



ANNUAL REPORT 2008

Science, Mathematics & Engineering



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success starts here

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ANNUAL REPORT 2008

From the Dean



As we begin the 2008-2009 academic year, I am pleased to share the SME Annual Report with you, highlighting the past year in Sinclair Community College's Science, Mathematics and Engineering (SME) division. I am grateful to the faculty and staff and in particular, the Leadership Team for the innumerable ways in which they collaborated and cooperated to make

the first year for this newly formed division an enormous success. Despite budget constraints, we have achieved growth in a variety of programs, and have worked to make all our programs more effective and efficient through our focus on quality and innovation.

In this 2008 SME Annual Report, you will learn more about the division's efforts to collaborate with Sinclair's Workforce Development and other divisions to stay on the cutting edge in meeting the needs of the region's employers. During this transitional time in Ohio's and the nation's economy, the focus is on STEM (science, technology, engineering, and mathematics) education, and SME division is in a uniquely strong position to produce the highly skilled, highly qualified workforce to fill the current and future high tech jobs in Montgomery County and across the state of Ohio.

The SME division is excited to participate in statewide initiatives such as Governor Strickland's "Senior to Sophomore" program. Beginning this fall, every academically qualified Ohio 12th grader will be given the option to spend his or her senior year of high school on

a University System of Ohio campus at no cost, and then will graduate from high school ready to start his or her sophomore year in college.

As part of the new University System of Ohio, Sinclair and our SME division look forward to being at the forefront of recruiting and retaining an increasing number of students. We already have a variety of established successes in working with high school teachers and students, and building on those existing relationships will serve us well in achieving Ohio's new educational goals.

In fact, student success and retention is already a focus of the SME division and we have seen great successes, including the highly effective efforts of the math department in developing a new sequence of MAT 191-192-193, which you will read more about in this report. The use of innovative pedagogy, classroom techniques, and online tools is a shining example of what our outstanding SME faculty has accomplished and continues to achieve.

In addition, the current SME faculty carries on the division tradition of being exceptionally active in obtaining grants and in-kind support, being published, and conducting applied research. Among the specifics you will read about in this report is the National Science Foundation's renewed funding for the National Center for Manufacturing Education (NCME), which leads the center into its second decade of serving manufacturing and engineering technology educators nationwide.

The dedication and collaboration of SME faculty and staff made the 2007-2008 academic year one of which we are all proud. I extend my hearty congratulations and heartfelt thanks. I look forward to another exciting, successful year ahead.

George H. Sehi, Ph.D.
Dean
Science, Mathematics and Engineering

Leadership Team

George Sehi
Dean
Professor
SME Division



Shep Anderson
Chairperson
Professor
Manufacturing and Operations
Technology (CAM, OPT)



Steve Ash
Chairperson
Professor
Automotive Technology (AUT)



Mike Canestaro
Chairperson
Professor
Chemistry (CHE, GLG)



Walt Davis
Chairperson
Assistant Professor
Aviation Technology (AVT, ESUP)



Don Homan
Interim Chairperson
Associate Professor
Electronics and Robotics (ACT, EET)



Lorraine Kapka
Chairperson
Associate Professor
Engineering Technology
Design (CAT, ETD, HVA)



Terry Maiwurm
Co-op Coordinator
Co-op Education



Monica Martin-Frayne
Administrative Assistant II
SME Division



John Mersfelder
Chairperson
Assistant Professor
Biology (BIO, BTN)



Art Ross
Chairperson
Professor
Physics (AST, PHY)



Anthony Ponder
Chairperson
Professor
Mathematics (MAT)



Steve Wendel
Director
National Center for
Manufacturing Education (NCME)



Surinder Jain
Interim Associate Dean
Professor
SME Division

STEP II Co-op Program Making a Difference

When STEP II coordinator Daryl Curnutte began working with the Dayton Tooling and Manufacturing Association (DTMA) to develop a co-op program for STEP II students, he believed it would show benefits for the participants, the employers, and the STEP II program – and he was certainly right.



As part of DTMA's diversity initiative, the pilot program placed 15 students in DTMA companies, with a rotation of five and a half weeks in class, five and a half weeks on the job. Students were placed in the program based on attendance, cumulative GPA, and National Tooling and Machining Association (NTMA) aptitude testing. The employers in the co-op program agree to give hiring preference to those who successfully complete both the classroom and on-site requirements.

The pilot proved highly successful. In fact, two participants who were former Delphi employees who accepted the buyout and then came to Sinclair were both offered full-time employment at their co-op sites. Says Curnutte: "The companies have been very positive in their responses to both Sinclair and the DTMA. The students are as happy as they can be and so

many of them have told me how it has changed their lives and put them in a lot better spot."

Along with Sinclair, DTMA is actively recruiting participants for the program. With the positive response and valuable feedback from this initial implementation, the STEP II co-op program will continue to grow and improve.

