. Helen R. Abadiano
Date of Original Approval:	Fall 2003
Date of Last Approval:	05/25/2016
Board Resolution of Last Approval:	
Sunset Date:	12/31/2018

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☑ I recommend continuation of this Center/Institute Please see comments below.

☐ I recommend discontinuation of this Center/Institute

8/30/2018

Signature of President

Comments (OPTIONAL):

The Provost will be working with the Director to make changes to the mission of the Center and develop a Five-Year Strategic Plan.

Mission:
(Provide the mission of the Center/Institute; note any changes from the most recent approval)
The mission of the East Asian Center (EAC) is to promote, support, and enhance academic success and excellence among international Asian and Asian American students at CCSU.

Needs Assessment:
(Describe why this Center/Institute was created)
The increasing prominence of Asia in our global society in general, and the increasing number of both Asian American and international Asian students at CCSU as well as the growing Asian community in Connecticut in particular, prompted the creation of the East Asian Center (EAC).

While the Center's aggregate data on the international Asian and Asian American students' academic performance in the last 10 years reveal a low percentage of low academic performance among both the graduate and undergraduate degree as well as non-degree students, including low percentage of withdrawal from programs, the Center found it imperative to place strong emphasis on "promoting and supporting academic success and excellence among international Asian and Asian American students at CCSU" to ensure that 100% of our international Asian and Asian American undergraduate and graduate students remain at CCSU, graduate with outstanding academic record, and within a reasonable time period.

Finally, the Center's mission and goals complement those of the university's, particularly the university's distinctive elements on "international education" and "interdisciplinary studies and cross-cultural initiative."

Needs Modification:
(Describe how the need for this Center/Institute may have changed)
The Center recognizes its critical role in promoting, supporting, and enhancing academic success and excellence among international Asian and Asian American students at CCSU, but not limited to it. Given the overall academic success of the international Asian and Asian American students at CCSU it would be prudent for the Center to capitalize on its high achieving students such as in mathematics and the sciences to set examples and high expectations for the rest of the international Asian and Asian American students as well as other CCSU students, who have not yet reached their highest potential in their academic programs, or are in need of inspiration, additional support and encouragement. The Center's expanded goals, objectives, and principal activities are intended to make the most of the benefits that can be gained from the experiences of its high achieving students, and the opportunities to collaborate effectively with other Centers, support services, university clubs and organizations, and community partners in order to forge a strong and safe academic community for all students by building community leadership while promoting social and cultural understanding between the diverse racial and ethnic groups on campus and the larger community.

Goals, Objectives, and Principal Activities:
(List goals, objectives and principal activities of the Center/Institute)

1. Ensure that the Center's mission and goals complement those of the university's, particularly the university's distinctive elements on "international education" and "interdisciplinary studies and cross-cultural initiative."
2. Foster a welcoming, inclusive, informed and sensitive campus climate to the international Asian and Asian American students, faculty and staff by creating social opportunities for individuals to feel connected to campus life.
3. Advocate and participate in the assessments of recruitment, retention, and graduation rates of the international Asian and Asian American students; recruitment, tenure and promotion of international Asian and Asian American faculty and staff.
4. Secure support for the international Asian and Asian American students' academic development and leadership on campus.

5. Collaborate with other Centers, i.e., the Africana Center and the Latin American, Latino and Caribbean Center, as well as other campus organizations, in sponsoring and coordinating an array of programs, events/ activities, workshops, and conferences to enhance academic learning, encourage social interactions, and inspire leadership among international Asian and Asian American students, to provide opportunities for students from other cultural groups to learn about the cultural, economic, political, historical, philosophical and artistic aspects of Asian cultures; and to increase opportunities for dialogue and collaboration among international Asian and Asian American students and faculty, staff, and university organizations, cross-cultural communities, and/or individuals with an interest in Asian culture.
6. Expand informal and formal ties and partnerships with the community especially in the Greater Hartford area whose mission and/or interests complement those of the EAC and our university.

Principal Accomplishments:
*(List the Center/Institute's principal accomplishments since its last report. Attach a chronological list of the Center/Institute major activities over the course of the **past five years**; under specific, relevant categories such as research, papers, conferences, presentations, workshops, sponsored events, exhibits, etc.)*

ACADEMIC DEVELOPMENT & LEADERSHIP SUPPORT

Academic Performance Analysis of International Asian and Asian American Students (2010-present). Since fall 2010, EAC has reviewed data on specific information regarding international Asian and Asian American undergraduate and graduate academic performance, including enrollment, categorized by their GPAs, program of study, degree completion, and withdrawal from program.

The data has been used to monitor international Asian and Asian American undergraduate and graduate students' academic performance and to identify students at risk in order for the Center to plan courses of action, including tutoring and/or referral that will enable the students to focus on areas of concern.

Students, especially first year students, who have been identified as experiencing academic difficulty based on their course grades and cumulative GPA, which is below 2.0, are contacted to meet with the EAC Director to discuss their academic status and ways by which they can be helped in successfully coping with the academic demands in their respective program of study.

EAC Mentoring Program (EAC-MP) (2010-present). The EAC-MP was created to provide guidance, support, and resource for incoming international Asian and Asian American students to adapt to their new college life and experience. Through the EAC Mentoring Program new students are given the opportunity to connect with other CCSU students, faculty, and staff and to learn how to get involved with the University campus events and organizations. The goal was to provide new students with various opportunities to develop relationships as they participate together in social, cultural, and recreational activities, outreach projects, and/or tutoring.

From 2010 to 2013, EAC held a Peer Mentors & Mentees Orientation Reception. The goals were:

- To welcome and introduce mentors and mentees to the EAC Mentoring Program
- To provide opportunity for mentors and mentees to meet and plan for their mentoring schedule/activities for the academic year
- To have senior mentors and former mentees share their experiences with the EAC Mentoring Program, specifically, pitfalls to avoid.
- To discuss policies, roles, responsibilities, and expectations as mentor or mentee.

In 2014-2015 the EAC Mentoring Program was restructured to make it strategic and cost effective. In the past, all incoming CCSU international Asian and Asian American students were automatically registered as participants in the East Asian Center Mentoring Program, and were appointed

a peer mentor, who received a stipend for the entire semester. However, we found that new students disassociate themselves from their peer mentor as soon as they have settled and established their own relationships on campus. And this usually happens early in the semester. We also found that students who needed academic support look to the Peer Mentoring Program for help. The Peer Mentoring Program now focuses on providing academic support through tutoring upon a student's request for such service.

The EAC first makes appropriate referrals (i.e., Learning Center, Writing Center, Central Connecticut Writing Project, Literacy Center, Elihu Burritt Library, Marcus White Student Technology Center). If EAC determines the need for an academic mentor, one is assigned to the student.

University Success Program (USP; formerly ConnCAP) (2012). Using the fall 2012 incoming first year Asian American students' data, the Center identified students who were eligible to participate in the summer 2012 University Success Program (USP) based on their academic and financial needs. These students were sent a letter of invitation. Five students participated. These five students were also assigned both an EAC peer mentor and a faculty mentor to support them throughout their first year on campus.

The EAC Director collaborated with the other Center Directors in providing academic support for incoming students of underrepresented groups by including the RDG 140-Reading Efficiency course (3 credits) in its program, which was taught by the Department of Reading and Language Arts.

Faculty Mentor Club (2012-present). The Faculty Mentor Club, which was formed in summer 2012, aims at providing encouragement and support for EAC students, particularly those who are experiencing academic difficulty. EAC faculty mentors are expected to encourage students to become part of the learning community, guide them around making personal and academic choices, listen to their particular experiences and stories and provide feedback and support, sources and information when needed. They are not to be the students' academic program advisor; rather, the mentors respect the advisor's role in directing the student's academic program and never put any student in the middle. They are expected to bring major problems with a student's academic performance or progress to the advisor's attention, even if a student might prefer to discuss them only with the mentor. More importantly, the EAC faculty mentors are expected to be sensitive to the diversity of student lifestyles, cultures, and experiences and are aware of the challenges faced by students from underrepresented groups in their fields.

Priority is given to first year international Asian and Asian American students, who are struggling academically based on their first semester GPA. The EAC continues to recruit volunteer faculty to the Faculty Mentor Club through a reception-orientation in early fall semester of each year.

Early Academic Alert System (2014-present). The Center receives Early Academic Warning notices to monitor EAC students' academic performance throughout the semester and to identify students who are struggling in their academic discipline. These students are sent a letter and an email to arrange for them to meet with the EAC Director to discuss ways by which they could be helped in successfully coping with the academic demands in their respective program of study. When appropriate, a student may be provided an EAC-MP tutor, assigned an EAC faculty mentor, and/or referred to a CCSU support services.

Celebration of Academic Excellence (2016-present)

Each semester the EAC holds a "Let's Celebrate" social event for international Asian and Asian American students, faculty, staff, and community partners, which is a part of the Welcome Celebration Reception. EAC recognizes international Asian and Asian American students for their academic achievements. Barnes & Noble Gift Cards are presented to EAC students with GPA ranging from 3.0 to 4.0. Other gift items such as EAC sweat shirts and EAÇ t-shirts are given to EAÇ students who have maintained their "in good standing" academic status.

EAC Participation Program (Spring 2018-present). The goal of this program is to increase international Asian and Asian American students' participation and leadership in campus-wide events and activities throughout the academic year. To be eligible for the EAC Participation Program, international

Asian and Asian American students should: (1) Attend at least three on-campus CCSU events/activities for fall and/or spring semesters; and (2) Submit evidence of attendance/participation or leadership (e.g., program, a brief description of event/activity OR a signed attendance slip by speaker/representative of event/program). For every three confirmed attendance/participation or leadership in on-campus events/activities, individuals will receive a "gift" from EAC, which will be handed out at the following EAC event (usually held at the beginning of fall and spring semesters).

SPONSORED & CO-SPONSORED EVENTS

Welcome & End-of-Semester Celebration Receptions: Students, Faculty, Staff, and Community Partners (2010-present). Each semester the EAC invites new and continuing international Asian and Asian American students to a **welcome reception** to meet CCSU students, faculty, staff, and community partners. The welcome reception is an opportunity especially for new students to forge support relationships that will help them throughout their years at CCSU. New students are encouraged to invite their course instructors, friends, and family. Attendance ranges from approximately 67 to 94 students, faculty, staff, guests, and community partners.

The Annual Chinese New Year Gala (2011-present) (Sponsor: Chinese Culture Center). The event is free and open to the public. It is held at Welte Auditorium with a VIP reception in the Connecticut Room, Memorial Hall. The program consists of keynote speakers (i.e., Senator Richard Blumenthal, Dr. Henry Lee, Amy Chua "Tiger Mom," Representative William Tong) and guest performers/ entertainers. Each year's celebration of the Chinese New Year has approximately 1,000+ in attendance. Co-sponsoring such grandiose event that is open to public adds visibility to the EAC and the university.

Youth Talent Show (2011) (Sponsor: Chinese Culture Center). The Youth Talent Show highlights talent of young and adolescent Chinese children in the Greater Hartford area and held at the CCSU Torp Theater.

International Festival: Crossing the Borders (April 22, 2012) (Sponsor: Center for International Education). A celebration of international culture with food samples fdrom different countries, booths and performances by CCSU students and the community. Open to the public.

Connecticut Chinese Language Academy School Fair (July 2012) (Sponsor: Chinese Culture Center). EAC co-sponsored the Connecticut Chinese Language Academy School Fair, which was held in the CCSU Student Center, with some events happening in front of the Student Center.

An Afternoon of Chinese Ethnic Dance, Choral and Instrumental Music (June 29, 2013) (Sponsor: CCSU). The event was held at CCSU Torp Theater and open to the public. Performers include award recipient of the Vienna Choral Festival Excellent Conductor, and renowned soloist and choreographer of classical and ethnic dance, acclaimed Chinese dulcimer player, pipa player, and dramatic singer and dancer of the Wenqu opera.

The Riverfront Dragon Boat and Asian Festival (Summer 2013-present) (Sponsor: Chinese Culture Center). The event is two full days of dragon boat racing on the Connecticut River accompanied by a culture-rich Asian festival—complete with authentic Asian cuisine and a full schedule of cultural entertainment. Open to the public.

Trampoline Flight Night (November 21, 2013). EAC peer mentors organized a social evening for fun and get to know their mentees.

Typhoon Haiyan: Philippines Recovery Fundraiser (November 23, 2013) (Sponsor: CCSU Athletics Department). Proceeds went to AmeriCares, a non-profit disaster relief and humanitarian aid organization, for Haiyan victims in the Philippines.

Cultural Trips (2013-2017)

The Bushnell – *An Afternoon with American Idiot, The Musical* (March 2, 2013). Fourteen international Asian and Asian American students, all first timers at the Bushnell Theatre attended with three EAC chaperones. Feedback was very positive.

The Bushnell – *Mamma Mia!* (November 1, 2015). Fourteen (14) students/staff attended Saturday matinee for this social-cultural outing for EAC students. Feedback was very positive.

"*Let's Visit Boston!*" (November 19, 2017). Twenty-five (25) international Asian and Asian American students with staff took a day trip to Boston and visited cultural and historical sites.

CCC Language Sunday School Graduation (June 10, 2017) (Host: Chinese Culture Center). A celebration of students who graduated from the Chinese Language Sunday School.

A Concert Featuring Jin Quanai Soprano (November 11, 2017) (Sponsor: CCSU). A showcase of Chinese folk songs and operatic arias. Open to the public.

Chinese New Year Celebration (February 12, 2018) (Sponsor: Confucius Institute). The event was free and open to the public.

PRESENTATIONS & WORKSHOPS

Professional Networking (2012 & 2013) (Sponsor & Host: Chinese Culture Center). A professional networking event is held in October and welcomes professionals and experts in various disciplines, including students who wish to explore their discipline of interest, to establish connections. The event is held at CCSU for faculty and students, and community professionals.

"Meet the East Asian Center" Table in the Student Center (2012). In 2012-2013, EAC set up a table in the Student Center to disseminate information regarding EAC to campus community. Hosts were volunteer mentors and mentees who took turns every third Thursday of the month. EAC brochures and pens were distributed to students who stopped by to chat about the Center. They were also asked to sign up if interested in receiving information regarding future events or activities of EAC.

8th Annual Literacy Essentials Conference/Early Literacy Institute (April 12, 2014) (Host: Department of Literacy, Elementary, and Early Childhood Education). Two EAC peer mentors in Elementary Education program presented at the Early Literacy Institute: *All Sorts of Fun* – an activity that engages children in analyzing words by sorting them into categories. EAC peer mentors and mentees also volunteered to assist in welcoming conference participants and guiding them to session rooms.

CIE International Student Orientation (2015 & 2016) (Host: Center for International Education). Welcomed incoming Asian International students and distributed East Asian Center brochures.

Asia Day (Sponsor: East Asian Studies) (2010-2015).

November 4, 2010 ° "Learning and Teaching About Asia" ° Student poster presentations, tales from Asian countries, learning and teaching Chinese through community engagement, and Asian cultural presentations. Open to the CCSU community.

November 3, 2011 ° "Tradition, Opportunities, and Future" ° Students showcase their work and experiences related to the study of Asian culture. The event also includes Asian cultural presentations. Open to the CCSU community.

November 6, 2013 ° "Fifth Annual Asia Day" ° Students showcase their work and experiences related to the study of Asian culture. The event also includes Asian cultural presentations. Open to the CCSU community.

November 13, 2014 ° "Sixth Annual Asia Day" ° Students showcase their work and experiences related to the study of Asian culture. The event also includes Asian cultural presentations. Open to the CCSU community.

October 27, 2015 ° Guest speaker: Thomas Rudice, Assoc. Professor, SCSU ° "Ornamentation and Deception: Theatrically in Chinese Religion, Morality, and Politics"

Networking with Asian Community and Organizations/Programs. EAC invites representatives from various CCSU clubs and organizations, and community partners to EAC events. At these events representatives are given opportunity to speak (or distribute flyers) to students and guests about their various activities or projects.

Asian Family Services (AFS) (February 2017). AFS distributed pamphlets (i.e., Family and Domestic Violence in Asian Communities: A Silent Epidemic) and answered questions regarding AFS services to individuals and families from different cultures. Clinicians and support staff are not only multicultural but also fluent in Vietnamese, Cambodian, Dari, Hindi, Pashto, Persian, Urdu and Japanese. AFS is the only outpatient clinic licensed to serve Asian Americans with in-person interpreters.

Problem Gambling Among Asian Americans in Connecticut (December 6, 2017). (Co-sponsor: East Asian Studies). Film screening of Paulina (2012), a story of a Cambodian American teenager who grows up in a family and community where gambling is prevalent, examining the tensions that gambling creates. The film screening was followed by a discussion with Quyen Truong from the Problem Gambling Ambassadors Program of Connecticut, an initiative that arose from the Connecticut Asian Pacific American Affairs Commission.

EAC also invites representatives from various CCSU clubs and organizations, and community partners to EAC events. At these events representatives are given opportunity to speak (or distribute flyers) to students and guests about their various activities or projects.

Faculty, Staff, and Responsibilities:

(Specify Director/Coordinator, Departments/Disciplines of Members, and Time Commitment for each and changes of personnel over time)

Helen R. Abadiano EAC Director (3 credits/semester) 2010-present	The EAC Director oversees the Center and ensures that its mission, goals and objectives are met, documented and assessed using appropriate assessment measures, and reported annually.
Lisa Michaud Staff Support (part time), 2013-present **Cathy Wildman** Staff Support (part time), 2010-2013	The staff is responsible for assisting the EAC Director.

Student Involvement and Student Outcomes:
(*If applicable, discuss Center/Institute's impact upon the university's students; specifically, what was the nature of student involvement and how many students were involved with Center/Institute activities; what were the resultant student outcomes of that involvement stated numerically. Student outcomes may include such measures as learning outcomes, achievement, persistence, graduation, employment and graduate school placements. Along with or without student involvement and student outcome; a focus of the Center/Institute's mission might be public engagement/outreach. If so, that construct should be discussed here.*)
The East Asian Center (EAC) uses four major resources to support international Asian and Asian American students' academic performance throughout their program at CCSU. These are: the Academic Performance Analysis, the EAC Mentoring Program, the Faculty Mentor Club, and the Early Academic Alert System. The EAC Mentoring Program (EAC-MP) focuses on providing academic support, i.e., providing tutors, to students who are in need of one and request for it. At the same time, appropriate referrals to other CCSU support services are made.

Each semester, international Asian and Asian American students who have been identified as experiencing difficulty in their academic program are sent a letter and an email advising them to meet with the EAC Director to discuss ways by which they could be helped in successfully coping with the academic demands in their respective program of study. The EAC Mentoring Program and the Faculty Mentor Club are tapped to respond to these students' needs. The Center also makes appropriate referrals to other CCSU support services.

- **Spring 2014:** 31 students received Early Academic Alert; 5 students met with the EAC Director; 3 students taking the same class were allowed to use the Literacy Center for group study especially in preparation for final exam. Majority of students dropped from courses. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.
- **Fall 2014:** 31 students received Early Academic Alert; 4 students met with the EAC Director. At end of semester 6 students passed the course while 18 failed and have to retake course(s). There were 9 students that withdrew from their course(s) and have to retake the following semester. Majority of students dropped from courses. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.
- **Spring 2015:** 43 students received Early Academic Alert; 5 students met with the EAC Director. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. At the end of the semester, eight students passed the course while 14 failed and have to retake course/s. There were 20 students that withdrew from their course/s and planned to take the course/s the following or later semester. A couple of parents responded to their daughter's/son's Early Academic Alert by contacting the EAC Director (with permission from the daughter/son).
- **Fall 2015:** 69 students received Early Academic Alert; 2 students met with the EAC Director to discuss ways in which they could be supported. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.
- **Spring 2016:** 47 students received Early Academic Alert; 4 students met with the EAC Director to discuss ways in which they could be supported. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone

conversations with the course instructors regarding students who received Early Academic Alert.

- **Fall 2016:** 56 students received Early Academic Alert; 8 students met with the EAC Director to discuss ways in which they could be supported. Four of these students withdrew from courses (MATH 101, ENGR 240, FIN 295, and BIO 111). Four students who responded passed the course (ENG 110, NRSE 210, CHEM 210, and MATH 306). One student requested a tutor for his Classical Music course. A tutor was hired at $10 per hour to support student by helping with homework, taking class with student and helping with the language barrier. Tutor cost was $190.50. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.
- **Spring 2017:** 52 students received Early Academic Alert; 4 students met with the EAC Director to discuss ways in which they could be supported. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.
- **Fall 2017:** 34 students received Early Academic Alert; 5 students met with the EAC Director to discuss ways in which they could be supported. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.
- **Spring 2018:** 26 students received Early Academic Alert; 2 students met with the EAC Director to discuss ways in which they could be supported. The rest emailed either to acknowledge receipt of letter/email or to indicate that they have already met with their course instructor and have been advised accordingly. The EAC Director also had email or phone conversations with the course instructors regarding students who received Early Academic Alert.

In addition, the EAC Academic Performance Analysis allows us to identify international Asian and Asian American students who are "in good standing" in their academic performance. For example, in fall 2015, out of 636 EAC students registered, 398 EAC students achieved a GPA of 2.7 or higher (63%); two EAC students were on the President's List with a 4.0 GPA; and 20 EAC students were on the Dean's List with a 3.5-3.99 GPA. Forty-two (42) EAC students from first year through senior year received a 3.8-4.0 GPA; 95 EAC students received a 3.5-3.7 GPA; and 128 EAC students received a 3.0-3.4 GPA. At the Celebration of Excellence event, students with high academic performance are recognized. For example, in spring 2016, 22 international Asian and Asian American undergraduate and graduate students representing various disciplines were recognized for academic excellence in previous semester (fall 2015); in fall 2016, 27 international Asian and Asian American undergraduate and graduate students representing various disciplines were recognized for academic excellence in previous semester (spring 2016); in spring 2017, 13 international Asian and Asian American undergraduate and graduate students representing various disciplines were recognized for academic excellence in previous semester (fall 2016); in fall 2017, 38 international Asian and Asian American undergraduate and graduate students representing various disciplines were recognized for academic excellence in previous semester (spring 2017); in spring 2018, 24 international Asian and Asian American undergraduate and graduate students representing various disciplines were recognized for academic excellence in previous semester (fall 2017).

The EAC continues to monitor the academic performance of international Asian and Asian American students each semester.

Attendance in EAC sponsored and co-sponsored events is measured by using sign-up sheets. To increase student, faculty and staff participation, invitations to social events encourage students to bring a friend (including family members), and faculty to the event. In addition, the mentor liaisons to CCSU clubs and organizations are held responsible for bringing representations from these clubs and organizations to EAC sponsored events. Overall, attendance at all events has been very satisfactory (since 2010). During the event, the EAC Director and staff sit with various groups to invite feedback from students, faculty and staff, and community partners. Feedback has always been positive and students, faculty and staff, and community partners look forward to the next EAC social event.

- **Fall 2013:** 85 students, faculty & staff, and community partners
- **Spring 2014:** 75 students, faculty & staff, and community partners
- **Fall 2014:** 67 students, faculty & staff, and community partners
- **Spring 2015:** 86 students, faculty & staff, and community partners
- **Fall 2015:** 88 students, faculty & staff, and community partners
- **Spring 2016:** 90 students, faculty & staff, and community partners
- **Fall 2016:** 94 students, faculty & staff, and community partners
- **Spring 2017:** 76 students, faculty & staff, and community partners
- **Fall 2017:** 90 students, faculty & staff, and community partners
- **Spring 2018:** 93 students, faculty & staff, and community partners

Assessment and Evaluation:

(Describe how progress toward meeting goals and objectives has been measured and include a brief description of lessons learned)

The EAC events/activities are aligned to the Center's mission, goals and objectives. The Center's activities are assessed through attendance rate, response and/or feedback from participants using formal and informal tools. The information gained from all these has been used to prioritize EAC program events/activities. Data/Information from the EAC Academic Performance Analysis and the Early Academic Alert are used to determine international Asian and Asian American, students' academic performance per semester and to identify students who struggle academically. These students, especially first year students, whose GPA fell below 2.0 are sent a letter and email to meet with the EAC Director to discuss ways by which they could be helped in successfully coping with the academic demands in their respective program of study. The course instructor is copied in the letter and email. The EAC Director also contacts the course instructors to have a better understanding of how best to help the student. Students are referred to the appropriate university support services and/or provided with a tutor, when necessary. In addition, the EAC has identified the following steps to further support students who experience academic difficulty:

- Regularly review all EAC students' end-of-semester grades in order to monitor their academic performance and to identify those who need additional support (especially because not all students who experience academic difficulty in their course/s are reported in the Early Academic Alert). These students will be immediately contacted.
- Follow up these students with their course instructor/s to ensure that they are meeting academic expectations.
- Continue monitoring all students who have been identified with academic difficulty the previous semester, to ensure that they no longer experience similar or additional academic difficulties.
- Continue offering tutorial support through the EAC-MP for EAC students who are experiencing academic difficulty.

As described in the Student Involvement and Student Outcomes section (above), attendance in EAC sponsored and co-sponsored events is measured by using sign-up sheets. To increase student and faculty participation, invitations to social events encourage students to bring a friend (including family members), and faculty to the event. In addition, the mentor liaisons to CCSU clubs and organizations are

held responsible for bringing representations from these clubs and organizations to EAC sponsored events. Overall, attendance at all events has been very satisfactory (since 2010). During the event, the EAC Director and staff sit with various groups to invite feedback from students, faculty, and community partners. Feedback has always been positive and students, faculty and staff, and community partners look forward to the next EAC social event.

In 2017, EAC launched a Satisfaction Survey, which was completed by 27 students (see below). The purpose is to gain insight into international Asian and Asian American students' perceptions of their social, cultural and academic experiences at CCSU in order to inform the goals and function of the East Asian Center. It is gratifying to note that a high percentage of international Asian and Asian American students are satisfied with "the overall quality of their academic program" (100%) and are "determined to finish their degree at CCSU" (96%). However, over 50% of international Asian and Asian American students do not find CCSU to be a "friendly and supportive campus." EAC will share the findings in this survey with appropriate CCSU committees and at the same time find other means within the EAC to address some, if not all, of the students' concerns.

EAC will refine the survey and continue to collect responses annually from international Asian and Asian American students.

Survey Item	**Strongly Dissatisfied**	**Dissatisfied**	**Satisfied**	**Strongly Satisfied**	**No Response**
1. I am satisfied with the overall quality of my academic program.	0	0	59.26%	40.74%	0
2. I am satisfied with the variety of courses offered every semester to fulfill my academic needs.	0	018.52%	51.85%	29.63%	0
3. I feel that I can ask my program advisor for questions and feedback about my academic progress.	0	18.52%	51.85%	29.63%	0
4. I am determined to finish my degree at CCSU.	0	3.70%	18.52%	77.78%	0
5. I find CCSU to be a friendly and supportive campus.	48.15%	3.70%	44.45%	0	3.70%
6. I feel comfortable approaching a faculty or staff member on campus if I need help.	3.70%	7.41%	48.15%	40.74	0
7. I am satisfied with the sense of community on campus.	3.70%	14.82%	51.85%	29.63%	0
8. During my time at CCSU, I have been treated fairly and with respect by faculty and staff.	0	3.70%	48.15%	48.15%	0
9. During my time at CCSU, I have been treated fairly and with respect by other students.	3.70%	0	51.85%	44.45%	0
10. Overall, I am satisfied with the richness of social events and opportunities on campus.	0	18.52%	62.96%	18.52%	0
11. Overall, I'm satisfied with the available academic support and resources on campus.	0	7.41%	62.96%	25.93%	3.70%

COMMENTS/SUGGESTIONS:			
Are you satisfied with the East Asian Center events/activities?	YES = 88.89%	NO = 0	N/A = 11.11%
How can the East Asian Center better support your academic needs?	-Cantonese speaking events and courses to improve language and widen vocabulary -more awareness of what the Center offers; send emails when an event happens -more scholarship opportunities; more grants and research -more motivation -more opportunities related to academics -opportunities to travel to other universities -tutors for foreign languages that are not offered at CCSU		

What on campus events have you participated in since last year?	Color Run IRC Church Blood Donations CAN Food Drives Baseball Tea Club Asian Students Accounting Club Devil's Den SPAs CS Club	CCSU Chinese New Year Gala Graduate Assistant (Psychology) Freshman/Transfer Orientation Chinese American Students Association Alpha Lambda Delta Honor Society Golden Key Honor Society Women's Center Events Japanese American Culture Club SASA Events Spring Concert Winter Formal Women's Day
What off campus events/activities have you participated in since last year?	GA Psychology JA Jump Start VITA	Tennis Tournament Eastern Psychology Association Volunteering 5K Hot Cocoa Event
Are you a member of a campus club or organization? If yes, which ones?	Tennis Club IRC MIS Club Baseball Marketing CS Club Psych Tutoring	Psi Chi Honor Society Psychology Club Anthropology Club Student Nursing Association Intramural Sports Arts + Science Advising Center Chinese American Student Association Japanese American Culture Club Habitat for Humanity Golden Key Honor Society

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

ACTUAL Revenues and Expenses:

(For FY 2018, include encumbrances to the end of the approved period, use estimates where necessary)

BUDGET CATEGORIES	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]	22,900.53	22,589.00	22,239.00	22,239.00	22,224.53
4. Other Revenue [d]					
5. TOTAL REVENUE (lines 1-4)	22,900.53	22,589.00	22,239.00	22,239.00	22,224.53
EXPENSES					
6. Personnel [e]	12,255.03	14,943.50	15,632.38	15,239.00	16,224.53
7. Fringe Benefits					
8. Travel					
9. Equipment & Supplies	2,404.24	2,194.90	2,194.09	2,500.00	2,500.00
10. Contractual					
11. Construction [f]					
12. Other	4,121.98	4,121.98	4,392.00	4,500.00	3,500.00
13. Total Direct Costs (lines 6 through 12)	21,781.25	22,218.47	22,218.47	22,239.00	22,224.53
14. Indirect Costs [g]					
15. TOTAL COSTS (lines 13 + 14)	21,781.25	22,218.47	22,218.47	22,239.00	22,224.53
NET					
16. TOTAL REVENUE - TOTAL COSTS					
surplus / (deficit)	1,119.28	789.81	20.53	0.00	0.00
17. OPERATIONAL BALANCE					
from previous year	$				

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative

b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).

c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).

d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.

e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g. Estimate costs for facilities use, utilities consumption, etc.

PROJECTED Revenues and Expenses:

BUDGET CATEGORIES	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]	22,259.53	22,259.53	22,259.53	22,259.53	22,259.53
4. Other Revenue [d]					
5. TOTAL REVENUE (lines 1-4)	22,259.53	22,259.53	22,259.53	22,259.53	22,259.53
EXPENSES					
6. Personnel [e]	15,724.53	15,724.53	15,724.53	15,724.53	15,724.53
7. Fringe Benefits					
8. Travel					
9. Equipment & Supplies	2,500.00	2,500.00	2,500.00	2,500.00	2,500.00
10. Contractual					
11. Construction [f]					
12. Other (Events, Food Costs, etc.)	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
13. Total Direct Costs (lines 6 through 12)	22,224.53	22,224.53	22,224.53	22,224.53	22,224.53
14. Indirect Costs [g]					
15. TOTAL COSTS (lines 13 + 14)					
NET					
16. TOTAL REVENUE - TOTAL COSTS					
surplus / (deficit)	35.00	35.00	35.00	35.00	35.00
17. OPERATIONAL BALANCE					
from previous year	$				

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative
b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).
c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).
d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.

e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.
f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g. Estimate costs for facilities use, utilities consumption, etc.

Budget Narrative:
(Provide any important context about ACTUAL and PROJECTED Revenues and Expenses)
The annual expenditures cover sponsored and co-sponsored EAC events/activities that meet the EAC mission, goals and objectives. The EAC Director's stipend has been added to the EAC annual budget allowance.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Continuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve continuation of the Institute of Technology and Business Development at Central Connecticut State University until June 30, 2019.

A True Copy:

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Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Continuation of the Institute of Technology and Business Development at Central Connecticut State University

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the Institute of Technology and Business Development's 2018 Sunset Report – a 150-page document.

The Institute of Technology and Business Development was originally established as the Institute for Industrial and Engineering Technology on July 23, 1993 (BR 93-60) by the CSU Board of Trustees and renamed in October 2002. The Institute was authorized by the Board of Regents on November 21, 2013 to continue until December 31, 2018. The mission of the Institute is to support Connecticut businesses and business related organizations with training, technology assistance, student interns, conferencing services and business incubation.

PRINCIPAL ACTIVITIES/ACCOMPLISHMENTS
The core service of the Institute is workforce training and development. The Training Center has provided LEAN process training and consulting to manufactures, workforce training, consulting and advising to minority-owned businesses, businesses practices to small businesses, and process and productivity improvement for manufacturing clients. In fiscal year 2016 alone, the Training Center "completed 78 training programs serving approximately 721 attendees." Annually, the Training Center generates roughly 62% of the Institute's revenue.

The Institute's Conference Center annually generates 34% its revenue through nearly 500 events with other 40,000 attendees. The Institute's Business Incubation achieved its goal of 90% occupancy with 11 incubators and 3 tenants in fiscal year 2013. Since 1993, the Business Incubation has served over 100 companies. The operations of the Business Incubation are being curtailed and reassessed in anticipation of Charter Oak State College occupying its space.

STUDENT INVOLVEMENT
Students are the beneficiaries of scholarships raised by the Institute's annual golf outing. Annually, 20 to 30 students are hired or engaged in internships and projects through referrals by the Institute. Students provide assistance with the operations of the Training Center and the Conferences; often securing employment, internships and scholarships through their experiences.

Students and alumni have been clients of the Business Incubation, launching their own enterprises.

BUDGET

Summary of Revenues and Expenses					
	FY 2014	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**
Beginning Balance	$984,621	$753,316	$516,506	$256,006	$141,859
Total Revenues	$1,067,206	$1,170,181	$1,485,729	$1,465,378	$1,327,837
Total Expenses	$1,298,511	$1,406,991	$1,746,229	$1,579,525	$1,284,539
Revenues Less Expenses	($231,305)	($236,810)	(#260,500)	($114,147)	$43,298
Ending Balance	$753,316	$516,506	$256,006	$141,859	$185,157

Summary of Projected Revenues and Expenses					
	FY 2019	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Beginning Balance	$185,157	$235,157	$285,157	$335,157	$385,157
Total Revenues	$1,300,000	$1,350,000	$1,400,000	$1,450,000	$1,500,000
Total Expenses	$1,250,000	$1,300,000	$1,350,000	$1,400,000	$1,450,000
Revenues Less Expenses	$50,000	$50,000	$50,000	$50,000	$50,000
Ending Balance	$235,157	$285,157	$335,157	$385,157	$435,157

CCSU contributes operational funds to cover one-third of the Institute's expenses. Two-thirds of the expenses are covered by grants and the Institute's fee for services.

ASSESSMENT/EVALUATION

The Institute

RECOMMENDATION

President Zulma R. Toro has reviewed or been briefed on the evaluation of the Institute of Technology and Business Development and recommends that the Board of Regents authorize its continuation for only a six-month period. She comments further that Central Connecticut State University will conduct a strategic planning process to transition the Institute into a new entity that will fully serve the needs of CCSU students, faculty, industrial partners and clients.

10/05/17 – BOR-Academic and Student Affairs Committee
10/18/17 – Board of Regents

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (apoole@commnet.edu) with a copy to Patricia Ryiz (pryiz@commnet.edu).

Name of University:	Central Connecticut State University
Name of Center/Institute:	Institute of Technology and Business Development
Director/Coordinator:	Richard C. Mullins, Jr.
Date of Original Approval:	Fall 1985 Center for Industrial and Engineering Technology
Date of Last Approval:	November 21, 2013
Board Resolution of Last Approval:	November 21, 2013
Sunset Date:	December 31, 2018

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☒ I recommend continuation of this Center/Institute for six months. Please see attached memorandum.

☐ I recommend discontinuation of this Center/Institute

9/10/2018

Signature of President

Comments (OPTIONAL):

See attached memorandum.

Mission:

(Provide the mission of the Center/Institute; note any changes from the most recent approval)

Central Connecticut State University's Institute of Technology and Business Development (ITBD) supports Connecticut businesses and business related organizations with training, technology assistance, student interns, conferencing services and business incubation.

Needs Assessment:

(Describe why this Center/Institute was created)

The ITBD was created to link Connecticut's business needs in technology development and implementation using skilled faculty and student interns in multiple disciplines including: manufacturing, accounting & financial services, healthcare, Information Technology and Stage 1 Mixed Use business incubation and tenant space.

Connecticut is facing a serious workforce shortage due to the graying of the workforce and the retiring baby boomers. Connecticut is recognized as a leader in Aerospace, Medical and Military manufacturing. Thirty-one percent of the businesses in the Knowledge Corridor (New Haven to Springfield, MA) plan on expanding their businesses. Twenty-one percent state there is a shortage of skilled talent in the region. Thirty-three percent will expand facilities. They anticipate their workforces to grow by sixty percent. Many of these businesses are family owned legacy businesses which are part of the supply chain for the industries mention herein. Fifty percent of these businesses hire workers from area institutions. Forty-eight percent offer internships to local students. Sixty percent of the twenty fastest growing occupations in CT require a minimum of a Bachelor's or Master's degree and have salaries approaching $75,000 annually. Source CBIA Econonmic Summits.

Needs Modification:
(Describe how the need for this Center/Institute may have changed)

The core service and revenue driver of ITBD is workforce training and development. Regular meetings with our industry clients, professional organizations, surveys, outreach and meetings with members of the Advisory Board drive our workforce training programs in support of their emerging business needs. The conference center is financially the second driver of the ITBD. Current up to date classrooms and a computer laboratory are used for training programs, community and industry association meetings. The Mixed Use Business Incnbation and Tenant Space is used to launch Stage One businesses. To date ITBD has served over 100 businesses owned by students, faculty and private sector entrepreneurs. These entrepreneurs have offered CCSU students scholarships, internships and full time career opportunities. On such Faulty/Student incubator CCSU C.A.R.E.S. - "Go Baby Go" has refurbished wheelchairs for the needy and reconfigured children driven battery operated vehicles for disabled toddlers. ITBD has offered and supported the development of their business model to make the program sustainable. Additionally, the launch of the Education and Innovation Center (3D Design/Printing/Scanning/Modeling) has engaged CCSU students, faculty, local business and youth in New Britain's Consolidated School District in many projects including a 3D campus map, a medical device, a valve body component of a vehicle fuel delivery system, fixturing tools and a financial industry trade model in forensic accounting.

The area of most significant change is the Mixed Use Business Incubator. In September of 2017 a campus decision was made to ready space in the downtown campus for Charter Oak College. This move was expected to take 50% of the building space. In anticipation of the move all but five companies did not receive lease renewals. One incubator client EnterpiseMD, LLC and five remaining tenants; American Savings Foundation, CT Breast Health Initiative, CT Judicial Court Support Services Training Academy, and CT Mortgage Bankers Association all have a strategic alliance with CCSU.

Goals, Objectives, and Principal Activities:
(List goals, objectives and principal activities of the Center/Institute)

The primary goal of the ITBD is to support CCSU's mission in supporting CT's business community in training and technology deployment, workforce development, business growth & incubation using faculty and students and conference center rentals. This supports CT's business community in achieving growth and thriving in world markets.

Principal Accomplishments:
(List the Center/Institute's principal accomplishments since its last report. Attach a chronological list of the Center/Institute major activities over the course of the past five years; under specific, relevant categories such as research, papers, conferences, presentations, workshops, sponsored events, exhibits, etc.) FY14-18

Exhibit "A" is attached to this report is a detailed summary by year of activities of the ITBD.

General –

The Institute of Technology and Business Development is the only such program in the CT State College and University System. It is not part of the general fund and earns revenue on a fee for service basis by prospecting opportunities across the state. It is uniquely linked to manufacturing associations and chambers of commerce across the state.

