

#### College of Technology Site Coordinators Meeting

Date: Friday, December 7, 2018 Time: 9:30AM Hosted by: Southern CT State University 501 Crescent Street, New Haven, CT 06515 Building: Academic Science & Laboratory Building Room: 222



#### CT State Colleges & Universities

Karen Wosczyna-Birch, Executive Director, College of Technology – Regional Center for Next Generation Manufacturing Wendy Robicheau, Project Manager, College of Technology – Regional Center for Next Generation Manufacturing Lesley Mara, Director of Director of Workforce Development, Strategic Partnerships, and Sponsored Programs, CSCU System Office Doug Hoffman, Associate Professor of Math, Northwestern CT CC Rob Ryder, Associate Professor - Math, Physics, Engineering, Housatonic CC Felisha Guirand, Recruitment Coordinator, Housatonic CC Susan Spencer, Program Coordinator – COT programs, Gateway CC Eric Flynn, Department Chair - Engineering & Applied Technologies, Gateway CC Steven Moore, Interim STEM Division Director, Manchester CC Mehrdad Faezi, Professor/Program Coordinator, Manchester CC Mobin Rastgar Agah, Program Coordinator, Norwalk CC Joe DeFeo, Director, Advanced Manufacturing Technology Center, Naugatuck Valley CC Mark Vesligai, Program Coordinator – COT Programs, Three Rivers CC Lin Lin, Program Coordinator, Middlesex CC Michael Gentry, Program Coordinator, Three Rivers CC Steve LaPointe, Director, Advanced Manufacturing Technology Center, Quinebaug Valley CC Jodi Clark, Assistant Director, Advanced Manufacturing Technology Center, Quinebaug Valley CC Jakob Spjut, Program Coordinator, Quinebaug Valley CC Haoyu Wang, Associate Professor, Central CT State University Olusegun Odesina, Associate Dean, School of Science, Engineering, and Technology, Central CT State University Aaron Clark, Assistant Chair, Mathematics, Southern CT State University Matthew Enjalran, Chair & Professor, Physics, Southern CT State University Winnie Yu, STEM IL Director, Southern CT State University Terri Bennett, Professor, Mathematics, Southern CT State University Christine Broadbridge, Dept. Research & Innovation Executive Director, Southern CT State University Robert Prezant, Provost & Vice President for Academic Affairs, Southern CT State University

#### **Other College & Universities**

Harvey Hoffman, Associate Dean of Engineering, Fairfield University Joyce Hu, Department Chair, Mechanical Engineering, University of Bridgeport David Giblin, Assistant Professor, Mechanical Engineering, University of Connecticut

#### **Other Organizations**

Taylor Van Antwerp, Talent & Workforce Director, CT Technology Council Jack Crane, Director, Growth & Innovation Services, CONNSTEP Jeff Orszak Technology & Innovation Manager CONNSTEP

#### Joined Meeting via WebEx

Greg Szepanski, Program Coordinator, Tunxis Community College Michael Accorsi, Senior Associate Dean, School of Engineering, University of Connecticut Nadja Koehler, Education Segment, ABB Robotics

#### MINUTES

## Welcome Remarks – Dr. Robert Prezant, Provost and Vice President for Academic Affairs, Southern CT State University (SCSU)

• Just returned from Complete College America (CCA) Conference, which focused on pathways to get students to complete college on time.

Executive Director: Dr. Karen Wosczyna-Birch

- SCSU is glad to be a part of the College of Technology as a way to provide a pathway to students.
- The physics program at SCSU is interdisciplinary and has CSCU TAP programs.
- A new advising system is being implemented as part of TAP.
- SCSU has the only Professional Science Masters (PSM) program in New England.
- SCSU is a serious advocate for education and industry partnerships.
- SCSU is home to BioPath, the CSCU Center for Nanotechology, and a new M.S. in Coastal Resilience in partnership with Liverpool.
- SCSU also has the Office for STEM Innovation and Leadership.
- The recognition of the Regional Center for Next Generation Manufacturing by the National Science Foundation is a real accomplishment.