Full Chemistry Sequence in Summer an Advantage to Students throughout Ohio

Chemistry professor Jim Johnson knew there had to be a way to deliver three quarters worth of organic chemistry in the summer, and he figured out how to make that happen. By offering CHE 201 in Summer A, then CHE 202 and CHE 203 concurrently in Summer B, students are able to complete the sequence in ten weeks rather than over the course of an academic year.

The two-quarter sequence made it necessary for Johnson to be flexible in his delivery of CHE 202 to accommodate the pace of the CHE 203 class. "It's a continual adjustment, and the only way it works well is to have one faculty person teaching both courses so instruction can be on a just-in-time basis," says

Johnson. Students must get departmental permission to register for CHE 203, since its prerequisite CHE 202 is taken concurrently. The number of CHE 203 students is limited to 20, while CHE 201 and 203 can accommodate 30.

The program benefits not only Sinclair students, but also students from surrounding universities. Students from these other institutions use the sequence to satisfy requirements in a variety of programs such as pre-med, pre-pharmacy, pre-dental, and chemical engineering.

2007 Automotive Hybrid Workshop Repeats Successful International Training

In its second year, Sinclair's Hybrid Automotive Technology conference continued its success in attracting educators from throughout the nation and across the world. The conference has now trained more than 70 instructors from 26 states, Australia, and New Zealand, supported by National Science Foundation (NSF) funding totaling \$270,000.

The hands-on training that instructors receive is unique to this conference. "In fact, you can't buy this training anywhere else," according to Rex Kent, the project director. The instruction provided is the equivalent of dealership master technician training, and participants get copies of all materials presented.

The one drawback of this advanced intensive training is that the number of participants must be limited in order to ensure that each person gets to work directly on the vehicles, as opposed to just hearing a lecture or observing a procedure. There are also safety concerns that necessitate keeping the attendance limited. "There are times when they are

handling 300 volts of power. We need to make sure each person has the right safety equipment and the right supervision," explains Kent.

For the 2007 event, top industry trainers from Ford, General Motors, and Toyota spent the week teaching their specific procedures, with assistance from Sinclair automotive faculty Thomas Freels, Michael Garblik, David Stover, and James Truxal. The participants worked on 13 vehicles, including a new Lexus hybrid. One of the highlights for 2007 was the arrival of Toyota's Fuel Cell Hybrid Vehicle, on loan complete with its own driver, from Washington, D.C.

A proposal for additional funding of approximately \$750,000 is expected to be accepted by NSF to establish a National Alternative Fuel Vehicle Center through the SME division's Automotive Technology department, and to run the conference again in 2009, 2010, and 2011.



Future Looks Bright and Green for Center for Energy Education

“Demand is increasing for our students who have energy education and experience,” according to Architectural Technology assistant professor Bob Gilbert, and his mission is to meet that demand. Gilbert runs the Science, Mathematics and Engineering (SME) division’s Center for Energy Education, located on the first floor of Building 11, Dayton campus. Since its inception in 2006, the center has become the focal point for all of Sinclair Community College’s energy related activities.

In 2007, the design for the Center for Energy Education was developed by Sinclair students as a spring internship project, and construction took place that summer. The center is essentially a laboratory that supports a wide variety of energy and environmental activities, with an additional emphasis on community awareness and outreach, especially for K-12 students. Numerous SME division courses have also utilized the lab.

In 2007, HVACR and Architectural Technology students performed an energy audit of Building 14 on the Sinclair Dayton campus. They collected data from both construction prints and actual measurements, and also acquired data regarding scheduling, lighting, heating and air conditioning, and other mechanical systems. The students determined energy and cost saving measures, and their recommendations were presented to Sinclair President Dr. Steven Johnson and to Sinclair Facilities Management personnel.

Enthusiasm for the Center for Energy Education extends regionally and statewide. A service learning partnership with the Community Action Partnership (CAP) of the Greater Dayton Area has been very successful. Sinclair students worked with the CAP-Dayton weatherization program by assisting in residential energy audits and subsequent home repairs and improvements to reduce utility costs.

The center also has received Ohio Department of Natural Resources (ODNR) funding in collaboration with Sinclair Facilities Management. One goal of the ODNR grant is to have some of Sinclair’s lawn maintenance equipment run on biodiesel fuel produced from used oil from Sinclair’s food service.



Scholarship for Sinclair Flight Student Honors Late Pilot Jim LeRoy

After acrobatic pilot Jim LeRoy, nationally recognized for years on the air show circuit and a Vectren Dayton Air Show favorite, was fatally injured at the 2007 show, the United States Air & Trade Show board established a one-time \$2,000 scholarship to be presented to a Sinclair Community College flight school student. Sinclair is the official education partner of the Vectren Dayton Air Show.

