

# From STEM to STEAM: Keeping the Arts in the Instruction of Science, Technology, Engineering, and Math

## 2010 North Atlantic One-Day Conference

NOVEMBER 19, 2010 | RENSSELAER POLYTECHNIC INSTITUTE | EMPAC: EXPERIMENTAL MEDIA AND PERFORMING ARTS CENTER | TROY, NY

8:15 AM–9:15 AM |

**REGISTRATION IN THE EMPAC ATRIUM**  
**CONTINENTAL BREAKFAST IN THE EMPAC CAFE**

9:15 AM–9:25 AM | EMPAC Studio 2

### (N10M12) Welcome

**Presented by:** Robert Joy, Managing Principal, JMZ Architects and Planners, PC; Thomas Rathbone, Associate Vice President, Facilities, State University of New York College at Oneonta  
Conference co-chairs Bob Joy and Tom Rathbone will welcome attendees and provide a conference overview.

9:25 AM–9:45 AM | EMPAC Studio 2

### (N10M11) Welcome to Rensselaer

**Presented by:** Ben Chang, Associate Professor, Rensselaer Polytechnic Institute  
Ben Chang, associate professor, Department of the Arts, and co-director, Games and Simulation Arts and Sciences will provide an introduction to the Institute and The Rensselaer Plan.

9:45 AM–10:45 AM | EMPAC Studio 2

### (N10M11) The Quiet Crisis: America's Economic and National Security at Risk

**Presented by:** Dr. Shirley Ann Jackson, President, Rensselaer Polytechnic Institute  
As they approach decisions on education and careers, the best students look for opportunities that will allow them to use the full spectrum of their talents. They want to combine the rigor, power, and adventure of science and engineering with all that the arts bring. As we face a shrinking pool of technical experts—one which puts our hopes for prosperity and leadership at risk—appealing powerfully and broadly to a new generation of talented individuals becomes ever more crucial. In addition, we must keep them engaged once they direct themselves toward science, engineering, and math.  
Charged with this mission, Rensselaer has created common ground for people of diverse disciplines. Through programs and venues, we are bringing together those with complementary skills and capabilities, and then supporting their collaboration. This approach engages the best and the brightest, providing hope for a new generation of leaders. It also creates opportunities for finding innovative and holistic answers to our society's most urgent challenges.

#### LEARNING OUTCOMES:

1. Identify the range of programs that help recruit the best undergraduate students to institutions specializing in science, technology, engineering, and mathematics (STEM).
2. Assess the importance of collaborative opportunities—including those presented by significant spaces—for furthering undergraduate education.

3. Discover the power of the arts and humanities in attracting highly competent students and retaining key faculty members.
4. Determine ways to bring together students and faculty with complementary skills and capabilities to advance innovative and holistic answers to complex social and technological questions.

10:45 AM–12:15 PM

### (N10M14) Center for Biotechnology and Interdisciplinary Studies Tour

**Presented by:** Jonathan Dordick, Director, Center for Biotechnology and Interdisciplinary Studies

Can the design of a college building create a collaborative environment for different disciplines on campus? On this tour, participants will learn how Bohlin Cywinski Jackson and Burt Hill created this 218,000 square foot complex that responds to the specific needs of its physical and pedagogical context. This tour will provide participants with the opportunity to compare three different types of learning laboratories in the center: research labs, support labs, and core labs. These laboratories complement each other in their range of equipment and flexibility available to users. The separation of the labs and offices changes how researchers traditionally interact with their surroundings, and reconfiguration of faculty is possible due to the flexible approach to lab design. Participants will also tour the building's seminar spaces, galleries, the Bruggeman Conference Center, and its state-of-the-art auditorium.

#### LEARNING OUTCOMES:

1. Compare the design and function of three different types of science learning laboratories.
2. Describe the key features of laboratory design that provide flexibility that allows re-purposing as research needs change.
3. Consider how design affects the ability of researchers to create interdisciplinary teams that can attract increased funding.
4. Illustrate the ways in which common spaces, such as auditoria, can enhance the connection of a science building to the rest of the campus.

AIA Credits Possible: 1.0 LU HSW

12:15 PM–1:15 PM | LUNCH IN THE EMPAC CAFE

1:15 PM–1:30 PM | EMPAC Studio 2

### (N10M17) Remarks from Trina Learned, North Atlantic Regional Representative

**Presented by:** Trina Learned, Director of Facilities, Northfield Mount Hermon School

Trina Learned, the North Atlantic Regional Representative will provide an update on SCUP Activities. Co-chairs Bob Hicks, Mina Amundsen, and Debi McDonald will provide a brief preview of the 2011 March regional conference in the Five Colleges' Region of Western Massachusetts.

1:30 PM–2:45 PM | EMPAC Studio 2

### (N10M19) The Story and Impact of EMPAC

**Presented by:** Johannes Goebel, Director, Experimental Media and Performing Arts Center, Rensselaer Polytechnic Institute; Evan Douglis, Dean, School of Architecture, Rensselaer Polytechnic Institute

**Student Panel:** Julia Alsarraf, Electronic Arts, with an Electrical Engineering dual (and Music minor); Yehuda Duenyas, MFA student in Electronic Arts; Anna Lindemann, Master's student in Electronic Arts; Kyle Mackenzie, Computer Science; Yu Sheng, Ph.D. student, Architectural daylighting visualization; Philip Vernon, Architecture

Johannes Goebel, director of EMPAC will explain the program, design, special features, and construction of The Curtis R. Priem Experimental Media and Performing Arts Center.

Evan Douglis, Dean, School of Architecture will moderate a panel of students in a discussion about the impact of The Rensselaer Plan and the construction of EMPAC on their college experiences.

3:00 PM–4:00 PM

### (N10M11) Experimental Media and Performing Arts Center Tour

EMPAC has been billed as “both a place and a program where the arts, technology and science will challenge and transform each other.” This tour will explore Rensselaer’s new facility designed by Grimshaw Architects and Davis Brody Bond Aedas, intended to bring together several venues that can be used independently and simultaneously, while also dedicating space to research and residencies. Participants will learn about the technologies employed in designing the 1,200-seat Concert Hall, as well as black box studios and support space. Discussions will include the technical challenges involved in constructing the unusually shaped Atrium and Concert Hall.

#### LEARNING OUTCOMES:

1. Observe and analyze the architect’s approach to the acoustic design, theatrical lighting design, sight lines, seating capacity and layout, and material selections design of the 1,200 seat concert hall and 400-seat theater.
2. Investigate the two ‘black box’ studios and analyze the approach to building in flexibility in configuring the space, including the shape and volume of the space, acoustic design, technical infrastructure and material selections.
3. Discuss the role of the building’s support spaces, including backstage support space, artist-in-residence studios, and AV production and post-production suites.
4. Examine the Atrium’s and Concert Hall’s material use and features, and discuss the technical and structural challenges to construction with these unusual architectural elements.

AIA Credits Possible: 1.0 LU HSW

### 4:00 PM–5:00 PM | RECEPTION IN THE EMPAC CAFE

Attendees will have the opportunity to informally tour the building and socialize with colleagues.

*A special note of thanks to President Shirley Ann Jackson for her generous donation of time and for hosting this event at Rensselaer Polytechnic Institute.*

*Thanks to the wonderful assistance and contributions provided by RPI staff and students for their efforts to coordinate and participate in this event.*

*Thank you to our volunteers for their hard work and dedication.*

*Please be sure to thank our sponsors!*

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