ITBD has built strong institutional relationships with companies like Eversource, Stanley Black and Decker and TD Bank, Peter Paul Electronics, Acme Monaco, Medtronics and many others. Below are just a few examples of organizations that supported ITBD and helped to fund ITBD programs:

- **Eversource:** ITBD Programs, Business Plan Competition, Athletics Event, Ana Grace Project, Air Bridge Project, Storm Catastrophic Lineperson Housing and client service referrals. (Over $10,000 in support to date).
- **Stauley Black and Decker: Roughly $50,000 a year for the past** (3) years $15,000 in scholarships for CCSU students, $25,000 for the Business Plan Competition, Ana Grace Project, Tech it Out Project and Woman of Leadership activities.
- **TD Bank:** Executive Breakfast Funding, Education & Innovation Center (3) years $25,000 each, University Center (3) years $10,000

ITBD works with Career Advising Center and Faculty in the School of Engineering, Science and Technology and the School of Business in relaying job opportunities and career job fairs for students. Our Faculty in Residence program has had faculty and students engaged in over 30 projects.

ITBD has supported and recruited organizations for the CCSU Connected Campaign.

Faculty, Staff, and Responsibilities:
(Specify Director/Coordinator, Departments/Disciplines of Members, and Time Commitment for each and changes of personnel over time)

The ITBD reports to Institutional Advancement, led by Dr. Christopher Galligan. The ITBD is led by CCSU Alumnus Rick Mullins. Mullins oversees the daily and fiscal operations of the ITBD. He is the primary business development person at ITBD. Mullins has been engaged with ITBD since its early start in the role of Training Center Director and the Director of the ITBD. He is responsible for much of the growth and transition of the ITBD since 1993. Sue Davis is the Business Development Coordinator of the Training Center. She has been in this role since 1993 as well. Sue handles the open enrollment workforce development programs and operationally the contracted training inititives of ITBD. She interfaces with

faculty, students and clients of the ITBD. Thru her skilled awareness of Industry needs she markets a very successful open enrollment program listing many of the non-credit course offerings of the ITBD. James Bruner serves as the Business and Conference Center Manager of ITBD. In his role he interfaces with clients renting rooms, billing of the incubators/tenants, weekly collects/reports the fiscal operations of the ITBD and interfaces with CCSU's Business office. In the period since our last assessment, ITBD has had three retirees. These include; a Procurement Technical Assistance Coordinator, a Conference Center Manager and a Sales Manager. We have not refilled these positions permanently. We did fill a Sales Coordinator position however the recipient returned to the private sector the position has not been filled. ITBD also had a Youth Program Coordinator. As funding in the youth programs area declined the Youth Program Coordinator accepted another position on campus.

An investment was made in an Education and Innovation Center at ITBD. Similar to a Maker Space, this area has 3D CAD, printing and scanning capacity. We have raised funding to staff the area with campus faculty. We collaborate with the Academic Affairs TRiO program in afterschool learning activities for Middle and High School students. Recently we offered free open enrolhnent training for CCSU faculty, students and Alums in this technology area which has been well received.

Student Involvement and Student Outcomes:
(If applicable, discuss Center/Institute's impact upon the university's students; specifically, what was the nature of student involvement and how many students were involved with Center/Institute activities; what were the resultant student outcomes of that involvement stated numerically. Student outcomes may include such measures as learning outcomes, achievement, persistence, graduation, employment and graduate school placements. Along with or without student involvement and student outcome; a focus of the Center/Institute's mission might be public engagement/outreach. If so, that construct should be discussed here.)

ITBD made a business decision to change from outside contracted security services to using CCSU Event Management students in the lobby. Working with Event Management we have 4-6 students at the reception desk during building operations. Students learn strong customer service skills in the role and meet various business and industry professionals attending events at the downtown campus. ITBD has also hired students to work in the Education and Innovation Center to assist with student, faculty and industry activities related to Additive Manufacturing and entrepreneurialism. ITBD acquired a $400,000 grant to assist companies with business transitions from the Department of Economic and Community Development. The grant provides funding for faculty to do a business and technology assessment project at manufacturing companies. The outcome is a 6-9 month Faculty in Residence program at the company working on one of the high priority business needs. Faculty identify students from their classes to work beside them leading to full time employment for the student. Some of the activities qualify for a student internships or senior project as well. In the two years of the grant we have had over 30 engagements with clients and close to 25 students engaged in these projects.

ITBD has supported University\CSUS and Community involvement at ITBD by working with the Community Central, supporting the New Britain EMS Training Academy and its link with the CCSU School of Education Nursing\Athletic Training\Continuing Education programs. Additionally, the School

of Engineering and Technology Summer Robotics Institute was offered at the NB Boy's and Girl's Club for the second year. A similar ACE Construction Program was launched this spring with 5 NB construction companies, (12) area HS students, (3) CCSU students and a State Construction Association involved. The ITBD Annual Golf outing has contributed to student scholarships for 10 years. Last year on our 20th Anniversary of the outing $10,000 was raised for 10 CCSU scholarships for the fall of 2018.

ITBD remains active in the New Britain Lions, the BOD of the NB Boy's and Girl's Club, the NB Network Group, the School District's - Technology and Future Workforce Initiatives - Finance Academy and STEM committees, Capital Workforce Partners, the Annual CT Dept. of Labor CT Learns & Works Conference. ITBD continues working with the two Governor Malloy task forces related to workforce development: 1. Talent ID Task Force and 2. Manufacturing Round Table DECD\DOL\OWC Taskforce. ITBD serves on the Mayor's Mfg. Taskforce and as the CCSU representative to the Metro Hartford Alliance.

ITBD collaboration with Board of Regents (BOR) included; CCSU Day at the Capitol focused on Workforce Development, Charter Oak College and CTDLC on the development of on-line programs and the Community College System and (2) On-line programs; (1) Introduction to Careers in Mfg. and (2) Introduction to Careers in the Gas Industry. Currently ITBD is working with the BOR in expanding its working relationship with the New Britain and Bristol Boy's and Girl's Clubs.

Assessment and Evaluation:
(Describe how progress toward meeting goals and objectives has been measured and include a brief description of lessons learned)

ITBD – Fiscally, ITBD as a whole covers the majority of the operating cost of the building at 185 Main St. This amounts to approximately $250-300,000 annually. In addition, it covers the salaries and benefits of the three staff. In FY18, ITBD covered $243,000 in building expense and added $43,000 to reserves while covering the staff salaries and fringe. In addition, ITBD made decisions to reduce expenses effectively. There are other CCSU offices in the downtown campus that do not contribute to facilities operations. This performance is associated with an excellent rating.

ITBD – Programmatically, it is the Training Center that has the largest interface with Companies, Faculty and students. Program design and delivery is led by faculty, consultants and most often in the School of Engineering, Science and Technology and the School of Business. The Faculty in Residence concept is very well received by the business community and has led to part-time and full-time student hires. ITBD has a reputation for being knowledgeable (A Trusted Advisor) and up to date on progressive training initiatives to assist CT business with process and productivity. This is proven by the number of repeating customers to our programs. The programs offered are very pragmatic. The Open Enrollment offerings fill quickly because they are topics and skills necessary for companies and employees to be able and ready to face the globally competitive market. Pricing on training programs is fair. The many grants and funding sources that ITBD has access to makes the course cost very reasonable. The ability to serve companies in the southern part of the state is challenging with faculty teaching schedules and distances traveled. We are a University based service and we are not in the league of high end private consulting practices. Our rates are competitive with other like institutions who offer skills training. The Training Center is strongly

engaged with multiple business communities across the state. The Training Center is associated with an Excellent rating.

The Conference Center offers a professional environment with current technology that allows clients the opportunity to deliver skills, knowledge and learning in an effective manner. The rooms are well equipped, up to date with technology, and provide for a positive learning, testing or meeting venue. The Conference Center gets a lot of use with minimal staff. In fact, in a cost saving measure we elected not to staff it with students for registrations, intake or ITS support. Parking, by using City facilities, is well addressed and convenient to attendees. The food/refreshments, using local vendors, is adequate. Pricing is reasonable on all levels. The Conference Center has built a good reputation statewide. The Conference Center rating is Very Good.

The Business Incubation 5 Year Life Cycle program is the strongest attribute to our incubation program. It is well structured and well-coordinated with the campus business office and facilities. It provides an effective framework for the entrepreneur to launch a successful business. Its Mixed Use format allows the greatest flexibility to tenants and their business models. The Incubator program rates Very Good.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

ACTUAL Revenues and Expenses:

(For FY 2018, include encumbrances to the end of the approved period, use estimates where necessary)

BUDGET CATEGORIES	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]					
4. Other Revenue [d]	1,067,206	1,170,181	1,485,729	1,465,378	1,327,837
5. TOTAL REVENUE (lines 1-4)	1,067,206	1,170,181	1,485,729	1,465,378	1,327,837
EXPENSES					
6. Personnel [e]	413,132	487,222	599,480	509,392	370,241
7. Fringe Benefits	231,937	292,940	387,140	355,508	267,542
8. Travel	2,622	3,796	3,850	2,268	1,861
9. Equipment & Supplies	7,488	9,578	13,154	20,864	13,484
10. Contractual	361,964	356,501	515,900	434,573	383,085
11. Construction [f]					
12. Other					
13. Total Direct Costs (lines 6 through 12)	1,017,143	1,150,037	1,519,524	1,322,605	1,036,213
14. Indirect Costs [g]	281,368	256,954	226,705	256,920	248,326
15. TOTAL COSTS (lines 13 + 14)	1,298,511	1,406,991	1,746,229	1,579,525	1,284,539
NET					
16. TOTAL REVENUE - TOTAL COSTS	(231,305)	(236,810)	(260,500)	(114,147)	43,298
surplus / (deficit)					
17. OPERATIONAL BALANCE	753,316	516,506	256,006	141,859	185,157
from previous year	$ 984,621				

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative

b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).

c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).

d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.

e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.

f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

g. Estimate costs for facilities use, utilities consumption, etc.

PROJECTED Revenues and Expenses:

BUDGET CATEGORIES	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]					
4. Other Revenue [d]	1,300,000	1,350,000	1,400,000	1,450,000	1,500,000
5. TOTAL REVENUE (lines 1-4)	1,300,000	1,350,000	1,400,000	1,450,000	1,500,000
EXPENSES					
6. Personnel [e]	375,000	390,000	400,000	415,000	430,000
7. Fringe Benefits	270,000	280,000	285,000	290,000	295,000
8. Travel	2,000	2,000	2,000	2,000	2,000
9. Equipment & Supplies	8,000	13,000	18,000	18,000	22,000
10. Contractual	345,000	355,000	370,000	385,000	400,000
11. Construction [f]					
12. Other					
13. Total Direct Costs (lines 6 through 12)	1,000,000	1,040,000	1,075,000	1,110,000	1,150,000
14. Indirect Costs [g]	250,000	260,000	275,000	290,000	300,000
15. TOTAL COSTS (lines 13 + 14)	1,250,000	1,300,000	1,350,000	1,400,000	1,450,000
NET					
16. TOTAL REVENUE - TOTAL COSTS	50,000	50,000	50,000	50,000	50,000
surplus / (deficit)					
17. OPERATIONAL BALANCE	235,157	285,157	335,157	385,157	435,157
from previous year	$ 185,157				

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative

b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).

c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).

d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.

e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.

f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g. Estimate costs for facilities use, utilities consumption, etc.

Budget Narrative:
(Provide any important context about ACTUAL and PROJECTED Revenues and Expenses)

The summary detail in the "Actual Revenues and Expensess" has been supported by the CCSU Busiess office. The detail for the past three years was collected and reviewed in assessing the impact of Charter Oak moving to the downtown campus. These figures are represented in the table.

The original model of the ITBD was that the operation was supposed to be 100% self-supporting with actual revenues generated by fees from the services ITBD provides. In 2006, the CCSU President changed the model and covered the utility costs. Recent Business Office analysis for the past three years demonstrates that CCSU is covering about one-third of the expenses for ITBD. Two-thirds of expenses are covered by ITBD fee for services and cover ITBD Operating expenses including salaries, fringe benefits, faculty & consultant payments, catering & parking costs, educational supplies, software, books, materials and supplies. In addition ITBD Building expenses are recovered covering janitorial, student worker lobby greeters, building repairs, HVAC maintenance, elevator maintenance, fire and security systems maintenance, snow removal, trash removal, landscaping and garage cleaning. The ITBD Building expenses covers the entire building, which includes ITBD, ITBD Tenants, several other CCSU departments and CT State Auditors. ITBD funds all the building expenses for these numerous other CCSU departments and CT State auditors, without any reimbursement.

When reviewing the three core business functions of ITBD Workforce Training is roughly 62% of the revenue generated at ITBD. Conferencing is 34% and Incubation 9%. Incubation was reduced significantly in FY18 due the planned Charter Oak move at the direction of CCSU Adminsistration.

Future revenues reflect a conservative growth of 4%. These revenues will be from fee for service engagements with customers, clients and tenants. ITBD is very fortunate to have a dedicated client base who have been receiving our services for decades. We generally see transformations in our client base (new customers) as we continue to update and market our services. ITBD will aggressively purse such. Currently we are seeing interest in updates to the process and productivity standards, quality management systems, interest in Technology 4.0 initiatives in coding, mechatronics, robotics and automation. In addition, the ITBD Education and Innovation Center, supporting STEM activities in Academic Affairs Community Engagement initiatives such TRiO, the Elihu Burritt Library and School of Engineering, Science and Technology and School of Business Entrepenuerial activities. It is providing faculty, student and alumni training in STEM activities. This area has recived projects from industry supported by faculty and student worker teams, it also addressed the need of a 3D campus map completed faculty, student worker mentors and TRiO programs in Creativity, Innovation and Entreprenurialism.

Future expenses for ITBD will still include both the ITBD Operating and ITBD Building expenses. The future Operating expenses will increase as salaries, fringe benefits, consultant fees, catering fees, educational supplies, books, software and supplies all increase annually. The future ITBD Building expenses will increase as the contractors and vendors fees also increase annually.

Exhibit "A" Detailed Summary by Fiscal Year of the Activities of the ITBD.

The Training Center in **FY13** continued its relationship with Eversource and the PRIME program. ITBD was the only educational institution selected to provide LEAN process training and consulting to manufacturers. Often work in this area led to additional opportunities for workforce training in process and productivity. We linked with CT Innovations "Tech Bridge Program" where faculty recommend students as interns and co-ops. We tried to launch a Healthcare Simulation program with Nursing to support the healthcare industry but there wasn't much interest in the healthcare community. We served many repeat clients. Client satisfaction remained high on all of our program offerings in training. We continued our relationship with the CT Dept. of Labor receiving a $36,000 training grant to support workforce training,

We renegotiated the Conn/DOT Disadvantaged Business Program for two years. To date we had served about 180 clients in this program. Faculty provided consulting and advising to disadvantaged businesses in CT. Often the companies were looking for talent as well and we connected the companies with the CCSU Construction Management program. As a result about 6 students received internships. Success in this program led to $30,000 in funding to ITBD by Eversoure, TD Bank and the CT Development Authority to support any small business that had interest in assessments and training in business practices. We named this the University Center program. Twenty-three clients were served in the year.

ITBD raised $25,000 to link with the School of Business, Stanley Black & Decker, Eversoure and CT Innovations to develop and Business Plan Competition at CCSU. Scholarship funds were awarded to students who successfully completed the program.

The Training Center Manager retired at the end of 2012. In a cost saving measure and with state hiring restrictions we did not replace the position. The duties were distributed to the existing staff.

In FY14, the training center received a $35,000 grant from the CT Dept. of Labor to support process and productivity improvement at CT manufacturing clients. These funds provided opportunities for faculty to train companies in progress methods and improve their productivity. Faculty often recommend students to these companies for internship, co-ops or hires. The Business Plan program was refunded as mentioned above as well. ITBD launched a collaborative Innovation & Education Center at ITBD. Collaborators in this initiative was the Elihu Burritt Library and Academic Affairs TRiO program. Middle School and High School students were introduced to 3D CAD, Printing, Scanning, Coding, Research and Entrepreneurialism.

In FY14 we completed the last $150,000 of the Congressional Earmark we received to support CT manufacturers in making their businesses more competitive. Funds were used to finance 50% of the program workforce training cost in advanced manufacturing skills.

In May of 2014 one of the CCSU students working on the ConnDOT program was hired by the CT Minority Supplier Council. Two additional students working the program were hired by disadvantaged businesses as well.

In June of FY14 ITBD delivered the second Hyundai Management program. The program addressed cultural and business topics for executives migrating to North America for a five year period.

In December of 2014 a Sales Manager was hired to replace the one who retired. This was a great addition to the Training Center. The employee did a great job in expanding our footprint into New Haven and southern CT. Unfortunately after two years in the position the employee left to pursue another opportunity.

In FY15, the Training Center assisted the community in building capacity in an understanding of "Disruption". Funds were raised by the Training Center to host a statewide conference on the subject which was the backbone of the US Federal Reserve Bank's Working Cities Challenge and CT Innovations CTNext Innovation Places program. CCSU ITBD was an anchor in both initiatives. The Innovation and Education Center programming forged programs in Creativity, Innovation and Entrepreneurship. In a summer TRiO program, students from the local Middle and High School students built a 3D map of the CCSU campus. Faculty and student hires work on 3D projects for industry as well. Items such as a Fuel Delivery Assembly, Periodic Table Element Boxes for a game, a Forensic Account Scale, and a medical device called the Stoma Shield where the inventor pursued a patent.

In FY16, the Training Center completed approximately 78 training programs serving approximately 721 attendees. Working closely with referrals from the CT Department of Labor and Department of Economic and Community Development ITDB gained the reputation as a "Trusted Advisor". Working with the Department of Economic and Community Development ITBD was awarded a two year contract to help CT manufacturers transition their businesses with technology applications. The value of the contract was $400,000 and required the companies to match the cost of the projects 50%.There were 10 active Faculty in Residence Programs underway, which continued to link companies with faculty and students. Three on-line learning programs were launched. A Six Sigma course and two courses in collaboration between CCSU faculty, the Board of Regents and Charter Oak College staff. The Six Sigma program was not successful. The two with the collaborative partners were more successful because they were free. There was one class developed in Manufacturing and another in Careers in the Natural Gas industry. These were open enrollments course expected to educate the public in these two career areas the Board of Regents institutions could support. ITBD pursued a $10,000 grant from Farmington Savings Bank to launch a Hispanic Entrepreneurial Program with 30 participants joining the program across the state.

We began to track the number of students in FY16 that we were impacting through projects and programs. The table below is a summary of the impact.

Student Workers Projects	# Students	Student Wages Earned
Faculty in Residence Program	10	$120,000
ConnDOT	6	$14,400
CCSU Event Mgt	6	$60,000
Total	**22**	**$194,000**

In FY17, the Training Center's ConnDOT Disadvantaged Business Program funding was eliminated by US Federal Highways ending the program. ITBD continued to receive funding from TD Bank for the University Center program in the amount of $10,000. Twenty-nine open enrollment courses were

delivered. The Faculty in Residence program grew successfully with more clients and new client projects. ITBD pursued a second $10,000 grant from Farmington Savings Bank to fund a second Hispanic Entrepreneurial Program. The grant was awarded and this time had 40 participants from communities across the state. The Working City Challenge and Innovation Places programs where CCSU ITBD was an anchor participating member were awarded to other communities.

In FY18, ITBD continued its onsite and open enrollment training programs with much success. From 2009 to date ITBD has delivered over $1.5 million in WIA/TAA training thru the regional workforce board Capital Workforce Partners and the CT Dept. of Labor. The CT DOL issued an MOA to ITBD for multiple employer workforce training in the amount of $100,000. With these funds ITBD had great success in offering open enrollment training. Thirty-five open enrollment courses were delivered. In May and June ITBD delivered four Manufacturing Operations courses to MBA students at Wroclaw and Cracow Universities in Poland using CCSU faculty. This is the first year of a 2 year program in Poland. In June of 2018 the DECD Faculty in Residence program funding expired. We have been asked to make another submittal and we will do so in September. The fee for services model of the Training Center continues to be our largest revenue generator.

Conference Center –

In FY13, we had approximately 25,000 attendees attend events and approximately 225 individual events at ITBD. This volume of attendees and events have been consistent for the past (2) years. ITBD paid approximately, $80,000 in parking fees to the city from clients attending activities at the downtown campus. The Conference Center successfully developed and delivered the Executive Breakfast program offering up to date business seminars to stimulate interest in the business community that the Training Center often follows up with for on-site training. The Conference Center engaged faculty from the School of Business as a moderator and often sought program sponsors to support the program. The Conference Center is the second largest revenue generating Center at ITBD. The Conference Center has 6 rooms and one computer lab.

In FY14, the Conference Center continued the Executive Breakfast program and secured TD Bank as a sponsor. Three sessions were held and facilitated by a School of Business Faculty member. The site was pursued and was qualified for new TEAS state-wide testing for the Nursing and Athletic Training programs. The Conference Center hired faculty to monitor the testing. The site was selected for the new HURST statewide testing site for Nursing exam. It was selected as the site for the Technical High School Administrative quarterly meeting center as well as the UConn Health Center Quarterly STUDUR Training and the Central CT Regional Planning Agency Regional Conference on Business Continuity for Emergency Preparedness and Disaster Recovery. Farmington Bank held its breakfast series during Small Business Week in May of 2014.

In FY15, the Conference Center has hosted nearly 500 events with over 42,000 attendees. Occupancy has been nearly 70%.

In FY16, performance was very similar to FY15.

In FY17, the Conference Center Manager retired. The position was not filled as a cost saving measure. The work load was shared among the three remaining ITBD staff.

In FY18, performance remains the same with roughly 500 events and 40,000 attendees.

Business Incnbation –

In FY13, the Incubation Program reached a goal of roughly 90% occupancy. There were eleven incubators and three tenants. Four new incubators were added GN International, Eureeka, Dialouce, Kinai – which was student owned. Two incubators expanded Tamion and NB EMS. Four incubator companies left (PV Squared, Klingberg, Quail Run, Milton Jackson). Tamion a Information Data/Ayalytics company and business incubator won a statewide Small Business Incubator Program grant from DECD in the amount of $30,000. This was ITBD's 5th winner to date. The company hired two students to work part-time in support of the grant. Klingberg Family Center's incubators clinic were actively engaged with CCSU faculty\students\graduates from the Marriage and Family Counseling program. PV Squared, a solar panel system design and installer was reaching their 7th year status at ITBD. We worked with them to structure their business model to expand in New England. Ultimately Western, MA was selected. We actively supported their exit strategy from ITBD as they sought another site in CT. In 2013, we updated our incubator lifecycle program to provide more effective company support support, direction and ensuring their reporting and fiscal practices were up to date with CCSU. One of our incubator graduates (Victory Energy Solutions) was inducted into the School of Business Wall of Fame in May. In FY13, the campus began moving offices from the main campus to the downtown campus. Those offices didn't contribute to the building expenses and have not to date in FY20.

In FY14, a new student Incubator program launched with Bankernews, LLC a company that also received assistance with a DECD\CCAT SBIP Grant. One of the CCSU Business Plan Competition winners Grow-It, LLC joined ITBD. Another existing Incubator called Eureeka, LLC won a DECD/CCAT SBIP grant to help grow the business. Eureeka engaged CCSU MBA students and a faculty member to collect business analytics in the transportation industry.

Three additional DECD\CCAT\CBIN grants amounting to $30,000 each were awarded to ITBD incubators: Eureeka, LLC and Dioluce, LLC and Bankernews, LLC (a CCSU student company).

One of our Alums Mr. Paul Genaris heard about the work of one our incubators CCSU C.A.R.E.S. This is a CCSU School of Engineering & Technology faculty/student Company. The alumnus linked the program with Shriners Hospital and the Hospital for Special Care. Another faculty member showed interest in a faculty student incubator called Café Central. Complications with the space, staffing, hours and liability discouraged further investigation.

A local philanthropic gift was established by the Czepiga family to provide seed money for Student\Alumni Incubators. The grant was for $5,300. They chose to make (3) $500 awards two to students one to an alumnus who is a minority and DAV.

FY15 and FY16 available incubation space remained flat. We didn't have space to expand the program. Companies were on time with their rents and looking to move to a Stage 2 incubator or traditional office space. One CCSU Alumni Incubator offered a CCSU School of Business student a $200.00 scholarship. This was the first incubator to do so in our history.

FY17 and 18, many of the incubators began to looking for new space. They had met our 5 year life cycle program at ITBD and began evaluating their next move. To date we have served over 100 companies since 1993, significant number of mixed use incubation clients. In FY17, we were instructed to begin reducing our business incubator footprint in anticipation of Charter Oak College moving into the downtown campus. To date office moves to the 4th floor are being made and once that is complete we will reassess the program.

Summary

For 10 years the funds raised by ITBD's Annual Golf outing has awarded undergraduate and graduate scholarships. In 2018, ITBD awarded 10 student scholarships amounting to $10,000. ITBD has been responsible for building strong institutional relationships with Stanley Black and Decker, TD Bank, Eversource and many other small and medium sized business in the state (Peter Paul Electronics, Acme Monaco, ebmpapst, etc….). As CT companies return to the United States we are receiving inquires to assist in automating their facilities and readying them for the Tech 4.0 Industrial Revolution. These relationships transition into faculty classes for tours, semester projects, internships and student hires. Annually ITBD links 20 to 30 students to paying jobs, projects and other activities thru referrals to companies looking for talent, interns, the Faculty in Residence program or supporting faculty requests to assist students in paid internships (Mfg: Gammons & Hoagland, Polar Corporation, Okay Industries, Peter Paul Electronics, Financial Services: F. Marrocco CPA, Mahoney & Sabol, Computer Services: The Computer Company, Walker Group and others). During the 13 years of the CT Dept. of Transportation (ConnDOT) Disadvantaged Business Enterprises (DBE) program which expired in 2017 there were at least 3-6 multidicipinalry students per semester working at ConnDOT or assigned to DBE's. Students were paid thru ConnDOT funding. Recently, one of the companies we work with asked us for recommendations of how other clients are working with our students and providing the students with scholarships while they are employed. These relationships result in funding Foundation scholarships, corporate or community learning, program or center sponsorships impacting activities at ITBD, faculty and students on campus. Community organizations like the New Britain Lions launched a scholarship program in the CCSU Foundation. In the last 3 years we have received grants from TD Bank, Farmington Bank and Eversource go directly into the CCSU Foundation, Inc. to support students and ITBD programs.

ITBD serves as an Ambassador for CCSU committed to supporting increasing enrollment, raising the value of the CCSU Foundation, Inc. and working to achieve the campus goal of 15,000 students.

OFFICE OF THE PRESIDENT

CCSU

Central Connecticut State University

MEMORANDUM

TO: Jane Gates, Provost and Senior Vice President for Academic and Student Affairs
Connecticut State Colleges and Universities

FROM: Zulma R. Toro, President
Central Connecticut State University

DATE: September 10, 2018

RE: Institute of Technology and Business Development

My recommendation to continue the Institute of Technology and Business Development for six months responds to feedback I received from one of the main funders of the unit, the Connecticut Department of Economic and Community Development, faculty in the School of Business and in the School of Engineering, Science and Technology, and representatives from companies that have received services from the Institute. In addition, we are in the middle of the planning process to move the operations of Charter Oak State College to the building currently occupied by the Institute. This will affect two of the revenue streams of the Institute: the Conference Center and the Mixed Use Business Incubator. Also, there is a significant degree of overlap between the services provided by the Institute and our Office of Continuing Education. Finally, we have identified the need to provide more support for our students and faculty in the area of entrepreneurship.

This unit is supposed to be self-sustainable, however for the last four out of five years their actual expenses have been more than their revenue. In other words, they have been running a deficit per year that ranged from $114,147 to $231,305. They were able to finish fiscal year 2018 with a surplus of $43,290 because two people left the Institute and were not replaced. Evidently, there are reasons to believe that unless significant changes are made to the Institute's operating model, there is a high probability they will face a deficit again in the years to come.

To address the feedback, facts, and needs described above, we will conduct a strategic planning process that should guide us in the creation of a Center or Institute required that will fully serve the needs of CCSU students, faculty, industrial partners and clients. Such a process should not take more than four months, after which we will seek approval from the Board of Regents to transition the Institute of Technology and Business Development into the new entity.

1615 Stanley Street - P.O.Box 4010 - New Britain, CT 06050-4010 - T: 860-832-3000 - F: 860-832-3033 - www.ccsu.edu

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Continuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve continuation of the Church Farm Center for Arts and Science at Eastern Connecticut State University until December 31, 2025.

A True Copy:

_____

Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Continuation of the Church Farm Center for Arts and Science at Eastern Connecticut State University

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the Church Farm Center for Arts and Science's 2018 Sunset Report – an 11-page document.

The Church Farm, an historic home and barn on 110 acres of pristine farmland, woods and wetlands located in Ashford, Connecticut, 15 minutes from Eastern was donated to the ECSU Foundation in 2007. The farm is the physical location of the Church Farm Center for Arts and Science. The Church Farm Center for the Arts and Sciences at Eastern Connecticut State University was established March 10, 2008 (BR 08-07) by the CSU Board of Trustees, and was reauthorized for continuation by the Board of Regents on November 21, 2013 until December 31, 2018.
The mission of the Center is to integrate art, the humanities, environmental science and ecology into the University and local communities by providing a site for student and faculty research, a wide range of formal learning experiences for Eastern students and members of the broader community, and a venue for cultural activities.

PRINCIPAL ACTIVITIES/ACCOMPLISHMENTS
The Biology Department uses the property extensively for a variety of courses and as a focus for faculty and student research. The Environmental Earth Science Department utilizes the Center for undergraduate student research projects. The Center is an essential asset and students gain practical, applied field-based research skills into the laboratory sections developed by faculty member for seven distinct courses. Faculty members are conducting three long-term, on-going research projects. Students have completed 17 projects since 2011. Several other departments, institutional and community organizations utilize the Center for events related to the arts, humanities, environmental sciences and ecology.

STUDENT INVOLVEMENT
Seven Biology faculty members teach field laboratories to nearly 200 students each year at the Church Farm Center for Arts and Science. Students from first-year to advanced Biology courses conduct experiments and carry out other hands-on activities, developing applied field-based research and laboratory skills. Students conduct honors theses and independent research projects - over the course of the previous five years, 12 students completed biological research studies using the farm as a field site.

BUDGET

Summary of Revenues and Expenses					
	FY 2012	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**
Beginning Balance	$0	$653	$796	$436	$436
Total Revenues	$5100	$5791	$6489	$6710	$6920
Total Expenses	$4447	$5648	$6849	$6710	$6920
Revenues Less Expenses	$653	$143	($360)	$0	$0
Ending Balance	$653	$796	$436	$436	$436

Summary of Projected Revenues and Expenses					
	FY 2017	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**
Beginning Balance	$0	$0	$0	$0	$0
Total Revenues	$7006	$7356	$7724	$8110	$8516
Total Expenses	$7006	$7356	$7724	$8110	$8516
Revenues Less Expenses	$0	$0	$0	$0	$0
Ending Balance	$0	$0	$0	$0	$0

The Church Farm Center for Arts and Science's source of revenue is its operating funds. Institutional operating funds covers the proportional cost of the Center's director. Funding for research conducted on the site is funded by a $500,000 grant from the John C. Hicks Estate. The ECSU Foundation owns and maintains the Church Farm property. The Foundation allows the Center to utilize the facility at no cost.

ASSESSMENT/EVALUATION

The Center's Sunset Report noted success in the full integration of the facility into the institution's biology research program. While noting the usage of the facility for programs related to the arts, humanities, environmental sciences and ecology, as well as community events, the Report acknowledged that more outreach is needed. Further progress in this regard is expected from introducing newly hired faculty to the potentials for the Center's use as a venue for teaching and creative exhibitions.

RECOMMENDATION

President Elsa Nunez has reviewed or been briefed on the evaluation of the Church Farm Center for Arts and Science and recommends that the Board of Regents authorize its continuation.

10/05/17 – BOR-Academic and Student Affairs Committee
10/18/17 – Board of Regents

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (poolea@commnet.edu) with a copy to Maureen McClay (mcclaym@commnet.edu).

Name of University:	Eastern Connecticut State University
Name of Center/Institute:	Church Farm Center for Arts and Science
Director/Coordinator:	Patricia Szczys, Professor of Biology
Date of Original Approval:	March 10, 2008
Date of Last Approval:	November 21, 2013
Board Resolution of Last Approval:	November 21, 2013
Sunset Date:	December 31, 2018

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☑ I recommend continuation of this Center/Institute

☐ I recommend discontinuation of this Center/Institute

Signature of President

Comments (OPTIONAL):

CONNECTICUT STATE COLLEGES & UNIVERSITIES
Connecticut State Universities
Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

Mission:
The mission of the Center for the Arts and Sciences is to integrate art, the humanities, environmental science and ecology into the University and local communities by providing a site for student and faculty research, a wide range of formal learning experiences for Eastern students and members of the broader community, and a venue for cultural activities.

Needs Assessment:
The Church Farm Property: Donated in 2007 by Dorothy Church Zaring and Joseph Zaring to the ECSU Foundation, Inc., and located in Ashford, Connecticut, 15 minutes from Eastern's North Campus, the Church Farm encompasses an historic home and barn on 110 acres of pristine farmland, woodlot, and wetlands. Both house and barn have been carefully restored, renovated, and maintained by the ECSU Foundation to support a wide range of programs with potential to generate regional and national recognition. The Zarings made this donation with the specific request that it be devoted to creative university, community, state and regional involvement in the arts and humanities, environmental sciences and ecology, and a range of other community and life-long learning activities and events.

Offering endless opportunities for teaching, creative endeavors, and research by Eastern faculty and students, as well as an inspiring setting for performances, poetry readings, and lectures offered to the broader community, the Church Farm is a unique facility. Rarely can a campus like Eastern, located in the residential neighborhoods of a small town, offer to faculty and student researchers carefully managed and maintained field sites that are close enough to campus to allow for short-term visits.

The Church Farm Center for the Arts & Sciences: The Church Farm Property provides a physical location for the Center for the Arts and Sciences while the Center is the formal link between the farm and campus programs, especially the Biology department. Faculty involved in the Center come from a variety of existing academic departments—the Center does not offer credit courses or degree programs. The Center is an arm of the School of Arts and Sciences, facilitating the interdisciplinary research, teaching, and programs offered on the farm. At the same time that the ECSU Foundation, Inc. maintains the physical location with endowed funds. The Center has

integrated Church Farm into the Ashford community through programs attended by local residents and by providing a venue for local organizations to hold events. The Center has also created a web site that provides a digital library of documents related to Church Farm.

Combining the administrative benefits of a Center and the physical attributes of the unique location, the Church Farm Center for Arts and Sciences facilitates innovative, high caliber teaching and research and promotes programming that extends the Eastern campus to a rural setting.

Goals, Objectives, and Principal Activities:
(List goals, objectives and principal activities of the Center/Institute)

1. Utilize Church Farm as a field site for student and faculty research and creative activity
    - Conduct on-going meaningful ecological research by faculty and undergraduate researchers.
        i. Long-term research projects by individual faculty mentors and undergraduates
        ii. Short-term research projects by individual faculty mentors and undergraduates
    - Incorporate Church Farm as the field site used routinely by faculty to develop undergraduate field-based skills in laboratory courses of all levels; first-year to advanced upper level biology courses
        i. BIO 130 Ecology Lab
        ii. BIO 324 Entomology Lab
        iii. BIO 336 Invertebrate Biology Lab
        iv. BIO 338 Vertebrate Biology Lab
        v. BIO 365 Mycology Lab
        vi. BIO 440 Aquatic Biology Lab
        vii. BIO 442 Plant Ecology
        viii. BIO 452 Conservation Biology Lab

2. Establish the Center as part of the work of the Undergraduate Research Coordinator in Biology whose main aim is to support and enrich research productivity of faculty and undergraduates.
    - Encourage undergraduate research experience under the mentorship of in the Biology Department for students interested in in all subdisciplines including field-based biology and ecology.
        i. Host on-going seminar series including undergraduate student research and professional guest speakers in all areas of biology, including ecology and field biology.
        ii. Raise awareness among students of on and off-campus research opportunities (ex. REU, SURP, etc.)
        iii. Support faculty research involving undergraduate researchers.

- Support undergraduate research and presentations at conferences.
    i. Raise awareness of off-campus conferences
    ii. Fund travel to discipline-specific conferences for presentations
    iii. Fund research for students continuing research for credit (BURG)
    iv. Administer Marc Freeman Summer Research Scholarships in collaboration with the Division of Institutional Advancement.

3. Offer programs at the Center related to the arts, humanities, environmental sciences and ecology for the campus and local communities.
    - Communicate with the Visual Arts, Performing Arts, English, and Environmental Earth Science Departments to encourage use of Church Farm.
    - Communicate with the Division of Institutional Advancement who oversees Community use of the Church Farm Property

Principal Accomplishments:
The university website associated with the center is found at the following link: http://www.easternct.edu/biology/church-farm-center-for-arts-and-sciences/

The Biology Department uses the Church Farm property extensively for a variety of courses and as a focus for faculty and student research. The center is an essential asset and students gain practical, applied field-based research skills integrated into the laboratory sections associated with seven unique courses for biology majors. *Seven faculty -- half of the departmental faculty teach these field laboratories to nearly 200 students each year.* In addition, dozens of research projects (group and independent) by students have been conducted at the center. The Environmental Earth Science Department utilizes the center for undergraduate student research projects and expects to continue in the future.

Goal 1: Establish Church Farm as a site for Research and Teaching

A. Long-term and on-going research projects (3):
Establishing long-term experimental plots as a framework for undergraduate research experience in terrestrial ecology. (2013 - ongoing). Dr. Mattingly

New England stone walls: Do these agricultural relics alter the strength and outcome of plant-consumer interactions in Northeastern successional forests? (2014 - ongoing). Dr. Mattingly

- SPARCnet Salamander Population and Adaptation Research Collaboration Network. Three field site surveys each fall and spring. This is a regional collaborative effort across the Northeast, lead by USGS. Dr. Epp has involved students enrolled in the following courses: BIO 130 (Ecology; n ~ 60), BIO 444 (Population & Community Ecology; n = 16), and BIO 338 (Vertebrate Biology; n = 16). This project also involves student volunteers for weekend surveys (~40 students assist each year). (2016 - ongoing). Dr. Epp


- The Church Farm Mushroom Garden is an educational project designed to give students hands-on experience with cultivating and harvesting mushrooms using an agroforestry approach. The trees harvested for use in the garden are sourced on-site from the Church Farm property, and the space allows for the cultivation of multiple species of fungi, some of which are collected and cultured from the surrounding forest. Lab exercises for our Mycology course, along with our cultivation workshops for our Mycology club, are held at the site. It is our hope that the space will evolve and develop over the years, as a resource for students to carry out research projects on mycology and mushroom cultivation. Dr. Hulvey

B. Completed Projects (17):

- 2018 Honors Thesis: Taylor Brown: The effects of invasive plant litter on larval amphibian performance under different environmental temperatures. Dr. Mattingly, Mentor
- 2018 Undergraduate Research Project: Zach Adams, The ecology of fear: influence of human scent on white-tailed deer (*Odocoilues* virginianus) anti-predator behavior. Dr. Idjadi, Mentor
- 2016 Undergraduate Research Project: Richard Bergman: The role of plant-soil feedback in promoting invasions: mycorrhizal infection rates of native spicebush vs. invasive Japanese barberry. Dr. Mattingly, Mentor
- 2016 Undergraduate Research Project: Justin Duperry: Evaluating seed bank abundance and diversity in a New England successional forest. Dr. Mattingly, Mentor
- 2016 Undergraduate Research Project: Leo Walter: The effects of agricultural land use on annual growth rates of Red Oak, a canopy dominant in eastern successional forests. Dr. Mattingly, Mentor
- 2015 Undergraduate Research Project: Tommy Orcutt: Using geographic data to predict tree community structure in a New England forest. Dr. Mattingly, Mentor
- 2015 Honors Thesis: Monika Kalinowska, Limnological Study of Church Farm Pond. Dr. Booth, Mentor
- 2015 Undergraduate Research Project: Sarah Dube: Do New England Stone walls affects the abundance and diversity of ticks? Dr. Mattingly, Mentor
- 2015 Undergraduate Research Project: Kelly Livernoche: The role of plant-soil feedback in shaping competitive interactions between native and non-native plants. Dr. Mattingly, Mentor

- 2015 Undergraduate Research Project: Matt Silver, Identification of copepods from Church Farm pond. Dr. Booth, Mentor
- 2014 Honors Thesis: Jessica Edwards: The effects of forest structure on seed removal rates by two consumer guilds (arthropods & rodents). Dr. Mattingly, Mentor
- 2014 Undergraduate Research Project: Brandon Chatfield: An assessment of canopy tree structure and dynamics in an eastern deciduous forest. Dr. Mattingly, Mentor
- 2013 Undergraduate Research Project: Nick Mills, Biodiversity Survey Infrastructure
- 2011 Undergraduate Research Project: William Oster and Jessica Farrell collected bottom sounding data and constructed virtual 3D imagery beside the pond and at a few locations in the house (prior to renovations). Dr. Hyatt, Mentor
- 2011 Undergraduate Research Project: Toni Langevin, Sedimentary records within the Church Farm Pond as an archive of land use change. Dr. Hyatt, Mentor (http://www.easternct.edu/~hyattj/homepage/htmpages/ECSU_UGR.html
- 2011 Undergraduate Research Project: Kevin Veilleux Ground Penetrating Radar and Coring Studies at Church Farm Pond. Dr. Hyatt, Mentor
- 2011 Undergraduate Research Project: Ryan Brodeur. Ground Penetrating Radar Investigatons of Common Near-Surface Geologica Materials at the Church Farm Property Near Ashford, CT. Dr. Hyatt, Mentor

C. <u>Develop undergraduate field-based skills in laboratory courses (7) of all levels.</u>

- BIO 130 Ecology: Invasive species service-learning exercise. (annually, one visit per semester). Drs. Epp, Idjadi, Mattingly
- BIO 324 Entomology: Collection of insects for identification and ecological niche classification. (annual laboratory field trip spanning three weeks). Dr. Cowles
- BIO 336 Invertebrate Biology: Collection of invertebrates for identification and DNA sequence analysis. (biannual laboratory field trip). Dr. Graham
- BIO 338 Vertebrate Biology: Salamander surveys and amphibian diversity (1 visit/semester), Bird survey (1 visit/semester), Camera trap mammal survey (1 visit/semester). Dr. Epp
- BIO 440 Aquatic Biology: Lentic Ecology of Church Farm Pond: Examine the physical, chemical, and biological features of a small man-made pond and adjacent stream and wetlands. We will also look at the features of a glacial kettle hole pond. (biannual laboratory field trip). Dr. Booth
- BIO 442 Plant Ecology: Small Group Projects (3-4 students per group, eight weekly visits). Examples of group projects include: Effects of agricultural land-use history on overstory tree density and diversity; Environmental predictors of Japanese barberry abundance; Effects of stone walls on seed removal rates [walls provide refuge for granivores]; Effects of Japanese barberry on understory plant species diversity; Stone walls as ecological barriers: differences between up-slope vs. down-slope plant communities. Dr. Mattingly
- BIO 452 Conservation Biology: Species-Area Relationships and Tree Biodiversity of a Temperate Forest. (annual laboratory field trip spanning four weeks). Dr. Szczys

Goal 2: Encourage programs at the Center related to the arts, humanities, environmental sciences and ecology for the campus and local communities.