#### Overview of SCSU/COT Physics Agreement - Dr. Matthew Enjalran, Physics, SCSU

- SCSU's Physics B.S. with Engineering Concentration is part of a College of Technology articulation agreement.
- SCSU has an old wood and metal shop that they want to get up and running again to use for elective courses.
- Students in the physics program can be involved in research as soon as they want; their level of involvement will depend on how far along they are in the program.
- Over 55% of the physics students are on the engineering track.
- For the Physics B.S. with Engineering Concentration, students can choose a minor in a STEM field or an
  additional 12 credits in STEM that are applicable to specific engineering disciplines. Math cannot be chosen for
  the minor, but a math minor is automatically awarded if a student takes linear algebra.
- In order for an institution to receive the Professional Science Masters designation, the program has to be connected to industry.
- The Center for Nanotechnology is for the entire CT State College and University System (CSCU). Contact Dr. Christine Broadbridge for more information <u>Broadbridge@southernct.edu</u>
- SCSU also hosts the Industry Academic Fellowship and is a partner in the Center for Research on Interface Structures and Phenomena (CRISP) with Yale University for undergraduate research.

#### Overview of SCSU's Data Science B.S. Program – Dr. Aaron Clark, Mathematics, SCSU

- The current goal of the Data Science B.S. program is to allow students to go right into the workforce or continue on to a M.S. degree program.
- SCSU will be the first institution in the CSCU System to have a Data Science B.S.
- These skill sets will allow students to enter many different arenas when searching for jobs.
- There is also a minor offered in Data Science in the Computer Science, Mathematics, General Physics, General Chemistry, Biology, and Biotechnology B.S. degree programs.

## ACTION ITEM: Quinebaug Valley CC – Advanced Manufacturing Certificate Program Modification Discussion and Vote

- Steve LaPointe, Director, Advanced Manufacturing Technology Center, Quinebaug Valley Community College (QVCC) presented the proposed program modification to QVCC's Advanced Manufacturing Certificate. The proposed modification takes the certificate from 34 credits to 30 credits, combining hands-on course that were 1 or 2 credits per course. New courses were approved through QVCC's instructional curriculum review process. Students will also have flexibility through an elective that can be chosen based on the specific industry or company they will be going to. The elective will also help if students transfer.
- Motion to approve the program modification by: Joe DeFeo, Director of Advanced Manufacturing Technology Center, Naugatuck Valley Community College; Motion seconded by: Mehrdad Faezi, Manufacturing Faculty, Manchester Community College. The motion was unanimously approved. The program modification, as presented, was approved.

## College of Technology and Regional Center for Next Generation Manufacturing Business & Updates – Dr. Karen Wosczyna-Birch, Executive Director, College of Technology, Regional Center for Next Generation Manufacturing

#### International Collaborations

- Received second round of funding through the French Embassy's Partnerships for Innovation and Collaboration in Study Abroad (PICSA)
- Currently organizing the second year of CT Collaborative Learning for International Capabilities and Knowledge (CLICKs), which involves CT community colleges faculty co-teaching modules with faculty at French partner institutions. There is also a partnership with Mexico.
- The second round of funding adds undergraduate research component between France and the US to the program.
- There is still time for CT community college faculty to get involved if interested.
- Student travel is included in the program.
- The overall program allows community college students to get a global perspective even if they do not travel abroad.
- There is not a requirement to be fluent in French to participate.
- Student travel opportunities will include bootcamps organized by the French Embassy and programs organized through the PICSA partnerships and independently at French institutions.
- Students participating in programs that are 14 days or longer will be eligible to apply for the Gilman Scholarship. This is a national scholarship program for students participating in study abroad programs.
- Travel and scholarship opportunities will be distributed as details become available.
- Karen Wosczyna-Birch was just in France for a US Community College Summit and after community colleges presentations was told that Connecticut really hit the ground running with their programs and is ahead of other states.
- The German Chamber of Commerce in the United States is also looking forward to working with the COT-RCNGM n upcoming initiatives.
- CSCU System Office Updates Lesley Mara, Director of Workforce Development, Strategic Partnerships, and Sponsored Programs for the CSCU System
  - CSCU System submitted an \$8 million proposal for apprenticeships. The partner companies had to commit to providing internships for students even if the companies received no money. The proposal committed to 3000 apprenticeships.
  - There is a new general education core that will be implemented. The new core has a 21-credit minimum. The core will also require a First Year Experience (FYE) course.