Representatives from Sinclair and the Air Show board established criteria for the scholarship recipient that included status as full-time student in the Sinclair pilot program, grade point average, ratings achieved for flying, and hours of flight. Sinclair officials evaluated applications, and two finalists were chosen to interview with Sinclair and Air Show representatives. The interview included questions provided by LeRoy's widow Joanie, which she felt would elicit responses that would reflect the candidates' level of passion for aviation. Shawn

Riffée of Zanesville was selected to receive the scholarship. Shawn has earned his Commercial/Instrument/Multi Engine license and his Certified Flight Instructor certificate, and is working as a flight instructor for the Aviation Technology department and the partner, Aviation Sales, Inc. (ASI). Shawn continues to be a Sinclair student as well, working toward his Certified Flight Instructor Instrument rating and his Associate of Applied Science degree (Professional Pilot option), with the goal of becoming an airline or corporate pilot. The scholarship was presented to Shawn by Joanie LeRoy at the 2008 Vectren Dayton Air Show.

Shawn Riffée, Scholarship Recipient



*Joanie LeRoy, widow of Jim LeRoy,
with scholarship recipient Shawn Riffée.*



Students Appreciate Extended Math Sequence

Photo taken by Gary Honnert

For many of the students who were unsuccessful in the MAT 101-102 sequence, the new MAT 191-192-193 series has proven to be a welcome change. Changing the sequence from two quarters to three has slowed the pace to be more manageable for struggling students. Assistant professor Richard Uchida, who was instrumental in the development and implementation of the new MAT 191-192-193 courses, says that “especially for anyone who has been out of school and away from math for a long time, this lets them ease back into it.”

To increase student engagement outside of the classroom, MyMathlab was used to create homework assignments and quizzes. In response to student feedback from the fall quarter of 2007, the MyMathlab assignments were adjusted to use fewer problems spread over six days each week.

Math faculty David Hare, Lynn Schutte, Richard Uchida, and James Willis began offering exam review sessions for the MAT 191 and 192 in 2007-2008. For students unable to attend the review sessions, Uchida and Willis created online video review clips. Exam review sessions for MAT 193 are planned for 2008-2009. Other improvements being planned include the use of tablet p.c.'s and a personal response system (clickers) to increase student engagement and encourage group interaction.



Aviation Faculty Puts Theory into Action for Middle School Girls

In November of 2007, Donna Hanshew, Bill Kronenberger, and Don Stark of the Aviation department took their tornado machine, static generator, and flight simulator to Weisenborn Middle School in Huber Heights for the school's Girls in Science program. The girls were excited, but their teacher, John Betts, decided the best way to show them the practical applications of these demonstrations was to get them in a plane.

Betts worked with Hanshew to accomplish the goal of giving the girls a “discovery flight,” and so on a Saturday in December, the 15 middle school girls each had the opportunity to take the controls on a flight from the Dayton International Airport to the Wright Brothers Airport and back. On that day, Hanshew was joined by flight school manager Kristof Cappoen and adjunct flight instructor Aaron Martinelli, all three of whom volunteered their time and expertise to make this a memorable experience for the girls.



Biology Professor to Lead NSF Dayton Urban STEM Grant

Assistant professor Norma Hollebeke of the Biology department is the principal investigator for a National Science Foundation (NSF) grant awarded to Sinclair Community College to establish the Dayton Urban STEM Academy. The grant is to provide professional development for science, technology, engineering, and mathematics (STEM) teachers, and is funded at just over \$642,000 for three years beginning January 2009.

The goals of the grant include creating an environment where urban high school students pursue urban teaching careers and launching a STEM teacher development pipeline. Ideally,

the pipeline will articulate from high school to community college to four-year universities in order to produce the next generation of STEM educators for urban schools.

In addition, the grant seeks to develop a new K-12 science and mathematics teacher education model employing state and national Tech Prep program standards and best practices, thus providing future STEM teachers a solid, content-rich foundation in STEM disciplines and pedagogy.

Personal Weather Stations Benefit Students, Community

Students in statistics and computational science courses are using personal weather stations to acquire, monitor, and analyze real-time data related to a variety of weather conditions, including temperature, humidity, and wind speed.

Purchased with funds from a Sinclair Community College Innovative Projects grant, the relatively inexpensive weather stations provide an engaging real-world experience for students in a variety of contexts. Currently used by a variety of math and science courses, including computational physics, Art Ross, chairperson of the Physics department, foresees specific climate related courses in which the personal weather stations would be



invaluable. “With the live link to the web site www.wunderground.com, students are connected to a national network of weather monitors. There are numerous ways instructors can incorporate the data acquisition and analysis, and the students find it much more exciting to be working with actual up-to-the-second information that they are collecting themselves.”

The three weather stations are at Sinclair’s Dayton campus, at the Englewood campus, and Warren County Courseview campus. The main campus station is linked to WHIO television, so the greater Miami Valley also benefits from the live data the weather station transmits.