- Communicate with the Visual Arts, Performing Arts, English, and Environmental Earth Science Departments to encourage use of Church Farm.
  - The Visual Arts Department regularly visits the Church Farm property with students for use as a painting venue.
  - J.J. Cobb, Faculty of Theater in the Performing Arts Department wrote and directed *Echoes: Voices From the Church Farm*, performed May 6-7, 2011. The production was designed as a Site-Specific experience, with vignettes taking place at various locales around the property (the front porch, under the barn, by the pond, in the barn, in the garden). Scenes were based on the Church/Zaring family history - researched by both J.J. Cobb and Barbara Tucker- **and utilizing 15 student actors**, designers, and a student composer.
- Coordinate with the Division of Institutional Advancement who oversees Community use of the Church Farm Property
  - The Friends of Ashford Library, annual wine tasting fundraiser since 2010
  - Biology Faculty Retreat and Departmental Picnic, annually since 2007
  - Tolland County Art Association, Painting Venue, Fall 2011
  - Joshua Trust, Wine Tasting Fundraiser, 2014.
  - Joshua Trust, Bioblitz, 2010.

Faculty, Staff, and Responsibilities:
(Specify Director/Coordinator, Departments/Disciplines of Members, and Time Commitment for each and changes of personnel over time)

Director / Coordinator: Patricia Szczys, Ph.D. serves as Director of the Church Farm Center for Arts and Sciences. Dr. Szczys is Professor of Biology, Director of the University Honors Program, and Undergraduate Research Coordinator (UGRC) in Biology. Her role as UGRC supports and enriches research productivity of faculty and undergraduates in the Biology department and compliments her work as Director of the Church Farm Center for Arts and Sciences.

ECSU Foundation: The ECSU Foundation, Inc. handles maintenance of the Church Farm property.

Student Involvement and Student Outcomes:

(If applicable, discuss Center/Institute's impact upon the university's students; specifically, what was the nature of student involvement and how many students were involved with Center/Institute activities; what were the resultant student outcomes of that involvement stated numerically. Student outcomes may include such measures as learning outcomes, achievement, persistence, graduation, employment and graduate school placements. Along with or without student involvement and student outcome; a focus of the Center/Institute's mission might be public engagement/outreach. If so, that construct should be discussed here.)

The following students conducted honors theses and independent research projects at the Church Farm Center for Arts and Science while completing degrees in Biology (2013-2018).

- Taylor Brown: will graduate in 2018; multiple semesters of UGR.
- Zach Adams: will graduate in 2018; multiple semesters of UGR.
- Richard Bergman: Research Associate, Indigo, Boston, MA
- Justin Duperry: UCONN Nursing School
- Leo Walter: Graduate Program in Environmental Biology, University of Glasgow/Disease Ecology Researcher at The Institute of Biodiversity, Animal Health, and Comparative Medicine, Glasgow, Scotland
- Monika Kalinowska: Medical Scribe, Emergency Department, St. Mary's Hospital
- Sarah Dube: Data Entry at DASHUB
- Kelly Livernoche: Master's Program, James Madison University
- Matt Silver: Account Executive at Indeed.com
- Jessica Edwards: Support Specialist, Mobile Asset Solutions, Newtown, CT.
- Brandon Chatfield: Anatomy and Physiology Teacher at Wethersfield, CT High School
- Nick Mills: Science Teacher at Norwich Free Academy

Assessment and Evaluation:

(Describe how progress toward meeting goals and objectives has been measured and include a brief description of lessons learned)

Goal 1: Establish Church Farm as a site for Research and Teaching

As shown above, the Church Farm is fully integrated into the biology research programs. The Church Farm is a field site for student and faculty research and creative activity, allowing faculty to practice high-impact learning methods in seven courses and to involve a number of students in field-based research (SPARCnet) and intensive research experiences (Honors Theses and Independent Study Projects).

Goal 2: Encourage programs at the Center related to the arts, humanities, environmental sciences and ecology for the campus and local communities.

Programs related to the arts, humanities, environmental sciences and ecology for the campus and local communities indicates successful use of Church Farm by the Biology Department and others. Use of the property by the arts, humanities, and community could be increased. Progress toward this goal can be enhanced by introducing newly hired faculty in the humanities and fine arts to the property by highlighting the potential for its use as a venue for teaching and creative exhibitions. The opening of the Fine Arts Instructional Center at Eastern has drawn talented students and faculty to Eastern. Classes and independent projects can benefit from connecting to the Center.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

ACTUAL Revenues and Expenses:

(For FY 2016, include encumbrances to the end of the approved period, use estimates where necessary)

BUDGET CATEGORIES	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]	$5100	$5791	$6489	$6710	$6920
4. Other Revenue [d]					
5. TOTAL REVENUE (lines 1-4)	$5100	$5791	$6489	$6710	$6920
EXPENSES					
6. Personnel [e]	$4447	$5648	$6849	$6710	$6920
7. Fringe Benefits					
8. Travel					
9. Equipment & Supplies					
10. Contractual					
11. Construction [f]					
12. Other					
13. Total Direct Costs (lines 6 through 12)					
14. Indirect Costs [g]					
15. TOTAL COSTS (lines 13 + 14)	$4447	$5648	$6849	$6710	$6920
NET					
16. TOTAL REVENUE - TOTAL COSTS	$653	$143	$360	0	0
surplus / (deficit)					
17. OPERATIONAL BALANCE	$653				
from previous year	$ 0	0	0	0	0

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative
b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).
c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).
d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.
e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvemen
f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g Estimate costs for facilities use, utilities consumption, etc.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

PROJECTED Revenues and Expenses:

BUDGET CATEGORIES	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]	$7006	$7356	$7724	$8110	$8516
4. Other Revenue [d]					
5. TOTAL REVENUE (lines 1-4)					
EXPENSES					
6. Personnel [e]	$3656	$3839	$4031	$4232	$4444
7. Fringe Benefits	$3350	$3517	$3693	$3878	$4072
8. Travel					
9. Equipment & Supplies					
10. Contractual					
11. Construction [f]					
12. Other					
13. Total Direct Costs (lines 6 through 12)					
14. Indirect Costs [g]					
15. TOTAL COSTS (lines 13 + 14)	$7006	$7356	$7724	$8110	$8516
NET					
16. TOTAL REVENUE - TOTAL COSTS	0	0	0	0	0
surplus / (deficit)					
17. OPERATIONAL BALANCE					
from previous year	$ 0	0	0	0	0

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative
b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).
c Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).
d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.
e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.
f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g. Estimate costs for facilities use, utilities consumption, etc.

Budget Narrative:
(Provide any important context about ACTUAL and PROJECTED Revenues and Expenses)

Eastern Connecticut State University's operating funds covers the portion of the Undergraduate Research Coordinator's salary that is dedicated to serving as Director of the Center.

Other costs:

Funding for the research conducted on the site is funded by a $500,000 grant from the John C. Hicks Estate.

The ECSU Foundation, Inc. owns and maintains the Church Farm property. The Center has an agreement with the Foundation, allowing the Center to use it for no cost.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Continuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve continuation of the CSCU Center for Nanotechnology at Southern Connecticut State University until December 31, 2025.

A True Copy:

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Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Continuation of the CSCU Center for Nanotechnology at Southern Connecticut State University

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the Center for Nanotechnology's 2018 Sunset Report, a 65-page document.

The Center for Nanotechnology was established by the Board of Regents on November 21, 2013 and authorized until December 31, 2018. The Center is a multi-institutional entity with regional hubs on the campuses of the other Connecticut State Universities. Its revised mission is to foster collaborative, interdisciplinary research and educational initiatives/programs in micro- and nano-scale science and technology with the goal of enhancing Connecticut's workforce competitiveness in nanotechnology and materials science.

PRINCIPAL ACTIVITIES/ACCOMPLISHMENTS
The Center's ongoing activities include grant-funded projects, publications and presentations of scholarly work, and conferences, sponsorship and participation of community outreach and education events. It is instructive to note that among the Center's activities, students are impressively featured as co-authors or co-presenters. The Center's accomplishment as assessed in its evaluative report are outlined below:

1. Provide research opportunities at the undergraduate and graduate levels;
2. Facilitate development of coursework in nanotechnology/materials science and it applications;
3. Develop research facilities and programs that facilitate interdisciplinary interactions between community college and CSU faculty and students;
4. Provide coursework and professional development opportunities for K-12, community college and CSU educators;
5. Established research facilities supporting education, research training in nanotechnology and materials science;
6. Work with the Connecticut Advisory Board on Nanotechnology and the Connecticut Office for Workforce Competitiveness [and similar bodies] to offer resources at will aid in the state's workforce competitiveness

The Center has quickly established itself as a "world-class" research facility and leader in nanotechnology education as evidenced by a distinguished listing of scholarship and related activities.

STUDENT INVOLVEMENT

More than 200 students had significant educational experiences directly associated with the Center, including research projects, internships, fellowships or scholarships. At least 800 additional CSCU students in STEM disciplines engaged with the Center through career fairs, the biosciences symposium and newly developed courses in nanotechnology for no-STEM majors. Approximately 350 K-12 teachers have participated in workshops and/or research experiences, and through their usage of kits and curricular materials, the Center has indirectly impacted thousands of K-12 students.

BUDGET

Summary of Revenues and Expenses					
	FY 2014	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**
Beginning Balance		$75,551	$71,067	$110,039	$116,347
Total Revenues	$146,333	$102,848	$196,550	$150,297	$212,687
Total Expenses	$70,782	$107,332	$157,578	$143,989	$177,592
Revenues Less Expenses	$75,551	($4,484)	$$38,972	$6,308	$35,095
Ending Balance	$75,551	$71,067	$110,039	$116,347	$151,442

Summary of Projected Revenues and Expenses					
	FY 2019	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Beginning Balance	$151,442	$153,726	$156,792	$171,500	$216,208
Total Revenues	$219,572	$220,354	$235,354	$265,354	$289,354
Total Expenses	$217,288	$217,288	$220,646	$220,646	$230,646
Revenues Less Expenses	$2,284	$3,066	$14,708	$44,708	$58,708
Ending Balance	$153,726	$156,792	$171,500	$216,208	$274,916

Institutional operating funds allocated to the Center are devoted to student education. Grants, membership charges, fees charged to participants and event fees comprise the other sources of revenue.

ASSESSMENT/EVALUATION

The Center has helped to foster growth in scientific research and training at SCSU. Through the development of new programs, new courses to the acquisition of state-of-the-art research equipment, the Center has changed the way people think about science teaching and research facilities on CSCU campuses.

RECOMMENDATION

President Joe Bertolino has reviewed or been briefed on the evaluation of the CSCU Center for Nanotechnology and recommends that the Board of Regents authorize its continuation.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (apoole@commnet.edu) with a copy to Patricia Ryiz (pryiz@commnet.edu).

Name of University:	Southern Connecticut State University
Name of Center/Institute:	CSCU Center for Nanotechnology (CSCU-CNT)
Director/Coordinator:	Dr. Christine Broadbridge (Physics/Research&Innovation)
Date of Original Approval:	11/21/2013
Date of Last Approval:	11/21/2013
Board Resolution of Last Approval:	
Sunset Date:	NA

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☑ I recommend continuation of this Center/Institute

☐ I recommend discontinuation of this Center/Institute

Signature of President

Comments (OPTIONAL):

Overview of CSCU Center for Nanotechnology

The Connecticut State College and University (CSCU) system Center for Nanotechnology (CNT), housed in the Physics Department at Southern Connecticut State University (SCSU), was granted initial Board of Regents approval just five years ago (2013). Since then, the CNT has established itself as a world-class research facility, leader in K-Grad nanotechnology education and trusted, productive partner in collaborations with regional industry and workforce development organizations at all governmental levels. Successful external grant proposals linked to the CNT brought in ~$14M with ~$3M awarded directly to SCSU supporting CSCU research, curriculum development and enhanced educational experiences. Over the time-period discussed in this renewal application (2013-2018), more than 200 students had significant educational experiences, including research projects, internships, fellowships or scholarships directly associated with the CNT. At least 800 additional CSCU students in Science, Technology, Engineering and Mathematics (STEM) disciplines engaged with the CNT through career fairs, the biosciences symposium and newly developed courses in nanotechnology for non-STEM majors. Approximately 350 K-12 teachers have participated in workshops or research experiences offered by the CNT. Through those teachers, and management of loaner kits containing supplies and curricular materials

for nanotechnology and material science in the K-12 classroom, thousands of K-12 students in Connecticut have been indirectly impacted by the CNT.

CNT personnel have a large, well-established and diverse project portfolio and collaboration network with productive connections to regional industries, public and private educational institutions (K-Grad) as well as workforce development and professional organizations at all levels of government. See Figure 1 for an overview of CNT projects and collaborators. Acronyms for key projects are noted on the figure as are the actual or approximate numbers of students (S) and teachers (T) directly impacted by the project. See Appendix A for a list of CNT collaborators and projects with brief descriptions.

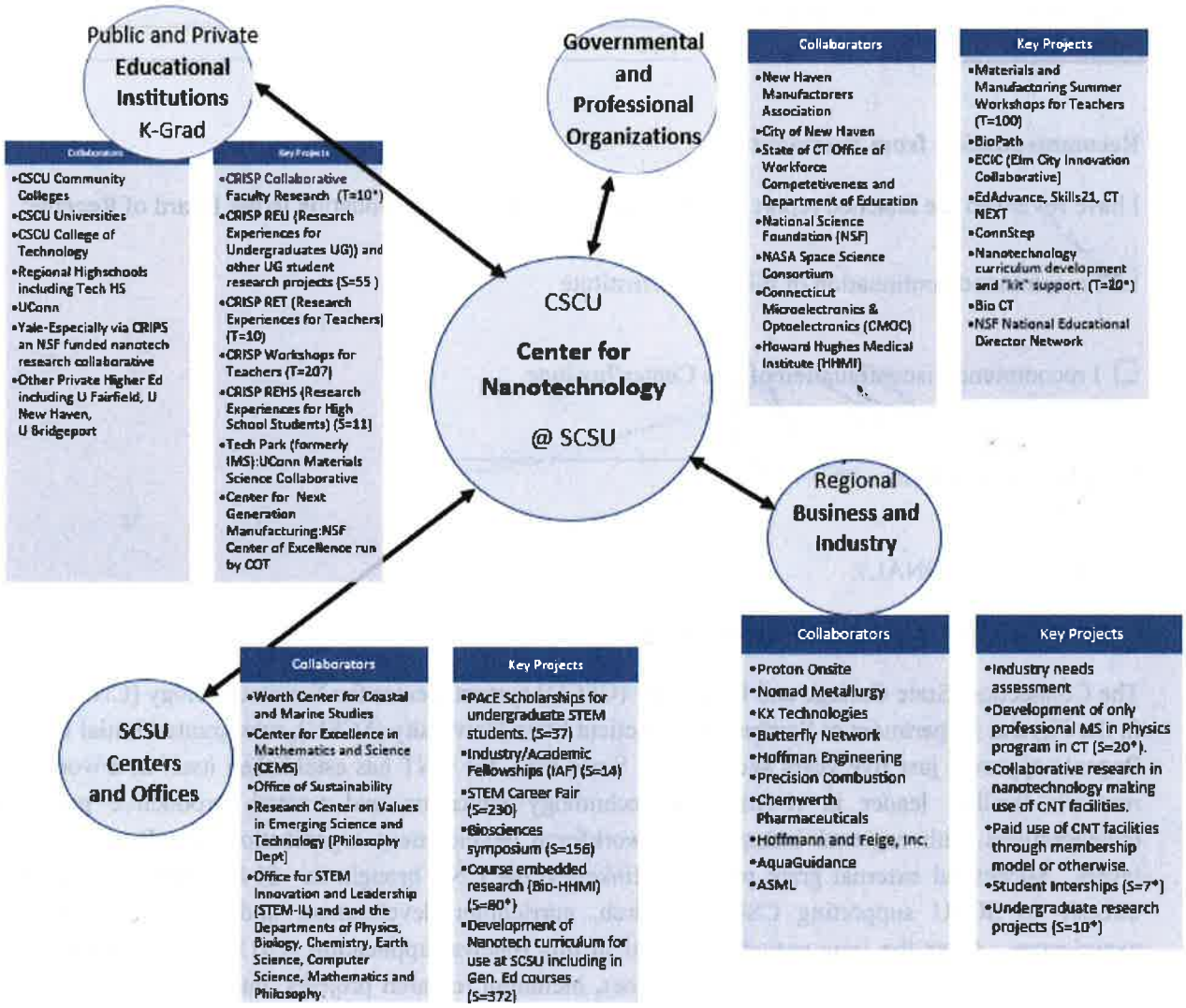

Figure 1 *An overview of key Center for Nanotechnology collaborators and projects. Projects typically involve multiple collaborators from various sectors, but are listed just once next to major stakeholders to avoid excess complexity. The number of students (S) and teachers (T) directly impacted by a project are noted where applicable.*

The CNT is primarily housed at SCSU where it is a show-case occupant of the new Academic Science and Laboratory Building, which was designed to foster interdisciplinary scientific research and research-based teaching. At SCSU, and on our sister campuses, research-grade equipment associated with the CNT was purchased to align with local faculty expertise and complement, rather than compete with, facilities available at UCONN and Yale. (A concise equipment list is included in the Assessment and Evaluation section of this document.). Much of this equipment was purchased with external funding and most is used regularly by students. The CNT's dual focus on research and experiential learning is effective, and the CNT's existence provides evidence to funding organizations that the CSCU system has the administrative, structural and intellectual infrastructure necessary to successfully carry out large-scale externally-funded research and curriculum development projects. For example, in the $13 million-dollar renewal of the CRISP program (2012), the National Science Foundation (NSF) pointed to the planned formation of the CNT as a notable strength of the proposal to continue funding this long-running Yale/SCSU materials science collaboration.

Regional companies including Proton Onsite, Nomad Metallurgy and KX Technologies pay to make use of CNT research facilities through membership and other fees, and hire students trained in CNT facilities. (A membership or fee-for-use model has been implemented for the CNT research facility use. Details are included in the budget narrative.) In addition, collaborating companies work with CNT personnel to provide educational opportunities for undergraduate students within an innovative structure of spiraled experiential learning that embeds development of specific research skills companies desire. This supported, tiered approach typically starts with early research experiences for undergraduates (REU), a known positive-influence on student retention in STEM fields, followed by supported, on-campus research projects which leave students well prepared for related off-campus internships and, not uncommonly, employment in the regional nanotechnology industry. This is an innovative, truly win-win approach to workforce development that started with an industry needs assessment.

Going Forward

The CSCU CNT is an enormously productive center focused on world-class nanotechnology research and related student opportunities for experiential learning, facilitated by collaborations with a broad range of organizations. Going forward, we intend to continue with our portfolio of activities. We will be reapplying for external funding for the Pathways to Academic Excellence (PaCE) Scholarship and CRISP programs, along with pursuing other public and private funding opportunities.

Acknowledging that both advanced manufacturing and life sciences are areas of workforce strength and projected job growth in Connecticut, the CNT will continue to broaden our existing focus, currently primarily on advanced manufacturing via "hard materials", to include more "soft" materials and life science projects like BioPath - a collaborative life-science workforce development initiative undertaken with the City of New Haven. We will begin using software to better track user time, especially among students, and undertake longitudinal tracking of our Industry/Academic Fellowship (IAF) and CRISP REU students. We intend to continue to provide resources to faculty across the system via support of seed projects with the goal of increasing the number of external grants containing support for CNT membership and/or facility use fees. We believe that we will see significant increases in paid user support for CNT facilities, as well as increased opportunities for experiential learning and scholarships.

We will engage with the community colleges in the CSCU system to do a needs assessment related to more effectively engaging community college students in the nanotechnology field via the CNT. In order to further connections between CSCU community colleges and universities, we will expand the IAF program to community colleges.

Mission:
(Provide the mission of the Center/Institute; note any changes from the most recent approval)

Nanotechnology is a catch phrase used to describe a broad technological enterprise that investigates the fundamental scientific concepts of material systems and the engineering challenges for designing devices/tools at the micro- and nano-length scales (10^{-6} – 10^{-9} meters). Advances in nanotechnology are vitally important to the semi-conductor and integrated circuits industries that are the backbone of the multitude of technologies that run modern day commerce and society. This very large and extensive high-tech industry is predominately focused on research and development of applications that use hard, inorganic materials like silicon wafers for computer chips. However, the field of nanotechnology, and materials science more generally, is also interested in the science and potential applications of "soft" materials like biological systems, polymers, and fluids. Hence, developments in nanotechnology have the potential to impact fields like medicine, pharmaceuticals, the environment, energy production, agriculture, and more. Because of the extensive reach of nanotechnology into our daily activities, many ethical and societal concerns are also being raised and studied.[1]

The mission statement for the Connecticut State Colleges and Universities Center for Nanotechnology has been modified from its original form to reflect changes in the identification of the CSCU system, to stress that current materials science research studies phenomena over a range of length scales and in different material systems, and to broaden our vision of collaborative activities. The original and the modified CSCU-CNT statements are provided below. Differences are underlined in the current version.

Mission Statement (November, 2013): *The mission of the Connecticut State Colleges & Universities (ConnSCU) Center for Nanotechnology is to foster collaborative, interdisciplinary research and educational initiatives/programs in micro- and nanotechnology with the goal of enhancing Connecticut's workforce competitiveness in nanotechnology and materials science. The Center will build upon existing collaborations with Yale University, University of Connecticut, and the Connecticut Community Colleges to create programs enhancing Science, Technology, Engineering, and Mathematics (STEM) education for the ConnSCU community and beyond.*

Mission Statement (August, 2018): *The mission of the Connecticut State Colleges & Universities (CSCU) Center for Nanotechnology is to foster collaborative, interdisciplinary research and educational initiatives/programs in micro- and nano-scale science and technology with the goal of enhancing Connecticut's workforce competitiveness in nanotechnology and materials science. The Center will build upon existing collaborations with academic institutions, industry groups, and businesses in the State to create and provide programs and expertise to advance fundamental and applied Science, Technology, Engineering, and Mathematics (STEM) resources and education to the CSCU and state-wide communities.*

[1] National Nanotechnology Institute (NNI) at https://www.nano.gov

The CNT's Mission Statement is not only well aligned with the vision and mission of our broader educational network: the CSCU system, SCSU, and collaborative schools, centers, and departments, at SCSU, it also reflects the priorities at the national level as expressed by National Nanotechnology Institute (NNI).[2] Mission and vision statements for most collaborating organizations is included in Appendix A.

Needs Assessment:

(Describe why this Center/Institute was created)

At the time of the original proposal (2013) it was well understood that nanotechnology was, and would continue to be, an evolving field with enormous potential to affect the way we live and work. The federal government understood its importance to the country's economy and security. The United States should be a leader in the field of nano-scale material systems. As part of the government's response, the National Nanotechnology Institute (NNI) was created in 1998 to coordinate all federal efforts to develop and deploy nano-scale science and technology. The coordination included a number of federal agencies as well as work with academic and industry groups.[3]

Several years later, the State of Connecticut commissioned two reports on nanotechnology. The first, written in 2005, examined the importance of nanotechnology and the State's ability to participate in the field. The second, written in 2006, provided recommendations to the Connecticut General Assembly on steps the State should take to develop the academic, industrial, and workforce foundations required to fully participate in the nanotechnology revolution.[4] The key finding from these reports was that the State lacked essential infrastructure and resources needed to attract the talent and investment required to build a vibrant nanotechnology community. The state reports stressed the following:

1. Connecticut lacked key capabilities needed to perform nano-scale materials research and develop related industry.
2. Educational materials and programs, at multiple levels, would be needed to train a skilled nanotechnology workforce and
3. Collaboration between public and private interests should be developed to maximize the State's competitiveness.

Physics faculty at SCSU quickly realized that Southern was exceedingly well positioned to house a Center for Nanotechnology that could lead efforts to develop a highly trained workforce and expand nanotechnology related research capabilities in Connecticut. The Physics Department had built infrastructure and expertise in the important and closely related areas of condensed matter physics,

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[2] See Appendix A for the vision, mission or purpose statements of different organizations.
[3] The most recent NNI Vision Statement is provided in Appendix A and can be found at http://nap.edu/23603
[4] (1) *A Call to Action: Advancing Nanotechnology Development in Connecticut*; Prepared for: the Connecticut Office for Workforce Competitiveness by Battelle Technology Partnership Practice, Cleveland, Ohio, May 2005. (2) Recommendations to Advance Connecticut's Position in Nanotechnology Development; Prepared for: the Connecticut Office for Workforce Competitiveness and the State Department of Higher Education; In Consultation with: the Connecticut Advisory Council on Nanotechnology; Facilitated by Battelle Technology Partnership Practice, Cleveland, Ohio, February 2006.

materials science including nano-scale phenomena. Through the leadership of Dr. Christine Broadbridge, the SCSU Physics Department had developed strong ties with Yale (via the multi-million dollar National Science Foundation materials research, education and outreach collaboration called CRISP), connections to UCONN through their Institute of Materials Science (IMS)[5], the Connecticut Community Colleges, other regional universities, and local industry (New Haven Manufacturers Association[6] and Connecticut Microelectronics and Optoelectronics Consortium[7]). Perhaps more importantly, as a regional public university in the New Haven area, with commitments to both academic excellence and accessibility, our faculty are dedicated to both scientific research and teaching.[8] Hence, the development of new knowledge occurs in tandem with the dissemination of that knowledge to our highly diverse student population. The Physics Department at SCSU was well situated to fulfill the need for a nanotechnology center that would combine research, education, work-force development, and community service in the State.

The CNT has always been envisioned as a highly collaborative organization with positive impacts across all the CSCU campuses. The central hub, located in the Department of Physics at SCSU, would support three regional-hubs at Central, Eastern, and Western Connecticut State Universities (CCSU, ECSU, WCSU). A distribution of research facilities, matched to local research expertise, was seeded through a Department of Energy (DOE) grant obtained by SCSU that supported the purchase of equipment at each campus, as well as related curriculum development. Each of the four CSU campuses obtained new instruments that advanced the experimental research and teaching capabilities of the proposed center: a X-ray diffractometer at CCSU, an UV-VIS-NIR spectrometer at ECSU, a scanning electron microscope (SEM) at SCSU, and a Raman spectrometer at WCSU. The State's community colleges would be tied to the CNT mainly through the College of Technology (COT).[9]

Through the CNT, SCSU developed courses in nanotechnology at the undergraduate and graduate (masters) levels, as well as a new Masters of Science in Applied Physics (MSAP) program (approved 2012) with a materials science/nanotechnology track. (The graduate program in Physics at SCSU is built to support two important foci – optics/optical instrumentation and materials science/nanotechnology.) The focused emphasis of the MSAP program has worked well for student learning and opportunities, faculty scholarship and collaboration, curriculum development, and the success of the CNT. At the regional-hubs, traditional chemistry courses were modified to include treatment of nano-scale phenomena. A list of nano-related courses developed and taught at the four CSU campuses is presented in the Assessment and Evaluation section.

There are a vast number of material systems that could fall under the heading of nanotechnology. The original focus of the CNT was on hard materials. This was largely a reflection of the research trends at

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[5] IMS at https://www.ims.uconn.edu

[6] New Haven Manufacturers Association (NHMA) at http://www.newhavenmanufacturers.com

[7] CMOC - Connecticut Microelectronics and Optoelectronics Consortium. See for example http://www.ee.uconn.edu/cmoc

[8] SCSU strategic plan at https://www.southernct.edu/strategic-plan/10.2_%20StrategicPlan_2015.pdf) and School of A&S Strategic Plan at https://issuu.com/scsu/docs/a_s_strategic_plan?e=1560078/47916317

[9] College of Technology (COT) at http://www.ct.edu/cot

the time and a very successful, thirteen-year collaboration with Yale to the study metal oxides and glasses (CRISP)[10]. In the midst of the success of this program, we leveraged the resources and expertise we had developed to build the CNT and then expand our horizons. The expansion of the CNT included the purchase of new equipment, the hiring of new faculty, the development of new academic and industry collaborations, and plans to continue to develop the CNT and its activities to more faithfully address the full range of issues presented by nanotechnology.

Existing academic structures at SCSU – departments and centers - and a spirit of collaboration across disciplinary lines were important to the original proposal. As noted above, nanotechnology is a topic that involves many forms of inquiry and attracts a diverse set of interest groups in the public and private sectors. Hence, collaboration among academic institutions and private companies is common to the field. The Physics Department had developed numerous research collaborations with other STEM departments on campus to study materials properties. There were projects with biology, chemistry, computer science, and mathematics faculty that often involved students from multiple departments. There was the Center for Excellence in Mathematics (CEMS) with whom natural lines of collaboration in research and education existed. Therefore, there was a strong spirit at SCSU of seeking expertise from diverse groups of individuals in order to address challenging scientific and technological questions. The Physics Department at SCSU was ideally suited to establish and operate a Center for Nanotechnology and have it succeed.

Needs Modification:
(Describe how the need for this Center/Institute may have changed)

The CSCU Center for Nanotechnology has experienced a number of successes and has continued to evolve in the last five years. We obtained new resources – new equipment and expanded facilities in a new building – and hired new faculty. We have expanded our research capabilities into the synthesis of nano-scale materials to complement our expertise in materials characterization. We are building research programs and forming collaborations to study properties of biological and soft materials. We have increased our academic and business/industrial partnerships and have benefited from the outside advice of the Center Advisory Board. Very importantly, we have impacted the scientific and technical education of numerous undergraduate and graduate students as well as STEM high school teachers across Connecticut. The fields of materials science and nanotechnology are constantly evolving; therefore, the knowledge and skills of workers need to change in concert if they wish to continue to participate in these exciting fields. Because of these dynamics, the need for the CNT will continue and will very likely increase over time.

As noted above, the Mission Statement of the CNT was adapted to reflect changes in the fields of materials science and nanotechnology. There is increased emphasis on biology, medicine, the environment, and advanced manufacturing. Associated ethical and societal concerns are now part of research and business discussions.[11] All the changes that have occurred at the forefront of the field are reflected in the State's academic and business sectors and thus have had effect on the CNT's activities. However, even as the CNT adapts its programs and expands its collaborations to meet the demands of the

[10] Center for Research on Interface Structures and Phenomena (CRISP) at https://crisp.yale.edu
[11] See the report Triennial Review of the National Nanotechnology Initiative at found at http://nap.edu/23603

evolving scientific and technological landscapes, the central tenant of the CNT's mission – to provide excellence in research, education, training, and outreach to the State - remains unchanged.

Across the State, major universities and businesses have improved and expanded their capabilities in materials science research and development at the micro- and nano-scales. Public and private partnerships or collaborations are leading the change at all levels. The creation of Tech Park[12] as a partnership between the UCONN and major instrumentation manufactures offers cutting-edge fabrication, characterization, analysis, and business expertise and tools to assist companies and academic groups in their research and development of commercially viable projects. The focus at Tech Park is on hard materials for advanced manufacturing. In the bio-medical and bio-tech fields, the Jackson Laboratory[13] and UCONN Health Center partnership has created a nexus of expertise in genomic medicine. Cellular structures found in genomic research are at the nano-scale. Education is an important component to the business models of Tech Park and Jackson Laboratory, and the CNT has been working to develop stronger ties to both groups. In New Haven, Science Park[14], a Yale – City of New Haven – Olin Corporation – State of Connecticut partnership, has been a successful incubator for startup and established technology companies, including bio-tech. Through the new Bio-Path[15] program at SCSU, the CNT has worked with ARVINAS[16] at Science Park. There has also been significant progress by research groups and departments at Yale (CRISP is one example) and UCONN that has contributed to our knowledge of nano-scale phenomena in materials. Finally, manufacturing more broadly benefits from advances in materials science. Industrial sectors in the State working on aerospace and national security rely on advanced materials for the development and production of their products. A recent survey by business and academic groups predict that thousands of skilled workers will be needed for state manufactures over the next few years.[17]

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[12] Innovation and Partnership Building at the UConn Tech Park, https://techpark.uconn.edu
[13] The Jackson Laboratory at https://www.jax.org
[14] Science Park at https://www.scienceparknewhaven.org/home
[15] Bio-Path at http://www.southernct.edu/stem/biopath.html
[16] ARVINAS at http://arvinas.com
[17] See CBIA survey at https://www.cbia.com/resources/workforce-development/workforce-reports-surveys/2017-survey-connecticut-manufacturing-workforce-needs/

Goals, Objectives, and Principal Activities:
(List goals, objectives and principal activities of the Center/Institute)

The goals and outcomes of the CNT are essentially the same as originally proposed. Again, slight modifications reflect the recognition of current materials science research and development emphasis on phenomena that emerge over multiple length scales and a need to address the broader concerns of nanotechnology.

CNT goals:

1. Serve as a state-of-the-art instrumentation and techniques center for characterization, fabrication, and analysis studies of micro- and nano-scale structures;
2. Serve as a locus for faculty and student learning, research, and research-training in materials science and nanotechnology;
3. Work with other SCSU centers and programs to provide a nexus for interdisciplinary science studies;
4. Provide academic – corporate collaboration and experiential learning opportunities for students and faculty;
5. Work with other SCSU centers and programs to facilitate STEM recruitment, retention and public literacy initiatives; and
6. Support nanotechnology and materials science education and research CSCU system wide.

Outcomes for CNT activities:

1. Provide research opportunities at the undergraduate and graduate (MS) levels;
2. Facilitate development of coursework in nanotechnology/materials science and its applications for use at the undergraduate and graduate levels as well as for non-science majors;
3. Develop research facilities and programs that facilitate interdisciplinary interactions between community college and CSU faculty and students;
4. Provide coursework and professional development opportunities for K-12, community college and CSU educators;
5. Establish research facilities supporting education, research and research training in nanotechnology and materials science;
6. Work with the Connecticut Advisory Board on Nanotechnology and the CT Office for Workforce Competitiveness [and other similar bodies] to offer resources that will aid in Connecticut's workforce competitiveness (e.g. coursework, certification programs, and use of laboratory facilities).

Principal activities:

The CSCU Center for Nanotechnology was initially conceived to fill a research, education, and training role that lay between the more advanced centers and the general public. The CNT has responded by developing new collaborations and connections with the more advanced research and development entities, like those noted above, and with smaller and more local organizations. The CNT has continued to work with the New Haven Manufacturers Association (NHMA) to offer our very popular *Materials and*

Manufacturing Summer Teachers' Institutes. Through the Bio-Path initiative at SCSU and BioCT[18] the CNT is developing relationships with the bio-tech and medical industries of the State.

The CNT continually works to improve equipment resources and expertise. Recent acquisitions have expanded the CNT's strength in *characterization* of materials and begun development of *fabrication* capabilities. For example, Dr. Todd Schwendemann is building a pulsed laser deposition system to synthesize nano-scale structures including carbon nanotubes and very thin films. A Perkin-Elmer Inductively Coupled Plasma Mass Spectrometer, purchased from equipment funds for the new science building, provides important elemental analysis capabilities for hard materials. A research-grade transmission electron microscope (TEM) was purchased from a Harvard research lab with CRISP funds. The new TEM can be used to analyze biological samples as well as hard materials. With the growing presence of biology and medicine in the materials science and nanotechnology fields, the CNT has expanded its collaborations with faculty in the Biology Department at SCSU, in addition to the efforts made to connect with the broader bio-tech community as previously noted. The Physics Department also hired a new faculty member, Dr. Binlin Wu, whose expertise is biophysics of tissues and particularly optical and spectroscopic studies of human cancerous tissue. A full list of research-grade equipment associated with the CNT is given in Assessment and Evaluation section of this proposal.

Another important accomplishment is the IAF program, a Werth Family Foundation[19] sponsored partnership between the CNT, the SCSU School of Business, and area companies. Students, faculty, and staff work in teams on industry related research projects over the summer and fall semesters. The IAF program investigates applications of nanoscience to business and industry, in general, and to the bioscience/pharmaceutical industry, in particular. This program is funded for ten years, and we just completed the fifth year of the program. Collaborations with individual companies to help them explore what nanotechnology can do for their business have grown over the past few years. A list of CNT affiliated partners is provided in Appendix C. The CNT also expanded its ties to university research groups in the State. The collaboration with Yale through CRISP grew stronger. Connections to UCONN material scientists and engineers have matured. The CNT's success with these programs was leveraged to build new bridges with researchers at University of Fairfield, Bridgeport University, University of Hartford, and Trinity College.

Academic course offerings and programs linked to the CNT[20] have experienced change too in order to meet the challenges of educating scientists, engineers, teachers, and college students about the importance of the rapidly changing fields of materials science and nanotechnology. Physics faculty have worked with faculty from Chemistry, Computer Science, and the School of Business at SCSU to devise an effective course rotation plan that works well for students in the Masters of Science in Applied Physics (MSAP) program. Physics courses for the MSAP nano-track discuss a wide range of topics important to the field and introduce students to the theory and applications of important instrumentation found in the CNT. We

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[18] BioCT Connecting Connecticut's Bioscience Community at https://bioct.org

[19] The Werth Family Foundation at http://www.werthff.org

[20] A list of university course offerings at SCSU and the regional-hubs is under Assessment and Evaluation.

point out that the MSAP program is designated as a Professional Science Master's (PSM)[21] and students from a multitude of STEM fields and even business have gone through the program.

