

NAWEA 2013 Symposium, Boulder, CO

Session 6B: Education and Curriculum

Chairs and Speakers: James Manwell, Andrew Swift

**Panelists: Suzanne Tegen, NREL; Tom Acker, Northern Arizona; Carlos Simao Ferreira, TU ;
Jonathan Miles, James Madison; Jonathan Naughton, University of Wyoming; Ganesh
Rajagopalan, Iowa State University**

Purpose of panel: Each panelist presented a 5-minute overview of their wind energy educational program at their institution. The presentations were followed by a panel discussion about the NAWEA Education and Curriculum Mission, and paths forward to achieve the mission.

Summary of Panel Discussion:

The question posed to the panel and discussed with the audience was “Should NAWEA offer a graduate certificate in wind energy?” The general consensus of the panel was that it would be beneficial if NAWEA were to either offer a “certificate” of some sort, or in some way “bless” or “approve” of curriculum related to wind energy. There were three general categories of NAWEA blessed programs that were discussed:

- 1) NAWEA certifying/approving the wind energy curriculum at a given university. For example, NAWEA might certify a major, minor, graduate degree, or certificate offered by a university.
- 2) NAWEA maintains a list of “certified” wind energy related courses and programs that an interested professional or person could take in order to learn more about a particular aspect of wind energy. The courses could vary from introductory material in a survey course to detailed technical courses in engineering or business, and likewise for the programs.
- 3) NAWEA could be a central hub in facilitating the offering a coordinated degree in wind energy, involving multiple institutions. A prospective student could be enrolled in a given university’s graduate program, but take on-line courses from other universities to fulfill the coursework requirements for the degree at their home institution. NAWEA would have worked out the articulation agreement between all universities involved to allow courses to transfer seamlessly for credit, and the mechanism for the university teaching the course(s) to get paid for on-line students from other universities.

In all three cases mentioned above, NAWEA would in some way be involved in reviewing the program and courses to ensure they include material relevant to the wind energy industry, and the quality of these programs/courses are vouched for by NAWEA. It was also suggested that the European models for wind energy education be used both as a platform for learning from their experience, as well as possible collaborators.

Concerning the types of programs/certificates/degrees that would be offered, there was no consensus about what type of program should be offered/approved/certified. However, there was agreement that there is a need for something of this sort, and that NAWEA should fill the void. It was also agreed the curriculum and education programs considered be broad, spanning the needs in the industry from engineering to business to environmental to regulatory, etc. For general education of the public (and possibly even more so for the press and policy makers), it was suggested that MOOCs

(Massively Open Online Courses) be considered, as well as creating a series of 2-minute You-Tube videos.

An additional topic that was discussed was financial support (such as scholarships, fellowships, research assistantships) for graduate students. It was noted that it is difficult for students to pursue advanced educational opportunities without some form of financial support. It was recommended that NAWEA could serve as a vehicle for providing such support.

Below are some “next steps” that were identified to help NAWEA move forward:

- 1) Formally create a NAWEA education and curriculum committee, and define an agenda for the committee.
- 2) Identify the need for a certificate or certified degree or certified courses, etc. Who are the customers and what is the market? I.e. how many people would be interested in taking the courses or completing the programs/degrees, and who would hire these people? I.e. what is the real need for a NAWEA education program?
- 3) Write a planning grant for the NAWEA certification/educational activities. NAWEA will need to find funding in order to move forward.
 - a. Who would be interested in funding such a grant?
 - b. There are some legal aspects...
 - c. What programs have been done before (in wind energy)? What similar programs have been offered successfully in other professions? Etc.
 - d. Explore external examples – models from different industries
 - e. Need to expand the network to other schools – what are the kinds of certifications
 - f. Need some industry vetting – would this be of value to the industry? What classes would be important to the industry? – consider AWEA Seal of Approval model
 - g. Students really need something that is solid – in European Academy they only got traction once they were offering a real MS – a minor
- 4) Standardization of class's at different universities: is this necessary, and if so, what should be done?
- 5) Begin the process to identify potential sources of financial support for graduate students.