Sinclair Becomes a Haas Technical Education Center



providing some scholarship money for Sinclair students in the Computer Aided Manufacturing program.

When Natalie Royer, a lab technician for Computer Aided Manufacturing, stopped by the Haas Automation display at the Dayton Tooling and Manufacturing Association's annual Advanced Manufacturing & Technology Show in 2006, she could not have predicted that it would lead to a partnership establishing Sinclair Community College as a Haas Technical Education Center (HTEC), but that's exactly what happened.

The agreement with Haas will bring all new lab equipment to the department, including three CNC lathes and three CNC machining centers. Valued at approximately \$250,000, the new machinery ensures that Sinclair students are receiving the most advanced, cutting edge training available. In addition, tabletop simulators allow individual students to gain experience operating machine controls.

According to Don McFadden, a 1987 Sinclair STEP II graduate, and the Haas representative, there are over 500 Haas machines in regional companies. "You'll find one in almost every shop." As well as making Sinclair students attractive and important to local industries, "the five axis machining training can lead to entrepreneurial opportunities." In addition, the Haas Foundation will be

The mission of the HTEC program is to "leverage the capabilities and technologies of Haas Automation and partner with industry, schools, and professional societies to exchange best practices and exploit the power of modern manufacturing equipment for educational purposes... and to promote and advance manufacturing and productivity through excellence in manufacturing education." Their vision is "to develop, deliver, and disseminate collectively the best educational methods and techniques for advanced manufacturing education in the world."



As a Haas Technical Education Center, the Manufacturing and Operations Technology department received the new equipment in the summer of 2008. Additionally, it will receive periodic upgrading of equipment to ensure that the program is always consistent with the most current technology.





Faculty Awards and Achievements

Faculty receiving recognition:

Bob Chaney, Professor

Mathematics

OhioMATYC Teaching Excellence Award

Jim Houdeshell, Professor

Manufacturing and Operations Technology

Affiliate Societies Council of Dayton Outstanding Engineers and Scientists Award

Len Ruth, Professor

Mathematics

Received Ph.D. in Mathematics

Steve Wendel, Director

NCME

NISOD Excellence Award, 2007

Phyllis Williams, Professor

Biology

Academy for Leadership and Development Exemplary Leader Award

Sinclair Flight School Soaring

For students wanting to take to the skies as a pilot or a flight attendant, or wanting to work on the ground as a dispatcher or aircraft mechanic, Sinclair's Aviation Technology department is the place to get the state-of-the-art training for these in-demand professions. With the flight school's move to the Wright Brothers airport, students are benefitting from the "more and newer aircraft available," according to Walt Davis, Aviation Technology department chairperson.

Among the planes being used in the program is a brand new SportsStar light sport aircraft that is fully equipped for instrument instruction.

In January 2008, the Sinclair flight school established a unique partnership with Aviation Sales, Inc. (ASI), known for more than fifty years as a premier pilot training facility. Along with cutting edge aerospace simulations and modeling tools used at Sinclair, the collaboration with ASI continues the Aviation Technology department's success in



training pilots to commercial airline standards.

With nearly 100% post-graduation job placement, the program is aggressively recruiting both students and flight instructors. According to Davis, the use of aircraft in interstate commerce and a shift in business travel from the major airlines to executive size aircraft has increased demand for pilots. Along with these changes in airline passenger and cargo traffic, an expected wave of retirements will provide many job opportunities for new pilots and flight instructors at all levels.

In addition to pilot training, Aviation Technology's certificate programs for flight attendants, maintenance technicians, and dispatchers continue to be popular. With the continued growth of the airline industries, demand for these front line and support functions is certain to continue.

SME Division Alums Receive Purdue-Richmond 2008 Honors

When it came time for the Purdue University College of Technology at Richmond to select their 2008 Class Representative, they had to do some tie-breaking. The decision is based on the highest GPA, and three candidates all held the highest “graduation Index GPA” possible with Purdue University . . . and two of those three were SME division alumni from the Manufacturing and Operations Technology department!

Mark Yeomans graduated from the Industrial Engineering Technology program in 2002 and Amy Anderson graduated from the Quality Engineering Technology in 2003. The tie-breaker (hours completed at Purdue) went in Mark’s favor, with him

having one more credit hour than Amy. Anderson was later named Outstanding Industrial Technology student for 2007-2008. The SME division congratulates both these outstanding alumni.

Michael Swain, the Purdue-Richmond student services coordinator says: “This speaks so well of the quality of Sinclair, the programs, and the graduates you produce. Keep sending us more of your great graduates!”

Online Biology Sequence to Include Lab



Beginning in the fall of 2008, students can meet the requirements of the complete online degree being offered by Health Information Management (HIM) with the BIO 121-122 (anatomy and physiology) online sequence, which includes a lab.

Building on experiences with the BIO 101 (anatomy) online sequence, which does not have a lab component, development of the new online sequence for the HIM degree began in the spring of 2008. “The lab component will be a challenge for students,” according

to Phyllis Williams, 2007-2008, chairperson Biology department, “but being able to complete a degree online is a great benefit.”