Common interests between the Physics faculty associate with the CNT and the Chemistry, Biology, Marine Sciences, Math, and Computer Science departments has produced some nice collaborative efforts at the undergraduate level. A growing list of STEM students have used the equipment in the CNT as part of their capstone project research. Students involved in the Howard Hughes Medical Institute (HHMI) SEA-Phages program[22], directed by Dr. Nicholas Edgington, SCSU Biology, have also availed themselves of the instrumentation and expertise of the CNT. The traditional STEM departments and the Center for Excellence in Mathematics and Science (CEMS)[23] at SCSU are natural allies for the development and teaching of interdisciplinary courses, and especially courses with ties to materials science. However, as noted, important questions need to be asked and issues understood about the use of nano-scale materials by individuals and the effect of any such products on public health and the environment. This means that input from the communities of business, law, government, medicine, public health, and ethics is needed to better understand the full scope of micro- and nano-scale materials in society. Ethics has been a consistent topic of study in the graduate nanoscience courses.

The Philosophy Department at SCSU has run a Research Center on Computing and Society for decades. It has recently undergone review and they have broadened their focus to challenges to values from emerging technologies (RC-VEST)[24], of which nanotechnology certainly qualifies. The CNT and RC-VEST faculty are working together to explore options for how the two centers can contribute to each other's education and research goals. The spirit of collaboration across disciplinary lines is very good at SCSU and fits well with the mission of the CNT. The CNT will continue to seek out better, more effective, course offerings and educational programs that can reach the broadest possible audience and inform them about the wonders, challenges, and opportunities for nanotechnology.

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[21] Professional Science Master's at https://www.professionalsciencemasters.org

[22] HHMI SEA-Phages https://www.hhmi.org/developing-scientists/science-education-alliance

[23] CEMS at http://www.southernct.edu/academics/schools/arts/cems/

[24] Research Center on Values in Emerging Science and Technology (RC-VEST), http://rcvest.southernct.edu/home/

Principal Accomplishments:
(List the Center/Institute's principal accomplishments since its last report. Attach a chronological list of the Center/Institute major activities over the course of the past five years; under specific, relevant categories such as research, papers, conferences, presentations, workshops, sponsored events, exhibits, etc.)

The on-going activities of the CNT include grant-funded projects, publications and presentations of scholarly work, and conferences, workshops, sponsorship and participation of community outreach and education events. We present below a reverse chronological list of publications (journals and conference proceedings) and presentations (oral and poster) by CNT faculty, staff, and student, and then provide a list the important community events. Note, we adopt the convention of listing faculty (bold), staff (bold), and students (bold+underlined) in what follows.

Grants

- **National Science Foundation**, "Center for Research on Interface Structures and Phenomena" $13.0M (SCSU; $1.8M)
- **National Science Foundation**, "Pathways to Academic Excellence", NSF S-STEM (SCSU; $593K)
- **Werth Family Foundation**, "Nanotechnology Industry Academic Fellowship Program", (SCSU $675K).

Publications

- Liu, C., **Wu, B.**, Sordillo, L., Boydston-White, S., Sriramoju, V., Zhang, C., …& Alfano, R. *Pilot study for distinguishing basal cell carcinoma from normal human skin tissues using resonance Raman spectroscopy*. Submitted to Lasers in Medicine and Surgery (2018).
- **Wu, B.**, Gao, X., and **Smith, J.** *Optical biopsy for prostate cancer diagnosis using fluorescence spectroscopy*. Submitted to International Journal of High Speed Electronics and Systems (2018).
- Bordeenithikasem, P., Liu, J., Kube, S.A., Li, Y., Ma, T., **Scanley, B.E.**, **Broadbridge, C.C.**, Vlassak, J.J. Singer, J.P., and Schroers, J., *Determination of Critical Cooling Rates in Metallic Glass Forming Alloy Libraries Through Laser Spike Annealing*. (2017) Scientific Reports 7, 7155.
- Sohn, Y., Liu, J., Gong, P., Prades-Rodel, S., Blatter, A. **Scanley, B.E.**, **Broadbridge, C.C.**, Schroers, J., (2017) *Noble metal high entropy alloys*. Scripta Materialia 126, 29-32.
- Li, J., Stein, H.S., Sliozberg, K., Liu, J., Liu, Y., Sertic, G., **Scanley, E.**, Ludwig, A. Schroers, J., Schuhmann, W., Taylor, A.D., (2017) *Combinatorial Screening of Pd-Based Quaternary Electrocatalysts for Oxygen Reduction Reaction in Alkaline Media*. Journal of Materials Chemistry A, 5(1), 67-72.
- Jain, M., Robinson, B. D., **Wu, B***., Khani, F., & Mukherjee, S. (2017). Exploring Multiphoton *Microscopy as a Novel Tool to Differentiate Chromophobe Renal Cell Carcinoma from Oncocytoma in Fixed Tissue Sections*. Archives of pathology & laboratory medicine
- Jain, M., **Wu, B.**, Pisapia, D., Salvatore, S., Mukherjee, S., & Narula, N. (2017). *A Component-by-Component Characterisation of High-Risk Atherosclerotic Plaques by Multiphoton Microscopic Imaging*. Journal of microscopy, 268(1), 39-44. *Fig. 3B was chosen for the cover page*

- Gao, X., **Wu, B.**, & Schäfer, T. (2017). *Introducing an Analytical Solution and an Improved One-Factor Gaussian Copula Model for The Pricing of Heterogeneous CDOs.* International Journal of Financial Engineering 4.02n03 (2017): 1750038.
- Sohn, S., Liu, Y., Liu, J., Gong, P., Prades-Rodel, S., Blatter, A., **Scanley, B.E.**, **Broadbridge, C.**, and Schroers, J.; *Noble Metal High Entropy Alloys.* Scripta Materialia, 126, 29, (2017).
- Li, J., Stein, H.S., Slosberg, K., Liu, J., Liu, Y., Sertic, G., **Scanley, B. E.**, Ludwig, A. Schroers, J., Schuhmann, W., and Taylor, A. D.; *Combinatorial Screening of Pd-based Quaternary Electrocatalyst for Oxygen Reduction Reaction in Alkaline Media.* Journal of Materials Chemistry A, 5, 67, (2017).
- Jain, M., Robinson, B. D., **Wu, B.**, and Mukherjee, S.; *Exploring Multiphoton Microscopy as a Novel Tool to Differentiate Chromophobe RCC from Oncocytoma in Fixed Tissue Sections.* Archives of pathology & laboratory medicine 142.3 (2017): 383-390.
- Liu, C., Boydston-White, S., **Wu, B.**, Sriramoju, V., Zhang, C., Sordillo, L., Beckman, H., Zhang, L., Pei, Z., Shi, L., and Alfano, R.; *Depth Dependence of Resonance Raman Spectra of Basal Cell Carcinoma and Normal Human Skin Tissues Using 532nm Excitation.* Submitted to Journal of Biomedical Optics, Paper Number: JBO 170011 (2017)
- Liu, Y., Padmanabhan, J., Cheung, B., Liu, J., Chen, Z., **Scanley, B. E.**, Wesolowski, D., Pressley, M., **Broadbridge, C.**, Altman, S., Schwarz, U. D., Kyriakides, T. R., and Schroers, J., *Combinatorial Development of Antibacterial Zr-Cu-Al-Ag Thin Film Metallic Glasses.* Scientific Reports, 6, 26950 (2016). DOI 10.1038/srep26950
- Li, Y., Jensen, K. E., Liu, Y., Liu, J., Gong, P., **Scanley, B. E.**, **Broadbridge, C.**, and Schroers, J.; *Combinatorial Strategies for Synthesis and Characterization of Alloy Microstructures over Large Compositional Ranges ACS Combinatorial Science.* ACS Comb. Sci., 18 (10), 630 (2016). DOI: 10.1021/acscombsci.6b00040
- Henelius, P., Lin, T., **Enjalran, M.**, Hao, Z., Rau, J. G., Altosaar, J., Flicker, F., Yavors'kii, T., and Gingras, M. J. P., *Refrustration and competing orders in the prototypical $Dy_2Ti_2O_7$ spin ice material*, Phys. Rev. B **93**, 024402 (2016)
- Li, G., **Wu, B.**, Ward, M. G., Chong, A. C. N., Mukherjee, S., Chen, S., and Hao, M.; *Multifunctional in vivo imaging of pancreatic islets in diabetes development.* J. Cell Sci., 129, 2865-2875 (2016).
- **Wu, B.**, Alrubaiee, M., and Gayen, S. K.; *Time reversal optical tomography: detecting and locating tumors in an ex vivo model human breast*. Optics & Laser Technology 77, 229–235 (2016)
- Westcott, B.L., **Crundwell, G.**, Remesic, M., Knopf, K., Chandler, K., McMaster, J., Davies, E.S.; *Crystal structure and magnetic properties of di-copper and di-zinc complexes with di-2-pyridyl ketone oxime*, Inorganic Chemistry Communications, **74**, 79 (2016).
- B. Javanparast, Z. Hao, **M. Enjalran**, M.J.P. Gingras; *Fluctuation-Driven Selection at Criticality in a Frustrated Magnetic System: the Case of Multiple-k Partial Order on the Pyrochlore Lattice,* Phys. Rev. Lett. 114, 130601 (2015)
- **Dahlberg, K.**, **Woods, K.**, **Jenkins, C.**, **Broadbridge, C.**, and **Schwendemann, T.**; *Patterned Deposition of Nanoparticles Using Dip Pen Nanolithography for Synthesis of Carbon Nanotubes.* MRS Proceedings, 1752, pp 65-70 (2015).
- Kornblum, L., Jin, E., Kumah, D., **Ernst, A.**, **Broadbridge, C.**, Ahn. C., and Walker, F.; *Oxide 2D Electron Gases as a Route for High Carrier Densities on (001) Si*, Appl. Phys. Lett. 106(20):201602 (2015).
- Liu, J., Liu, Y., Gong, P., Li, Y., **Scanley, B. E.**, **Broadbridge, C.**, and J. Schroers, J.; *Combinatorial Exploration of Color in Gold Based Alloy.* Gold Bulletin, 48 (3), pp 111-118 (2015).

- Knopf, K.M., **Crundwell, G.**, Westcott, B.L.; *Crystal structure of hexaaquadichloridoytterbium(III) chloride*, Acta Crystallographica Section E: Crystallographic Communications, **71**, i5 (2015).
- **Crundwell, G.**, Glagovich, N.M., King, M.E.; *6, 7-Dichloro-2, 3-bis(pyridin-2-yl)quinox-aline* Acta Crystallographica Section E: Structure Reports Online, **71** (2), 147 (2015).
- Boyle, R., **Crundwell, G.**, Glagovich, N.M.; *Crystal structure of N,N'-[(thiophene-2,5-diyl)bis(methanylylidene)]di-p-toluidine,* Acta Crystallographica Section E: Crystallographic Communications, **71**, p. 403 (2015).
- Day, D. A., N. Ferrari and **Broadbridge, C.**; *The Role of Collaborative Student Research on the Development of 21st Century Skills*, MRS Proceedings, 1657, mrsf13-1657-qq02-05 (2014).
- **Jenkins, C.**, **Cruz, M.**, **Depalma, J.**, **Conroy, M.**, **Benardo B.**, Horbachuck, M., Sadowski, T., **Broadbridge, C.**, and **Schwendemann, T.**; *Characterization of Carbon Nanotube Growth via CVD Synthesis from a Liquid Precursor*, International Journal of High Speed Electronics and Systems, 23: 1420001 (2014).
- **Scanley, B. E.**, **Sadowski, T.**, Pelligra, C., Kreider, M., Osuji, C., and **Broadbridge, C.** *Use of the Gabor Filter for Edge Detection in the Analysis of Zinc Oxide Nanowire Images*, Microscopy and Microanalysis, 20 (Suppl 3): 830-831 (2014).

Additional Conference Proceedings

- Liu, C., Sriramoju, V., Boydston-White, S., **Wu, B.,** Zhang, C., Pei, Z., Sordillo, L., Beckman, H., M.D. and Alfano, R.R.; *Resonance Raman of BCC and normal skin.* Proc. SPIE 10060, Optical Biopsy XV: Toward Real-Time Spectroscopic Imaging and Diagnosis, 100601B (2017)
- **Wu, B.,** **Dahlberg, K.,** Gao, X., **Smith, J.**, and **Bailin, J.**; *Rapid measurement of meat spoilage using fluorescence spectroscopy.* Proc. SPIE 10068, Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XV, 1006820 (2017)
- **Wu, B.,** Gao, X., **Smith, J.**, and **Bailin, J.**; "Optical biopsy using fluorescence spectroscopy for prostate cancer diagnosis," Proc. SPIE 10038, Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices, 100380U (2017)
- **Wu, B.,** and **Dahlberg, K.;** *Measurement of muscle food spoilage using fluorescence imaging.* SPIE Proc., Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues IX, 9711-18 (2016)
- **Wu, B.,** Mukherjee, S., and Jain, M.; *A New Method Using Multiphoton Imaging and Morphometric Analysis for Differentiating Chromophobe Renal Cell Carcinoma and Oncocytoma Kidney Tumors* Proc. SPIE, Multiphoton Microscopy in the Biomedical Sciences XVI, 971210 (2016)

Oral Presentations

American Physical Society, March 2018 Meeting| March 5 - 9, 2018; Los Angles, CA

- **M. Enjalran,** *Metal insulator transition to a partial disordered state in the 1/3-filled Hubbard model on a triangular lattice*

SPIE Photonics West | January 27 – February 1, 2018; San Francisco, CA

- **Wu, B.**, **Smith, J.** T., Zhang, L., Gao, X., & Alfano, R. R. *Characterization and discrimination of human breast cancer and normal breast tissues using resonance Raman spectroscopy.* Optical Biopsy XVI: Toward Real-Time Spectroscopic Imaging and Diagnosis. [Invited]
- **Wu, B.**, Liu, C. H., Boydston-White, S., Beckman, H., Sriramoju, V., Sordillo, L., ... & **Bailin, J.** *Statistical analysis and machine learning algorithms for optical biopsy.* Optical Biopsy XVI: Toward Real-Time Spectroscopic Imaging and Diagnosis

MRS, Fall Meeting and Exhibit | November 26 – December 1, 2017; Boston, MA

- **Jenkins, C**, Canning, I, Bauer, M, **Broadbridge, C. C.**, Bio-Path: *A City-University-Industry Partnership Targeting Regional Workforce Needs*

Frontiers in Optics, The Optical Society of America Annual Meeting | September 18 – 21, 2017; Washington, D.C.

- Zhou, Y., Liu, C. H., **Wu, B.**, Yu, X., Cheng, G., Zhang, C., & Alfano, R. R. (2017, September). *Quantitative characterization for identification of brain cancer surgical margin using resonance Raman spectroscopy.*
- Liu, C. H., **Wu, B.**, Boydston-White, S., Beckman, H., Sriramoju, V., Sordillo, L., ... & Alfano, R. R. (2017, September). *Characterization and discrimination of basal cell carcinoma and normal human skin tissues using resonance Raman spectroscopy.* [Selected for rapid fire oral presentation]

SCSU Graduate Student Research & Creative Activity Conference | May 9, 2017; New Haven, CT

- **Smith, J.**, **Bailin, J.**, & **Wu, B.** *Characterization and Discrimination of Basal Cell Carcinoma and Normal Human Skin Tissues Using Resonance Raman Spectroscopy and Artificial Neural Networking*

Connecticut Microelectronics and Optoelectronics Consortium Symposium (CMOC) |April 5, 2017; University of Connecticut, Storrs, CT

- **Wu, B.**, Gao, X., **Smith, J.**, & **Bailin, J.** *Optical Biopsy for Prostate Cancer Diagnosis Using Fluorescence Spectroscopy.* Session IV: Biosensing/Nano-Biosystems

American Physical Society, March 2017 Meeting | March 13-17, 2017; New Orleans, LA

- **M. Enjalran,** *Going beyond mean-field theory for frustrated magnetism with extended Thouless-Anderson-Palmer method*

18TH Annual Greater Boston Area Statistical Mechanics Meeting| October 29, 2016; Brandeis University, Waltham, MA

- **M. Enjalran,** *Going beyond mean-field theory for frustrated magnetism with extended Thouless Anderson-Palmer method*

Saul Krasner Memorial Science Lecture Series| October 6, 2016; U.S. Coast Guard Academy, New London, CT

- **M. Enjalran**, *Frustrated? Magnetic systems can empathize* [Invited]

Physics Department at Fordham University, Bronx, New York | April 27th, 2016; New York

- **Wu, B.**, *Optical Imaging and Spectroscopy for Biomedical Applications.* [Invited]

Connecticut Microelectronics and Optoelectronics Consortium Symposium (CMOC) |April 6, 2016; University of Connecticut, Storrs, CT

- **Wu, B.**, Mukherjee, S., and Jain, M. *Multiphoton Imaging for Differentiating Chromophobe Renal Cell Carcinoma and Oncocytoma Kidney Tumors.* Session III: Applications

American Physical Society, March 2016 Meeting| March 14-18, 2016; Baltimore, MD

- **M. Enjalran** *A mean-field study of the Hubbard model on the kagome lattice*

SPIE Photonics West | February 2016; San Francisco, CA

- **Wu, B.**, Mukherjee, S., and Jain, M. *A New Method Using Multiphoton Imaging and Morphometric Analysis for Differentiating Chromophobe Renal Cell Carcinoma and Oncocytoma Kidney Tumors.* Multiphoton Microscopy in the Biomedical Sciences XVI; Paper 9712-56,

Connecticut Microelectronics and Optoelectronics Consortium Symposium, April 9, 2014; University of Connecticut, Storrs, CT

- **Gossett, E.**, **Scanley, B. E.**, **Dodson, J.**, Sohn, S., Schroers, J., **Schwendemann, T.**, and **Broadbridge, C.**; *Computational Methods for the Characterization of Bulk Metallic Glass.* Presented by **E. Gossett.**

Microscopy and Microanalysis Annual Meeting Aug. 3 – 7, 2014, Hartford, CT.

- **Broadbridge, C.**, **Sadowski, T.**, **Garofano, J.**, and **DaPonte, J.**; *Microscopy and Team-based Interdisciplinary Materials Research to Achieve 21st Century Skills.* Presented by C. Broadbridge.

Poster Presentations

International Conference on Highly Frustrated Magnetism 2018 (HFM 2018)| July 10 - 14, 2018; University of California, Davis, CA

- **M. Enjalran** and R. T. S. Scalettar, *Frustration driven metal insulator transition in 1/3-filled Hubbard model*

American Physical Society-New England Section Meeting Spring | March 2018; Suffolk University, Boston, MA

- **Frey, J.**, **Gallego, F.**, **Vaidya, S.**, **Scanley, B.E.**, **Schwendemann, T**. *Thin Film Deposition/ CNT Synthesis.*

SPIE Photonics West | January 27 – February 1, 2018; San Francisco, CA

- Xue, J., Pu, Y., **Smith, J.**, Gao, X., and **Wu, B.** *Machine learning based analysis of human prostate cancer cell lines at different metastatic ability using native fluorescence spectroscopy with selective excitation wavelength.* Biophysics, Biology and Biophotonics III: The Crossroads
- **Judd, N.**, **Smith, J.**, Jain, M., Mukherjee, S., **Icaza, M.**, **Gallagher, R.**, ... & **Wu, B.** *A pilot study for distinguishing chromophobe renal cell carcinoma and oncocytoma using second harmonic generation*

imaging and convolutional neural network analysis of collagen fibrillar structure. Optical Biopsy XVI: Toward Real-Time Spectroscopic Imaging and Diagnosis

- Zhou, Y., Liu, C. H., Zhu, K., Zhang, C., Yang, Y., Yu, X., Hu, H., Cheng, G., **Wu, B.**, Shi, L., and Alfano, R. R., *Resonance Raman Imaging for Detection and monitoring of the molecular pathological changes in human brain tumors related to Warburg effect*. Optical Biopsy XVI: Toward Real-Time Spectroscopic Imaging and Diagnosis
- **Wu, B.**, Gao, X., **Smith, J.** and **Bailin, J.**, *Optical biopsy using fluorescence spectroscopy for prostate cancer diagnosis*. Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices
- **Wu, B.**, **Dahlberg, K.**, Gao, X., **Smith, J.** and **Bailin, J.**, *Rapid measurement of meat spoilage using fluorescence spectroscopy*. Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XV
- Liu, C. H., Sriramoju, V., Boydston-White, S., **Wu, B.**, Zhang, C., Pei, Z., Sordillo, L., Beckman, H. and Alfano, R. R., *Resonance Raman of BCC and normal skin*. Optical Biopsy XV: Toward Real-Time Spectroscopic Imaging and Diagnosis

MRS, Fall Meeting and Exhibit | November 26 – December 1, 2017; Boston, MA

- **Mahmoud, F.**, **Feger, T.**, **Scanley, B.E.**, **Broadbridge, C.**, and **Schwendemann, T.**, *Characterization of Pharmaceutical Nanoparticles* BM06: 2D Nanomaterials in Health Care

Frontiers in Optics, The Optical Society of America Annual Meeting | September 2017; Washington, D.C.

- Liu, C. H., **Wu, B.**, Boydston-White, S., Beckman, H., Sriramoju, V., Sordillo, L., ... & Alfano, R. R. *Characterization and discrimination of basal cell carcinoma and normal human skin tissues using resonance Raman spectroscopy.*

SCSU Graduate Student Research & Creative Activity Conference | May 9, 2017; New Haven, CT

- **Gallego, F.**, **Scanley, B.E.**, and **Schwendemann, T**. *Characterizing Lycocell Fibers: A Cross-Sectional Area Analysis*
- **Cusumano, S.**, **Pang, J.**, **Scanley, B.E.**, & **Solbrig, C** *Primordial Self Assembling Peptides: Synthesis and Characterization*
- **Smith, J.**, **Bailin, J.**, and **Wu, B.** *Characterization and Discrimination of Basal Cell Carcinoma and Normal Human Skin Tissues Using Resonance Raman Spectroscopy*

SCSU Undergraduate Research and Creativity Conference | April 8, 2017; New Haven, CT

- **Uhl, D.**, and **Schwendemann, T**. *Application of Structure from Motion Software Pix4D for Lyocell Fiber Characterization*
- **Bailin, J.**, **Smith, J.**, and **Wu, B.** *Analyzing Raman Spectral Data of Cancerous Human Tissues Using Machine Learning Techniques to Improve Optical Biopsy Diagnosis Procedures*
- **Mahmoud, F.**, **Scanley, B. E.**, **Solbrig, C.**, **Broadbridge, C.**, **C. Schwendemann, T.** *Characterization of Iron Sucrose Nanoparticles*

Connecticut Microelectronics and Optoelectronics Consortium Symposium (CMOC) | April 5, 2017; University of Connecticut, Storrs, CT

- **Smith, J.**, **Bailin, J.**, and **Wu, B.**; *Characterization and Discrimination of Basal Cell Carcinoma and Normal Human Skin Tissues Using Resonance Raman Spectroscopy*

SPIE Photonics West, San Francisco, CA, January 28 – February 2, 2017

Wu, B., Gao, X., **Smith, J.**, and **Bailin, J.**; *Optical biopsy using fluorescence spectroscopy for prostate cancer diagnosis.* Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices; Paper 10038-29

MRS, Fall Meeting and Exhibit | November 27 – December 2, 2016; Boston, MA

- **Woods, K.**, and **Schwendemann, T.**, *Carbon Nanotube Syntheses from Block Copolymer Deposited Catalysts*

SCSU Undergraduate Research and Creativity Conference | April 23, 2016, New Haven, CT

- **Cao, Z.**, **Dahlberg, K.**, and **Wu, B.**, *Meat spoilage detection using fluorescence spectroscopy*
- **Hansen, C.**, and **Broadbridge, C.C.**, *A Big Data Case Study: Nanoparticle Size Distribution Statistics*
- **Perez, K.**, and **Broadbridge, C.C.**, *Characterization of Nano-Pharmaceuticals using Transmission Electron Microscopy*

Connecticut Microelectronics and Optoelectronics Consortium Symposium (CMOC), | April 6, 2016; University of Connecticut, Storrs, CT

- **Dahlberg, K.**, and **Wu, B.**; *Meat Spoilage Analysis of Native Fluorophore Levels in Grocery Store Meat Using Fluorescence Spectroscopy*
- **Woods, K.**, Sillima, J., and **Schwendemann, T.**; *Carbon Nanotube Synthesis from Block Copolymer Deposited Catalysts*
- **Wu, B.**, Mukherjee, S., and Jain, M.; *Multiphoton Imaging for Differentiating Chromophobe Renal Cell Carcinoma and Oncocytoma Kidney Tumors*

MRS, Fall Meeting and Exhibit | November 29 – December 4, 2015, Boston, MA

- **Litwin, P.**, **Scanley, B. E.**, Slomba, J., **Broadbridge, C.**, **Schwendemann, T.**, *A comparison of Environmentally Friendly Graphene Oxide Reduction Techniques for Supercapacitor Applications.*

Connecticut Microelectronics and Optoelectronics Consortium Symposium (CMOC) | April 1, 2015; University of Bridgeport, CT

- **Scanley, B. E.**, **Sadowski, T.**, Pelligra, C., Kreider, M., Osuji, C., and **Broadbridge, C.**; *Variations in Gabor Filter Asymmetry for Edge Detection in the Analysis of Zinc Oxide Nanowire Images*
- **Dahlberg, K.**, **Woods, K.**, **Jenkins, C.**, **Broadbridge, C.**, and **Schwendemann, T.**; *Patterned Deposition of Nanoparticles Using Dip Pen Nanolithography for Synthesis of Carbon Nanotubes*
- **Pham, H.**, **Scanley, B. E.**, and **Broadbridge, C.**; *Optimization of EDS Parameters for the Creation of a Compositional Database for Bulk Metallic Glasses.*

- **Litwin, P**. and **Schwendemann, T.**; *Comparison of Environmentally Friendly Graphene Oxide Reduction Techniques for Supercapacitor Applications.*

SCSU Undergraduate Research and Creativity Conference | March 28, 2015, New Haven

- **Litwin, P.** and **Schwendemann, T.**, *Comparison of Environmentally Friendly Graphene Oxide Reduction Techniques for Supercapacitor Applications.*
- **Ernst, A.**, *Optimizing Specimen Preparation for EM Studies of Nanomaterials.*
- **Gossett, E.**, *A Rapid Web-Based Compositional Method for the Nano-Characterization of Combinatorial Developed Bulk Metallic Glass.*
- **Klaucke, P.**, *Mechanical property determination of electrolysis cell membranes using atomic force microscopy.*
- **Pham, H.**, *Optimization of EDS Parameters for the Creation of Compositional Database for Bulk Metallic Glasses.*
- **Hansen, C.**, and **Ernst, A.**, *Characterization of Bulk Metallic Glasses (BMGs) Using Various Microscopy Techniques for Biomedical Applications.* *Honorable Mention

CRISP NSF Site Visit | February 19, 2015, New Haven, CT

- **Hansen, C**., **Ernst, A.**, **Broadbridge, C.**, and **Schwendemann, T**.; *Atomic Force Microscopy of Bovine Serum Albumin on Bulk Metallic Glasses*. Voted "Best Poster"
- Li, Y., Yanhui, Jensen, K., Liu, Y., Gong, P., **Scanley, B. E., Ernst, A.**, Sohn, S., **Broadbridge, C**. and Schroers, J.; *High-Speed Microstructure Mapping of Combinatorial Alloy Libraries.*
- **Gossett, E.**, **Scanley, B. E.,** Liu, Y., Li, Y., Liu, Z., Sohn, S., Schroers, J., **Broadbridge, C.,** and **Schwendemann, T.**, *A Rapid Web-Based Compositional Method for the Nano-Characterization of Combinatorial Developed Bulk Metallic Glass.*
- **Ernst, A.**, **H. Pham**, **Scanley, B. E.,** Schroers, J., **Schwendemann, T.**, and **Broadbridge, C.,** *Optimizing Surface Characterization of BMG's using Electron Microscopy.*
- Li, Y., Jensen, K., Liu, Y., Gong, P., **Scanley, B. E., Ernst, A.**, Sohn, S., **Broadbridge, C.,** and Schroers, J.; *High-Speed Microstructure Mapping of Combinatorial Alloy Libraries.*
- **Broadbridge, C.** and **Jenkins, C**.; *CRISP Education and Outreach Signature Programs.*

Werth Family Foundation Poster Presentations | August 12, 2014

- **Agyekum-Yamoah, A., Lombardo, A.**, **Scanley, B. E., Broadbridge, C.**, and **Schwendemann, T.**; *Characterization of Nanoparticles for Environmental Applications.*
- **Dahlberg, K.**, *Patterning Various Substrates Using Dip Pen Nanolithography for Biomedical Applications.*
- **Hossain, M.**, **Hansen, C.**, **Schwendemann, T.**, and **Broadbridge, C.** *Surface Topography of BMGs, Unpolished and Electro Polished Stainless Steel.*
- **Hansen, C.**, **Ernst, A.**, **Broadbridge, C.**, and **Schwendemann, T.**; *Atomic Force Microscopy of Bovine Serum Albumin on Bulk Metallic Glasses.*
- **Ernst, A.**, **H. Pham**, **Scanley, B. E.,** Schroers, J., **Schwendemann, T.**, and **Broadbridge, C.**; *Optimizing Surface Characterization of BMG's using Electron Microscopy.*

Microscopy and Microanalysis Annual Meeting | August 3-7, 2014, Hartford, CT.

- **Scanley, B. E., Sadowski, T.**, Pelligra, C., Kreider, M., Osuji, C., and **Broadbridge, C.**; *Use of the Gabor Filter for Edge Detection in the Analysis of Zinc Oxide Nanowire Images.*

International Conference on Highly Frustrated Magnetism 2014 (HFM 2014) | July 7-12, 2014; Queens' College, Cambridge, United Kingdom

- **M. Enjalran,** *Charge and magnetic correlations near the Mott transition of the Hubbard model on the anisotropic kagome lattice*

Connecticut Microelectronics and Optoelectronics Consortium Symposium (CMOC), | April 9, 2014; University of Connecticut, Storrs, CT

- **Dahlberg, K., Woods, K., Broadbridge, C.**, and **Schwendemann, T.**; *Patterned Deposition of Nanoparticles for Carbon Nanotube Growth by Dip Pen Nanolithography.*

MRS, Fall Meeting and Exhibit | November 30 – December 5, 2014, Boston, MA

- **Dahlberg, K., Woods, K., Jenkins, C., Broadbridge, C.**, and **Schwendemann, T.**; *Patterned Deposition of Nanoparticles Using Dip Pen Nanolithography for Synthesis of Carbon Nanotubes.* MRS Proceedings Library Archive 1752 (2015): 65-70.
- Ferrari, N., **Jenkins, C.**, Garofano, J., Day, D., **Schwendemann, T.**, and **Broadbridge, C.**; *Research Experiences for Students: Interdisciplinary skill development to prepare the future workforce for success.* MRS Proceedings, 1762, (2015).

Non-research: Conference presentations (C), workshops (W), sponsored events (SE), exhibits and general education events (GE)

2018

(SE) 6th Annual Materials Manufacturing Summer Teachers' Institute – Gearing up for the Future, July 24 – 27, Southern CT State University

- SCSU, NHMA and Platt Tech (Broadbridge co-lead with Robert Klancko).

(SE) STEM Career Fair, January 31, 2018, Southern CT State University

- Over 100 students participated and there were representatives from 21 companies. There were information sessions led by companies throughout the day. The event started with CT Next presenting the Technology Talent Bridge program to companies, a program which could partially pay for the cost of interns, and there was networking session for companies at the end of the Fair. There were a number of internships and job hires resulting from the event.
- Participating companies: Connecticut Agricultural Experiment Station, The Jackson Laboratory, CTNext Technology Talent Bridge, My Gene Counsel, DISTRICT New Haven / Digital Surgeons, Society for Ecological Restoration – New England, SCSU STEM graduate programs Core Informatics, Owl Cyber Defense, IBM Watson Analytics, Yale University HR Staffing and Career

Development Office, Medical Innovations in Context, LLC, Checkmate Digital, Wallingford Economic Development, Aperture Optical Sciences, Inc., Next Generation Manufacturing / College of Technology, Ulbrich Stainless Steels & Special Metals, Inc., Analytical Technologies Group, MakeHaven, HumanEdge, Entrepreneurs' University Program

(SE) BioScience Careers Forum, April 27, 2018, Southern CT State University

- Co-hosted by BioPath and The Jackson Laboratory for Genomic Medicine (JAX). Over 130 students attended and 20 companies participated. JAX's President and CEO Dr. Edison Liu delivered the keynote address, which was followed by a panel discussion with leaders and scientists from JAX, BioCT, Alexion, Trevi Therapeutics. Faculty and college students from SCSU and other institutions, industry professionals and leaders, community leaders, and New Haven education leaders and New Haven public school high school students attended the events. In the afternoon, there was a networking session with participation from over 20 companies. Over 130 students participated in the forum. The event was very successful and is expected to be offered annually. See the following for more details http://more.southernct.edu/bioscience/
- Participating companies: Alexion Pharmaceuticals, Inc., SEMA4, Core Informatics (Thermo Fisher Sci), BioCT, Alexion Pharmaceuticals, Inc., Vanessa Research, CTNext, Medical Innovation in Context, LLC, Innovation Thru Partnerships, IBM Watson Analytics Internship Program, HumanEdge, EDC of New Haven, Connecticut Agricultural Experiment Station, Evotec, Absolute Standards, Inc., The Jackson Laboratory, DG Scientific Consulting, Arvinas, Golden Compass, Inc., GeneDx, Next Generation Manufacturing

2017

(W) The Magic of Applied Science & Engineering: the 5th Annual Materials and Manufacturing Teacher's Institute; July 25 – 27, 2017; Southern CT State University

- SCSU, NHMA and Platt Tech (co-lead by Robert Klancko)

(C) MRS, Fall Meeting and Exhibit, November 26 – December 1, 2017; Boston, MA

- "Teaching Materials Science and Engineering (MSE) in the Pre-College Classroom as a Vehicle for NGSS Implementation," **Granucci, N., Jenkins, C.,** Bauer, M., Gard, A., Pinkerton, B., & **Broadbridge, C.**, MRS Advances, 1-6, (2017). doi:10.1557/adv.2017.102.

2016

(W) Science for All: Strategies for Teaching Science to Students with Special Needs; July 8, 2016.

- Maria Diamantis, Adam Goldberg, ACES faculty, attended.

(W) Materials and Manufacturing Teachers' Institute 2.0: A New Approach; July 26 – July 28, 2016; Southern CT State University

- SCSU, NHMA and Platt Tech (co-lead with Robert Klancko).

(W) Building with Biology; August 2, 2016

- Nick Edgington, Sarah Roe, STEM-IL and BioPath sponsored.

2015

(W) Next Generation Science Standards Workshop – Analyzing and Interpreting Data, July 27, 2015, Southern CT State University

- Marie Nabbout Cheiban, Adam Goldberg and Scott Graves were presenters.

(W) Materials and Manufacturing Teachers' Institute: How Things are Made – Networking with Local Industry to Bring Ideas Back to Your Classroom; July 28 – July 30, 2015; Southern CT State University

- Christine Broadbridge, SCSU, NHMA and Platt Tech (co-lead with Robert Klancko).

(C) SACNAS Conference, October 30, 2015, Washington, DC

- "NSF MRSEC: Increasing Diversity in Materials Science through Team Based Interdisciplinary Research," **C. C. Broadbridge**

(W) CRISP Presents: Analyzing and Interpreting Data, November 14, 2015, Southern CT State University

- Marie Nabbout Cheiban, Adam Goldberg, Karen Cummings and Maria Diamantis were presenters.

(W) Bringing STEM & Manufacturing Careers into Your Classroom; November 21, 2015,

- CT Science Teachers Association (CSTA) Annual Conference, Hamden Middle School, Hamden, CT., C.C. Broadbridge and P. Dimoulas co-presented workshop.

(C) MRS, Fall Meeting and Exhibit, November 29 – December 4, 2015, Boston, MA

- "Research Experiences for Students: Interdisciplinary skill development to prepare the future workforce for success," N. Ferrari, **C. Jenkins**, J. Garofano, D. Day, **T. Schwendemann** and **C. Broadbridge**. *MRS Proceedings*, 1762, mrsf14-1762-aaa08-03 doi:10.1557/opl.2015.154. (2015)

2014

(W) Materials and Manufacturing Follow-up Workshop: How Things are Made and Networking with Local Industry to Bring Ideas Back to Your Classroom; February 8, 2014, Southern CT State University

- C.C. Broadbridge B. Klancko co-lead the workshop.

(C) CT Learns and Works Conference, May 16, 2014, Waters Edge Resort, Westbrook CT

- "Building Bridges – Manufacturers and Teachers Collaborate for Student Access to STEM" **C. Broadbridge** and R. Klancko, (Invited).

(W) Scientific Modeling with Connections to the Common Core; May 31, 2014, Southern CT State University

- C. Broadbridge co-lead with N. Granucci and CCSA.

(W) Materials and Manufacturing Teachers' Institute: How Things are Made – Networking with Local Industry to Bring Ideas Back to Your Classroom; July 29 – July 31, 2014; Southern CT State University

- SCSU, NHMA and Platt Tech, Broadbridge and R. Klancko co-leaders

(C) SACNAS Conference, October 18, 2014, Los Angeles, CA

- "CRISP MRSEC: Achievement of 21st Century Skills via Team Based Interdisciplinary Research in Materials Science," **C. C. Broadbridge**, *C. Jenkins*, J. Garofano, (Invited)

(W) Finding FOCIS: A Framework for Examining Lessons and Learning Activities, November 8, 2014, Yale Peabody

- C. Broadbridge led workshop for presenter Robert Tai (University of Virginia))

(C) MRS, Fall Meeting and Exhibit, November 30 – December 5, 2014, Boston, MA

- "Research Experiences for Students: Interdisciplinary Skill Development to Prepare the Future Workforce", N. Ferrari, **C. Jenkins**, J. Garofano, D. Day, **T. Schwendemann, C. Broadbridge**

(C) MRS, Fall Meeting and Exhibit, November 30 – December 5, 2014, Boston, MA

- "The Role of Collaborative Student Research on the Development of 21st Century Skills", D. A. Day, N. Ferrari and **C. Broadbridge**, *2014 MRS Proceedings*, 1657, mrsf13-1657-qq02-05 doi:10.1557/opl.2014.400. (2014)

2013

(W) A 21st Century Approach to Teaching Electricity and Magnetism: Content and Pedagogy, February 2, 2013, Peabody Museum, Yale University.

- C. Broadbridge and K. Cummings co-leaders.

(W) Materials and Manufacturing Teachers' Institute: How Things are Made – Networking with Local Industry to Bring Ideas Back to Your Classroom; July 29 – August 1, 2013, Southern CT State University

- SCSU, NHMA and Platt Tech, C. Broadbridge and R. Klancko co-leaders

(C) Conference, October 2, 2013, University of Florida, Gainsville

- "Educating a Competitive Future Workforce: Interdisciplinary Team Based Research and the Development of 21st Century Skill," C. Broadbridge (Invited)

(C) American Vacuum Society 60th International Symposium and Exhibition, October 27 – November 1, 2013, Long Beach, CA

- "21st Century Skills and Educating the Next Generation Workforce for Expedited Innovation and Deployment", C. Broadbridge (Invited)

(W) Special Education in Teaching Science; CRISP/NHPS Professional Development Workshop, November 5, 2013, Peabody Museum, Yale University

- C. Broadbridge attended.

(C) New Haven Manufacturers Association Regional Meeting; "Leveraging Technology for Manufacturers' Profitable Growth", November 7, 2013, Graduate Club, New Haven, CT

- "Physics and Nanotech: Programs Targeting Local Industry/Academic Needs," C. Broadbridge, M. Enjalran and T. Schwendemann (Invited)

(C) Materials Research Society 2013 Fall Meeting, December 2, 2013, Boston, MA

- "The Role of Collaborative Student Research on the Development of 21st Century Skills", D. A. Day, N. Ferrari and **C. Broadbridge**.
- "Optimizing K-14 Instruction to Infuse 21st Century Skills", D. A. Day, C. Guo, N. Ferrari, H. Edgecumbe and **C. Broadbridge**, *2013 MRS Proceedings*, 1583, doi: 10.1557/opl.2013.776.

(W) A 21st Century Approach to Teaching Electricity and Magnetism – Real World Applications: December 7, 2013, Peabody Museum, Yale University

- C. Broadbridge and K. Cummings co-leaders.