#### • Manufacturing Instructors Outreach Survey

While the community colleges work to increase the capacity of manufacturing programs and facilities, it is still difficult to find instructors. This problem can also be seen in high schools. Through the UD DOL TAACCCTT funding the CSCU System had received, a survey was done to explore the interest of employees either retired or soon-to-be retired from the manufacturing industry to become instructors. The survey provided good insight and recommendations for next steps. More programming will be coming out of this initiative in partnership with Borrow My Glasses, CT AARP, CSCU, COT-RCNGM, and manufacturing associations throughout CT. There will also be professional development workshops for incoming instructors who do not have experience teaching in higher education.

#### • University of New Haven (UNH) Agreement

- Following the information on curriculum and program updates at UNH provided during the November COT meeting, there is no current articulation agreement for Engineering Science with UNH. There is a possibility of a transfer agreement with the General Engineering B.S. at UNH; however, this is not an accredited program.
- Motion to remove UNH transfer option from COT website and associated community college websites: Mehrdad Faezi, Manufacturing Faculty, Manchester Community College; Motion

seconded by Jakob Spjut, Engineering Faculty, Quinebaug Valley Community College; The motion was unanimously approved.

#### • Central CT State University Agreements

 The Computer Electronics & Graphics Technology is reviewing and exploring their articulation agreements with the community colleges. While some of these may not fall under the COT, the Site Coordinators meeting scheduled for March 2019 at CCSU will be a good time to discuss them. There can also be discussion on bringing these programs into the COT.

Advanced Robotics for Manufacturing (ARM) Institute – Connecticut Apprenticeship Program for Robotics & Automation (CAPRA) Project Presentation – Dr. David Giblin, Assistant Professor in Residence, Mechanical Engineering, UConn

- Overview of program Slide presentation attached
- Main question for the discussion was when can courses or similar courses be offered at the community colleges?
   Quinebaug Valley Community College has the courses for the program in place.
- Discussion of recruitment strategy resulted in plan to recruit current students, preferably ones who are also incumbent workers.
- Depending on education and work experience, companies providing apprenticeship opportunities may require Bennett and Berke tests or a list of previous coursework.
- Software that will be used is RobotStudio, which allows for offline programming.
- Jack Crane of CONNSTEP, CT's Manufacturing Extension Partnership (MEP) requested that interested community colleges submit a list of students interested in the apprenticeship program and a list of courses offerings.
- There will have to be a type of capstone project for skills and academic assessment.
- Quinebaug Valley CC, Gateway CC, Three Rivers CC, Asnuntuck CC, and Tunxis CC are the current participating community colleges.

#### **Upcoming COT Meetings**

January 25, 2019 – University of Connecticut, Storrs Campus February 22, 2019 – University of Hartford, West Hartford March 8, 2019 – Central CT State University, New Britain April 12, 2019 - University of Bridgeport, Bridgeport May 17, 2019 – Northwestern CT Community College, Winsted

#### Other Important Dates

May 3, 2019 – Epsilon Pi Tau Honor Society Induction Ceremony – Manchester CC

## Physics & Engineering at Southern Connecticut State University



General transfer questions: Ms. Anna Rivera-Alfaro, <u>alfaroa1@southernct.edu</u>, 203-392-6848 Physics transfer questions: Prof. Matthew Enjalran, <u>enjalranm1@southernct.edu</u>, 203-392-7153



# Faculty, Staff, Facilities

## Faculty & Staff

- 9 full-time faculty plus adjuncts
- General department technician
- Technician for the CSCU-CNT
- Education & outreach coordinator
- Office/administrative support

## Facilities

- New laboratory space for research & teaching
- CSCU Center for Nanotechnology
- Astronomy control room
- State-of-the-art optics teaching lab
- High performance computing cluster & lab
- Engineering project lab in development
- Metal and wood machine shops in development







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# Faculty Research

## **Principal areas of strength**

- Materials science & nanoscale phenomena new facilities
  - Inorganic and organic/bio materials
  - Characterization/analysis, synthesis
  - High resolution imaging
  - Experimental and applied
- Optics & Optical instrumentation new facilities
  - Foundations in optics and lasers
  - Interferometry
  - Optics in astronomy
  - Experimental and applied

## Other fields

- Astronomy research at large telescopes, e.g., Arizona, Hawaii, Chile
- Biomedical including cancer research
- Condensed matter frustrated magnetism
- High energy & nuclear research at BNL, Long Island
- Physics education research on how students learn
- Computational physics high performance computing on a local cluster









Southern Connecticut State University

# **Undergraduate Degree Programs**

- BS General
  - Traditional physics degree, for students interested in graduate school in physics or related field
- BS Secondary Education
  - Core physics education with education training to become secondary education teacher
- BS Engineering Concentration
  - Core physics education with emphasis on applied science and engineering concepts.
- **BA** 
  - Core physics education with the freedom to explore disparate fields, good preparation for medical school
- 4+1 BS+MS
  - Under consideration
- All majors complete an independent capstone project, many involved in faculty research.
- Informal process by which students find internships.