There are a number of restrictions on students wishing to register for BIO 121-122 in order to give them the best chance to achieve success. Before being accepted for the courses, students must:

- have all DEV work completed and be admitted to college level courses
- have a minimum 2.5 GPA
- have completed any previous online classes successfully
- have at least one science course completed, which can include high school biology, chemistry, or physics, or any college level science

Williams says “It’s tough, with a lot of deadlines, but with these requirements in place, students should be able to succeed as they would in an independent study.”

Automation & Control Technology Takes to the Stage

Jeff Donbar, 2007-2008 chairperson Electronics and Robotics, recognizing how much engineering and the arts overlap, proposed a partnership that would team his Automation & Control Technology program with Sinclair's Theatre and Dance department.

"I am always searching for alternative career paths for students," Donbar says. "Collaborating with the Theatre department helps students broaden their scope from traditional manufacturing applications to non-traditional ones, such as the automation used in effects at facilities like Kings Island or Disney."

Donbar contacted associate professor of Theatre and Dance, Gina Neuerer, and when the 2007-2008 theatre season was announced, *Something's Afoot*, a musical mystery spoof that requires the set to have nine special effects, including automation, seemed the perfect piece for a partnership.

Neuerer and Terry Stump, Blair Hall theatre manager and set designer for *Something's Afoot*, met with Donbar, gave him a copy of the script, and a list of special effects needed. Donbar turned to Gene Gilliat, a faculty member who teaches an engineering capstone class. Gilliat's students started pulling together the planning materials for a round piece of upholstered furniture used as a low seat with no legs visible, known as a pouffe.



Engineering students Mark Ares, Adam Kankey, Joneil Kimball, Chris Martin, Jason McDougald, Joe McKibben, and Chris Pauer retooled an existing remote controlled robot and added a scissor jack and pivoting mechanism to complete the required special effects. Theatre students Jaeson Jackson and Alex Beneke built the pouffe which surrounds the robot and assisted in upholstering it to complete the effect.



The success of the unique collaboration drew national attention. According to a Kennedy Center American College Theatre Festival reviewer, "the highlight of the scenic design was the special effects I was informed that many of these effects were partnerships with engineering students, and I must applaud their efforts and results as well as the faculty and staff of both departments for imagining such a wonderful collaboration between Apollonian and Dionysian thinkers."



(reprinted in part from an article by Patti Celek, marketing manager for Sinclair Theatre and Dance, by permission of the author)

New Chairpersons



Don Homan
Interim Chairperson, Electronics and Robotics

Don Homan began teaching for Sinclair Community College in 1996 as an apart-time faculty member. Don was hired as an ACF in 1999 and became a tenure track faculty member in the EET program in 2002. Don holds a B.S. in Electrical Engineering from the University of Dayton and an M.S. in Engineering Management from the University of Dayton. Prior to his career at Sinclair, Don held positions at EG&G Mound Applied Technologies/MonsantoResearch Corporation and Sperry Gyroscope Company.



Lorraine Kapka
Chairperson, Engineering Technology Design

Lorraine Kapka began teaching for Sinclair Community College in 1998 as a part-time faculty member. Lorraine was hired as an ACF in 2000 and then became a tenure track faculty member in the HVA program in 2004. Lorraine holds an M.S. in Mechanical Engineering from the University of Dayton, an M.S. in Industrial Management from Central Missouri State University, and a B.S. in Mechanical Engineering from the University of Missouri. Prior to her career at Sinclair, Lorraine's experience includes employment as an HVAC Engineer at STAN Engineering and Monsanto, being an instructor at the University of Dayton in the Mechanical Engineering Technology department, and serving in both the U.S. Air Force and the U.S. Air Force Reserve.



John Mersfelder, Ph.D.
Chairperson, Biology

John Mersfelder became a tenure track faculty member in the Biology department at Sinclair Community College in 2005. Dr. Mersfelder holds both a Ph.D. and an M.S. degree in Biochemistry from the Ohio State University and a B.A. degree in Biology from Capital University. In addition to his teaching experience at Sinclair, he has also taught at Ohio Dominican University and Capital University. John is very active on professional committees and volunteers much of his time to community service.