Faculty, Staff, and Responsibilities:
(Specify Director/Coordinator, Departments/Disciplines of Members, and Time Commitment for each and changes of personnel over time)

The administrative and technical structure of the Center for Nanotechnology:

- **CSCU-CNT Director: Dr. Christine Broadbridge (Physics)**
  - Background: Research interests and experience includes materials science and engineering, characterization of nanoscale materials, high-resolution scanning probe and electron microscopy, and best practices in professional development for STEM educators.
  - General responsibilities: Work closely with the Physics Department Chairperson, CNT Facilities Manager, CNT Technician, and CRISP EO Coordinator to advance the goals of the Center.
  - Major responsibilities
    1. Serve as Chairperson for the CNT Advisory Board. Work closely with Physics Department Chairperson, University Administration to continually assess mission and goals of the Center.
    2. Provide administrative oversight to the CNT Technician and other technical support staff (e.g., CRISP EO Coordinator, Graduate and Undergraduate Students as appropriate).
    3. Provide administrative oversight to CNT Manager for budget and purchasing of equipment, materials and supplies for the CNT.
    4. Serve as liaison with University Administration (Executive Director of Research and Innovation; Provost's Office, Physics Department Chairperson).
    5. Provide administrative oversight to CNT Manager for maintenance and service contracts. Work closely with CNT Manager, CNT Technician, and EO Coordinator to assure ongoing coverage.
    6. Provide administrative oversight for documentation and enforcement of all required Environmental, Health, and Safety (EHS) and University regulations (e.g., laboratory safety, security and proper waste disposal).
    7. Assist with preparing documentation for annual reporting and renewals (IAF, University, BOR).
    8. Oversee fundraising efforts, development of a business plan and future plans for the CNT. Work closely with the CNT Manager and Physics Department Chairperson on implementation.
    9. Assist with recruitment and maintenance of CNT memberships holders and/or users. Work with Integrated Marketing and Communications on materials to showcase the CNT. Work closely with the CNT Manager and Physics Department Chairperson.
    10. Oversee Facility outreach events and classes. Work closely with CNT Manager, EO Coordinator, and Physics Department Chairperson.
  - Time commitment: No release time credit is awarded to the CNT Director. Because the CSCU-CNT is part of the Department of Physics, the CNT Director and Physics Department Chairperson will work closely to fulfill the responsibilities outlined above.

- **CSCU-CNT Facilities Manager: Dr. Todd Schwendemann (Physics) and Dr. Binlin Wu (Physics) share responsibilities.**
  - A brief history of the FM position: Dr. Schwendemann served as FM from the inauguration of the CNT to the end of fall 2017. During spring 2018 when Dr. Schwendemann was on sabbatical leave and Dr. Wu served as the FM. As the programs and activities in the CNT have grown, it was deemed beneficial to share the responsibilities of the FM between two faculty going forward.

- Background, Dr. Schwendemann: Research interests and experience includes materials science, chemistry and chemical engineering, nanotribology, synthesis of nano-materials by deposition methods, high resolution scanning probe microscopy.
- Background, Dr. Wu: Research interests and experience includes biophysics, medical physics, optical and spectroscopic studies with biomedical application, high resolution imaging of bio-materials, and numerical methods, including artificial intelligence, applied to image analysis.
- General responsibilities: Work closely with the CNT Director, CNT Technician, and CRISP EO Coordinator.
- Major responsibilities
  1. Provide technical assistance to the Laboratory Technician and other support staff (e.g., CRISP EO Coordinator, Graduate and Undergraduate Students as appropriate).
  2. Oversee budget and purchasing of equipment, materials and supplies for the CNT. Work closely with the CNT Technician and EO Coordinator on submission of required documentation. Work with CNT Technician to assure that all equipment inventory protocols are followed and are in place. Provide regular updates to the CNT Director and Physics Department Chairperson.
  3. Assure coverage of the Facility to assure supervision and oversight of students working in the labs. Work with CNT Technician and EO Coordinator to optimize schedules and be on call for coverage and emergencies. Will keep in close communication with Physics Department Technician and Chairperson.
  4. Oversee overall maintenance and service contracts. Work closely with CNT Technician and EO Coordinator to assure ongoing coverage.
  5. Oversee documentation and enforcement of all required EHS and University regulations (e.g., laboratory safety, security and proper waste disposal).
  6. Prepare documentation for annual reporting and renewal to IAF, University, and BOR.
  7. Play a leadership role in fundraising efforts, development of a business plan and future plans for the CNT. Work closely with the CNT Director.
  8. Recruit and maintain CNT memberships holders and/or users. Work with Integrated Marketing and Communications on materials to showcase the CNT. Work closely with CNT Director.
  9. Oversee Facility outreach events and classes. Work closely with CNT Technician, EO Coordinator, and Physics Department Chairperson.
  10. Assist in communication with, and planning of, CNT Advisory Board meetings. Work closely with CNT Director and Physics Department Chairperson.
- Time commitment: Three (3.0) credits of release time is awarded to the CSCU-CNT Facilities Manager. This translates to 131.25 hours for a 15 week semester. The release credits will be equally split between Drs. Schwendemann and Wu. They will equally share the responsibilities of the position as outlined above.

- **CSCU-CNT Part-time Technician: Dr. Barbara (Ellen) Scanley (CSCU-CNT)**

- General responsibilities: Work closely with the CNT Director, CNT Facilities Manager, Department Chairperson and CRISP EO Coordinator.
- Background: Research interests and experience includes medical research in psychiatry, fMRI and SPECT imaging of the brain, microbiology, use of scanning electron and probe imaging of nanoscale materials, and sample preparation of nanoscale materials.
- Major responsibilities
    1. Coordinate and implement day-to-day operations including the CNT users program.
    2. Provide technical assistance to undergraduate and graduate students, SCSU faculty, and CNT facilities users.
    3. Maintain instrumentation, facilities and assure appropriate protocols
    4. Act as liaison between CNT, physics department and other SCSU departments and programs

- **CSCU-CNT Advisory Board**[25]:
    - Professionals from academia, industry, and business, including entrepreneurship, provide guidance to the CSCU-CNT administrative staff on all CNT programs and operations.

Faculty from Physics and other STEM departments at SCSU and other institutions who have been involved in research, education, and outreach programs of the CNT are noted below.

Physics at SCSU

- Dr. Cummings, co-Director of the Liberal Education Program (LEP)
- Dr. Matthew Enjalran, Department of Physics Chairperson
- Mr. Thomas Sadowski, adjunct faculty
- Dr. Shital Vaidya, adjunct faculty

Biology at SCSU

- Dr. Meghan Barboza, faculty
- Dr. Steven Brady, faculty
- Dr. Sarah Crawford, faculty
- Dr. Nicholas Edgington, faculty
- Dr. Rachel Jeffrey, faculty
- Dr. Elizabeth Lewis Roberts, faculty

Chemistry at SCSU

- Dr. Jiong Dong Pang, faculty
- Dr. James Kearns, faculty
- Dr. Todd Ryder, faculty

Environment, Geography, and Marine Sciences (EGMS) at SCSU

[25] See Appendix B for CSCU-CNT Advisory Board members.

- Dr. Vincent Breslin, faculty
- Dr. Scott Graves, faculty
- Dr. Robert Prezant, Provost and Vice President for Academic Affairs, SCSU
- Dr. James Tait, faculty

Philosophy at SCSU

- Dr. Sarah Roe, Director of RC-VEST

Connecticut Agricultural Station

- Dr. Quan Zeng – Connecticut Agricultural Station

CCSU

- Dr. Sourav Chakraborty - Chemistry
- Dr. Guy Crundwell – Chemistry

ECSU

- Dr. Sarah Tasneem – Computer Science
- Dr. John Toedt – Physical Sciences

WCSU

- Dr. Yu-Fong Yen – Chemistry

Student Involvement and Student Outcomes:
(*If applicable, discuss Center/Institute's impact upon the university's students; specifically, what was the nature of student involvement and how many students were involved with Center/Institute activities; what were the resultant student outcomes of that involvement stated numerically. Student outcomes may include such measures as learning outcomes, achievement, persistence, graduation, employment and graduate school placements. Along with or without student involvement and student outcome; a focus of the Center/Institute's mission might be public engagement/outreach. If so, that construct should be discussed here.*)

The facilities, activities, programs, faculty and staff of the CNT have impacted undergraduate and graduate students in multiple ways. As previously mentioned, over the time-period 2013-2018, approximately 220 students had significant educational experiences such as research projects, internships, fellowships or scholarships directly associated with the CNT. Students regularly presented the results of their work at professional scientific conferences, to industry partners and academic collaborators, and to physics faculty. On multiple occasions, student research was published in journal articles. See Principal Accomplishments above for a list of published articles and presentations involving students. Notable student impacts over the past five years:

- **16** student authors on peer reviewed journal articles or conference proceedings.
- **75** authors and co-authors of research presentations.
- **15** students completed the MSAP program researching materials science/nanotechnology
- **7** students completed their undergraduate Honors Thesis research on materials science/nanotechnology

The CNT has been associated with two summer research programs for students. One was a Research Experience for Undergraduate (REU) program funded through the NSF as part of the CRISP program. The last year for the REU program was summer 2018.[26] The REU projects focused on fundamental materials science and nano-scale phenomena. The IAF is the second student program. The IAF is supported by a grant from the Werth Family Foundation. The support is for ten years and the fifth year was completed this past summer. The emphasis in IAF projects is on potential applications of nanoscience to industry. The School of Business at SCSU is a partner in the IAF program. Student participation:

- **40** students have participated in the CRISP – Yale/SCSU REU program since summer 2014.
    - **22** female, **18** male
    - **15** were from underrepresented minority groups
    - Students in the REU program come from all over the country with 2-3 CSCU students included each year.
- **26** students have participated in the IAF program since summer 2014.
    - **9** female, **17** male
    - **8** were from underrepresented minority groups
    - All students have come from SCSU but represent different STEM majors.

[26] Yale and SCSU researchers plan to reapply to the NSF for continuation of the MRSEC.

Students who have worked in the CNT and participated in the courses and activities associated with the CNT have done internships in the private sector, gone on to full-time positions after graduation, or have continued their education in graduate school. Some notable examples include

- **Felipe Gallego**, MSAP, started with an internship that has become a full-time position at Arvinas, a local bioscience startup.
- **Kelly Woods**, MSAP, has worked at Yale Applied Physics since graduating and recently accepted a full time permanent position as a cleanroom technician at Yale.
- **Kevin Dahlberg**, BS and MSAP, started as an intern then a full-time position at Aperture Optical Sciences, a local company that develops and builds optical systems for the aerospace industry.
- **Marvin Wint**, BS, works as a scanning electron microscope technician at Yale.
- **Katherine Perez**, BS, completed an internship at Medtronic, a medical technology manufacturer. She has returned to the MSAP program at SCSU.
- **Jason Smith**, MSAP, completed and internship at Arvinas, now enrolled in a Ph.D. program in bio-engineering at Rensselaer Polytechnic Institute
- **Eric Gossett**, BS, is working on a Ph.D. in materials engineering at Duke University.
- **Peter Litwin**, BS, is working on a Ph.D. in materials science at University of Virginia.
- **Alexis Ernst**, BS and GCNT, is working on a Ph.D. in materials science at UCONN.
- **David Uhl**, BS, completed an internship at CT Metallurgical Inc.
- **Hang Pham**, BS, coordinator at Yale Evolutions Program, Peabody Museum.

See Assessment and Evaluation section for additional outcomes information related to REU, IAF, and CRISP EO programs.

The CNT has engaged in a significant number of outreach activities and undergraduate and graduate students have been actively involved as presenters and facilitators. Some events are held at the CNT, for example visits by K-12 student groups. Many are performed in partnership with the CRISP Education and Outreach program and these activities are community and K-12 focused. Public lectures and Family Science Nights have been a very popular offering and those offered as part of the CRISP collaborative reached hundreds more K-12 students and their parents.

At least 800 additional CSCU students in Science, Technology, Engineering and Mathematics (STEM) disciplines engaged with the CNT through career fairs, the biosciences symposium and newly developed courses in nanotechnology for non-STEM majors. Almost 500 students have taken nanotechnology / materials science courses for non-STEM majors. (See the discussion in Assessment and Evaluation for a list of relevant courses and enrollments.) The CNT has supported STEM career fairs that have been well attended by students and companies alike.

Below is a partial list of companies that have participated:

Connecticut Agricultural Experiment Station
The Jackson Laboratory

CTNext Technology Talent Bridge
My Gene Counsel
DISTRICT New Haven / Digital Surgeons
Society for Ecological Restoration – New England
Core Informatics
Owl Cyber Defense
IBM Watson Analytics
Yale University HR Staffing and Career Development Office
Medical Innovations in Context, LLC
Checkmate.Digital
Aperture Optical Sciences, Inc.
Next Generation Manufacturing / College of Technology
Ulbrich Stainless Steels & Special Metals, Inc.
Analytical Technologies Group
MakeHaven
HumanEdge

Assessment and Evaluation:
(Describe how progress toward meeting goals and objectives has been measured and include a brief description of lessons learned)

The CNT has helped foster transformative growth in scientific research and training on the SCSU campus. From new courses to new programs, from the effective use of a new building to acquisition of state-of-the-art research equipment, the CNT has changed the way people think about science teaching and research facilities on the CSCU campuses. There are an extraordinary number of accomplishments for such a young center. Many of these accomplishments, including the popular Materials and Manufacturing Summer Teachers' Institute, our Industry/Academic Fellowship program that provides internship opportunities to students, and most of the education and outreach activities associated with the CRISP grant, have been formally evaluated. Example evaluations for such activities are summarized below. For other outcomes, we will report that the goal was met and discuss a few key accomplishments.

As discussed above, the outcomes associated with Center goals and activities are as follows:

1. Provide research opportunities at the undergraduate and graduate (MS) levels;
2. Facilitate development of coursework in nanotechnology/materials science and its applications for use at the undergraduate and graduate levels as well as for non-science majors;
3. Develop research facilities and programs that facilitate interdisciplinary interactions between community college and CSU faculty and students;
4. Provide coursework and professional development opportunities for K-12, community college and CSU educators;
5. Establish research facilities supporting education, research and research training in nanotechnology and materials science;
6. Work with the Connecticut Advisory Board on Nanotechnology and the CT Office for Workforce Competitiveness [and other similar bodies] to offer resources that will aid in Connecticut's Workforce Competitiveness (e.g. coursework, certification programs, and use of laboratory facilities).

1. Provide research opportunities at the undergraduate and graduate (MS) levels;

Industry Academic Fellowship (IAF):

The IAF program invites undergraduate and graduate students to conduct materials science research with an industry focus over the course of an 8-week summer research internship. They conduct research in collaboration with educators and industry professionals, while exploring the business-related aspects of technology. These research teams work on nanotechnology projects with topics including nano-medicine and nano-environmental studies. In the below table, program participation rates along with participant demographics and prior experience with research and business are presented for 2015-2017. The past three years of IAF have served 14 undergraduate students, including five students from underrepresented minority groups. For most students this was both their first time conducting research as well as their first time engaging with business.

Participation Rates, Demographics, and Prior Experience of IAF Participants

	2015	2016	2017	Total
# of Participants	5	4	5	14
Male	3	3	4	10
Female	2	1	1	4
Black/African American	0	0	1	1
Hispanic	1	2	1	4
Asian	1	0	1	2
White	3	2	4	9
Other	0	0	1	1
First research experience	3	1	5	9
First business experience	4	1	4	9

**Note: Some students indicated multiple demographic categories, so totals represent instances of all response options chosen.*

At the conclusion of the IAF program, students reflected on their feelings and knowledge both before and after their summer internship by responding to survey questions. Students had an overall positive experience and showed positive gains on nearly all surveyed questions. Across the program years, the largest gains were in students' understanding of nanoscience/technology as a discipline and in everyday applications, in their confidence designing and implementing a research project as well as presenting their findings, and in their knowledge of academic-business collaborations and bringing products to market. Students also commented on how their IAF experience related to developing 21st-century skills. These skills are important for succeeding in the modern STEM workplace as identified by educators, business leaders, and policy makers. The top skills that were rated by students as most "*frequently/an integral and important part of the activities in my IAF program*" were critical thinking, problem solving, scientific reasoning, collaboration, good citizenship, and personal/social responsibility. When asked how this experience influenced their career interests, almost all students said that IAF influenced them in a positive way. For some it solidified their interests in pursuing graduate education and a career in the field, and for others it was good exposure to industry as a career option.

Additional Professional Development and Research Experiences:

The EO program provides several additional professional development and research experiences to secondary and postsecondary students along with local K-12 science teachers. The first set of these opportunities provides summer research internships for students and teachers to work in teams of multidisciplinary CNT-affiliated researchers. Undergraduates (in the REU program; 8 weeks), high school students (in the REHS program; 4 weeks), and K-12 teachers (in the RET program; 4 weeks) work together in a research group composed of a faculty mentor, postdoctoral fellows, and graduate students. For students, these experiences provide an opportunity to do hands-on, authentic research and foster mentoring relationships to grow them as researchers and show them how to pursue future schooling and careers as scientists. For teachers, the hands-on research is a stepping stone for creating lesson plans to bring back to their own classrooms to promote student learning around nanotechnology and materials science.

The below tables present participant rates and demographics for each of these research internships. Additionally, the tables include prior research experience for the REU and REHS programs and teaching positions for the RET program. The past four years of these programs have provided 56 teachers and students with summer research internships. Regarding the REU and REHS programs, they have served 16

students from underrepresented minority groups. In the case of the REHS program, most students were from urban school districts; and for the RET program, most teachers were also from urban schools (and teaching at the high school level).

Participant Information for the REU, REHS, and RET Programs

REU Participation Rates, Demographics, and Prior Experience

	2014	2015	2016	2017	Total
# of Participants	11	12	8	4	35
Male	7	3	4	1	15
Female	4	9	4	3	20
Black/African American	0	4	1	0	5
Hispanic	1	2	2	1	6
Asian	0	1	1	3	5
White	8	2	3	0	13
Other	2	0	0	0	2
First research experience	3	10	5	1	19

REHS Participation Rates, Demographics, and Prior Experience

	2014	2015	2016	2017	Total
# of Participants	3	3	3	2	11
Male	2	1	0	2	5
Female	1	2	3	0	6
Black/African American	1	1	0	1	3
Hispanic	1	0	1	0	2
Asian	0	2	1	0	3
White	1	0	0	0	1
Other	0	0	1	1	2
Urban school	2	3	1	1	7
Suburban school	1	0	2	1	4
First research experience	2	3	3	1	9

RET Participation Rates, Demographics, and Teaching Positions

	2014	2015	2016	2017	Total
# of Participants	3	2	3	2	10
Male	2	0	0	0	2
Female	1	2	3	2	8
Urban school	3	2	1	0	6
Suburban school	0	0	2	2	4
Rural school	0	0	0	0	0
Grades K-5*	0	1	0	0	1
Grades 6-8*	0	0	2	0	2
Grades 9-12*	6	0	6	3	15
College	0	1	0	0	1

**Note: Most teachers teach multiple grades, so totals represent instances of all grade levels taught.*

Students and teachers in each of these programs completed surveys to capture how the research internship impacted their knowledge and feelings about science, research, and (for teachers) teaching of these topics in the classroom. Looking across program years, for the REU undergraduates the experience seemed to

have the biggest impact on their understanding of materials science as a discipline, confidence designing and implementing a research project, and confidence presenting research findings to others. For the REHS programs, the most consistent gains across program years were for high school students' understanding of and appreciation for interdisciplinary science, including its applications and the fields of nanotechnology and materials science in particular. For the RET teachers, their gains varied from year to year, and included increases in their understanding of designing a research project, microscopy techniques, and nanotechnology as an example of interdisciplinary science. They also gained in their appreciation for interdisciplinary science and its application as well as in their ability to introduce science/engineering practices and interdisciplinary science concepts in the classroom.

2. *Facilitate development of coursework in nanotechnology/materials science and its applications for use at the undergraduate and graduate levels as well as for non-science majors;*

Since inception of the CNT, the Physics Department at SCSU has developed several nanotechnology related courses and programs. A list of the courses and programs, along with enrollments and brief descriptions follows:

Undergraduate

- **PHY 120 - Physics for Tomorrow: Nanotechnology (A Course for Non-Science Majors)**
  An introduction to the science and engineering of nano-scale materials (nanotechnology). Emphasis on technological applications and potential ethical/societal impacts.

  Five year enrollment about 372

- **EGR 232 – Materials Science and Engineering**
  An interdisciplinary introduction to materials science and engineering with topics including historical perspective, structure property relationships, engineering design, characterization techniques, manufacturing/synthesis, nanoscale applications and ethical/society implications.

  Five year enrollment about 27

- **PHY 415 - Solid State Physics (and Nanoscience*)**
  Crystal structure, X-ray diffraction, lattice vibrations, band theory of metals, electrical conductivity of metals and semi-conductors, semiconductor devices, and superconductivity.
  * Current course description includes crystal structure, scattering methods, thermal, electronic, and magnetic properties of solids, introduction to nanoscience, scaling, size effects, characterization and fabrication methods.

  Five year enrollment about 23

Graduate - all three are for the GCNT, the first two are for the nano-track of the MSAP program

- **PHY 519 – Nanotech I: Fundamentals of Nanoscience**
  Provides a highly interdisciplinary introduction to the science of nanoscale materials (nanoscience). Topics will include historical background, characterization techniques, physics

and chemistry of nanoscience materials, fabrication techniques, nanoscale applications and ethical/societal considerations.

Five year enrollment about 23

- **PHY 521 – Nanotech II: Characterization of Nanomaterials**
  Introduces the state-of-the-art techniques commonly used in the characterization of nanomaterials. Two important aspects of characterization, imaging and chemical analysis, are included. Emphasizes force, transmission and scanning electron microscopy.

  Five year enrollment about 12

- **PHY 523 – Nanosystems Laboratory**
  The capstone experience for the Graduate Certificate in Nanotechnology. Students chose an appropriate topic in nanotechnology in consultation with the instructor, perform a literature search, design the experiments and perform the data collection and analyses, write up the project following the style of a professional journal article, and present their results to their peers and instructor in the format of a formal scientific presentation.

  Five year enrollment about 2

Courses at the regional-hubs have included the study of nano-scale phenomena. A list of these courses follows:

Undergraduate at CCSU

- **CHEM 238 - Introduction to Research**
  Research experience for first-year students to juniors under faculty supervision. May be repeated for a maximum of 6 credits.
- **CHEM 438 - Undergraduate Research**
  Research participation for sophomore to senior students under faculty supervision. May be repeated for a maximum of 6 credits.
- **CHEM 485 - Topics in Chemistry (Crystallography)**
  Advanced treatment of chemistry topics in analytical chemistry, inorganic chemistry, organic chemistry and physical chemistry. Three lectures or two lectures and one two-hour laboratory period per week depending on topic. May be repeated with different topics for a maximum of 9 credits.

Undergraduate at ECSU

- **CHE 430 - Nanotech III: Nanosystems Laboratory: Applications of Basic Spectroscopy, Separations, and Electrochemistry to Nanomaterials**
  This course applies the theory and practice of basic chemical instrumentation to nanomaterials. The scope is limited to the analysis of metal, metal oxide, and semiconductor

nanoparticle samples using electronic and fluorescence spectroscopy, chromatography and centrifugation separations, and electrochemical methods of analysis.

Undergraduate at WCSU

- **CHE398 - Properties and Applications of Nanomaterials**
  The course will start with an introduction to the properties of nanoscale materials such as nanomechanics, nanoscale heat transfer, electrical and optical properties intrinsically associated with their low dimensionality, and the quantum confinement effect. Critical components in potential nanoscale device applications such as liquid crystals, light emitters, photoconductors, photoresists for nano- and microelectronics, nano-based solar cells and solar to fuel conversion, and optical information storage, will also be covered.
- **CHE400 – Instrumental Analysis**
  The intent of this course is the effective and knowledgeable use of modern chemical instrumentation in order to solve chemical problems. Areas covered will include theory and fundamental concepts of instrumentation with application and interpretation of results. Topics include: analog and digital electronics and electroanalytic, spectroscopic and chromatographic methods.

3. *Develop research facilities and programs that facilitate interdisciplinary interactions between community college and CSU faculty and students;*

There are several important ways in which the CNT has accomplished the goal of connecting community college and CSU faculty and students. Perhaps the most notable is the Pathways for Academic Excellence Scholarship programs. This $600,000 National Science Foundation funded project provided scholarship to promising STEM students who transferred into SCSU. This very successful program funded 37 scholarships over a period of 5 years. We plan to apply for renewal.

In addition, Dr. Matthew Enjalran, has made a point of routinely visiting regional community colleges to discuss the opportunities that the CNT and Department of Physics have available to students. Karen Wosczyna-Birch, in the College of Technology (COT), is a long-time collaborator and we expect that additional connections will develop as the Center for Next Generation Manufacturing, An NSF Center of Excellence run by the COT.

However, going forward, we plan to focus even more on this important goal. For example, we intend to engage our community college collaborators in a needs-assessment process designed to determine how the CNT can be a more effective partner. We intend to expand the Industry/Academic Fellowship (IAF) program to include community college students as well.

4. *Provide coursework and professional development opportunities for K-12, community college and CSU educators;*

The Education and Outreach (EO) program of the CSCU-CNT connects K-12 teachers and advanced students with cutting edge research and technology in science and engineering. Public school science teachers engage in professional development programs that develop their skills in interdisciplinary, innovative, and hands-on teaching practices. They also participate, along with high school students and undergraduates, in immersive research experiences in multidisciplinary, team-based research over the

summer on SCSU's campus. Participants in CNT's EO program—along with SCSU student, post-doc, and faculty facilitators—benefit in many regards, academically, professionally, and personally.

We highlighted above one particular strength of the CNT, the Industry Academic Fellowship program. Here, we highlight another: The Materials and Manufacturing Summer Teachers' Institute (MMSTI). Like the IAF program, this program bridges the domains of STEM research and industry, engaging participants with both the science and business of materials production. 2017 marked the 5th annual MMSTI and 4th annual IAF; data from the past several years are summarized here for each program (data are not yet available for 2018).

Materials and Manufacturing Summer Teachers' Institute (MMSTI):

MMSTI is a multi-day professional development workshop that acquaints K-12 science teachers with how STEM skills can be applied in Connecticut's manufacturing industries. Teachers learn from industry professionals about their workforce needs and network with fellow educators from across Connecticut, CEOs of local companies, and members of the Connecticut Department of Education. Teachers leave the workshop with concrete lesson plans that have connections to the Next Generation Science Standards (NGSS)[27], to be used in their classrooms. The below table shows the demographics and teaching positions held by each MMSTI teacher cohort from 2014-2017, along with the program participation rates. Over the past four years, MMSTI has served 100 teachers, mostly from urban school districts and teaching at the high school level.

Participation Rates, Demographics, and Teaching Positions of MMSTI Participants

	2014	2015	2016	2017	Total
# of Participants	21	25	29	25	100
Male	8	8	15	14	45
Female	13	17	14	8	52
Urban school	14	16	17	10	57
Suburban school	6	4	6	9	25
Rural school	0	3	1	1	5
Grades K-5*	0	0	2	2	4
Grades 6-8*	7	18	16	18	59
Grades 9-12*	37	38	21	39	135

**Note: Most teachers teach multiple grades, so totals represent instances of all grade levels taught.*

Surveys captured teachers' knowledge and feelings both before and after the workshop. Specifically, these questions inquired about changes in their understanding and experience with the application of STEM to manufacturing and product development, how they can incorporate these topics into classroom lessons, and how workshop facilitators/stakeholders can support their classroom teaching. Overall,

[27] Next Generation Science Standards at http://www.nextgenscience.org

participants experienced a significant positive change on nearly all survey questions. In particular, MMSTI participants experienced the largest positive shift in response to this question "*I have a clear understanding of specifically how the [program facilitators/stakeholders] can assist me with my teaching.*" This question referred to how EO program organizers and the New Haven Manufacturers Association (a collaborator for MMSTI) could support student learning of science and engineering topics in the classroom. Other prevailing impacts of the MMSTI over the past several years were in providing teachers with hands-on experience with materials-forming processes, fostering a clear understanding of the manufacturing process, and helping them understand how engineers contribute to product development. When asked if they believed the workshop would benefit their students—and if they planned to incorporate STEM activities related to engineering, product development, and production in the coming school year—all teachers agreed and responded in the affirmative.

Over the past five years, the EO program has also provided numerous 1-day professional development workshops for K-12 teachers. They introduced teachers to many topics in nanotechnology, materials science, and more. These workshops also instructed teachers in how to teach the workshop content using effective pedagogical practices (e.g., how to teach students with special needs and individualized education plans, IEPs) and aligning with national education standards (e.g., the Next Generation Science Standards, NGSS, and the Common Core State Standards, CCSS[28]). Overall, over the past four years, the EO program offered 12 workshops that were attended by 207 attendees. Most of these attendees were teachers from the high school level (but also many from elementary and middle school) who teach in urban school districts (with some from suburban districts as well). Post-workshop surveys indicate that teachers felt the content was relevant to their teaching, would benefit their students, and would be incorporated into how they teach science and math in the classroom.

One workshop topic that was repeated multiple times across program years, due to teacher need and demand, was data analysis and NGSS. Another was repeated twice in the same year, also due to teacher need and demand, on the topic of teaching elementary math and science lessons aligned with CCSS/NGSS. Additionally, as a follow-up to the annual MMSTI multi-day professional development workshop offered each summer, prior MMSTI attendees are invited back (along with additional interested teachers) to follow-up workshops to hear from a panel of industry professionals and continue discussing how to incorporate manufacturing topics into the classroom.

[28] Common Core State Standards Initiative at http://www.corestandards.org

Workshop Information and Attendee Teaching Positions

Topic	Date	# of Attendees	Grades Taught (# of Teachers)*	Schools
MMSTI Follow-Up	February 8, 2014	24	PreK-5 (4), Gr. 6-8 (10), Gr. 9-12 (10), Other (0)	Urban (15), Suburban (5), Other (4)
Modeling and CCSS	May 31, 2014	26	PreK-5 (0), Gr. 6-8 (9), Gr. 9-12 (20), Other (0)	Urban (14), Suburban (9), Other (3)
Science and learning activity preferences	November 8, 2014	16	PreK-5 (1), Gr. 6-8 (4), Gr. 9-12 (31), Other (0)	Urban (10), Suburban (4), Other (0)
Data analysis and NGSS	November 14, 2015	19	PreK-5 (15), Gr. 6-8 (22), Gr. 9-12 (0), Other (0)	Urban (11), Suburban (7), Other (1)
MMSTI Follow-Up	March 21, 2015	20	PreK-5 (0), Gr. 6-8 (10), Gr. 9-12 (32), Other (0)	Urban (17), Suburban (3), Other (0)
Data analysis and NGSS	July 27, 2015	19	PreK-5 (0), Gr. 6-8 (10), Gr. 9-12 (7), Other (2)	*(info not available)*
Science and students with special needs/IEPs	July 8, 2016	25	PreK-5 (1), Gr. 6-8 (19), Gr. 9-12 (20), Other (3)	Urban (7), Suburban (14), Other (3)
Synthetic biology and NGSS	August 2, 2016	18	PreK-5 (0), Gr. 6-8 (5), Gr. 9-12 (25), Other (6)	Urban (11), Suburban (5), Other (1)
Elementary math/science and CCSS/NGSS	August 18, 2016 and November 19, 2016	57	PreK-5 (102), Gr. 6-8 (32), Gr. 9-12 (18), Other (0)	Urban (42), Suburban (8), Other (1)
Engineering and NGSS	March 4, 2017	22	PreK-5 (9), Gr. 6-8 (5), Gr. 9-12 (30), Other (0)	Urban (9), Suburban (11), Other (1)
Data analysis and NGSS	March 18, 2017	11	PreK-5 (3), Gr. 6-8 (0), Gr. 9-12 (22), Other (0)	Urban (4), Suburban (7), Other (0)
TOTALS	**12 workshops**	**257 attendees**	**PreK-5 (135), Gr. 6-8 (126), Gr. 9-12 (185), Other (11)**	**Urban (111), Suburban (59), Other (7)**

**Note: Most teachers teach multiple grades, so totals represent instances of all grade levels taught*

5. *Establish research facilities supporting education, research and research training in nanotechnology and materials science;*

The CNT is a truly interdisciplinary, intercampus facility. While the CNT is primarily housed at SCSU, key pieces of equipment are in place at each of our sister campuses. Faculty from institutions of higher education across Connecticut make use of CNT facilities and colleagues from different departments collaborate on projects. For example, CNT personnel with physics backgrounds help with interdisciplinary research projects when they provide TEM imaging of microvesicles from cancer cells for a Biology graduate student or of bacterial magnetosomes for an undergraduate Chemistry major. The reader is encouraged to refer back to Fig. 1 to appreciate the number and diversity of collaborations underway at the CNT.

Current equipment and user fees for the CNT are shown below. Taken together this equipment constitutes a first-class facility focused on the nuts-and-bolts needs of industry for research, development and training. Occasionally higher level, more specific (and more expensive) techniques or equipment are required. In this case, users are referred to facilities at UCONN or Yale.

CSCU-CNT: INSTRUMENTATION

MICROSCOPY, (SCSU)

Transmission Electron Microscope - FEI Technai-12 Spirit
120kV TEM capable of resolving down to 0.3 nm. the system is heavily used in nano-scale investigations of nanoparticles and nanotubes of different types.

Scanning Electron Microscope - Zeiss Sigma VP
This is a field emission SEM capable of spatial resolutions of 1.5 nm. This is a variable pressure system allowing for examination of insulating samples without addition of conducting coatings. The system includes several detectors, including: In-lens SE, Everhart-Thornley SE2, Backscatter, STEM and energy dispersive spectroscopy (EDS).

Scanning Electron Microscope (tabletop) - Hitachi TM1000
The system is a portable SEM with UP TO 10,000 X magnification. Ideally suited for looking at a wide variety of small samples. It also contains an EDS detector allowing elemental composition analysis.

Scanning Probe Microscope (Atomic Force Microscope and Scanning Tip Microscope) – Vecco Multimode Rev 8 with Nanonis RT control electronics
Atomically sharp tips raster across a sample surface generating topography map with atomic scale detail. The multimode SPM can examine conductive as well as non-conductive samples. Additionally, biological samples can be examined using a fluid cell attachment.

Optical Microscopes - Zeiss Axio Lab A1, Zeiss Axio Scope A1 (with fluorescence microscopy capability), Olympus BH-2 Metallurgical Microscope, Olympus Gx71 Inverted Optical Microscope.

SPECTROSCOPY, (SCSU)

UV-Vis-NIR - Shimadzu UV-3600
Contains three detectors and a high performance double monochromator and an integrating sphere.

Inductively Coupled Plasma – Mass Spectrometer (ICP-MS) - Perkin Elmer NexION 350 D
The NexION ICP-MS provides inorganic trace-element detection with a sensitivity in the range of parts per billion. It runs in standard mode or with a collision cell or a reaction cell to remove polyatomic interferences.

Fluorescence Spectrometer - Perkin Elmer LS-55
This spectrometer has variable slits, in increments of 0.1 nm and holographic gratings which minimize stray light.

TEM SPECIMEN PREPARATION, (SCSU)

High Precision Polishers - Allied High Tech 15-2000 GI MultiPrep
The MultiPrep enables precise semi-automatic abrasive polishing to thin samples prior to viewing with the TEM

Ion Mill - Gentle Mill TL-GM1
Low energy argon Ion bombardment beam instrument designed for preparing TEM samples to thicknesses < 100 nm.

Precision Low Speed Diamond Saw - Allied High Tech, TechCut 4

A low speed saw excellent for cutting small delicate samples. Cutting of crystals and very hard materials with precision is also possible.

Ultra-Microtomes - Leica EM UC7 with cryosectioning option, Leica EM FC7 and a Sorvall Porter
Ultramicrotome MT-2

Other instruments:
Gold Sputter coater - SPI
Vacuum Oven – ThermoFisher
Critical Point Dryer – Tousimis, Samdri-780

FABRICATION/SYNTHESIS (SCSU)

Dip Pen Nanolithography (DPN) - Nanoink NLP-2000
Nanolithography instrument capable of depositing a wide variety of materials with sub-micron accuracy and precision. Used for multiplexed protein printing, biosensor functionalization, nanopattering studies, polymer pattering.

Tube Furnace - Nanotech Innovations SSP-354
Utilized for carbon nanotube synthesis using chemical vapor deposition.

Spin Coater - Laurell Technologies Corp. - WS-200-4NPP

Center HUBS (funded by DOE Grant)

SPECTROSCOPY, (ECSU)

Horiba Jobin Yvon Fluorolog 3-11 Research Spectrofluorometer
This instrument has an emission wavelength range that extends to 1550 nm which covers the carbon nanotube fluorescence wavelengths. It also comes with a "Nanosizer" software package that characterizes the diameter and chirality of single walled carbon nanotubes.

Hitachi U4100 UV-Visible Near-Infrared spectrophotometer
This instrument has a 200 x 200 mm sample compartment that accommodates electrochemical cells for spectro-electrochemical measurements. And is able to measure the electronic spectrum of solid thin film samples.

SPECTROSCOPY, (WCSU)

Raman Spectrometer, PerkinElmer RamanStation 400F
This is a research-grade benchtop Raman spectrometer with a motorized XYZ stage, fiber optic probe, and a resolution of 1cm-1 (or 4 cm-1 FWHM peak resolution).

X-RAY DIFFRACTION, (CCSU)

Rigaku Miniflex II powder diffractometer
This diffractometer is fitted with a rotating stage that handles up to five different sample preparations.

Agilent Xcalibur single crystal diffractometer

-equipped with a Sapphire CCD X-ray detector. The single crystal instrument has both Mo and Cu radiation capabilities and is equipped with a Helijet for low temperature diffraction studies.

ELECTRICAL MEASUREMENTS (ECSU)

Potentiostat - Pine Instruments WaveNow potentiostat
This instrument is relatively portable, has a current sensing range in the nanoamps and a USB interface for control and data acquisition.

6. *Work with the Connecticut Advisory Board on Nanotechnology and the CT Office for Workforce Competitiveness [and other similar bodies] to offer resources that will aid in Connecticut's Workforce Competitiveness (e.g. coursework, certification programs, and use of laboratory facilities).*

The CNT has made significant progress in developing win-win relationships with local business and industry and the lessons learned will be used to develop a model for workforce-focused education and training in Connecticut. Starting with a need assessment of regional industry, and through long running conversions with local business leaders, the CNT played a key role in development of the professional Masters of Science in Applied Physics program with nanotechnology and optics tracks. That program is now approved and running. It is meeting its enrollment and graduation targets.

Another important accomplishment associated with this goal is the CNT model for industry-driven experiential learning. Regional companies including Proton Onsite, Nomad Metallurgy and KX Technologies work with CNT personnel to provide educational opportunities for undergraduate students within an innovative structure of spiraled experiential learning that embeds development of specific research skills companies desire. This supported, tiered approach typically starts with early research experiences for undergraduates, a known positive-influence on student retention in STEM fields, followed by supported, on-campus research projects which leave students well prepared for related off-campus internships and, not uncommonly, employment in the local nanotechnology industry. This is an innovative, truly win-win approach to workforce development that started with the industry needs assessment and has evolved over time.

Another significant accomplishment related to workforce development is the Biotechnology Academic & Career Pathway (Bio-Path) initiative developed as a collaborative project between Southern Connecticut State University and the City of New Haven to support continued employment in this complex and growing field. The Greater New Haven metropolitan area is now home to the second largest cluster of biotechnology companies in New England and the city is making a concerted effort to support this growing economic sector through workforce development and academic support. Southern was chosen as the lead institution on this project as a result of its longstanding commitment and support for STEM initiatives, strong connections with the local high schools and regional community colleges, and prime location near the heart of the city of New Haven. Southern recently established an Office for STEM Innovation and Leadership that provides infrastructure for BioPath and other similar collaborative industry/academic/government initiatives.

