

Lessons Learned from a Collaboration with Normandale Community College

Presented by: Dr. Elena Brewer



**MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019**



Motivation for Finding a Partner to Teach a Vacuum Technology Courses

- **High cost barrier to entry (in developing curriculum and acquiring and maintaining lab equipment)**
- **Scarcity of qualified teaching faculty with the necessary technical expertise**
- **Difficulty of attracting and retaining smaller student populations to the field**

**Solution – SHARE programmatic resources between
two-year and four-year institutions !!!**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Finding a Partner in Vacuum Technology Education

- **SUNY Erie:**

- **2014 - 2017 – started AAS Nanotechnology program and introduced Semiconductor Fabrication courses into EET curriculum**
- **State-of-the-art cleanroom funded by \$5.7M SUNY-2020 grant**
- **2017 – was looking into expanding into Vacuum Technology course offering, but lacked in-house faculty expertise to go past basic vacuum systems**

- **Normandale Community College:**

- **offered AAS degree in Vacuum and Thin Film Technology since 1998**
- **2014 – Normandale was awarded NSF-ATE grant (Project ReVAMP, DUE #1400408) to sustain Vacuum Technology Program and meet the national industry demand (especially in Arizona, Minnesota, New York, California, Oregon, Texas)**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Finding a Partner in Vacuum Technology Education

- **Normandale Community College – Project ReVAMP:**
 - **updating the vacuum technology curriculum and developing a Vacuum Equipment Trainer (VET) system to support hands-on learning**
 - **delivering vacuum technology courses via telepresence**
 - **partnering with industry and academic institutions to boost enrollment and to meet nation-wide industry demands**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Delivering Courses via Telepresence



• Telepresence Facility at Normandale

- synchronous telepresence connection
- several tracking cameras
- microphones
- multiple screens
- connection software (Blue Jeans or Skype)



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Delivering Courses via Telepresence

• Telepresence Facility at SUNY Erie (off-site location)

- synchronous telepresence connection
- conference room setup with reasonable teleconferencing capabilities
- large-screen monitor (70") with back mounted computer
- webcam and microphone system
- back-up audio via phone land-line connection
- seating capacity – 14 students
- enough room for RVET
- no special expenditures were needed



**Rough Vacuum Equipment
Trainer (RVET)**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Forming a Partnership Between Academic Institutions

- **Logistical and legal details took 5 months**
- **Course, identical to *Introduction to Vacuum Technology* course at Normandale CC, was created at SUNY Erie (about a 3-month process)**
- **Issues between administration and FFECC union (based on union contract) : “SUNY Erie courses must be taught only by the SUNY Erie’s faculty” which were resolved by producing 1-year MOU allowing a jointly taught course *Introduction to Vacuum Technology***



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019

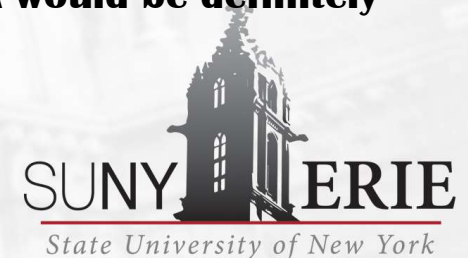


Forming a Partnership Between Academic Institutions

- **Managed activities at the off-site locations (SUNY Erie) were also funded by ATE grant:**
 - **classroom management**
 - **proctoring exams**
 - **interfacing with IT staff**
 - **VET system receiving, shipping, assembly, preparation, monitoring class usage, storage, troubleshooting and repair)**
- **All managed activities had to be performed by full-time or adjunct faculty (based on union contract). Spring 2018 - one full-time faculty and one IT technician were paid via grant. These activities do not really require faculty member assigned to the course, TA would be definitely sufficient.**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Forming a Partnership Between Academic Institutions

• **Student Registration:**

- **students were registered at SUNY Erie and SUNY Erie retained student registration fees (NSF funding supported the cost of the Normandale CC instructor, the cost of SUNY Erie staff time, and the cost of shipping the VET system)**
- **to make this sustainable in the future, need to develop agreement about sharing student registration fees to fund instructor at Normandale and support staff at SUNY-Erie**

• **Time Zones:**

- **Spring 2018 course contained 3 institutions from 3 different time zones**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Forming a Partnership Between Academic Institutions

- **Learning Management System (LMS):**

- **different LMSs (BlackBoard vs D2L)**
- **course material could not be shared between two different LMSs**
- **semester-long guest accounts in Normandale's LMS had to be created for SUNY Erie students**

- **College Schedules:**

- **different timing for semester start, drop/add week and spring recess**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Forming a Partnership Between Academic Institutions: Recommendations

- **Recommendations for institutions that would like to establish the level of partnership that we accomplished:**
 - **enlist the support of senior faculty member (or team of faculty/staff) from the department that would host the course**
 - **establish a team of representatives from the business office (contract negotiations and accounting), human resources (assignment adjustments), IT support, and admissions/registration**
 - **discuss LMS systems compatibility early on in the process**
 - **identify faculty for running telepresence course early on**



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019



Lessons Learned from a Collaboration with Normandale Community College

Dr. Elena Brewer

??? QUESTIONS ???



MNTeSIG Special Interest Group,
2019 HI-TEC Conference
July 23, 2019