New Online Astronomy Sequence “Priceless”

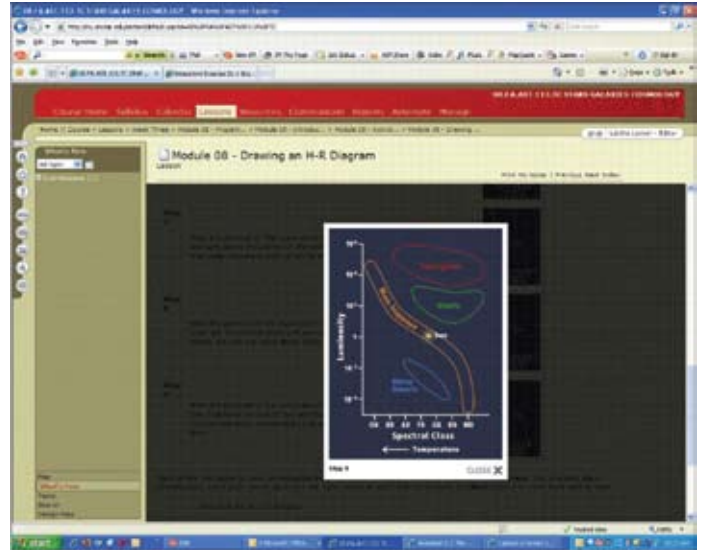
The 2007-2008 academic year was the first for the Physics department’s complete implementation of an innovative online astronomy sequence: online lectures AST111, 112, and 113, delivered by assistant professor Lalitha Locker and online labs AST117, 118, and 119, delivered by assistant professor Shan Huang. Professor Lori Cutright was also involved in the initial development of both the online lectures and labs, and she continues to serve as a consultant for content accuracy.

The online labs are parallel to classroom labs, and are comprised of highly interactive activities, and all three courses are offered each quarter, as opposed to one course in each of the fall, winter, and spring quarters.

The electronic format provides students with a variety of web tools, such as:

- Flash® animations to make measurements
- videos to learn to construct and use physical tools
- slide shows to learn how to plot orbital charts
- computer simulations to acquire and analyze observation data

Lab activities integrate scientific methods, physics principles, and mathematical tools with the technologies used in astronomy to engage students in the study of the observable universe. Field activities include field observations at Caesar Creek State Park, planetarium shows in a local museum, online telescopes, study of current astronomy events, and more.



For the lecture component, chapters from the text are presented in smaller sections, and are supplemented with visual media. The online lectures also include Flash® animations, interactive exercises, and slide shows to plot graphs.

Huang has presented the experiences of herself and her colleagues in implementing the online AST sequence at a variety of professional conferences.

Instructors face some of the same challenges in teaching the online courses as they do with classroom sections. Students often equate astronomy with astrology, and can be surprised that they are taking a “real, rigorous science course,” according to Locker. But the success of the online sequence is encouraging. A student in Fall 2007 wrote in her field activity report:

“...Astronomy class at Sinclair, \$250, ...Astronomy book for class, \$100, ...Ruler for class, \$2, ...Being able to prove to everyone that Amanda can actually find the North Star, priceless!”

Successful Co-op Experience Leads to Full-Time Employment

Rachel Evans is an Engineering Technology Design major with an emphasis on environmental studies. Rachel's co-op success story is a prime example of how co-ops and internships can benefit students throughout the SME division.

During the spring quarter of 2008, Rachel was successful in securing a co-op/internship at the Miami Conservancy District (MCD). From her firstday at MCD, Rachel was determined to learn and improve. She paid attention to details so that her performance would reflect her determination. "I have learned so much from this internship, my computer skills have greatly improved, and the feedback from my fellow employees has been so encouraging," says Rachel.

Janet Bly, general manager of MCD, tells SME Co-op Coordinator Terry Maiwurn: "Rachel has raised the bar when it comes to what we will expect from future co-op interns."



*Rachel Evans
Hydrogeologist
Miami Conservancy District*

Rachel reports that "on the last day of my co-op internship, I was offered a full-time position as a hydrogeologist technician. I am proud to become part of the great MCD organization, and look forward to my future here."

Congratulations to Rachel on her co-op success story.

Rachel's experience with the SME co-op program should encourage other students to explore the possibilities of internships with local employers. At a minimum, co-ops provide an excellent addition to a student resume, and in the best cases, as with Rachel Evans, the temporary placement can lead to permanent employment.

Electronics Engineering Technology Creates New Computer Engineering Track

Beginning in the fall of 2008, Electronics Engineering Technology students will have a new option available to them. The Computer Engineering Technology track was designed, created, and approved during 2007-2008 to respond to both industry need and student interest.

Focusing on computer hardware, students will gain skills in computer electrical systems, hardware troubleshooting and repairs, and alternative operating systems. Graduates with this option will be sought not only by industry employers, but also by computer retailers offering technical services.

A Helping Hand for Students in Chemistry

Mike Canestaro wants to encourage students to pursue chemistry, and he's doing more than just talking. "Sometimes it can feel like students in the natural sciences like chemistry, for example, don't have as much opportunity for recognition and reward as students working in more popular and lucrative fields," says Canestaro, chairperson of the Chemistry department. "I want to help attract students by providing a financial incentive."

With that goal in mind, in the spring of 2008, Canestaro established through the Sinclair Foundation the Michael Canestaro, Sr. Scholarship for students preparing for careers in chemistry. The scholarship honors Mike's father and professional mentor, an industrial chemist for more than 30 years, who began his career at Corning Glass, and then spent more than 28 years in research and development for IBM.