Southern Connecticut State University is committed to increasing the number and quality of students graduating in the STEM disciplines through a variety of initiatives with regional companies. Southern has worked closely with the City to conduct a needs assessment to ensure that these new academic pathways align with in-demand professional skills sets needed by regional biotechnology companies. SCSU (with input from the City) has assembled an Advisory Group that has met bi-annually at the University to assist as necessary in the development of these academic programs. Based on the input from the advisory board and needs assessment, Southern has developed a range of innovative programs including a BS in Biotechnology Degree, experiential learning programs including internships, project-based learning and industry academic fellowships. The collaborative efforts of both Southern and the City of New Haven have increased the awareness of academic programs at the university and have fostered the flow of information between those industries and the STEM disciplines- science, technology, engineering and mathematics. A brochure discussing the BioPath program can be found at http://www.southernct.edu/stem/files/documents/SCSU_BioPath_Brochure_Print%20no%20crop.pdf

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

ACTUAL Revenues and Expenses:

(For FY 2018, include encumbrances to the end of the approved period, use estimates where necessary)

BUDGET CATEGORIES	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
REVENUE					
1. Gifts/Grant Support [a]	$34,863	$48,469	$63,463	$74,686	$92,550
2. General Fund [b]					
3. Operating Fund [c]	$103,970	$45,874	$119,602	$59,589	$79,805
4. Other Revenue [d]	$7,500	$8,505	$13,485	$16,022	$40,332
5. TOTAL REVENUE (lines 1-4)	$146,333	$102,848	$196,550	$150,297	$212,687
EXPENSES					
6a. Personnel [e]	$2,276	$18,644	$24,335	$24,440	$25,816
6b. Fellowships / Stipends	$21,493	$28,697	$28,292	$43,619	$54,600
7. Fringe Benefits	$455	$3,729	$4,867	$5,621	$6,712
8. Travel					
9. Equipment & Supplies		$11,835	$52,972	$16,389	$36,469
10. Contractual	$41,148	$36,017	$32,999	$43,207	$41,840
11. Construction [f]					
12. Other			$500	$1,000	$206
13. Total Direct Costs (lines 6 through 12)	$65,372	$98,922	$143,964	$134,275	$165,642
14. Indirect Costs [g]	$5,410	$8,410	$13,614	$9,714	$11,949
15. TOTAL COSTS (lines 13 + 14)	$70,782	$107,332	$157,578	$143,989	$177,592
NET					
16. TOTAL REVENUE - TOTAL COSTS surplus / (deficit)	$75,551	($4,484)	$38,971	$6,308	$35,095
17. OPERATIONAL BALANCE from previous year		$75,551	$71,068	$110,039	$116,347

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative

b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).

c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.
e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.
f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g. Estimate costs for facilities use, utilities consumption, etc.

PROJECTED Revenues and Expenses:

BUDGET CATEGORIES	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
REVENUE					
1. Gifts/Grant Support [a]	$85,854	$85,854	$95,854	$105,854	$119,854
2. General Fund [b]					
3. Operating Fund [c]	98,718	94,500	94,500	104,500	104,500
4. Other Revenue [d]	35,000	40,000	45,000	55,000	65,000
5. TOTAL REVENUE (lines 1-4)	219,572	220,354	223,354	265,354	289,354
EXPENSES					
6a. Personnel [e]	44,047	44,047	46,347	46,347	46,347
6b. Fellowships / Stipends	66,400	66,400	66,400	66,400	76,400
7. Fringe Benefits	12,333	12,333	12,977	12,977	12,977
8. Travel					
9. Equipment & Supplies	39,454	39,454	39,454	39,454	39,454
10. Contractual	36,886	36,886	36,886	36,886	36,886
11. Construction [f]					
12. Other					
13. Total Direct Costs (lines 6 through 12)	199,120	199,120	202,064	202,064	212,064
14. Indirect Costs [g]	18,168	18,168	18,582	18,582	18,582
15. TOTAL COSTS (lines 13 + 14)	217,288	217,288	217,646	220,646	230,646
NET					
16. TOTAL REVENUE - TOTAL COSTS					
surplus / (deficit)	2,284	3,066	14,708	44,708	58,708

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

17. OPERATIONAL BALANCE					
from previous year	**$151,442**	**$153,726**	**$156,792**	**$171,500**	**$216,208**

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative

b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).

c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).

d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.

e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.

f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.

g. Estimate costs for facilities use, utilities consumption, etc.

Budget Narrative:

(Provide any important context about ACTUAL and PROJECTED Revenues and Expenses)

1) Gifts / Grant Support consists a donation from the Werth Family Foundation (IAF) and CRISP grant.

Werth support is expected to continue at an amount of $65,854 per year.

The CRISP grant has ended in FY 2018. It is anticipated that a new grant will replace it in FY 2019

at $20,000 and will increase to $54,000 by FY 2023.

3) The Operating Fund represents the support SCSU provides the Center from its regular operating budget.

This support has decreased from a high of $119,602 in FY 2016 to a conservative projection $94,500 in FY 2020.

This represents support for the portion of Nanotechnology usage devoted to student education.

4) Other Revenue refers to revenue generated from CNT affiliated Industry and Academic Institutions,

including but not limited to the following:

Industrial:	Academic:
Proton Onsite	Yale University; Materials Science
Nomad Metallurgy	Yale University; Electrical Engineering Applied Physics
KX Technologies	Fairfield University
Butterfly Network	University of New Haven
Hoffman Engineering	Mt. Saint Mary College
Precision Combustion	
Chemwerth Pharmaceuticals	
ASML (NDA finalization in progress)	

6a) Personnel expenses consist of the following:

Lab Technician - .15% of a permanent part time position (28 hrs per week) - $8,400

This may increase to .20% (increase to $9,200) if anticipated membership / affiliations increase as planned.

Lab Manager - consists of back fill for 3 credits of release time per semester for a total of

6 credits per year at a cost to $12,000.

Lab Manager - Summers only - 3 credits for $5,100.

Graduate Assistant - $9,600

Student Workers - $8,947

6b) Fellowships / Stipends

Graduate Assistantship & Student Workers -

20,000 funded by Operating budget

UG Fellowships - $20,000 - Werth (IAF)

Graduate Assistantship - 9,600 - Werth (IAF)

Faculty mentors/business faculty/non-teaching lecturers - $10,000 (Werth (IAF)

Student Workers - $6,800 (Werth (IAF)

7) Fringe Benefits - Percentage varies by fiscal year

8) Travel - Not applicable at this time

9) Equipment and Supplies -

Operating fund provides $20,000 for chemicals and lab supplies

Werth Foundation covers $19,454 for miscellaneous equipment, for example,

gases, microscopy supplies and chemicals

10) Contractual -

Operating budget of $34,886 for service contracts, Nano Tech consultants,

Electron microscopy, etc.

11) Construction - not applicable

12) Other - anticipated costs going forward have been categorized above.

16) Surplus / Deficit -

Despite tightened resources, the Nanotechnology Center has shown a surplus

in every year except for FY 2015, which was the first year the Center was fully operational.

It is hoped that as the Center's reputation (and resulting student enrollment) increase, the

Center will be able to generate additional revenue which will result in a greater surplus which

can then be reinvested into equipment and programs.

17) Operational Balance -

The operational balance at the beginning of FY 2019 is $151,442.

Examples of per-use user fees

	CSCU Academic Users and External Academic Collaborators	External Academic Users	Industry Collaborators	Industry
CSCU CNT, Instrument	**Rate/hr**	**Rate/hr**	**Rate/hr**	**Rate/hr**
ADDITIONAL CHARGE FOR TECHNICIAN ASSISSTED WORK AND/OR TRAINING	+ 50	+ 60	+ 70	+ 80
SEM, Zeiss Sigma VP	40	48	96	192
Tabletop SEM, Hitachi TM1000	15	18	36	72
AFM, Veeko-Nanonis	25	30	60	120
Dip Pen Nanolithography, Nanoprofessor	25	30	60	120
UV/Vis/NIR Spectroscopy, Shimadzu	20	24	48	96
Fluorescence Spectroscopy, Perkin Elmer LS 55	20	24	48	96
TEM, Philips EM 400	35	42	84	168
Ion mill	20	24	48	96
Ultramicrotome, Leica	35	42	84	168
Gold sputtering ($ per sputtering run)	5	6	12	24
Allied High Tech polishing instruments	15	18	36	72

* the user or affiliate may be asked to purchase consumable supplies and/or special instrument parts
† Pilot project rates are negotiable
‡Rates for use of equipment not listed here are negotiable

Membership Model:

As an alternative to paying per-use, companies have the option of purchasing an annual membership to the CNT. This membership costs just $2500 per year and provides access to the CNT's research facilities. The pricing structure for membership, as well as that for per-use fees, was developed based on the model used at the UConn material science research facility (Tech Park, formally IMS), but is offered at a small fraction of the cost at UConn. For some local business this opportunity represents and low-cost avenue to specific research grade equipment they desire.

Appendix A: Guide to Collaborators, Projects, and Associated Organizations (alphabetical order)

American Physical Society (APS) Forum on Industrial & Applied Physics (FIAP)
(At https://www.aps.org/units/fiap/index.cfm)

The objective shall be to enhance the Society's ability to meet the needs of the industrial and applied physics community, and help the Society take advantage of the evolving opportunities in the practice and application of physics.

BioCT – Connecting Connecticut's Bioscience Community
(At https://bioct.org/home/)

Mission

BioCT is the bioscience industry voice for the state of Connecticut. BioCT is dedicated to growing the vibrant bioscience ecosystem in Connecticut by supporting innovation, collaboration, networking, education, talent engagement and advocacy. We bring together companies, institutions, entrepreneurs, investors, government, service providers, and other passionate, dedicated people, to create a thriving community to improve patients' lives and public health.

Bioscience Academic and Career Pathway (Bio-Path)
(At https://www.southernct.edu/stem/files/documents/SCSU_BioPath_Brochure_Print%20no%20crop.pdf)

Vision

The Bioscience Academic and Career Pathway (Bio-Path) will help sustain the greater New Haven region as a leader in bioscience by delivering specialized education, applied research, and promotional events in order to generate a pipeline of highly skilled and well educated citizens and workers. To foster cohesion and organization between participants, the program will be stewarded through the Office of STEM Innovation and Leadership (STEM-IL) at Southern Connecticut State University.

Mission

The Bio-Path initiative aims to grow interest and participation in bioscience education by providing academic and experiential learning programs that position our graduates for the 21st century workforce with an intentional focus on industry needs and the pace of knowledge necessary to maintain currency. This collaborative project will serve the educational needs of Southern students, those entering the University through regional high schools and community colleges, as well as current bioscience employees requiring additional skills or formal credentials to advance their careers. The Bio-Path project will include internships, research efforts, and certification programs that will position Southern as a resource for all Connecticut bioscience

related organizations. These efforts will culminate in a strong pool of qualified, workforce-ready candidates that will solidly position New Haven as a bioscience leader in New England.

Center for Research on Interface Structures and Phenomena (CRISP)
(At https://crisp.yale.edu/about-us)

Mission

The Center for Research on Interface Structures and Phenomena (CRISP) discovers and develops novel atomically engineered materials and processes across a wide spectrum such as amorphous metals or artificially structured crystalline oxide interfaces. This research also serves as an effective vehicle for student recruitment, retention, and education in Science, Technology, Engineering, and Mathematics (STEM). CRISP includes two interdisciplinary research groups (IRGs): 1) the Atomic Scale Design, Control and Characterization of Oxide Structures IRG focuses on understanding and engineering the novel chemical, electronic, and magneto-electric phenomena that arise at atomically abrupt complex oxide interfaces; and 2) the Multi-Scale Surface Engineering with Metallic Glasses IRG addresses the grand challenge of how to control surface properties through topographical structuring at multiple length scales (examples include tailoring biocompatibility, reactivity, friction, adhesion, and wetting to efficiently functionalize surfaces for a wide range of new applications and devices). Each IRG relies on (i) unique, world-class expertise at Yale, Southern Connecticut State University (SCSU), and industrial, national laboratory, and international partners; (ii) demonstrated, seamless multi-disciplinary collaborations; and (iii) extensive shared facilities to address grand challenges in materials research through multi-faceted efforts that include physical and biological sciences, engineering, and interplay between state-of-the-art theory and experiment. The research is closely integrated with education and outreach (EO) efforts through partnerships among a major research university (Yale), the largest educator of teachers in the state (SCSU), and the economically distressed, under-represented minority (URM)-dominated New Haven Public School System (NHPS). These partnerships provide model programs for recruitment, retention, and broadened participation in STEM careers that may be replicated nationwide. Further, CRISP faculty members are committed to enhancing cultural, gender, ethnic and racial diversity among STEM students and faculty, and more broadly among science students, teachers, and researchers nationally.

For education and Human Resource Development, CRISP uses the interdisciplinary, innovative aspects of its research to enhance STEM recruitment, retention, education, and to broaden participation by under-represented groups. The focus is on two successful signature initiatives that are evolving based on continued quantitative outcome assessments. The Materials Research Center Initiative for STEM Education (MISE) enhances STEM recruitment and retention through professional development of teachers that enhances their teaching abilities. This efficiently impacts the largest number of students, resulting in a substantial multiplying effect. The Materials Research Center Initiative for Multidisciplinary Education and Research (MIMER) provides interdisciplinary team-based research and education opportunities to the entire spectrum of STEM professionals and students. Teams work on integrated IRG research projects that form bridges to

multidisciplinary courses and training projects. The integration of these EO efforts with graduate research uniquely prepares CRISP participants to succeed in, and ultimately lead, multi-disciplinary, multi-cultural efforts that are increasingly important to solve complex, large- scale problems. CRISP also prepares postdoctoral researchers for independent research careers by giving them latitude in defining research thrusts while providing them professional development training ranging from proposal writing to research management.

CRISP partnerships with national laboratories, industry, educational institutions, and state and local government agencies help CRISP realize its research and human resource development visions while broadening its impact. Key in-depth collaborations continue to be developed with Brookhaven and Argonne National Laboratories (BNL and ANL) that enable joint development of new characterization methods. Industrial partners, such as IBM or the PX Group, provide CRISP with a pathway towards commercialization of basic research findings. CRISP's interactions with international universities are highlighted by Joint Research Centers with Peking University on Microelectronics and Nanotechnology and with the Karlsruhe Institute of Technology on Advanced Atomic Force Microscopy Methods. Both endeavors involve joint projects and faculty and student exchanges, providing CRISP access to unique facilities at the partner institutions. CRISP's partnership with the New Haven Public School System provides detailed teacher evaluation data for a predominantly minority- serving school system that enables CRISP to direct its professional development (PD) towards teachers with the greatest needs, providing them with individualized PD plans. CRISP also works with the Connecticut Office of Workforce Competitiveness to develop new EO programs that span K-12, community colleges, and PD.

Center for Excellence in Mathematics and the Sciences (CEMS)
(At http://www.southernct.edu/academics/schools/arts/cems/about.html)

Mission

The mission of the Center for Excellence in Mathematics and the Sciences is to foster outstanding teaching and research in the various fields of math and science through the enhancement of existing campus initiatives and through effective collaborations between math and science faculty in K-16, with the goal of increasing the number and quality of students pursuing careers in math and science.

The goals of the Center for Excellence in Mathematics and the Sciences are to:

1. Enhance the facilities and infrastructure for conducting research and research training in science disciplines through coordinated grant-writing activities for intramural and extramural funding,
2. Create a forum for interdisciplinary math/science collaboration in teaching and research,
3. Strengthen the capacity of K-12 institutions in the greater New Haven community to effectively teach mathematics and science to all students,
4. Increase the impact of math and science on students via General Education Program,

5. Develop programs to specifically increase the number of women and members of underrepresented groups pursuing degrees in science, technology, engineering, and mathematics.

Center for Next Generation Manufacturing, An NSF Center of Excellence run by the COT

The Regional Center for Next Generation Manufacturing, A National Science Foundation Center of Excellence, provides great resources for both students and educators interested in exploring opportunities in today's technology companies. Funded by the National Science Foundation and directed by the Connecticut College of Technology, the Center offers:

- Industry-driven courses in next generation manufacturing
- Online courses that include diverse methods of teaching
- Career marketing materials that support the recruitment and retention of students in manufacturing centers
- Courses that bridge two-year engineering technology programs with traditional four-year engineering programs
- Longitudinal studies that identify promising practices and assess students' performance in the workplace and employer satisfaction with graduates
- Teacher externships in cutting-edge, next generation manufacturing companies

College of Technology (COT)

COT provides career pathways for students to earn certificates, Associates and Bachelors degrees in Engineering and Technology disciplines. COT reduces barriers to education by providing a seamless articulation between the community colleges and the four-year partner universities. In addition, the COT uniquely integrates all of the aforementioned college and universities systems through offering multiple points of entry for completion of degrees.

Connecticut State Colleges & Universities (CSCU)
(At http://www.ct.edu/regents/mission)

Vision

The Connecticut State Colleges & Universities will continually increase the number of students completing personally and professionally rewarding academic programs.

Mission

The Connecticut State Colleges & Universities (CSCU) contribute to the creation of knowledge and the economic growth of the state of Connecticut by providing affordable, innovative, and rigorous programs. Our learning environments transform students and facilitate an ever increasing number of individuals to achieve their personal and career goals.

Connecticut State Universities (CSU)
(At http://www.ct.edu/regents/mission)

Mission

As part of the Connecticut State Colleges & Universities (ConnSCU) system, the four Connecticut State Universities offer exemplary and affordable undergraduate and graduate instruction leading to degrees in the liberal arts, sciences, fine arts, applied fields, and professional disciplines. They advance and extend knowledge, research, learning and culture while preparing students to enter the workforce and to contribute to the civic life of Connecticut's communities. Through a variety of living and learning environments, the Universities ensure access and diversity to meet the needs of a broad range of students. They support an atmosphere of inter-campus learning, the exploration of technological and global influences and the application of knowledge to promote economic growth and social justice.

Connecticut Microelectronics and Optoelectronics Consortium (CMOC)

A professional organization of scientists and engineers who work or study in Connecticut. This organization organizes regional conferences related to nanotechnology.

Industry Academic Fellowship (IAF):

The IAF program invites undergraduate students to conduct materials science research with an industry focus over the course of an 8-week summer research internship. They conduct research in collaboration with educators and industry professionals, while exploring the business-related aspects of technology.

National Nanotechnology Initiative (NNI)
(*Triennial Review of the National Nanotechnology Initiative*, National Academies Press, http://nap.edu/23603, and references therein.)

The National Nanotechnology Initiative (NNI) is the U.S. government's interagency program for coordinating, planning, and managing research and development (R&D) in nanoscale science, engineering, and technology. It was codified into law by the 2003 21st Century Nanotechnology Research and Development Act (Section 2, Line 2). The NNI not only advances the frontiers of nanoscience and nanotechnology, but also serves the public good through technology transfer, assessing and mitigating the risk of using nanotechnology, educating students at all levels, reaching out to and informing the public about nanotechnology, developing the nanotechnology workforce, and supporting the prominence of the United States in commercial applications for economic benefit.

Vision

To expedite the discovery, development and deployment of nanoscale science and technology to serve the public good through a program of coordinated research and development aligned with

the missions of participating agencies.

The NNI has the following four high-level goals:

1. Advance a world-class nanotechnology research and development program;
2. Foster the transfer of new technologies into products for commercial and public benefit;
3. Develop and sustain educational resources, a skilled workforce, and a dynamic infrastructure and toolset to advance nanotechnology; and
4. Support responsible development of nanotechnology.

Materials Research Society (MRS)
(At https://www.mrs.org/home)

Vision

The Materials Research Society will build a dynamic, interactive, global community of materials researchers to advance technical excellence by providing a framework in which the materials disciplines can convene, collaborate, integrate and advocate.

Mission

The Materials Research Society (MRS) is an organization of materials researchers worldwide that promotes communication for the advancement

Materials and Manufacturing Summer Teachers' Institute (MMSTI):

MMSTI is a multi-day professional development workshop that acquaints K-12 science teachers with how STEM skills can be applied in Connecticut's manufacturing industries. Teachers learn from industry professionals about their workforce needs and network with fellow educators from across CT, CEOs of local companies, and members of the CT Department of Education. It is a collaboration between the CNT, the New Haven Manufacturers Association (see below) and sponsoring business partners.

New Haven Manufacturers Association (NHMA)
(At http://www.newhavenmanufacturers.com)

The New Haven Manufacturers Association promotes and advocates causes important to the manufacturing community in both the Greater New Haven region and beyond, educates members on business, and provides a forum for the exchange of ideas and issues of interdisciplinary materials research and technology to improve the quality of life.

Pathways to Academic Excellence (PAcE) Scholarship Program

This National Science Foundation grant funded approximately $600,000 in scholarships to undergraduate STEM majors at SCSU, as well has a seminar series and community building

events. CEMS provided administrative and logistical support throughout the grant period. Karen Cummings was principle investigator. January, 2010-January, 2015. We will apply for renewal.

Southern Connecticut State University (SCSU)
(At http://southernct.edu/strategic-plan/10.2_%20StrategicPlan_2015.pdf)

Mission

Southern Connecticut State University provides exemplary graduate and undergraduate education in the liberal arts and professional disciplines. As an intentionally diverse and comprehensive university, southern is committed to academic excellence, access, social justice, and service for the public good.

School of Arts & Sciences
(At https://issuu.com/scsu/docs/a_s_strategic_plan?e=1560078/47916317)

Vision

The School of Arts & Sciences promotes the study and practice of the liberal arts as the cornerstone and vibrant center of our comprehensive university. The School celebrates a free exchange of ideas – those whose foundations are supported by logical evidence as well as those illuminated by inspiration and creativity. Our goal is to engender free and independent thought, self-respect, and ethical citizenship.

Mission

Steeped in great educational traditions, the School of Arts & Sciences promotes the study of liberal arts as a progressive, imaginative and useful way to understand and participate in our rapidly evolving global society. We value and foster interdisciplinary study and support collaboration among and between disciplines, faculty, and students. As scholars, artists, and mentors, our faculty provide an innovative and supportive learning environment that extends far beyond the classroom. The programs in Arts & Sciences embrace a full spectrum of ideas, doctrines, disciplines, and philosophies, and each promotes the responsible development and application of disciplinary knowledge, essential skills, and modes of inquiry. We seek to engender compassion and empathy through civil discourse and cultural understanding. We support dynamic and resilient curricula to help prepare our students for the next generation of careers – including those that have yet to be invented or even imagined. Dedicated to the success of our students while recognizing the practical value of education, our degree programs ensure that students will remain competitive in the current knowledge-based economy. Importantly, the School is grounded in the belief that a quality education can and should encourage pursuit of truth, meaning, and beauty; relentless curiosity; global awareness and cultural respect; a deep love for learning; and the development of intellectual and artistic risk by challenging the known and exploring the unknown.

School of Business
(At http://www.southernct.edu/academics/schools/business/mission-and-vision.html)

Vision

Change for good: To become a recognized business school known for developing mindful leaders who do well by doing good.

Mission

As New Haven's urban, public School of Business, our mission is to transform the lives of a diverse student population. Through curricular and co-curricular learning, we provide business education informed by research. To meet changing workforce needs locally and globally, we cultivate leadership and cross-cultural awareness with an emphasis on sustainability and professional development.

STEM Innovation and Leadership (STEM-IL)
(At http://www.southernct.edu/stem/)

The SCSU Office for STEM Innovation and Leadership is a university-wide office designed to develop, strengthen, and promote interdisciplinary STEM (Science, Technology, Engineering, and Mathematics) research, education, and outreach for SCSU and the Southern Connecticut region.

It is a collaborative enterprise across SCSU academic units, other regional higher education organizations, school districts, regional offices of education, government agencies, business, and the community at large. The Office provides expertise in STEM research and education program design and implementation.

Our Goals

The Office for STEM Innovation and Leadership strives to promote interdisciplinary collaboration between STEM departments at SCSU: Biology; Chemistry; Computer Science; Earth Science; The Environment, Geography, and Marine Sciences; Mathematics; Physics; Psychology

Research Center on Values in Emerging Science and Technology (RC-VEST)
(Research Center on Computing and Society (original center), http://rcvest.southernct.edu/home/)

Mission (Draft)

The Research Center on Values in Emerging Science and Technology, focuses on issues located at the intersection of science and values as implemented in emerging technologies, such as issues regarding scientific values, computing technology, scientific technologies, scientific practices and human values. The Research Center on Values in Emerging Science and Technology, comprised

of faculty members from Southern Connecticut State University, meets regularly to discuss cutting edge issues that arise in technology, medicine, and science. One important purpose of the center is to bring together scientific information and ethical implications, as efforts to bring ethical based discussions into scientific classrooms have begun. Additionally, the Research Center on Values in Emerging Science and Technology hosts an annual roundtable discussion focused on one particular topic as well as an annual speaker series, in an effort to bring scholars together to discuss and advance the issues. Research done by the members of the center focus on topics such as computer ethics and biomedical ethics. The Research Center's future projects will include active participation of faculty members from a number of disciplines at Southern Connecticut State University and other Connecticut universities and colleges. Thus, the Research

Center on Values in Emerging Science and Technology can be understood as both a continuation and natural progression of the previous research center.

As such, our mission as the Research Center on Values in Emerging Science and Technology is to uphold and advance the following:

- Undergraduate Education – create and teach computer ethics, bioethics, and philosophy of science/nature courses at the university level; conduct teaching workshops for faculty members of colleges and universities regarding ethical implications found throughout the sciences.
- Research - promote member research through conference sponsorship, fellowships, grants, internships, commissioned publications, library creation, etc.
- Publications – support the creation and dissemination of books, articles, monographs, proceedings, video programs, model curriculum materials, and other results of research done by members of the Research Center on Values in Emerging Science and Technology.
- Public Outreach and Awareness - promote cooperation among scholars and public policy makers on computer ethics and science ethics topics; serve as a central source of information about relevant people, resources, and organizations via the Center's website.
- Web Site - create and maintain one of the finest computer ethics Web sites in cyberspace with teaching materials, articles and papers, multimedia materials, and links to other computer ethics resources.
- Inclusive Interdisciplinary Perspectives – promote a broadening of research members to include members from a multitude of disciplines within Southern Connecticut State University as well as other universities and colleges throughout Connecticut; maintain fruitful relationships with other likeminded centers on campus.
- Faculty Continued Education and Networking – offer continued education and resources to faculty at Southern Connecticut State University via focused roundtable discussions and workshop series; promote collaboration between interdisciplinary research members, speakers, visiting scholars, and Center visitors.

Werth Center for Coastal and Marine Studies
(At https://www.southernct.edu/research/research-centers/ccms/mission.html)

Mission

Southern Connecticut State University is located centrally along the heavily urbanized Connecticut coastline proximate to a variety of diverse natural habitats. This setting provides excellent opportunities for research and education focused on the pressures of human development and the need for the preservation of these natural habitats. Long Island Sound has been designated as an estuary within the National Estuary Program, a program designed to protect nationally significant estuaries throughout the United States. More than eight million people live within its watershed, and its waterways represent a major site for recreation, transportation, and fishing activities. Long Island Sound is also a repository for wastes and contaminants derived from various sources, including rivers and streams, urban and agricultural runoff, wastewater treatment plants, airborne transport, disposal of dredged material and tidal exchange with the New York City area. The high population density surrounding Long Island Sound and the resultant competition for resources within the estuary present unique problems and opportunities for students, educators, and scientists.

The Center will respond to the needs of the university and the community in direct and tangible ways. The efforts of the faculty, staff, and students associated with the Center will focus on coastal and marine environmental/ecological research and education along Connecticut's urbanized coast and harbors. The emphasis will be on applied research, including faculty-directed student research, designed to address issues of local and regional importance. Ongoing student-faculty research that would be incorporated into the Center's portfolio include distribution and concentration of heavy metals in Connecticut harbors, loss of coastal wetlands, storm impacts and beach erosion, landscape ecology, conservation biology and habitat selection and ecology of invasive species. The results of such studies will be made available to resource managers and educational institutions via outreach efforts that could include Center publications, publications in peer-reviewed journals, public talks, conferences, consultations, and educational materials.

In terms of enhancing education at the university, the Center will foster collaborative research and pedagogical initiatives among faculty across traditional academic departments in different disciplines. The interdisciplinary nature of coastal marine research will be used to provide a broad spectrum of students with opportunities to learn science by doing science. Through the establishment and monitoring of a series of field sites throughout the region, the Center will provide opportunities for faculty and students to participate in scholarly activities, and to incorporate the results of such activity into their teaching. Science is a process which cultivates skills such as experimentation, observation, inference, collaborative discussion and critical thinking. Because they are field-oriented, environmentally relevant, and multidisciplinary in nature, the marine sciences are uniquely suited for introducing undergraduate students to the dynamic and interdisciplinary nature of scientific research.

Appendix B: CSCU-CNT Advisory Board Membership

Dr. Mark Aindow
Executive Director Innovation, External Engagement, and Industry Relations
Professor of Materials Science
University of Connecticut Institute of Materials Science (IMS) and Tech Park
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Dr. Elizabeth Roberts
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Dr. Samuel Brauer
Principal and Founder
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http://www.nanotechplus.net/teamleaders.htm

Dr. Bruce Kalk
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http://www.southernct.edu/academics/schools/arts/contact.html

Dr. Karen Birch
Director Connecticut Community College – College of Technology
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Dr. Gregg Gallatin
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Mr. Andrew Lombardo
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Prof. Sarah Roe
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Mr. Michael Roer
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Prof. Robert Ryder
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Ms. Deborah Santy
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https://www.wcsu.edu/chemistry/index.htm

Appendix C: CSCU-CNT Affiliated Industries or Academic Institutions

Industry

- Proton Onsite (user)
- Nomad Metallurgy (member; user)
- KX Technologies (member; user)
- Butterfly Network (user)
- Hoffman Engineering (user)
- Precision Combustion (user)
- Chemwerth Pharmaceuticals (user)
- ASML (exploring use; NDA finalization in progress)
- CT Agricultural Experiment Station (exploring possible use)
- CONNSTEP

Academic

- Yale University; Materials Science (member)
- Yale University; Electrical Engineering Applied Physics (member)
- Fairfield University (member)
- University of New Haven
- Mt. Saint Mary College
- Central CT State University; Engineering
- Central CT State University; Physics
- Western CT State University; Chemistry
  University of Hartford; Chemistry (in discussions)
- Southern CT State University; Biology
- Southern CT State University; Chemistry

Industry affiliated through NHMA and BioPath (exploring possible use/internships)

- Alloy Engineering
- Orange Research
- Schwerdtle
- Leed Himmel
- Bridgeport Fittings
- Assa Abloy
- Alexion Pharmaceuticals
- SEMA4
- Core Informatics

- Vanessa Research
- Arvinas
- Evotec
- Medtronic
- The Jackson Laboratory
- Hoffmann and Feige, Inc.
- AquaGuidance
- ASML

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Continuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve continuation of the Center for Compassion, Creativity, and Innovation at Western Connecticut State University until December 31, 2025.

A True Copy:

_____

Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Continuation of the Center for Compassion, Creativity, and Innovation at Western Connecticut State University

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the Center for Compassion, Creativity, and Innovation's 2018 Sunset Report – a 10-page document.

The Center for Compassion, Creativity, and Innovation was established by the Board of Regents on June 20, 2013 and authorized until December 31, 2018. The mission of the Center is to expand opportunities and support teaching, research and intellectual discourse exploring the values of compassion, creativity and innovation for undergraduate and graduate students, faculty, and staff across all academic disciplines working whenever possible with people of all communities.

PRINCIPAL ACTIVITIES/ACCOMPLISHMENTS
The Center's faculty has developed and implemented two interdisciplinary courses that focus on compassion, creativity and/or innovations. The Center has generated 15 community service projects. The Center has co-hosted five projects with the Tibetan Buddhist Center for Universal Peace. The Center has advanced explorations of its focus areas at the primary, secondary and high education levels and promoted a global cultural perspective through a number of events.

STUDENT INVOLVEMENT
The biggest generator of community service project has been students, particularly members of the student-run Creativity and Compassion Club. Two students sit on the Center's Board of nine directors. Student volunteers are woven throughout Center activities. At least 40 students have been involved in some fashion each semester. Students benefit from their interactions with speakers, scholars, activists, community organization and political leaders; embracing questions of compassion in creating innovative solutions to social programs. The Center's director considers students to be the Center's true leaders.

BUDGET

Summary of Revenues and Expenses					
	FY 2014	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**
Beginning Balance	$122,043	$116,014	$115,549	$74,612	$603
Total Revenues	$9,376	$530	$2,130	$111	
Total Expenses	$15,405	$995	$43,067	$74,120	
Revenues Less Expenses	($6,029)	($465)	($40,937)	($74,009)	
Ending Balance	$116,014	$115,549	$74,612	$603	

Summary of Projected Revenues and Expenses					
	FY 2019	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Beginning Balance	$603	$603	$1103	$1603	$2103
Total Revenues	$500	$1,000	$1,000	$1,000	$1,000
Total Expenses	$500	$500	$500	$500	$500
Revenues Less Expenses	$0	$500	$500	$500	$500
Ending Balance	$603	$1103	$1603	$2103	$2603

NOTES: Funds are no longer being dispersed for support staffing. No University funds are being expended to staff the Center at this time. If significant donors emerge, the Center will reconsider hiring a University Assistant.

The initial funds to establish the Center were from the Dali Lama following his visit to the campus and individual donors.

ASSESSMENT/EVALUATION

The Center reports that of its stated seven measurable goals/objectives, four were met with one having room for growth, one was nearly met, one was not nearly met and is under review for possible revisions, and one was characterized as "fallen short". The Report identifies three area of improvement to meet its goals/objectives in the coming years. Additionally, the Center's staff, students and alumni have assisted several state municipalities in becoming a City or Town of Compassion and William & Mary in becoming a University of Compassion.

RECOMMENDATION

President John B. Clark has reviewed or been briefed on the evaluation of the Center for Compassion, Creativity, and Innovation and recommends that the Board of Regents authorize its continuation.

10/05/17 – BOR-Academic and Student Affairs Committee
10/18/17 – Board of Regents

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (apoole@commnet.edu) with a copy to Patricia Ryiz (pryiz@commnet.edu).

Name of University:	Western Connecticut State University
Name of Center/Institute:	Center for Compassion, Creativity, and Innovation
Director/Coordinator:	Dr. Christopher Kukk and Jessica Lin
Date of Original Approval:	June 2013
Date of Last Approval:	
Board Resolution of Last Approval:	June 2013
Sunset Date:	December 2018

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☑ I recommend continuation of this Center/Institute

☐ I recommend discontinuation of this Center/Institute

Signature of President

Comments (OPTIONAL):

Mission
The Center's mission is to expand opportunities and support teaching, research and intellectual discourse, exploring the values of compassion, creativity and innovation for undergraduate and graduate students, faculty, and staff across all academic disciplines working whenever possible with people of all communities.

Needs Assessment
This Center for Compassion, Creativity and Innovation (CCCI or the Center) was created to explore the study of compassion and its use as a tool for finding creative ways of living harmoniously with each other in all aspects of society. The Center grew out of the collaborative project to bring His Holiness the Dalai Lama to WCSU. Through CCCI's conferences, publications, forums, out-reach projects, lectures and events, students and teachers at all academic levels as well as local community members have not only raised awareness, concern and compassion about numerous societal issues but also offered ways to address such issues in places ranging from our boardrooms to our classrooms.

Needs Adjustment
The need for this Center has not changed since it was first founded in 2013 but it has grown through the societal events we have all witnessed over the last five years. The challenges that we face as a university, a community, a society, and a nation, such as suicides, school shootings and discrimination of all types (i.e., ethnic, gender, racial and mental health), demonstrate why we need to develop and promote compassionate thinking. Violence and callousness weaken communities whereas compassion has demonstrated (in science and business research) that it strengthens both individuals and the communities in which they live. Through CCCI, our students, staff, and community members have been a source of compassionate strength for not only our local towns and cities but also for other universities and cities across the country. The need for this Center has grown stronger than ever.

The purpose of the Center is to:

I. Create awareness within the university as well as the regional and global communities about the importance of compassion, creativity and innovation in daily and professional life.
II. Maintain a forum where students, faculty, staff and people from all traditions such as, but not restricted to, artistic, philosophical, cultural, political and business communities can come together to investigate the conjunction of compassion, creativity and innovation through dialogue, research and activities.
III. Publish and disseminate creative products of the Center (such as conference proceedings, research, music, etc.) through appropriate format and media (such as online, print, concerts, etc.).
IV. Seek to enrich the activities, research, and curricula in all disciplines of the university by supporting students, faculty, and staff who wish to inquire into issues of compassion, creativity and innovation.
V. Sponsor activities, events, conferences and forums related to issues of compassion, creativity and innovation.
VI. Engage with other centers and organizations on other projects consistent with the Center's mission.

Principal Activities

- Sponsoring events, programs, and conferences that enhance understanding of compassion as a critical element in supporting creativity, innovation, and an ethical culture.

Principal Accomplishments

Our activities and accomplishments are organized in relation to the objectives set out in our 2013 Center proposal.

Objective 1: Development of Interdisciplinary Courses that focus on Compassion, Creativity and Innovation. *Goal: To implement one interdisciplinary course every two years. Results: 2 courses completed in the five year time frame. We anticipate the third by year 6. On track.*

- Spring 2017 Compassion in the Real World
- Fall 2018 Ethics and Compassion in the Real World

Objective 2: Community Service. The biggest generator of activity for the Center comes from the student run Creativity and Compassion Club. Their leadership has helped to coordinate conferences for the Center and provided community service to the university and the surrounding community. *Goal: At least one community service event focused on compassion per year. Result: Goal met.*

A sampling of those projects include:

- August 2014: Collaborated with WCSU's Creativity and Compassion Club, WCSU's Honors Students, Wooster School's Compassion Club, Unger Industrial and local hotels and dentists to fill 50 backpacks with hygiene, first aid supplies, and snacks to help alleviate the suffering of the area's homeless population.
- September 2014: Coordinated with WCSU students, the City of Danbury, and the Danbury Garden Club to create a Compassion Garden at City Hall to represent the diverse communities of this city.
- May 2014: Hosted an art reception at Gallery@287 in Danbury that wove compassion with creativity through the art of Bryn Gillette. The event was called, "Haiti, Beyond the Ruins."
- October 2015: Coordinated a "Chalk Talk" event on campus, where faculty and students were invited to write down and participate in an open discussion about what makes them happy and thankful.
- November 2015: Hosted a screening of *Paper Tiger*, a documentary story where a public school was in a process of deteriorating as a result of the increasing number of drop outs and drug addictions. WCSU students were invited to the screening to discuss these problems that are becoming apparent in schools of all levels.
- April 2016: Coordinated with Roots and Shoots club, "Plant Your Way to a Healthy Life," an Earth Day event where WCSU students were invited to plant a flower seed and enjoy fruits and vegetables provided by Sodexo while discussing healthier options for diets and exercise.
- Fall 2016: Hosted every Friday at 6PM a "Compassion Book Club" where WCSU students were invited to read and discuss *Strangers Drowning* at the Kathwari Honors House.
- November 2016: Arranged with the Family and Children Aid, Danbury, CT for WCSU students to take a tour of their facilities, and to discuss some of the challenges they address in Danbury and how we can best assist and provide volunteers.
- December 2016: Coordinated a food and clothing drive for Danbury Families and Children's Aid.

- December 2016: Co-sponsored with the Institute of Holistic Health Studies a "Stressbusters" event to provide resources and stress relieving methods for the students on campus. CCCI and HSOC also co-hosted a "Compassionate Hearts and Talks" table at the event.
- December 2016: Assisted and volunteered with WCSU's Community Services Project Connect Event, by giving out clothing, food, and services for those in need.
- January 2017: Hosted two documentary nights and bake sales to help raise funds for Nobel Peace Laureate, Leymah Gbowee's visit to WCSU.
- April 2017: Coordinated with Families Network of Western, CT, Inc. in setting up a pinwheel garden at the Kathwari Honors House to raise awareness for April as the National Child Abuse Prevention Month and volunteered to set up gardens at other locations.
- Spring 2018: Coordinated volunteers with Muslim Student Association, Rotaract, and HSOC to serve meals at the Danbury Dorothy Day Soup Kitchen on the fourth Friday of every month.
- December 2017: Co-sponsored with the Institute of Holistic Health Studies a "Stressbusters" event to provide resources and stress relieving methods for the students on campus. CCCI and HSOC also co-hosted a "Compassionate Hearts and Talks" table at the event.

