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Partnering for Greener + Sustainable Design-related STEM Curriculum: Improving Outcomes for Women & the Environment

PRIMARY STRAND: PARTNERING (with sub-foci of Retaining and Releasing)

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As a result of a National Science Foundation ATE grant and FIT's Sustainability Council, faculty at FIT are developing a new model for teaching science to students interested in design and fashion related disciplines. This model focuses on the principles and materials used in eco-responsible design and product development, simultaneously addressing the educational challenge of retaining women in science and the underrepresentation of women in the STEM industries (De Welde, Laurensen and Thiry, 2007), including those in the design-related STEM.

The overarching goals of this grant-funded project are to retain and better prepare women for success in technology-driven design industries that are demanding green and sustainable products and to better prepare faculty to meet these objectives. Key efforts currently being implemented are innovative green/sustainable science modules that bridge high school and college curriculum and effective faculty development, demonstrating pedagogies designed to meet the needs of women with real-life learning experiences and everyday engineering. Especially critical to this initiative are working partnerships designed to bridge college career departments, local high schools and a dedicated advisory board representing industries such as textile development, interior design, technical design, toy design fashion design and packaging.

For the proposed SUNY-STEM workshop, the Principal Investigator and Co-Principal Investigator for this collaborative project, *Advancing Design-related Technological Education: A Three-way Partnership* (NSF# 1003034) will share accomplishments, findings and lessons learned after one year. These include 1.) documenting the creation of curricular modules for Earth Science and Physical Sciences-- developed as a result of industry, career department and high school collaboration, 2.) implementation of joint faculty development for high school teachers and college faculty that covers topics such as the Reflective Teaching Portfolio and infusing existing curriculum with real-life projects, 3.) application of teaching methodologies that draw on active and



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inquiry-based models, targeting the needs of female science students who represent 85% of the student population at FIT 4.) and analysis of strategies for nurturing effective collegial and industry partnerships. The presenters will also provide an overview of the activities timeline, the various challenges they've encountered along the way and facilitate a discussion on the importance of institutional buy-in and fundraising that can expand both project scope and benefit.

Specific Workshop Activities (75 minutes):

- 1) The workshop will begin with the presenters sharing the need for their project, underscoring the critical role of science in effective green and sustainable design. An overview of the project activities and achievements will be provided, detailing information on newly created science modules. Text and graphical representations will be included. Visuals will paint a broad, as well as, detailed picture of the project journey to date. Time will be allotted to Q&A, and hand-outs will be made available. (20 minutes)
- 2) Participant feedback "clicker session" will test participant knowledge on the challenges and evolving strategies for retaining women in science, the challenges still faced by women in the STEM workplace and other model efforts to implement eco-responsibility in design education. Key data, local and national, will be shared. Brief discussion will be facilitated. (20 minutes)
- 3) Break-out groups will foster more in-depth faculty discussion and brainstorming for local campus applications, guided by pre-determined questions. Time will be allotted for final report-back and discussion. (30 minutes)
- 4) Wrap-up. (5 minutes)



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Anticipated Learning Outcomes:

As a result of this workshop, faculty will

Gain new ideas and “how-to” information for developing eco-responsible content for science or career courses at the home campus.

Learn about innovative science faculty development activities and how they can be implemented in various campus settings.

Have a broader understanding of the current data and challenges for women in STEM-related workplace.

Learn new techniques for fostering improved outcomes for women in STEM education.

Develop a greater understanding of the critical role of science in design-related STEM activities.



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