By offering this scholarship, Canestaro wants to carry on his father's passion for chemistry and give a boost to Sinclair students who share the same vision. Faculty members from Chemistry will nominate eligible students for consideration.

The office of Financial Aid & Scholarships will review the nominations and select the recipient(s) with input from the department faculty. Preference will be given to students who do not have other forms of financial aid, and the award may be used for tuition, fees, or books.



Michael Canestaro, Sr.

Faculty Promotions and Tenure

Faculty securing tenure:

Karl Hess, Associate Professor
Mathematics

Ted Heckendorn, Professor
Biology

James Willis, Associate Professor
Mathematics

Faculty receiving promotions:

Moez Ben-Azzouz, Associate Professor
Mathematics

Anita Gilkey, Associate Professor
Manufacturing & Operations Technology

Ted Heckendorn, Professor
Biology

Lorraine Kapka, Associate Professor
Engineering Technology Design

Justin Morgan, Assistant Professor
Automotive Technology

Richard Uchida, Associate Professor
Mathematics



Disney Co-op Student Tells Her Story

Taynicia Matthews learned about the Disney Career Start Program during her senior year in high school. The program provides high school graduates an academically oriented work experience immediately following high school, and Taynicia viewed it as a way to gain an edge in competing effectively in today's job market. "So for me," says Taynicia, "the plan became to graduate from high school and then go to work for Walt Disney World in Florida."

Working for the Fortune 100 company, Taynicia acquired a variety of transferable skills that will enhance both her personal and professional development, including: assuming responsibility, time management, problem solving, teamwork, communication, multi-tasking, networking,

Taynicia Matthews
Disney
Co-op Student



appreciation of diversity, and professionalism. She says that "working for Disney is everyone's dream come true, but it also has opened my eyes to see that going to college and obtaining a degree is important.

This is especially true when you work those long hour Disney days. I plan on using what I learned at Disney toward my career and life goals." After earning her degree from Sinclair, Taynicia hopes to be back at Disney in a management position. She knows "the journey is long but worth every step."



NCME Names New Director

The National Center for Manufacturing Education (NCME) welcomed Steve Wendel as the new director in September of 2007. Steve has been at

Sinclair since 1994, and is a professor of mechanical engineering technology.

A graduate of the University of Dayton (B.S. and M.S. in Mechanical Engineering), Steve comes to the NCME with extensive experience in industry and in implementing National Science Foundation grants. Steve also serves Sinclair as an Ohio affiliate professor for Project Lead the Way, a highly successful national program that encourages and prepares high school students for success in engineering, science, math, and technology fields. In addition, Steve has served on a variety of divisional and campus wide committees.

Retiring Employees

Thanks to **Jim Eller**, professor, Engineering Technology Design for 11 years of service, and best wishes for his new adventures.



NCME Supports Elementary and Middle School Engineering and Manufacturing Programs



The NCME is helping to get more students into STEM (science, technology, engineering, and mathematics) fields by supporting a variety of initiatives aimed at K-8 youth.

For example, the Society for Manufacturing Engineers Education Foundation (SME-EF) contracted with the NCME in the spring of 2008 to manage their *Manufacturing is Cool* web site, www.manufacturingiscool.com. The hosting and development of *Manufacturing is Cool* by the NCME will leverage the best practices developed by both groups.

Designed to overcome negative stereotypes and images of manufacturing, the *Manufacturing is Cool* web site introduces middle school age students to the exciting and lucrative opportunities in the 21st century advanced manufacturing field.



To encourage students as young as kindergartners to pursue engineering and other STEM fields, the NCME is serving as Ohio's teacher training resource for Engineering is Elementary (EiE). Developed with National Science Foundation funding by the Museum of Science in Boston, EiE is a low-cost, storybook-based curriculum designed to foster engineering and technological literacy among children.

The NCME provided training in the spring of 2008 for educators from Auglaize, Mercer, Montgomery, and Stark counties, and the response has been highly enthusiastic. The program is expected to grow as it gains national recognition, such as a *Wall Street Journal* article of March 13, 2008 that referred to the activities used in the EiE curriculum as "liberating."

New Employees

Division's newest members:

Sandy Feola

part-time Customer Engagement Manager
National Center for Manufacturing Education (NCME)



Julie Gastineau

part-time Administrative Assistant
Engineering Technology Design



William Kronenberger
part-time Lab Technician
Aviation Technology

WiSTEM Institute Focuses on Hospital Patient Care Theme

The 15th annual Women in Science, Technology, Engineering, and Mathematics (WiSTEM) Institute – previously the Women in Engineering Technologies Institute (WIET) – was held for two weeks in June 2008. The institute is designed to encourage young women in high school to explore career opportunities in science, technology, engineering, and mathematics (STEM) fields.