Objective 3: Co-host Projects with Do Ngak Kunphen Ling (DNKL) the Tibetan Buddhist Center for Universal Peace. The establishment of the Center arose from WCSU's collaboration with DKNL to bring the Dalai Lama to our campus in 2012. The Center is to continue our relationship with DKNL and produce events that are appropriate to the Center's mission. *Goal: Execute at least one joint project with DNKL per year. Result: Nearly met and on track to grow.*

- September 2015**:** cohosted with DNKL the first "Mindfulness and Compassion in the Classroom" at WCSU. Top experts in the field of mindfulness and compassion shared cutting edge data and practical tips on how to integrate into the classroom and schools. Integrating Mindfulness and Compassion in Education is essential for building Social and Emotional Learning (SEL) in schools which is so important for student success in school, work, and life. Speakers included: Ted DesMaisons, US Coordinator for the Mindfulness in Schools Project; Scarlett Lewis, Choose Love Foundation; Chris Kukk, Director of CCCI; Thomas Pruzinsky, Professor of Psychology, Quinnipiac University; Brendan Ozawa-de Sila, Associate Professor, Emory University
- April 2016: CCCI co-hosted with Honors, DNKL, WCSU ConnCap, and Peace Jam to host a Peace Jam Slam, where we invited high school students across Connecticut, Massachusetts, and New York to participate in workshops and family groups on important issues centering on compassion and creativity.
- Fall 2016: CCCI coordinated, hosted and co-sponsored with DNKL, a "Buddhist Meditation at Noon" session every other Wednesdays during the fall 2016 semester for students, faculty, staff, and public in the Kathwari Honors House.
- April 2017**:** co-hosted with WCSU Doctor of Education in Instructional Leadership Program, WCSU Counselor Education, WCSU Dept. of Social Work, and DNKL Tibetan Buddhist Center for Universal Peace: "Nurturing Compassion & Creativity in Education Conference." Keynote was Scarlett Lewis "Choosing Love." Breakout sessions provided opportunities for like-minded education professionals, researchers, advocates, and others interested in compassionate and

creative education to learn, network, and engage. Sessions included: Integrating Yoga & Mindfulness in Schools, Developing Social Emotional Learning in Students, Mindfulness for Educators, Compassion in Practice, Compassion & Analytical Selective-Focus Skills (COMPASS), Teaching Compassion in Children with Comfort Dogs, An Update on the TeachLive Lab, Creating Enrichment Academies in Elementary Schools, Cultivating Cultural Awareness in Middle School Students, among others…

- Spring 2017: Invited and assisted DNKL's Geshe Lobsang Dhargey, Dr. John Briggs, Dr. Eric Lewis and Dr. Stephen Dydo in carrying out the first "Compassion in the Real World" course for honors students and non-matriculate students. (This is also part of Goal 1).

Objective 4: Ethics Awareness. Compassion itself raises many ethical questions. Focusing on these questions is a natural goal of this Center. *Goal: Sponsor at Least one ethics lecture or workshop per year. Result: We hosted one lecture specifically focused on ethics.* A review of all that the Center does, suggests that this is woven throughout the work and may not need to be a separate category. The Board is reviewing this goa.

- Fall 2014: Co-sponsored with the Ancell School of Business a day's worth of talks and activities with Dr. Ron Nahser. The day was part of Ancell's Sustainability, CSR, and Ethics Forum titled "Ethics in Business: Challenges for a Changing World."

Objective 5: Primary, Secondary & Higher Education. WCSU's proximity to Sandy Hook, has given as a particularly keen focus on the need to explore the value of compassion before college. *Goal: Encourage educators throughout the PK-20 pipeline to explore roles that compassion, creativity, and innovation can play in their curricula. Result: Goal met, but room for growth.*

- Spring 2016: CCCI Director coordinated and met with the White House staff and the U.S. Secretary of Education (Secretary John King) on implementing social-emotional learning programs around the country. April 2015 – Assisted in creating the Jesse Lewis Empowering Educators Act introduced by Senator Blumenthal and delivered a speech with Senator Blumenthal about the important role that social and emotional learning plays in education at the ceremony announcing the act.

- September 2016: Coordinated and co-hosted a Peace Jam Fest for WCSU students to raise awareness for and to educate them about Peace Jam's missions and goals as well as to encourage them to become mentors or event planners for the Peace Jam conference in the spring. Participants were from area school districts.

Objective 6: Global Cultural Perspectives. Part of the Center's mission is to work with people from all communities. It is therefore natural that we attend to cultural variations and ideas. *Goal: Host at least one event that is global in nature and involves diverse cultural perspectives. Result: Goal met.*

- April 2014: Sponsored a student-led social work event called "RACE" with guest speakers from around the state discussing race relations.

- September 2016: Co-hosted and sponsored with the Institute of Holistic Health Studies and Western's Office of Diversity and Equity, the first "Meditation: Multi-Cultural Perspectives," where students, faculty, staff, and community members were invited to join various workshops centering the theme of meditation and mindfulness.
- November 2016: CCCI co-hosted an International Festival with the HPX Department, ISEP and the WCSU Office of Diversity and Equity, inviting cultural and dance groups to participate hosting two booths. WCSU students had the opportunity to experience these diverse cultures with compassionate open minds.
- Fall 2017: CCCI Director and Assistant-Director became the co-advisors for the Muslim Student Association at WCSU. The mission of MSA is to provide basic education on Islamic practices/religious beliefs, spread compassion through community service/interfaith events, and create a safe space for Muslim/non-Muslim student communication.
- September 2017: Co-hosted and sponsored with the Institute of Holistic Health Studies in hosting the second "Meditation: Multi-Cultural Perspectives," where students, faculty, staff, and community members were invited to join various workshops centering the theme of meditation and mindfulness.
- April 2018: Hosted a Women of Islam event, where WCSU students and community members were invited to watch a video of Shaykh Omar Suleiman speaking on the topic of women's rights in Islam and then, were presented with a series of questions to invite conversation and discussion that allowed all of the participants to get to know each other on a deeper level.

Goal 7. Creativity and Innovation Projects. The founding of this Center arises from an argument that when compassion is combined with creativity, we foster innovative ideas and that have the power to improve the world. *Goal: To designate at least one annual event/activity focused specifically on the subjection of innovation, creativity and creative processes. Results: We have fallen short of this goal.*

The Center Director has published one work that supports this topic, and he has delivered numerous talks to civic and educational organizations that promote compassion as part of the curriculum.

- Kukk, Christopher. *The Compassionate Achiever: How Helping Others Fuels Success*. HarperCollins/HarperOne, 2017.

Several of our conferences drew together the components of compassion and creativity, but the focus on innovation has not yet been clear. This will become one of our primary goals in the next five years.

Other Outcomes. In an effort to expand our connections to other communities through a common desire for a compassionate society, the Center has assisted other cities and schools in becoming Cities and Organizations of Compassion.

- June 2013: Assisted the City of Danbury in becoming the first city on the east coast to become a City of Compassion
- September 2014: Assisted the City of Milford in becoming a City of Compassion
- 2015-2016: Assisted William & Mary in becoming a University of Compassion

- CCCI staff, students, and alumni have been assisting West Hartford, Berlin, New Britain, and Brookfield in becoming towns of compassion.

Faculty, Staff, and Responsibilities

The following excerpts from the Center Bylaws explain the Faculty, Staff and Responsibilities

ARTICE V – Governance and Rules of Order

1. The Center shall be managed by a Director and Governing Board under the supervision of the Provost/Vice President of Academic Affairs. There will be no salaried members of the Governing Board. No one shall be appointed to the Board whose purpose of being on the Board is to promulgate his or her personal faith.
2. The Governing Board shall consist of ten (10) voting members:
   a. The Director
   b. A representative from the Ancell School of Business, elected from among interested faculty in the Ancell School of Business
   c. A representative from the School of Arts and Sciences, elected from among interested faculty in the School of Arts and Sciences
   d. A representative from the School of Professional Studies, elected from among interested faculty in the School of Professional Studies
   e. A representative from the School of Visual and Performing Arts, elected from among interested faculty in the School of Visual and Performing Arts
   f. One (1) student, appointed by the Provost in consultation with the Governing Board, who will represent the university's student population
   g. One (1) student representative appointed by the Student Government Association
   h. One (1) representative elected by the SUOAF/AFSCME Administrative Faculty
   i. Two (2) representatives, appointed by the Provost in consultation with the Governing Board, who will represent the community at large.

ARTICLE VII – The Director

1. The Director of Center shall be appointed by the Provost/Vice President of Academic Affairs for a three (3) year term upon recommendation of the Governing Board.
2. The Director and other members of the Governing Board shall seek to achieve all the purposes and objectives defined in Article II.
3. The Director or other designated Governing Board member shall function as Chairperson at meetings of the Center.
4. The daily administration of the Center shall be the responsibility of the Director. The Center Director shall make routine operating decisions under guidelines established in periodic Governing Board meetings.
5. The Director shall be a fiscal agent of the Center and will be authorized to sign for disbursement of funds in the Center's accounts with the approval of the Governing Board.
6. The Director shall be responsible for the preparation of a budget for the ensuing year to be presented to the Governing Board at the annual meeting to be held in May. Said budget shall include the estimated costs of administering and operating each program and estimated revenues from all sources in support of the Center and its programs.
7. The Director shall prepare and provide to each member of the Governing Board, at the annual meeting, a report of the programs and services provided by the Center during

the previous academic year. The Director will also send a copy of the annual report to the University Senate.

Student Involvement and Student Outcomes

CCCI has two student representatives on its board of nine directors. Student volunteers are woven throughout all Center Activities. From creating community service events, to fundraising for conferences, to coordinating large events, this is a student-oriented Center. At least 40 students have been involved each semester in some way or another. They benefit directly from interaction with speakers, scholars, activists, community organizations, and political leaders as they embrace questions of compassion in creating innovative solutions to social problems. Indeed, students are the true leaders of this Center.

Assessment and Evaluation

Having reviewed our original proposal, we find that we have met most of our goals and we are excited by the success of our first five years.

Areas for improvement include:

1. Increasing our commitment to ethical awareness, by bringing it to the forefront of conversations about compassion.
2. Renewing our commitment to developing events that explore the intersection between compassion and innovation, with the goal of identifying or creating new tools, processes or other solutions to a social problem.
3. Increase our fundraising efforts to support the Center. Our initial endowment has been used to support personnel costs to launch the Center. While we no longer have those costs (there is no reassigned time associated with the Center), our events need steady funding. We have managed with many co-sponsors in the past five years, but will need a stronger investment from our community partners to grow our profile and continue to achieve our goals.

Actual Revenues and Expenses:

Compassion, Creativity & Innovation		FY2014	FY2015	FY2016	FY2017	FY2018
Revenue						
1	Gifts/Grant Support	$ 9,376.05	$ 530.00	$ 2,130.00	$ 111.06	$ -
2	General Fund					
3	Operating Fund					
4	Other Revenue	$ -	$ -	$ -	$ -	$ -
5	Total Revenue	$ 9,376.05	$ 530.00	$ 2,130.00	$ 111.06	$ -
Expenses						
6	Personnel	$ 11,868.00	$ -	$ 23,127.31	$ 41,300.00	$ -
7	Fringe Benefits	$ -		$ 18,010.84	$ 32,820.48	
8	Travel					
9	Equipment & Supplies					
10	Contractual					
11	Construction					
12	Other	$ 3,537.47	$ 994.59	$ 1,928.54	$ -	$ -
13	Total Direct Costs	$ 15,405.47	$ 994.59	$ 43,066.69	$ 74,120.48	$ -
14	Indirect Costs	$ -	$ -	$ -	$ -	$ -
15	Total Costs	$ 15,405.47	$ 994.59	$ 43,066.69	$ 74,120.48	$ -
16	Total Revenue - Total Costs	$ (6,029.42)	$ (464.59)	$ (40,936.69)	$ (74,009.42)	$ -
17	Operational Balance from previous year*	$ 122,043.81	$ 116,014.39	$ 115,549.80	$ 74,613.11	$ 603.69

NOTES: *Initial funds from 2013 were $115,536.09 from the Dali Lama and $6,507.72 from individual donors.

Projected Revenue and Expenses

Compassion, Creativity, and Innovation	FY2019	FY2020	FY2021	FY2022	FY2023
Revenue					
Gifts/Grant Support	$ 500.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
General Fund					
Operating Fund					
Other Revenue	$ -	$ -	$ -	$ -	$ -
Total Revenue	$ 500.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
Expenses					
Personnel					
Fringe Benefits					
Travel					
Equipment & Supplies					
Contractual					
Construction					
Other	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00
Total Direct Costs	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00
Indirect Costs					
Total Costs	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00
Total Revenue - Total Costs	$ -	$ 500.00	$ 500.00	$ 500.00	$ 500.00
Operational Balance from previous year	$ 603.69	$ 1,103.69	$ 1,603.69	$ 2,103.69	$ 2,603.69

Notes: Funds are no longer being dispersed for support staffing. If significant donors emerge we will reconsider hiring a University Assistant.

Budget Narrative:

WCSU's Center for Creativity, Compassion, and Innovation was established with funds earned from the Dali Lama's visit to our campus. In addition, several donors came forward as a result of that event and committed initial funds to support the start-up of the Center. The bulk of the funds were used on staffing as we planned for initial events and workshops as reported in the narrative.

After our initial programs, we have worked to develop events that are co-produced with other departments and organizations. For example, Peace Jam was largely funded by an external organization. Similarly, our conferences have recoupled costs through conference fees.

We no longer employ an assistant for the Center. As events are planned, we work with our student volunteers for planning and work with event sponsors if we need to pay staff to run the actual event. We have estimated a small amount in our gifts and grants for the near future, as we work to focus our goals further and enhance the impact of our Center. As our next steps become clearer, we will plan for additional fundraising as needed.

No university funds are being expended to staff this Center at this time.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Continuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve continuation of the Center for the Study of Culture and Values at Western Connecticut State University until December 31, 2025.

A True Copy:

_____

Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Continuation of the Center for the Study of Culture and Values at Western Connecticut State University

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the Center for the Study of Culture and Values' 2018 Sunset Report – a 9-page document.

The Center for the Study of Culture and Values was established March 7, 2003 (BR 03-09) by the CSU Board of Trustees. The Center was authorized to continue until December 31, 2018 by the Board of Regents on November 21, 2013. The mission of the Center is to "expand opportunities and enrich discourse in the university and community related to culture, values and issues of choice in history and contemporary life; and to support teaching, research and scholarship on topics related to the significance of culture and values in shaping our civilization."

PRINCIPAL ACTIVITIES/ACCOMPLISHMENTS
The Center supported an endowed chair in Modern Greek and Hellenic Studies through which three visiting scholars have taught at least one course and presented at least one public lecture; over the course of the past five years. Course enrollments were at capacity. Additionally during this time, students, faculty and the greater Danbury community attended the Center's endowed lecture series on three occasions, with 70 to 150 attending. Cultural activities sponsored by the Center include a Greek Operetta, a field trip to the Onassis Center and hosting a filmmaker and viewing her documentary.

STUDENT INVOLVEMENT
Students were enrolled in the courses taught by the endowed chair, attended the Center's lectures and participated in its cultural activities. A total of five undergraduate students in World Language and Literature attended the Annual International Conference on Humanities & Arts in a Global world at the Athens Institute of Education in 2016 or 2018 through the Center's support. These students presented research papers and participated in workshops.

BUDGET

Summary of Revenues and Expenses					
	FY 2014	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**
Beginning Balance		($35,314)	($34,147)	(38,815)	($17,448)
Total Revenues	$30,290	$30,763	$30,846	$26,935	$25,296
Total Expenses	$65,604	$29,596	$35,514	$5,568	
Revenues Less Expenses	($35,314)	$1,167	($4,668)	$21,367	
Ending Balance	($35,314)	($34,147)	(38,815)	($17,448)	

Summary of Projected Revenues and Expenses					
	FY 2019	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Beginning Balance		$11,656	$30,312	$17,312	$45,312
Total Revenues	$33,000	$40,000	$50,000	$50,000	$50,000
Total Expenses	$21,344	$21,344	$63,000	$22,000	$63,000
Revenues Less Expenses	$11,656	$18,656	($13,000)	$28,000	($13,000)
Ending Balance	$11,656	$30,312	$17,312	$45,312	$32,312

The Center is supported by proceeds of an endowment fund given to the university by the Macricostas Family Foundation. This fund has been transferred to the WCSU Foundation and its investment is expected to generate greater yields. The Macricostas Family Foundation has recently endowed the university's School of Arts and Sciences (now the Macricostas School of Arts and Sciences). The Center will undergo a restructuring to better manage the new initiatives supported by Macricostas.

ASSESSMENT/EVALUATION

The Center reports that its scholarly and cultural offerings fulfill its mission and enriches the community. However, its current governance and organization does not meet the programming needs afforded by the new endowments. A redefinition of goals and purposes, as well as, new by-laws are necessary. Accordingly, discussions and planning are underway.

RECOMMENDATION

President John B. Clark has reviewed or been briefed on the evaluation of the Center for the Study of Culture and Values and recommends that the Board of Regents authorize its continuation.

10/05/17 – BOR-Academic and Student Affairs Committee
10/18/17 – Board of Regents

Connecticut State Universities

Center/Institute Report – Year Five Sunset Report/Review for Continuation

Name of University:	**Western Connecticut State University**
Name of Center/Institute:	**Center for the Study of Culture and Values**
Date of Original Approval:	**March 3, 2003**
Date of Last Approval	**September 1, 2013**
Sunset Date:	**September 31, 2018**
Board Resolution #	**08-57[R]** **03-09 [E]**

Summary of PROJECTED Revenues and Expenses

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
REVENUE (from lines 1-5 in projected budget)	33,000	40,000	50,000	50,000	50,000
Gifts/Grant Support	33,000	40,000	50,000	50,000	50,000
General Fund	0	0	0	0	0
Operating Fund	0	0	0	0	0
Other Revenue	0	0	0	0	0
TOTAL REVENUE	33,300	40,000	50,000	50,000	50,000
EXPENSES (from line 15 in projected budget)	21,344	21,344	63,300	22,000,	63,300
Operational Balance	7,847.84	26,503.84	13,203.84	41,203.84	27,903.84

Recommendation from President

☑ I recommend continuation of this Center/Institute

☐ I recommend discontinuation of this Center/Institute

Signature of President

Mission

The mission of this Center is to "expand opportunities and enrich discourse in the university and community related to culture, values and issues of choice in history and contemporary life; and to support teaching, research and scholarship on topics related to the significance of culture and values in shaping our civilization. The Center is also charged with promoting the examination of ethical, moral and legal codes and their effect upon patterns of social, professional and business practices" (progress report, 2006).

Needs Assessment

The Center for the Study of Culture and Values was established "to responsibly manage a generous gift from the Macricostas Family Foundation and to create a focus at the university for studying the power and significance of culture throughout history and modern times" (from the progress report of July 2006). The funding supported an endowed lecture series and an endowed chair in Modern Greek and Hellenic Studies, and additional cultural activities as they arose. The Center currently manages those resources, schedules events, interviews the visiting scholar, and seeks opportunities to connect students at WCSU with the local Greek community.

Needs Modification

Since the Center was established, the Macricostas Family Foundation has provided funds to endow the School of Arts and Sciences (now the Macricostas School of Arts and Sciences). Among the initiatives supported by that donation are a new Speaker Series and support for students traveling abroad. The Center is now in the process of restructuring to better manage these new initiatives supported by Macricostas. We anticipate new by-laws in 2019.

Goals, Objectives, and Principal Activities

1. To promote and sponsor study of the contributions of world cultures and individual leaders to the development of values and great value-based decisions in history and contemporary affairs.
2. To promote and sponsor the examination and analysis of ethical, moral, and legal codes in their effect upon patterns of social, professional, and business practice related to culture and values.
3. To bring distinguished visiting teachers and scholars to the university through endowed chairs in the history, distinctiveness, and influence of cultures and their values.
4. To engage the university and the Danbury community in dialogue on culture and values by means of an endowed lecture series.
5. To engage students in critical, reflective thinking about individual and collective belief systems and provide a forum for student engagement with culture and value-related issues.
6. To sponsor and promote additional activities related to the study of culture and values. These may include interdisciplinary academic programs leading to certificates and/or degrees, research on culture and values, publications, an interactive website, an electronic library, exhibitions, workshops, conferences, and symposia with community leaders.

Principal Accomplishments

Endowed Chair/Scholar to teach courses related to Modern Greek and Hellenic Studies and present at least one public lecture.

- 2014-2015: Dr. Richard McKim. Dr. McKim has a BA in Classics from the University of Toronto and a PhD in Classics and Philosophy from Princeton University. He taught HUM 114 *The Greek Experience* in the fall 2014 with 31 students enrolled. This is more than double the number of students in the special topics course created for Dr. Pappas in 2013. Dr. McKim lives nearby and has continued to teach several other courses as a result of this initial appointment.
- 2015 – 2016: Macricostas Scholar, Marcello Kilani. Received his B.A. in Liberal Arts, and his M.A. in Eastern Philosophy from Saint John's College. He is a Dean's fellow at the New School for Social Research completing a Ph.D. in Philosophy. He offered a course called "The Greek Experience" during fall 2015, 37 students enrolled, and his "The Roman Experience" spring 2016 course filled with 38 students.
- The 2016– 2018: There was no visiting scholar appointed at WCSU, due to transitions in school leadership.
- 2018 - 2019: Christopher Paone has been selected The Macricostas visiting scholar for 2018-2019. He received his BA from University Heights, Ohio in philosophy, Latin, and English, and his Ph.D. from Southern Illinois University Carbondale in Philosophy. His research and teaching focus on ancient Greek philosophy (http://wcsu.edu/philosophy/christopher-paone/). Recently, he has written on Diogenes the Cynic and the Epicureans. Besides his focus on ancient Greece, he also teaches contemporary applied ethics and social and political philosophy. He will join the Department of Philosophy and Humanistic Studies and teach HUM 114 The Greek Experience (Fall 2018) - A first year course introducing students to ancient Greek literature, civilization, and philosophy and its reception in contemporary American culture and HUM 263 Love in Western Civilization (Fall 2018) - A seminar style course focusing on ancient Greek attitudes and understandings of love, sex, and gender and how these ancient views shape our own contemporary understanding

Endowed lectures Series attended by students, faculty and the greater Danbury Community first offered in 2006, most recently featured were:

- *Back to Polytheism! How ancient Greek religion made sense of human experience*. This public lecture was presented by Macricostas Scholar, Dr. Richard McKim on October 16, 2014. Sponsored by the Macricostas Family Foundation, approximately 70 people attended. This lecture supported the Hellenic Studies mission of the Center.
- *The Good Life: Ethics And Identity in Ancient Greece*, by Marcello Kilani, visiting Macricostas Scholar. Sponsored by the Macricostas Family Foundation, Wednesday, March 16th. 2016. Approximately 80 people attended this lecture, which supported the Hellenic Studies mission of the Center.
- The spring Macricostas Lecture was organized by The Ancell School of Business, focusing on the Ethical Issues in HealthCare. Cynthia Roy, President and CEO of Regional Hospice and Palliative

Care in Danbury, CT presented *Entrepreneurship in the Nonprofit World* on April 5th, 2017 (http://wcsu.edu/newsevents/Cynthia-Roy-to-present-Macricostas-lecture.asp).

Additional Hellenic Cultural Enrichment Activities

- *Hellenic Melodies: A journey from classical to contemporary.* This concert of rarely heard Greek Operetta was performed by Stefanos Koroneos, Georgios Argeratos, and Emilia Diakopoulou on February 18, 2015. Sponsored by the Macricostas Family Foundation, approximately 40 people attended.
- A field trip to the Onassis Center to visit the temporary exhibit entitles, *Gods and Mortals at Olympus* (http://onassisusa.org/exhibitions/gods-and-mortals-at-olympus). The event was attended by approximately 35 people including WCSU students, faculty, and members of the regional Greek community (May 19, 2016).
- On April 26th, 2017, The Center for Culture and Values hosted filmmaker Stavroula Toska and showed her documentary called *Beneath the Olive Tree* (http://www.imdb.com/title/tt1954999/). The event supported communication courses in media arts and video production. Approximately 70 people attended the event including students, faculty, and the regional Greek community.

New Endowed Speaker (since the 2016 school Endowment)

This endowment is not yet officially overseen by the Center, but was taken on ad hoc for the first two years of the endowment. The budget is currently not included in the Center's funding, but managed separately by the university foundation. We anticipate a by-law change to address this in the next year. We include this update to foreshadow our future plans.

- Inaugural Macricostas Family Foundation Endowed Speaker by Daniel Costa, Director of Immigration Law and Policy Research Economic Policy Institute. The talk was titled *U.S. Labor Migration Politics and Policy*, November 7, 2016. This event supports the Center's broader cultural education mission. Approximately 150 people attended.
- Chris Kelly, Privacy and Security Expert for Social Media, and former Facebook employee, will speak at WCSU, November 14, 2018. https://www.bigspeak.com/bigspotlight-chris-kelly-privacy-security-expert-employee-25-at-facebook-nba-team-owner-and-tech-investor/

Supporting International Travel for Students (Global Initiative)

Global travel is part of a new endowment that is by the WCSU Foundation, not the Center. We will include this budget in the next review, when the restructuring of the Center is completed.

- In 2016 the Center supported the attendance of three World Language and Literature undergraduate student's attendance at the Annual International Conference on Humanities & Arts in a Global World at the Athens Institute of Education and Research (https://www.atiner.gr/) (ATINER, 2016) in Athens, Greece. They were accompanied by WCSU World Languages and Literature professor Galina Bakhtiarova.

- In January 2018, the Center again supported two World Language and Literature undergraduate students to attend the Annual International Conference on Humanities & Arts in a Global World, ATINER in Athens, Greece. In both years the students presented papers and participated in workshops. In 2018, they presented at panel papers that grew out of projects that Mariana Martins and Drake Allegrini (two students) developed while participating in the Summer Study Program in Spain in May-June of 2017. The description of the panel is attached and the program of the conference can be seen here: https://www.atiner.gr/2018/2018PRO-HUM.pdf

Faculty, Staff, and Responsibilities

The roles and responsibilities of faculty and staff are articulated in these passages from our by-laws. We anticipate revising these by-laws in 2018-2019, to help us better manage all Macricostas supported endowments.

Article IV or the Center's bylaws

1. The Center shall be administered by a faculty Coordinator, who shall report to the Dean of Arts & Sciences and work under the guidance of an Advisory Committee.
2. The Committee shall consist of nine (9) voting members: the Coordinator; the Dean of the School of Arts and Sciences; five (5) full-time faculty members , two (2) to be elected from and by academic departments in the School of Arts and Sciences (no more than one from any department), one (1) from academic departments in the Ancell School of Business, one (1) from the School of Visual and Performing Arts and one (1) from academic departments in the School of Professional Studies; and two (2) representatives appointed by the President.

ARTICLE VI – THE COORDINATOR

1. The faculty Coordinator shall be drawn from the full-time faculty of the School of Arts and Sciences.
2. The Coordinator shall be appointed by the Dean of Arts and Sciences for a minimum term of one year upon recommendation of the Advisory Committee.
3. The Coordinator shall be responsible for the administration of the Center. He/she shall work with participating academic departments and other university and community constituencies to plan and implement programs appropriate to the Center's mission and purpose.
4. The Coordinator shall prepare a budget for the Center and shall present it to the Advisory Committee at the annual meeting. Said budget will include the estimated costs of operating and administering each Center program and estimated revenue from endowment and all other sources in support of the Center and its programs.
5. The Coordinator shall prepare a report of the programs, events, and services provided by the Center during the previous year and shall present this report to the Advisory Committee at its annual meeting. A copy of the report shall be sent to the university Senate.
6. Clerical support for the Coordinator will be provided by the office of Dean of Arts and Sciences.

There is no reassigned time associated with the coordinator position.

Assessment and Evaluation

We have successfully searched for and supported two visiting scholars, each bringing interesting perspectives on Hellenic history and culture to our students and faculty. The courses taught and lectures presented by these visiting faculty members enriched our environment and brought expertise that would not have otherwise been available to our students. Enrollment in classes taught by our visiting scholars have been at capacity, a marked improvement from our earlier strategies. We have recently entered a partnership with the American School of Classical Studies in Athens (http://www.ascsa.edu.gr/). This organization hosts international students and scholars, offering both advanced study opportunities for WCSU faculty and students, and an opportunity to recruit distinguished scholars for our endowed chairs. We anticipate a fruitful partnership and enhanced opportunities for the Center as a result of this partnership.

The endowed lectures have been well attended by students, faculty and members of the broader community (70-150 attending) The themes alternate between a focus on culture and a focus on entrepreneurship, neatly exemplifying the messages we strive to give our students: to value all cultures and to reach for their highest dreams.

So far, five students have presented research at a conference in Greece. As funds in the global initiative grow, we anticipate increased participation in study-abroad opportunities.

Finally, we have brought in productions of Greek Classics and have sponsored trips relevant to Greek History, and supported student travel to Greece that supported their participation in professional meetings, all of which bring opportunities to our students that would not be available without this Center (40-70 attending).

Each of these cultural offerings and scholarly opportunities fulfills the mission of the Center and enriches our community. However, the Center's governance model by advisory committee does not meet the programming needs of the Center in its current form. With the new endowments, a redefinition of goals and purposes is necessary. The Dean of the Macricostas School of Arts and Sciences and WCSU Provost will have initiated conversations with the Center Advisory Committee to revise the by-laws to support all of these endowments. Revisions will be reviewed by the Macricostas Family Foundation and are subject to University governance for final approval.

Connecticut State Universities

Center/Institute Report – Year Five Sunset Report/Review for Continuation

ACTUAL Revenues and Expenses

Center for the Study of Culture and Values		FY2014	FY2015	FY2016	FY2017	FY2018
Revenue						
1	Gifts/Grant Support	$ 29,198.75	$ 30,762.93	$ 29,223.27	$ 24,822.88	$ 23,355.10
2	General Fund					
3	Operating Fund					
4	Other Revenue	$ 1,090.97	$ -	$ 1,622.67	$ 2,111.62	$ 1,940.74
5	Total Revenue	$ 30,289.72	$ 30,762.93	$ 30,845.94	$ 26,934.50	$ 25,295.84
Expenses						
6	Personnel	$ 51,781.52	$ 25,260.95	$ 33,769.57	$ 3,652.35	$ -
7	Fringe Benefits	$ 9,884.25				
8	Travel					
9	Equipment & Supplies					
10	Contractual					
11	Construction					
12	Other	$ 3,937.80	$ 4,335.00	$ 1,744.25	$ 1,915.40	$ -
13	Total Direct Costs	$ 65,603.57	$ 29,595.95	$ 35,513.82	$ 5,567.75	$ -
14	Indirect Costs	$ -	$ -	$ -	$ -	$ -
15	Total Costs	$ 65,603.57	$ 29,595.95	$ 35,513.82	$ 5,567.75	$ -
16	Total Revenue - Total Costs	$ (35,313.85)	$ 1,166.98	$ (4,667.88)	$ 21,366.75	$ 25,295.84
17	Operational Balance from previous year	$ (35,313.85)	$ (34,146.87)	$ (38,814.75)	$ (17,448.00)	$ 7,847.84

Notes:

1. Personnel funds listed were to reimburse the University for the costs of full-time endowed chairs from the prior 5 year cycle. In this cycle, we only hired part-time faculty as endowed scholars per our plan for recovery of funds. The cost of the part-time faculty is included here. There are no longer any funds due to WCSU from this endowment.
2. "Other revenue" was the interest from the half of the endowment that was managed by the state. This has been transferred to the WCSU Foundation and will no longer appear in our reports and is not included in our projected budget.

Center for the Study of Culture and Values	FY2019	FY2020	FY2021	FY2022	FY2023
Gifts/Grant Support	$ 33,000.00	$ 40,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00
General Fund					
Operating Fund					
Other Revenue	$ -	$ -	$ -	$ -	$ -
Total Revenue	$ 33,000.00	$ 40,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00
Personnel	$ 13,344.00	$ 13,344.00	$ 35,000.00	$ 14,000.00	$ 35,000.00
Fringe Benefits			$ 20,300.00		$ 20,300.00
Travel					
Equipment & Supplies					
Contractual					
Construction					
Other	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00
Total Direct Costs	$ 21,344.00	$ 21,344.00	$ 63,300.00	$ 22,000.00	$ 63,300.00
Indirect Costs					
Total Costs	$ 21,344.00	$ 21,344.00	$ 63,300.00	$ 22,000.00	$ 63,300.00
Total Revenue - Total Costs	$ 11,656.00	$ 18,656.00	$ (13,300.00)	$ 28,000.00	$ (13,300.00)
Operational Balance from previous year	$ 7,847.84	$ 26,503.84	$ 13,203.84	$ 41,203.84	$ 27,903.84

Notes:

1. The growth in funding is the projected result of the transfer of the complete endowment to WCSU Foundation for investment. This doubles our endowment funding.

Budget Narrative

- Since its inception, funds for the Center were derived from a split endowment fund. The Endowment managed by the state generally yielded less than $2,000 annually (see "other" in the budgets above). This year, that fund has been transferred to the WCSU Foundation to be invested with the rest of the funds. Our projected budget reflects our expected performance for this endowment.
- The part that has always been managed through the WCSU Foundation has been yielding between $34,000- $36,000 annually.
    - Chair Funds: $27,000-$29,000
    - Lecture Funds $8,000-$10,000

With the increased chair funds from the transferred endowment, we expect an increase to 40,000 per year, with the lecture funds remaining steady.

The split fund structure resulted in an underfunded endowed chair. WCSU tried to make good on our promise to the donor, but was unable to sustain the original full-time, full year position. WCSU helped to cover the cost of the full-time endowed chair as an interim solution. As our budget reflects, it has taken several years to restore the funds from the endowment to the university. At this time, all university funds have been restored.

Current plans for the endowed chair are to alternate as follows: Year 1 Part-time, Year 2 part-time, Year 3 full-time half year, and alternating full-time and part-time thereafter as funds become available. Other expenses will include the endowed lecture and occasional field trips. This allows us to support the program with the endowment.

In 2016, the Macricostas Family Foundation endowed the School of Arts & Sciences (now the Macricostas School of Arts and Sciences). This contribution has added a high profile Speaker Series and funds to support student travel abroad. We are currently working to redefine the Center in order to manage all of the opportunities this endowment provides. We anticipate restructuring the Center in the coming year.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Discontinuation of a Center

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education approve discontinuation of the Biotechnology Institute at Central Connecticut State University effective December 31, 2018.

A True Copy:

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Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Discontinuation of the Biotechnology Institute at Central Connecticut State University effective December 31, 2018

BACKGROUND
The Board of Regents established a new Policy for the Establishment of Centers and Institutes in the Connecticut State Colleges and University System on September 19, 2017. That Policy requires the chief administrative officer of each center or institute in the System to undertake an evaluation of the entity in terms of its achieving its goals and objectives, and to submit a Sunset Report for Continuation or Discontinuation every seven years.

Following the institution's acceptance, the Sunset Report is forwarded to the System Office. This Staff Report, prepared by a staff member within the System's Office of the Provost and Senior Vice-President for Academic and Student Affairs, is a summation of the Biotechnology Institute's 2018 Sunset Report – a 10-page document.

The Biotechnology Institute was established May 8, 2003 (BR 03-32) by the CSU Board of Trustees and authorized by the Board of Regents on June 20, 2013 to continue until December 31, 2018. The Institute was established to facilitate productive interactions with area biotechnology companies to enhance academic, research and outreach activities in the biomolecular sciences.

NEEDS MODIFICATION
Since the creation of the Institute, there have been changes in the University's Foundation, which better facilitates the acceptance and disbursement of donations. In addition, the economic climate in Connecticut has drastically changed the landscape for Biotechnology companies and their approach to hiring. A major function of the Institute had been preparation of students to enter the biotechnology field and to facilitate their hiring. Accordingly, the Department of Biomolecular Sciences has established other ways and means to accomplish these tasks. It was decided that there is no longer a need for the Institute.

BUDGET

Summary of Revenues and Expenses					
	FY 2012	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**
Beginning Balance	$8,286	$9,430	$11,971	$9,761	$4,286
Total Revenues	$12,826	$6,315	$3,228	$200	$2,337
Total Expenses	$11,682	$3,774	$5,438	$5,675	$1,689
Revenues Less Expenses	$1,144	$2,541	($2,210)	($5,475)	$648
Ending Balance	$9,430	$11,971	$9,761	$4,286	$4,934

It was the intention of the Department of Biomolecular Sciences to cease existence of the Biotechnology Institute at the end of the 2017 fiscal year. All remaining funds in the account were expended. There were no activities for 2016-17 or 2017-18.

RECOMMENDATION

President Zulma R. Toro has reviewed or been briefed on the evaluation of the Biotechnology Institute and recommends that the Board of Regents authorize its discontinuation.

10/05/17 – BOR-Academic and Student Affairs Committee
10/18/17 – Board of Regents

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (APoole@commnet.edu) with a copy to Patricia Ryiz (PRyiz@commnet.edu).

Name of University:	Central Connecticut State University
Name of Center/Institute:	Biotechnology Institute
Director/Coordinator:	None
Date of Original Approval:	9/1/2008
Date of Last Approval:	11/21/2013
Board Resolution of Last Approval:	11/21/2013
Sunset Date:	12/31/2018

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☐ I recommend continuation of this Center/Institute

☑ I recommend discontinuation of this Center/Institute

8/29/2018

Signature of President

Comments (OPTIONAL):

Discontinuation of the CCSU Biotechnology Institute

Mission:

CCSU faculty that teach and conduct research in the molecular life sciences established a "Biotechnology Institute" (approved by the Board of Trustees, 5/7/03) to facilitate productive interactions with area biotechnology companies aimed at enhancing academic, research, and outreach activities in the biomolecular sciences. With input from the Biotechnology Institute's Advisory Board of biotech representatives, CCSU faculty are better able to maintain curricular programs that are modern, relevant, and responsive to the needs of these important local industries. In addition the Biotechnology Institute serves as a clearing-house for student internships at off-campus laboratories, and a center for resource-development activities that focus on

enhancing undergraduate research at CCSU. While supporting Central's teaching mission in these ways, Connecticut-based biotech's will increase their awareness both of CCSU's quality academic programs in the biomolecular sciences, and of our graduates as a local workforce resource. Finally, the Biotechnology Institute partnership allows CCSU faculty and the biotech industries to coordinate and increase community outreach efforts designed to recruit and prepare area middle and high-school students (including traditionally underrepresented minorities) for future educational and career opportunities in the biomolecular sciences in Connecticut.

Needs Assessment:

The Biotechnology Institute was created immediately following the creation of the Department of Biomolecular Sciences. The program faculty were looking for input from industry representatives of how best to prepare students for entry into the biotechnology field. In addition the Biotech Institute provide a means of accepting donations to support the program and student scholarships. No faculty stipends were allowed or disbursed from the institute.

Needs Modification:

The department has a very stable program that is properly and successfully preparing students for entry into the biotechnology field. Since the creation of the institute, there have been changes with the University's Foundation, which better facilitates the acceptance and disbursement of donations. In addition, the economic climate in Connecticut has drastically changed the landscape for Biotechnology companies and their approach to hiring. For example, Connecticut has lost some companies, such as Bristol Meyers, which closed its large facility last year. Other companies, have resorted to using "contract" employees, hired through placement agencies. We have worked to enhance our relationships with these placement agencies.

With the enhancements made in our University Foundation for managing donations, and the changes in hiring practices by the majority of Biotechnology companies, there was no longer a need for the Biotech Institute. For the past 3 years, all donations to support the department/program have gone into the CCSU Foundation: Biomolecular Science account.

NOTE: It was the intention of the department to cease the existence of the CCSU Biotechnology Institute at the end of the 2017 fiscal year. All remaining funds in the account were expended, but apparently the paperwork was never properly submitted, therefore the department is submitting this report to terminate the CCSU Biotechnology Institute. There were no activities for 2016-17 or 2017-18. Appended is the last report that was submitted for the Biotech Institute.

Kathy Martin, Chair
Department of Biomolecular Sciences and Director of the CCSU Biotechnology Institute
James Mulrooney, Asst, Chair

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

This report must be completed and submitted electronically to the Connecticut Board of Regents for Higher Education, Office of Academic Affairs by September 1 of the year in which the authorization for the Center/Institute lapses. Please email to Arthur Poole (poolea@ct.edu) with a copy to Maureen McClay (mcclaym@ct.edu).