## We have an articulation agreement with the COT



## **Undergraduate Curriculum**

### Core courses taken by all students

- PHY 230 Physics for Scientist & Engineers I
- PHY 231 Physics for Scientist & Engineers II
- PHY 309 Modern Physics
- PHY 370 Modern Physics Laboratory
- PHY 461 Methods in Physics Research
- PHY/EGR 471 Capstone Experience in Physics/Engineering
- MAT 150 Calculus I
- MAT 151 Calculus II
- MAT 252 Calculus III
- MAT 245 Differential Equations
- MAT 372 Linear algebra recommended
- CHE 120 General Chemistry I
- CHE 121 General Chemistry II

PHY \_221 CC equivalent PHY \_222 CC equivalent

MAT \_254 CC equivalent MAT \_256 CC equivalent MAT \_268 CC equivalent MAT \_285 CC equivalent MAT \_272 CC equivalent\*

CHE \_121 CC equivalent CHE \_122 CC equivalent



# **BS Engineering Concentration**

### **Required for the degree**

- EGR 151 Engineering Concepts
- EGR 251 Engineering Mechanics I: Statics
- Engineering Mechanics II: Dynamics
  - Under development
- PHY 355 *Electricity and Electronics*
- PHY Electives
- Two computer science courses

EGR \_111 CC equivalent EGR \_211 CC equivalent EGR \_212 CC equivalent

Selection of courses for CC equivalent may be transferable EGR \_214 Engineering Thermodynamics

- Choose a minor in a STEM field or additional 12 credits in STEM.
- The engineering capstone will emphasize team based projects like found in industry.
- Opportunities for materials engineering projects through individual faculty and CSCU Center for Nanotechnology
- Departmental strength in optics provides options for optical engineering projects, links to astronomy



## **Graduate Degree Programs**

### Master of Science in Applied Physics (MSAP)

- Materials science/nanotechnology track
- Optics/optical instrumentation track
- 36 credit masters program
- Professional Science Masters designation courses in business
- Thesis and special project options
- Internships required

## **Graduate Certificate in Nanotechnology (GCNT)**

- 9 credit certificate program
- Nanotechnology basics, emphasis on nano-characterization, final project
- Courses during evening hours to accommodate working professionals





# **MSAP & GCNT Curricula**

### MSAP

### **Core Courses – taken by all students**

- PHY 507 Applied Physics Graduate Seminar
- PHY 512 Methods of Theoretical Physics I
- CHE 520 Advanced Physical Chemistry I
- CSC 541 Digital Image Processing
- MBA 500 Management Process
- MBA 505 Marketing Management

## Materials Science/nanotechnology track requirements

- PHY 519 Nanotech I: Fundamentals of Nanoscience
- PHY 521 Nanotech II: Characterization of Nanomaterials

## **Optics/optical instrumentation track requirements**

- PHY 530 Optics and Detector Physics
- PHY 531 Interferometric Methods in Imaging and Precision Measurement **GCNT**
- PHY 519 Nanotech I: Fundamentals of Nanoscience (Nanotech III as a prerequisite.)
- PHY 521 Nanotech II: Characterization of Nanomaterials
- PHY 523 Nanotech IV: Nanosystems Laboratory



## Where recent graduates have gone

### Work force

- Sikorsky
- United Technologies
- Pratt & Whitney
- Aperture Optical Science, Meriden, CT
- Light Sources, Orange, CT
- Yale University, Applied Physics and Mechanical Engineering
- Assa Abloy Group, New Haven, CT
- Prometheus Research, New Haven, CT
- Arvinas, New Haven, CT
- Belcan Engineering, Shelton, CT
- Multiple high schools as physics teachers

### **Graduate schools**

- University of Connecticut
- Duke University
- Fairfield University
- Boston University
- University of Virginia
- Auburn University
- Rensselaer Polytechnic Institute
- Wesleyan University