“For the first time ever, we wrapped the WiSTEM program around a common theme. This year’s program explored how science, technology, engineering, and math are all critical to the operation of a modern hospital,” says Lorraine Kapka, the director of the WiSTEM Institute.

This year’s institute, attended by 44 young women, was structured to be more academically oriented and assessment driven, and the topics were expanded to include all STEM areas represented at Sinclair. A total of 16 different technical blocks of instruction

explored important STEM functions related to the activities of a modern hospital, from construction of the building, to developing the medications, to evaluating the process flows in an emergency room.

Sinclair faculty and staff worked with the young women in a variety of activities. Activities included a “lunch buddies” program that brought in local female STEM professionals to share their experiences with the girls over pizza, a panel of women majoring in STEM subjects at various academic institutions, and a financial aid presentation for parents. Guest speakers included Sara Deem, industrial engineer and director of Operations at University Pointe Surgical Hospital in West Chester, and Mary Beth Barrentine, Hazardous Materials and Safety Officer at Miami Valley Hospital in Dayton.



SME Division Scholarships

Russ Hollis Scholarship Fund

Mr. Russ Hollis donated \$100,000 through Sinclair's Changing Lives to award scholarships in the areas of Manufacturing and Computer Literacy to high school students with emergent financial need. Students receive up to \$500. A large number of students have benefited from this generous grant.

Fleck Scholarship Fund

Through a generous donation of \$80,000, students have received scholarships to attend select programs in the SME division, namely Automotive, Electronics, and Manufacturing. To date, 78 students have benefitted from this scholarship by receiving funding ranging from \$400 - \$1,000 during AY 2007-2008.

Russ and Edith Jerd Award

Set up through an endowment from Dr. and Mrs. Russ Jerd, previous dean of the Engineering & Industrial Technologies division, this award is given to full-time SME faculty and staff, individual or group, to try new innovative approaches to teaching and learning. It encourages faculty and staff to try something new. The award is \$7,500 per year and is awarded through a competitive process within the SME division.

2007-2008 award went to Charles Setterfield and Eric Dunn for "Building Information Modeling (BIM) Implementation in Construction Engineering."

SME Faculty Recognition Scholarship

In recognition of service by retired SME faculty, two or three scholarships of about \$500 are awarded to students in SME programs each year. A committee decides which retired faculty member will be honored in any given year, and endowment funds are established by donations from the faculty. The interest from the endowment is used to award the scholarships.

*2007-2008 Faculty Recognition Scholarship
Winners:*

*Satbir Dhillon
Adam Leeper
Loc Nguyen
Shawn Webster*

*Retired Faculty Recognized:
Bill Deighton*

WiSTEM Scholarship

Each year, two \$500 scholarships are awarded to female students currently enrolled in SME programs. These scholarships are to recognize and promote women in science, technology, engineering, and mathematics related fields.

*Debbie Strider
2007-2008 WiSTEM*

*Heidi Westphal
2007-2008 WiSTEM*

NSF Scholarship Program for Computer Science, Engineering, and Mathematics

With more and more 21st century jobs involving computers and computer based technologies, the need for highly skilled workers in high tech positions is constantly increasing. To meet the demand, the National Science Foundation (NSF) is supporting scholarships for students majoring in a variety of Computer Science, Engineering, and Mathematics (CSEM) disciplines. At Sinclair Community College, the scholarships are designated for students in the following majors:

- Automation & Control Technology
- Automotive Technology
- Civil Engineering Technology
- Computer Aided Manufacturing
- Computer Engineering Technology
- Computer Information Systems
- Electronics Engineering Technology
- Engineering Science University Parallel Transfer Program
- Mathematics
- Mechanical Engineering Technology
- Operations Technology

The CSEM scholarship was established to encourage academically talented students with financial need, and assist student transfers to four-year institutions to continue their education in a CSEM discipline. A student can receive up to \$3,125 per year, distributed quarterly. Scholarships are based on financial need, academic achievement,

and CSEM career potential. High school graduates must have a minimum GPA of 3.0, and current Sinclair students must be enrolled for at least 12 credits and have a minimum GPA of 2.5.

In addition to the financial award, students receiving a CSEM scholarship will be assigned a mentor from their discipline and are encouraged to participate in Sinclair student support services. They also may receive money for networking opportunities and industry experiences, and transfer assistance if continuing on to a four-year program.

For more information, contact CSEM Scholarships project director Vickie Lair, (937)-512-2313, or vickie.lair@sinclair.edu.



*Vickie Lair
CSEM Scholarship
project director*

Condolences

The SME division was greatly saddened by the deaths of three students in the spring of 2008, and offers sincere sympathy to their families and friends:

Nathan Davidson, ASEP; Alia Hartman, STEP II; and Corey Richards, ASEP.

Sinclair Community College, 444 West Third Street, Dayton, Ohio 45402-1460

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