Name of University:	Central CT State University
Name of Center/Institute:	Biotech Institute
Director/Coordinator:	Kathy Martin
Date of Original Approval:	2003
Date of Last Approval:	2016
Board Resolution of Last Approval:	
Sunset Date:	2018

Recommendation from President:

I have reviewed the attached report and the following is my recommendation to the Board of Regents:

☐ I recommend continuation of this Center/Institute

☐ I recommend discontinuation of this Center/Institute

_____

Signature of President

Comments (OPTIONAL):

Mission:

(Provide the mission of the Center/Institute; note any changes from the most recent approval)

CCSU faculty that teach and conduct research in the molecular life sciences established a "Biotechnology Institute" (approved by the Board of Trustees, 5/7/03) to facilitate productive interactions with area biotechnology companies aimed at enhancing academic, research, and outreach activities in the biomolecular sciences. With input from the Biotechnology Institute's Advisory Board of biotech representatives, CCSU faculty are better able to maintain curricular programs that are modern, relevant, and responsive to the needs

of these important local industries. In addition the Biotechnology Institute serves as a clearing-house for student internships at off-campus laboratories, and a center for resource-development activities that focus on enhancing undergraduate research at CCSU. While supporting Central's teaching mission in these ways, Connecticut-based biotech's will increase their awareness both of CCSU's quality academic programs in the biomolecular sciences, and of our graduates as a local workforce resource. Finally, the Biotechnology Institute partnership allows CCSU faculty and the biotech industries to coordinate and increase community outreach efforts designed to recruit and prepare area middle and high-school students (including traditionally underrepresented minorities) for future educational and career opportunities in the biomolecular sciences in Connecticut.

Needs Assessment:
(Describe why this Center/Institute was created)

CCSU undergraduates in the sciences are preparing for careers in health professions, academic research, or for entry-level jobs in the Connecticut Biotech Industry. Our ability to best aid them in these quests is to insure that our faculty have a strong relationship with these entities. The Biotech Institute was established to provide a means that would allow us to build these relationships. The Board that serves the Institute includes scientists from area companies and we use Board meetings to inform these scientists as to the quality and amount of laboratory research done by our undergraduate students. Further our students engage in many outreach activities that augment their communication and social skills – qualities and programs that positions in these companies demand. The Biotech Institute provides us an entity which allows us to advertise these programs and to demonstrate our institutional effectiveness in developing our student population.

Needs Modification:
(Describe how the need for this Center/Institute may have changed)

Since the economic downturn has affected employment options in Biotechnology companies we have worked to enhance our relationship with the placement agencies who are now doing most of the hiring for contract augment their communication and social skills – qualities and programs that positions in these companies.

The economy has now begun some signs of recovery but there has been much impact on the Connecticut companies. Most new companies are opening in the New Haven Science Park. Companies closer to Connecticut include Bristol Myers which is closing its Wallingford facility next summer and Protein Sciences which has moved its manufacturing facility to New York. Jackson Labs has opened in Farmington and we are building relationships with them.

Goals, Objectives, and Principal Activities:
(List goals, objectives and principal activities of the Center/Institute)

goals, objectives and principal activities of the Center/Institute)

1. Continue our student research in our CCSU laboratories using the Biotech Institute to offer our students access to area Biotech industry so that they would be aware of career opportunities and so that area Biotech's would be aware of our students preparation for careers offered by these companies
2. To develop academic programs that provide the development of the skills that students need to obtain positions in these companies
3. To develop and maintain outreach programs that increase the visibility of the sciences at CCSU and that enhance our recruitment efforts.

Principal Accomplishments:
(List the Center/Institute's principal accomplishments since its last report. Attach a chronological list of the Center/Institute major activities over the course of the past five years; under specific, relevant categories such as research, papers, conferences, presentations, workshops, sponsored events, exhibits, etc.)

In the 2014-2015 academic year the Biotech Institute was able to provide scholarship opportunities to two of our undergraduate students in the spring semester. We also held a workshop with alumni working in the State's biotech industry for our undergraduate students. Representatives from the major Connecticut Biotech companies attended and discussed the work environment and job opportunities. Our outreach activities continued with work with the Hartford School system and with our Partners schools in our Saturday morning programming. We have increased out outreach programs and currently have a cadre of undergraduates involved in service to the students of Hartford.

Faculty, Staff, and Responsibilities:
(Specify Director/Coordinator, Departments/Disciplines of Members, and Time Commitment for each and changes of personnel over time)

Kathy Martin serves as the Director of the Institute and the faculty of the Departments of Biomolecular Sciences and Chemistry participate in the activities. No faculty are compensated for their involvement in this Institute. The major changes over time involve changes in the membership of the Board as new companies move to Connecticut and the economic realities change the structure of some companies. (Bayer left Connecticut in 2007, Curagen has closed its facility, and Alexion grew and is hiring and Protein Sciences was accepting a steady stream of our students. An ongoing requirement of our CCSU Board members is to keep abreast of the changes in the area biotech industry.

Student Involvement and Student Outcomes:
(*If applicable, discuss Center/Institute's impact upon the university's students; specifically, what was the nature of student involvement and how many students were involved with Center/Institute activities; what were the resultant student outcomes of that involvement stated numerically. Student outcomes may include such measures as learning outcomes, achievement, persistence, graduation, employment and graduate school placements. Along with or without student involvement and student outcome; a focus of the Center/Institute's mission might be public engagement/outreach. If so, that construct should be discussed here.*)

The Biotech Institute provides a number of venues for students to gain work experience during their undergraduate tenure. The Department of Biomolecular Sciences has approximately 60 undergraduate students working in the research laboratories of our eight faculty each semester. Students who continue their research over multiple semesters are eligible for a 500.00 Biotech Scholar award provided by the Biotech Institute. Two students receive this award each spring semester. We are also able to involve our students in a number of outreach programs we run funded by the UConn Health Center. Students can gain employment and go to 20 area middle schools with our faculty to do after-school workshops. Each semester ten of our students are involved in this program. WE also provide (with the UConn Health Center) a six week summer research experience for high school students. Our upper level undergraduate majors mentor these high school students in this program. It is our goal to prepare our majors for work in the biotechnology industry and these offerings are critical to their ability to gain this preparation.

Assessment and Evaluation:
(Describe how progress toward meeting goals and objectives has been measured and include a brief description of lessons learned)

We are able to assess our accomplishments most directly by the success of our students. Students hired by the Connecticut companies are monitored to insure that they are valuable and productive employees. We do this both by keeping in touch with these students and by gathering information from our Board members. Perhaps the most effective lesson learned in this period is that the companies want to know what we are doing in our research and program development at CCSU and that they are willing to provide input and willing to keep us informed about opportunities as they arise. This networking has been facilitated by the existence of an entity such as the Biotech Institute which offers a credible means for introducing ourselves and our students to the community. Working with the Board members allows us to have an independent assessment of our student's preparation and value to the industry and a means to fine-tune our offerings to enhance their preparation. We have learned that the industry in Connecticut is ever-changing but that it will always have room for the pleasant, hard-working, and academically prepared students we value so much in our Departments.

We currently feel that we have established a reputation with the companies that we can maintain and request that the Biotech Institute is no longer essential to this mission. It is our intention to cease activity in August of 2017.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

ACTUAL Revenues and Expenses:

BUDGET CATEGORIES	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
REVENUE					
1. Gifts/Grant Support [a]	$5,000.00		$1,184.00		
2. General Fund [b]					
3. Operating Fund [c]					
4. Other Revenue [d]	$7,826.00	$6,315.00	$2,044.00	$200.00	$2,336.99
5. TOTAL REVENUE (lines 1-4)	$12,826.00	$6,315.00	$3,228.00	$200.00	$2,336.99
EXPENSES					
6. Personnel [e]	$1,954.96	$199.98		$518.85	$91.50
7. Fringe Benefits					
8. Travel					
9. Equipment & Supplies					
10. Contractual					
11. Construction [f]					
12. Other	$9,726.73	$3,573.65	$5,438.16	$5,350.25	$1,596.41
13. Total Direct Costs (lines 6 through 12)	$11,681.69	$3,773.63	$5,438.16	$5,874.55	$1,688.50
14. Indirect Costs [g]					
15. TOTAL COSTS (lines 13 + 14)	$11,681.69	$3,773.63	$5,438.16	$5,874.55	$1,688.50
NET					
16. TOTAL REVENUE - TOTAL COSTS	$1,144.31	$2,541.37	($2,210.16)	($5,674.55)	648.49
surplus / (deficit)					
17. OPERATIONAL BALANCE	$9,430.46	$11,971.67	$9,761.67	$4,087.12	$4,763.61
from previous year					

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative
b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).
c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).
d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.
e. Include breakout and costs for faculty reassigned time and costs for other personnel. Provide detail and FTE estimate in proposal narrative on faculty and staff involvement.
f. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
g. Estimate costs for facilities use, utilities consumption, etc.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

PROJECTED Revenues and Expenses:

BUDGET CATEGORIES	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
REVENUE					
1. Gifts/Grant Support [a]					
2. General Fund [b]					
3. Operating Fund [c]					
4. Other Revenue [d]					
5. TOTAL REVENUE (lines 1-4)					
EXPENSES					
6. Personnel [e]					
7. Fringe Benefits					
8. Travel					
9. Equipment & Supplies					
10. Contractual					
11. Construction [f]					
12. Other					
13. Total Direct Costs (lines 6 through 12)					
14. Indirect Costs [g]					
15. TOTAL COSTS (lines 13 + 14)					
NET					
16. TOTAL REVENUE - TOTAL COSTS					
surplus / (deficit)					
17. OPERATIONAL BALANCE					
from previous year					

NOTES:

a. Include and break out revenues from foundations and gift/nonoperational revenues from other sources. Provide description in Budget Narrative
b. Include revenues for support of Center/Institute from block grant (e.g. Reassigned time for faculty supported on block grant).
c. Include revenues for support of Center/Institute from operating funds (e.g. tuition and fees).
d. Other revenue includes operating revenue (fees charged to participants, event fees, etc.) and/or other sources not listed above. Provide description in Budget Narrative.
e. Include breakout and costs for new construction and costs for renovation or upgrade of existing facility/space.
f. Estimate costs for facilities use, utilities consumption, etc.

CONNECTICUT STATE COLLEGES & UNIVERSITIES

Connecticut State Universities

Center/Institute Report – Seven-Year Sunset Report/Review for Continuation

Budget Narrative:

(Provide any important context about ACTUAL and PROJECTED Revenues and Expenses)

1500.00 was used to supplement the funds needed to run the Saturday Partners in Science program for middle schools students. Income was generated from the sale of a lab manual for BMS courses and some revenue from contracts with the UConn Health Center. These funds left us with an operating budget of 4,735.61 at the start of this fiscal year.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Policy Amendment

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education amend its Academic Program Review Policy to mandate one of four optional institutional recommendations for the Board's action regarding an academic program's review; wherein the three-year average number of credentials awarded meet the definition of Low Completer, as defined and procedurally outlined in the document - Academic Program/Low Completer Review Process.

A True Copy:

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Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

STAFF REPORT ACADEMIC AND STUDENT AFFAIRS COMMITTEE

ITEM

Amendment of Academic Program Review Policy – Low Completer

BACKGROUND

The Board's Academic Program Review Policy mandates that all academic programs undergo a "comprehensive review" on a periodic basis – at least once every seven years; and established a process wherein the Board would monitor the institutional review procedures. However, the Policy does not quantify productivity of academic programs; thus, allowing diverse determinations by the individual institutions in the Connecticut State Colleges and Universities System.

This policy amendment is proposed for the expressed purpose of facilitating a process to conduct reviews of low producing academic programs in terms of the program's productivity over a three-year period; as defined in the Policy Statement, Academic Program Review – Low Completers. The assessment, analysis and outcomes that result will contribute to making higher education more efficient, sustainable, and valuable to the state of Connecticut and its citizenry.

RECOMMENDATION

It is the recommendation of the System's Provost and Senior Vice President for Academic and Students Affairs that the Board of Regents adopts the referenced policy amendment.

10/05/2018 – BOR Academic & Student Affairs Committee
10/18/2018 – Board of Regents

Connecticut Board of Regents for Higher Education

Academic Program/Low Completer Review Process

Proposal

Amend Academic Program Review Policy

History

The Board of Regents established the Academic Program Review Policy on August 21, 2014 declaring academic program review to be integral to academic planning and assessment efforts at the institutional level. The Board considers APR to be a means of ensuring continuous quality improvement of academic programs and an informative instrument to facilitate dialogue among the Regents, System administrators and institutional administrators. Key elements of such discussions include reflections on educational practices and the review of academic programs within the totality of academic offerings at the institutional level.

Purpose

State statutes empower the Board of Regents (BOR) to grant accreditations to the institutions of the Connecticut State Colleges and Universities (CSCU) System and their academic programs; therein authorizing them to operate and confer higher educational credentials (Connecticut General Statutes, Sections 10a-143, 10a-87 and 10a-72). Degrees are conferred by the BOR in their capacity as the board of trustees of the specific constituent unit.

Among the BOR's responsibilities is assuring the public about the educational quality and effectiveness of the credential-granting institutions it governs. NECHE standard 3.15, however, notes, "The [accredited] institution places primary responsibility for the content, quality, and effectiveness of the curriculum with its faculty. Faculty have a substantive voice in matters of educational programs,…" Therefore, when the BOR questions the efficacy of a program the faculty and academic dean/provost at that institution shall be encouraged to offer data and documentation supporting the retention of the program if they believe maintaining the program is in the best interests of their students and their community.

The BOR's Academic Program Review (APR) Policy is its chief instrument for quality assurance - the principal, catalytic mechanism for assessing program quality and effectiveness, and providing information for the continuous quality improvement of teaching and learning. In determining program viability, the BOR relies heavily upon the CSCU institutions to employ APR as a tool for quality control. Within that control is a forthright self-study, which specifically includes an examination of the degree to which an academic program actually confers the credential(s) for which it was established.

This policy amendment is enacted to facilitate a process to conduct reviews of low producing academic programs in terms of the program's productivity over a three-year period – see Definition below. This aspect of program review is also applicable to considerations regarding

the duplication of existing programs as an evaluative tool to determine a program's viability and continuation. The assessment analysis, and outcomes that result will contribute to making higher education more efficient, sustainable, and valuable to the state of Connecticut and its citizenry.

Definition

An academic program is to be examined as a **Low Completer** if it has, at the point of its periodic reporting to the BOR, a three-year average fewer than the following number of credentials conferred:

Credential	Productivity Level
Undergraduate Certificate	12 (avg. 4 per year)
Associate Degree	24 (avg. 8 per year)
Bachelor's Degree / Post-Bachelor's / Graduate Certificate	30 (avg. 10 per year)
Masters' Degree / Post-Masters	15 (avg. 5 per year)
Doctoral	3 (avg. 1 per year)

In the interest of uniformity, all programs at all institutions will be subject to these guidelines. This includes programs granted some type of maintenance provision (temporary, conditional or unconditional) in the most recent review.

Preliminary Screening

The System's Office of Research & System Effectiveness (ORSE) will provide each CSCU institution with a roster of academic programs that appear to meet the **Low Completer** definition. ORSE will compile data from the federal Integrated Postsecondary Education Data System (IPEDS) reporting for the 2014-15, 2015-16 and 2016-17 academic years. Hence, the institutions will be afforded the opportunity to ***examine programs that meet the low completer designation,*** adding completions data for the 2017-18 academic year. Consequently, the institutions must decide upon a course of action outlined below in the Process. Recommendations resulting from the preliminary screening are to be presented to the Board of Regents for its consideration via the System Office of the Provost and Senior Vice President for Academic and Student Affairs.

In subsequent years, the examination of **Low Completer** programs becomes an element of the annual academic program review process. The APR Policy requires "all academic programs to undergo a comprehensive review" and states that "at a minimum, each degree and certificate granting program is subject to review at least once every seven-years." An APR formal report, per the CSCU institution's format/structure, is due to the institution's chief academic officer or his/her designee by June of the program's reporting year. The institution's synopsis of all the formal reports submitted that reporting year is due to the System Office of the Provost in August. In that synopsis – the End-of-Year Report (APR Form 2) – those academic programs meeting the

Low Completer definition must be identified in column (d), with one of the four recommending actions stipulated below:

Process

The reporting academic program deemed a **Low Completer** in consultation with the institution's chief academic officer must recommend one of the following actions to the BOR at designated periods of time:

1. Program Termination
2. Program Suspension
3. Program Consolidation
4. Program Continuation

Termination

Community College and Charter Oak State College program officials, with the explicit approval of the institution, submits an *Application for Discontinuation of Existing Program*, per the System's existing procedures and instructions of the application form which includes a Phase Out / Teach out Strategy. State University officials shall follow the process set forth in the CSU-AAUP BOR Collective Bargaining Agreement.[1]

Suspension

Program officials, with the explicit approval of the institution, submits an *Application for Suspension of Existing Program*, per the System's existing procedures and instructions of the application form which includes a Phase Out / Teach out Strategy, as well as a projected reinstatement or termination date.

Consolidation

Program officials, with the explicit approval of the institution, submits a rationale for program consolidation that address each of the following issues:

- A brief description of what the consolidation would entail and a plan for implementation, including program modality and any curricular adjustments;
- Reasons why a consolidated program would succeed as compared to previous arrangements;
- Anticipated fiscal impact and opportunities for reinvestment, with consolidation;
- All relevant issues identified in the program's formal APR report

[1] See Section 5.20 CSU-AAUP BOR Collective Bargaining Agreement.

Continuation

Program officials, with the explicit approval of the institution, submits an–A. Improvement Plan B. Zero Fiscal-Impact Statement; or C. A rationale for program continuation that addresses contributions of the Program to Students, the Community, and/or the Institution.

A. An Improvement Plan to increase program completions should address each of the following applicable issues in the order presented:

   1. Brief description of the program, to include enrollment by year classification, faculty supporting the program by type (T/TT, FT, PT, adjunct, other), space/facilities, and administrative support;
   2. Projected enrollees and completers for the next five years with justification for such projections.

B. The program is deemed to have a zero fiscal impact it was to be either continued or terminated; and the following issues are addressed:

   1. The parent degree program and its actual enrollments and completions for the preceding three academic years;
   2. Any curricular elements required for the certificate but not for the degree, and their faculty inputs;
   3. Projected program enrollees and completers for the degree program, for the next three years with justification for such projections; and
   4. Projected total revenue and total expenditures for the degree program, for the next three years.

C. A description of the contributions of the program to students, the community, and/or the institution should address each of the applicable items in the order presented:

   1. The parent degree program and its actual enrollments and completions for the preceding three academic years (this need not be repeated, if the rationale for continuation includes A or B above);
   2. Contribution to economic development (and/or workforce) of the state;
   3. Uniqueness or relevance of the program to the region or area;
   4. Institutional need to maintain this program to support other programs, contributions of program faculty to General Education, or to maintain accreditation. Measures of productivity of program faculty (i.e. number of student credit hours taught by faculty affiliated with the program or academic discipline) can be included;
   5. Documented costs of revenue loss anticipated with elimination (e.g., recent major investments, external funding support, tuition, etc.);
   6. Placement of graduates (positions held, places of employment, enrollment in graduate or baccalaureate study);
   7. Passage rate of completers on licensure/certification exams or measures;
   8. Program quality as reflected by regional or national reputation, faculty qualifications, and the documented achievements of program graduates;

9. Measures of program productivity other than numbers of graduates (grants, publications or other); and
10. In the case where program duplication exists (other programs in the statewide inventory within the same CIP code and level), evidence to warrant the continuation of the degree program when similar programs are available within the state. Plans for collaboration or sharing resources with other programs or new delivery mechanisms may be included as applicable.

After the institution presents and submits its report and recommendation, the BOR will either (a) accept the report or (b) request further information from the institution and program. If the BOR requests information, with respect to existing faculty contracts, it will review the information. Upon completion of its review, the BOR will vote to either (a) terminate, (b) suspend, (c) consolidate or, (d) continue the program.

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

Amendment to CSCU Academic Program Proposals and Approval Policy

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education amends its Academic Program Proposals and Approval Policy to correct the categorization of academic programs within the definition of Below Threshold, as detailed below:

Programs that are Informational Items Only

The following nonsubstantive instances require that a communication or form be submitted to BOR central office staff for inclusion in the agendas for the CSCU-AC and the BOR-ASA as an information item. They do not require a BOR resolution:

a) new ~~minors~~, ~~concentrations/~~options, ~~specializations~~ or certificate programs not classified in the categories outlined above, i.e.:
   i. an undergraduate certificate of program of 30 credit hours or fewer which falls within an approved program,
   ii. a new baccalaureate minor of 18 or fewer semester credit hours,
   iii. a new undergraduate option or certificate program of 15 or fewer semester credit hours,
   iv. a new graduate option or certificate program of 12 or fewer semester credit hours

b) programs that do not qualify students to become eligible for federal financial aid.

A True Copy:

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Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

STAFF REPORT ACADEMIC AND STUDENT AFFAIRS COMMITTEE

ITEM

Amendment of Academic Program Approval Policy

BACKGROUND

The Board's Academic Program Approval Policy mistakenly identifies minors, concentration and specifications as academic programs in the categorization of academic programs that qualify as Below Threshold. The proposed policy amendment corrects this inaccuracy.

Programs that are Informational Items Only

The following nonsubstantive instances require that a communication or form be submitted to BOR central office staff for inclusion in the agendas for the CSCU-AC and the BOR-ASA as an information item. They do not require a BOR resolution:

a) new ~~minors~~, ~~concentrations~~/options, ~~specializations~~ or certificate programs not classified in the categories outlined above, i.e.:
   i. an undergraduate certificate of program of 30 credit hours or fewer which falls within an approved program,
   ii. a new baccalaureate minor of 18 or fewer semester credit hours,
   iii. a new undergraduate option or certificate program of 15 or fewer semester credit hours,
   iv. a new graduate option or certificate program of 12 or fewer semester credit hours

b) programs that do not qualify students to become eligible for federal financial aid.

RECOMMENDATION

It is the recommendation of the System's Provost and Senior Vice President for Academic and Students Affairs that the Board of Regents adopts the referenced policy amendment.

10/05/2018 – BOR Academic & Student Affairs Committee
10/18/2018 – Board of Regents

Academic Program Proposals and Approval Process
at the
Connecticut State Colleges and Universities

Amended and Restated in Full: Approved 01/19/2012, Revised 09/17/2015, Amended 10/18/18 – pending BOR approval

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Context

The Connecticut General Assembly reorganized the governance structure of public higher education in the state, and transferred the responsibility for academic program approval to the Board of Regents for Higher Education (BOR) [1]. This document outlines the process and conditions for conducting academic program approvals under the BOR. The intent is to maintain consistency with state regulations while at the same time embracing the operating principles spelled out in the section immediately below.

Operating principles

- *Nimbleness* - streamlining and focusing approval process to ensure highest significance for every step
- *Responsiveness* - paying closest attention to state needs and the needs of students
- *Effectiveness* - advancing the distinctiveness and most productive use of resources of each institution, while at the same time exploring opportunities for collaboration and academic innovation

BOR review of the effectiveness and efficiency of the program approval process itself will be thorough and ongoing. Institutions will use current forms as established by the BOR's Provost's office.

Programs Requiring BOR Action

Programs need to be reviewed and approved by the BOR under one of the following categories. All program actions will be submitted to BOR office staff. Each item will be presented at Academic Council, then be submitted to the BOR Academic & Student Affairs Committee for review and recommended for pertinent action by the full BOR at their next meeting. The following categories undergo this process:

1. *New programs are*: a) A new degree program; b) a new major; or c) a new stand-alone certificate program that is Title IV eligible. No prior approval has existed for the program by either the BOR or the former BOGHE (Board of Governors for Higher Education). Institutions shall seek approval of new programs either as Licensure or simultaneous Licensure and Accreditation:
    a. *Licensure*, normally granted for a period of three years, authorizing the enrollment of students and their advancement toward the completion of degree requirements; or
    b. *Simultaneous Licensure and Accreditation*, simultaneously authorizing the enrollment and award of credentials to students. The accreditation action is considered renewed with each regional accreditation of the institution. Simultaneous licensure and accreditation is generally sought for new degree and certificate programs that are closely related to a set of already existing programs and aligned with institutional strengths. A full description of the approval process of new programs is provided beginning on page 4 of this paper.

2. *Accreditation of a Licensed Program*: Program accreditation authorizes the institution to award credentials in the program. Accreditation is considered renewed with each renewal of the regional accreditation of the institution offering the program. Program accreditation should be pursued in a timely fashion toward the expected date of first graduation. The process for Accreditation approval requires a report on any

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[1]Sec. 10a-35a states the Board of Regents for Higher Education shall have authority over establishment of new academic programs for the universities, the regional community colleges, and Charter Oak State College

changes to the program since its licensure action, details on program enrollments, any financial considerations, and the addressing of any issues brought up at the time program was licensed.

3. *Program Modification:* A program modification is the substantive change to a previously BOR/BOGHE-approved program. The following instances are processed as Program Modifications:
    a. Creation of a new undergraduate certificate program of more than 30 semester credit hours of courses belonging to a previously approved baccalaureate major(s) at a four year institution, or an associate degree program(s) at a two year institution; a new baccalaureate minor of more than 18 semester credit hours; a new undergraduate option or certificate containing more than 15 semester credit hours of courses not falling within a previously approved program(s), or a new graduate option or certificate program including more than 12 semester credit hours of courses not falling within a previously approved program(s). Modifications below these thresholds may also require approval if required by existing state regulations for the licensed professions or work area of the program;
    b. Significant modifications in courses or course substitutions of more than 15 credits in a previously approved undergraduate degree program or more than 12 credits within a previously approved graduate degree program;
    c. The authorization for an approved program to be offered at an off-campus location or using an alternate modality (e.g., on ground to online); and
    d. A change in the title of a degree or title of program.

    Application formats for the approval of program modifications will contain sections for background, rationale and nature of the modification, enrollment/degree awards estimates, and resource summary. Depending on the nature of the modification and the constituent unit to which the institution belongs, other additional details such as full course descriptions, course sequences, etc. may be required [2].

4. *Program Discontinuation*: The discontinuation of an existing BOR/BOGHE-approved degree or certificate program must be authorized through BOR action. Program discontinuation consists of a phase out period during which any students in the program graduate and a termination step in which the program is taken off the official list of existing programs maintained by OHE (Office of Higher Education). Program discontinuation should:
    a. occur in the context of a related academic improvement, e.g., the merging of programs with declining enrollment/completions into a new program that effectively addresses relevant state needs and students' interests;
    b. emerge as a result of the periodic Academic Program Review for all programs at each institution, under the guidance of existing BOR policy;
    c. other institutional considerations such as redirecting capacity, adoption of new mission, etc.

    Program discontinuation should not impact state priorities for workforce preparation.

[2] Constituent Units of Higher Education are: the Connecticut Community College System, the Connecticut State University System, Charter Oak State College. Administrative processes within these units may require additional information and review beyond what is outlined or required in this document and related process forms. For example, any certificate program created at a CC System institution, even if below threshold for BOR approval, requires an administrative review and entry of such program and its courses in the system-level operated programmatic database.

Programs that are Informational Items Only

The following non-substantive instances require that a communication or form be submitted to BOR central office staff for inclusion in the agendas for the CSCU-AC and the BOR-ASA as an information item. They do not require a BOR resolution:

a) new ~~minors~~, ~~concentrations~~/options, ~~specializations~~ or certificate programs not classified in the categories outlined above, i.e.:
   i. an undergraduate certificate of program of 30 credit hours or fewer which falls within an approved program,
   ii. a new baccalaureate minor of 18 or fewer semester credit hours,
   iii. a new undergraduate option or certificate program of 15 or fewer semester credit hours,
   iv. a new graduate option or certificate program of 12 or fewer semester credit hours

b) programs that do not qualify students to become eligible for federal financial aid.

PROCESS FOR THE APPROVAL OF ACADEMIC PROGRAMS

Summary of Process

- *Concept Paper.* Early in the proposal development phase at the local level, the institution submits a one-to-two-page *New Program Concept Paper* to the BOR Office which is shared with the CSCU Academic Council (BOR-AC)[3] at its nearest possible meeting for early input, suggestions, and consideration of potential collaborations as appropriate.
- *New Program Proposal.* The institution creates a *Full Proposal* in a standard format and submits for review to the BOR Office. Site Visit/Team Visit is only required in special cases (e.g. new degree level, unique direction for the institution, new area of competence).
- Based on a *Planning and Quality Review*, the proposal moves first to the CSCU-AC and then to the BOR Academic and Student Affairs Committee (BOR-ASA) for review and recommendation for approval by the full Board.
- *Modification or Discontinuation.* The institution creates a proposal for either a modification or a discontinuation in the standard format and submits for review to the BOR Office. The proposal will subsequently be submitted to the CSCU-AC, then to the BOR-ASA and finally to the full BOR for pertinent action.

New Program-Process Details

1. *Sharing of New Program Concept Paper in Anticipation of Full Proposal*
   Intent to establish new program is shared at a CSCU-AC meeting using a one-to-two-page concept paper sent to the BOR Office. CSCU-AC provides input as appropriate and in consideration of program justification and benefits, potential for transfer agreements, avoidance of unnecessary duplication, and creation of potential collaborations. Institution takes the comments from the AC under consideration and BOR Office facilitates any further communication as needed. The New Program Concept Paper should be submitted at a time established by the institution in consideration of estimated time of completion of the full proposal, posted dates of CSCU-AC, BOR-ASA, and BOR meetings, desired initiation date for the program, and any necessary lead time required by federal or state laws and regulations. Notes: 1) Along with the New Program Concept Paper, the principal academic officer at the institution may require any additional information, as deemed necessary, for internal use at that institution and in conformance with local governance procedures; 2) In the few cases in which it may not be clear whether the program should fall in the New Program or Program Modification category, early consultation with the BOR Office is highly encouraged.
   Timeframe - Ongoing, and at each BOR-AC meeting

2. *Submission of Full Proposal and BOR Office Review*
   Provost/AVP/Academic Dean at institution submits a full proposal for Licensure/ Licensure and Accreditation to BOR Office using a standard electronic format; no paper copies are ever required. Substantive modifications of existing programs are also submitted in a standard format. BOR Office responds to applicant institution within two weeks of initial submission and may require that further information or clarifications be added to the proposal document. Proposal is e-mailed to CSCU-AC members as part of the agenda for the next meeting of this group. Members of the CSCU-AC are invited

[3] The CSCU-AC is composed of the Principal Academic Officers from all institutions under the BOR: the College Deans or Provosts at the CCs, and the Provosts/AVPs at the CSUS and COSC. Meetings are planned and facilitated by BOR Academic and Student Affairs Staff.

to submit any final comments at the meeting in which the full proposal is being discussed. Occasionally, a conference call with pertinent principal academic officers and others may be conducted.
Full proposal application for a new program contains three sections: Section 1. General Information; Section 2. Program Planning Assessment; and Section 3. Quality Review. The BOR Office conducts a *Planning Assessment Review* in consideration of: a) how the program addresses Connecticut workforce needs and/or the social and economic wellbeing of the state, including employment prospects for program graduates/completers; b) potential for transfer agreements or transfer programs; c) all pro forma budgetary and cost considerations and projections. The BOR Office also conducts an internal *Quality Review* using the criteria in existing state regulation, conducts site visit if needed, and makes recommendation to the BOR Provost.

Note: In cases in which a site visit takes place, such as new degree level (e.g., a masters degree level is offered for the first time), unique direction for the institution (e.g., a new school or department is created), new area of competence or type of program (e.g., the first Professional Science Master to be offered), such visit will be conducted in a fashion that contributes to the preparation for the particular professional/national accreditation, or consistent with BOR-approved Academic Program Review policy. Programs requiring simultaneous approval by a designated state agency other than the BOR (such as educator preparation programs approved by the State Department of Education) will undergo an onsite visit in conformity with the process and requirements of such agency.
Timeframe - From two weeks to no more than six weeks (in cases requiring a site visit)

3. *Approval*
Proposal is added to the nearest BOR-ASA meeting for discussion and recommendation for full Board approval. Following the ASA meeting, the BOR Provost places the item in the agenda of the nearest full Board meeting.
Timeframe - Between one and two months, depending on timing of BOR-ASA and BOR meetings

Important Requirement for Any New Program
Any new program that entitles an enrollee to apply for federal student financial aid under Title IV must receive approval by the BOR. The institution is responsible for determining that a program is eligible. Once approved, the institution is also responsible for compliance with all Title IV requirements and procedures declaring the approved program as eligible [4].

Overall Timeframe
No longer than two months for nonsubstantive changes. No longer than four months for cases in which a site visit is conducted.

Document Flow
The totality of the process is conducted electronically, except for the printing of materials for the BOR.

Nature of this Document
This document constitutes Board of Regents policy for academic program approval for the CSCU public higher education institutions in the state of Connecticut.

[4] http://www.eligcert.ed.gov/

CT BOARD OF REGENTS FOR HIGHER EDUCATION

RESOLUTION

concerning

CSCU Student Success Key Performance Indicators (KPI)

October 18, 2018

RESOLVED: That the Board of Regents for Higher Education directs the CSCU System Office to design, implement, and disseminate an annual report on Student Success Key Performance Indicators (KPI) for the CSCU community colleges, inclusive of the twenty-one KPI detailed herein.

The CSCU Student Success Key Performance Indicators (KPI) are established in order to support ongoing efforts to improve student outcomes at the CSCU community colleges and in the CSCU system. These short-term KPI, which focus on first year credit momentum, gateway momentum, and program momentum, are intended to correlate with long-term completion outcomes. The effectiveness of systemic efforts in the CSCU, particularly the creation and amendment of structures, policies, and practices intended to improve student outcomes under the umbrella of Guided Pathways, may be reflected in annual reports on these KPI.

The group of all degree and certificate students, both full- and part-time, who entered in the fall term of each previous academic year will be included in the annual Student Success KPI report, disseminated by the CSCU System Office every October. Historical KPI data will also be included.

The twenty-one KPI included in each annual report are as follows:

KPI 01: Percentage of students who have earned 15 or more college-level credits after year one (fall, winter, spring, summer)
KPI 02: Percentage of students who have earned 24 or more college-level credits after year one (fall, winter, spring, summer)
KPI 03: Percentage of students who have earned 30 or more college-level credits after year one (fall, winter, spring, summer)
KPI 04: Percentage of students who have passed (C or better) college-level math in year one (fall, winter, spring, summer)
KPI 05: Percentage of students who have passed (C or better) college-level English in year one (fall, winter, spring, summer)

KPI 06: Percentage of students who have passed (C or better) both college-level math and college-level English in year one (fall, winter, spring, summer)
KPI 07: Percentage of students who have completed (D- or better) college-level math in year one (fall, winter, spring, summer)
KPI 08: Percentage of students who have completed (D- or better) college-level English in year one (fall, winter, spring, summer)
KPI 09: Percentage of students who have completed (D- or better) both college-level math and college-level English in year one (fall, winter, spring, summer)
KPI 10: Percentage of students who have earned 6 or more college-level credits in first term (fall)
KPI 11: Percentage of students who have earned 12 or more college-level credits in first term (fall)
KPI 12: Percentage of students who persisted from term one to term two (fall to spring)
KPI 13: Average rate of college-level course passing (C or above) in students' first academic year (fall, winter, spring, summer)
KPI 14: Average rate of college-level course completion (D- or above) in students' first academic year (fall, winter, spring, summer)
KPI 15: Percentage of students who have attempted 12 or more credits, including developmental, in the first term (fall)
KPI 16: Percentage of students who have attempted 15 or more credits, including developmental, in the first term (fall)
KPI 17: Percentage of students who have attempted 30 or more credits, including developmental, in the first year (fall, winter, spring, summer)
KPI 18: Average number of credits attempted in the first term (fall)
KPI 19: Average number of credits earned in the first term (fall)
KPI 20: Average number of credits attempted in the first year (fall, winter, spring, summer)
KPI 21: Average number of credits earned in the first year (fall, winter, spring, summer)

The annual CSCU Student Success Key Performance Indicators (KPI) report will include data on these twenty-one KPI for all CSCU community colleges and will be reported by institution, by region, and in aggregate.

Additionally, the CSCU Student Success Key Performance Indicators (KPI) report will disaggregate data by demographic categories for the following five KPI, so that more detail is available about the success of particular groups of students:

KPI 02: Percentage of students who have earned 24 or more college-level credits after year one (fall, winter, spring, summer)
KPI 06: Percentage of students who have passed (C or better) both college-level math and college-level English in year one (fall, winter, spring, summer)
KPI 16: Percentage of students who have attempted 15 or more credits of any kind, including developmental, in the first term (fall)
KPI 20: Average number of credits attempted in the first year (fall, winter, spring, summer)
KPI 21: Average number of credits earned in the first year (fall, winter, spring, summer)

Each annual CSCU Student Success Key Performance Indicators (KPI) report will be distributed to the faculty, staff, and administrators of all CSCU community colleges, to the Board of Regents for Higher Education, and will be made publicly available.

A True Copy:

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Erin A. Fitzgerald, Secretary of the
CT Board of Regents for Higher Education

ITEM
Proposal to establish CSCU Student Success Key Performance Indicators (KPI)

RECOMMENDED MOTION FOR FULL BOARD
RESOLVED: That the Board of Regents for Higher Education directs the CSCU System Office to design, implement, and disseminate an annual report on Student Success Key Performance Indicators (KPI) for the CSCU community colleges, inclusive of the twenty-one KPI detailed herein.

BACKGROUND
Community colleges are commonly measured by long-term indicators such as three-, four-, or six-year completion rates for degrees and certificates. One challenge presented by such long-term measures is the significant lag time between the implementation of innovations and meaningful measurement of the impact of those innovations.

Institutions often turn to shorter-term indicators such as semester-to-semester persistence to measure the effectiveness of innovations. These short-term measures do not always correlate with long-term completion rates.

Recent national research on student success by Jenkins and Bailey[1] has suggested three specific types of short-term measures as likely predictors of long-term completion:

- Credit momentum (attempting 15 credits in the first semester)
- Gateway momentum (taking and passing college-level math and English in the first academic year)
- Program momentum (passing nine semester hours in the student's major or field of study in the first academic year)

The CSCU Student Success Center and the CSCU Office of Research and System Effectiveness have collaborated to propose a set of short-term Student Success Key Performance Indicators (KPI) for the CSCU community colleges based on this national momentum research and KPI that have been established for other community colleges, including those in California and others engaged in the American Association of Community Colleges Pathways Project. The CSCU Student Success Center, as part of the national Jobs for the Future Student Success Center Network, also consulted with Rob Johnstone, President of the National Center for Inquiry and Improvement, as these CSCU KPI were being developed.

With this momentum research in mind, the CSCU Student Success Center and the CSCU Office of Research and System Effectiveness propose the annual assembly and dissemination of an annual report on Student Success Key Performance Indicators (KPI) for the CSCU community colleges, including but not limited to local, regional, and aggregate college data regarding:

- The percentage of students completing 15, 24, or 30 credits in their first year
- The percentage of students that pass college-level math in their first year

- The percentage of students that pass college-level English in their first year
- The percentage of students passing both college-level math and English in their first year

Student success efforts, such as those under the umbrella of Guided Pathways, will focus on developing structures, policies, and practices designed to improve these KPI, with growing confidence that such improvements will move the needle on degree and certificate completion.

The proposed annual report of twenty-one KPI will include the group of degree or certificate students, both full- and part-time, who entered in the fall term of each previous academic year, as well as relevant historical data. Data will be presented in aggregate, by region, and by campus. Particular KPI designated as highly critical will be highlighted throughout the report and disaggregated by demographic data. The report will be disseminated to the Board of Regents for Higher Education, all faculty, staff, and administrators from the CSCU community colleges, and will be made publicly available. Where appropriate, the CSCU system office will work with national partners to review and make further meaning of the collected data.

[1]Jenkins and Bailey, *Early Momentum Metrics: Why They Matter for College Improvement*, Community College Research Center, February 2017.

RECOMMENDATION

It is the recommendation of the System's Provost and Senior Vice President for Academic and Students Affairs that the Board of Regents give favorable consideration to the establishment of the proposed Student Success Key Performance Indicators (KPI) for the CSCU community colleges.

10/05/2018 – BOR Academic & Student Affairs Committee
10/18/2018 – Board of Regents