**Department/Program Review Summary**

**2016-17**

**Department:** Mechanical Engineering / Heating, Ventilating, Air Conditioning & Refrigeration /

 Energy Management Technology (MET/HVA/EGV)

**Date of Review:** February 24, 2017

**Review Team Members and Titles:**

Dave Collins, Provost

Jared Cutler, Assistant Provost of Accreditation and Assessment

Natalie Fleck, Assistant Professor, Veterinary Technology

Matt Grear, Application Assurance Specialist, Application Delivery

Chip Hodges, Assistant Professor, Accounting

Kelly Joslin, Chair/Professor, Art

Larraine Kapka, Division Assessment Coordinator, Science, Math and Engineering

Matt Massie, Manager, Student and Community Engagement

Robert Minto, Manager/Student Enrollment, Strategic Enrollment Management

Elizabeth Orlando, Interim Dean, Business and Public Services

Derek Reed, Predictive Analytics Researcher, Research, Analytics & Reporting

Cole Rodesky, Academic Advisor, Academic Advising

**Department Members Present:**

Tony Ponder, Dean, Science, Math and Engineering

Eric Dunn, Chair/Professor, Mechanical Engineering Technology, Heating, Ventilating, Air Conditioning & Refrigeration Engineering Technology, Energy Management Technology

Faculty and Staff:

Bobby James

Larraine Kapka

Russ Marcks

Jamshid Moradmand

Tom Singer

Steve Wendel

**COMMENDATIONS:**

* “Impressive”. This was a word that was used repeatedly by the Review Team during the meeting with the department. There are so many impressive things the department is doing, many of which only emerged during the meeting with the Review Team. The camaraderie among the faculty in the department is impressive – the Review Team was struck by the evident respect that the faculty had for one another. Without question, the department benefits from committed, dedicated faculty and strong leadership from an excellent chairperson. The dynamic between the faculty members was so positive, and evidenced a shared commitment to the work they are doing for their students. There were several instances when faculty were reluctant to share their accomplishments, and only did so at the prodding of their colleagues who knew the noteworthy activities they were doing and felt that they should be shared publicly. The respect the faculty have for each other should serve as an example for other departments.
* Regarding those noteworthy activities, the Review Team felt that the department doesn’t realize how many impressive things it is doing – faculty seem so accustomed to the exciting things they are engaged in, they don’t seem to realize how remarkable they really are. The department was surprisingly humble in sharing what are some truly noteworthy endeavors – the guitar lab, the multidisciplinary chassis design project, and other similar activities, all seem to be so part and parcel of what the department does that it simply seems like “business as usual” to them. The department should be proud of what it is offering students – and should broadcast to a greater extent these offerings to both colleagues at Sinclair and the external public.
* This Program Review involved three distinct areas, Mechanical Engineering Technology (MET), HVAC-R Engineering Technology (HVAC-R), and Energy Management Technology (EGV). There is a tremendous amount of synergy among these disparate areas, particularly between HVAC-R and EGV. While both programs are relatively small, they complement each other in ways that are beneficial to students.
* The student-focused, student-centric attitude of faculty in the department was easily observable in the meeting with the Review Team. Many of the comments reflected a great deal of concern for their students, and for the future of the program and its students. A representative from Student and Community Engagement reported that the department is an active partner, with faculty who go above and beyond to foster student engagement. There is no question that among the faculty students come first.
* One particularly impressive achievement by the department is the substantial increase in success rates for HVAC-R courses. The department’s term to describe how they accomplished this increase was “assessment”, and that is an apt term. Noting low success rates in entry level HVAC-R courses, the department completely re-wrote these introductory courses, working to foster success among students in these courses and instill a sense of accomplishment and pride early in the students’ time in the program. In some courses, success rates doubled, and had a substantial impact on success rates for HVAC-R courses overall. This is a notable testament to the faculty’s commitment to helping their students succeed, and provides a model that other departments could follow in trying to make improvements in low-success courses.
* While not discussed extensively in the self-study, the Multi-disciplinary Capstone that students in this department participate in is a phenomenal experience. Not only are students given the opportunity to work with students from other departments in a setting that mimics what they will experience in the workforce, the involvement of representatives from local companies provides extensive networking opportunities that have led to employment for students in the department. This year the project involves development of a racing chassis, and this exciting project that has the potential to be a potent marketing tool. The department deserves high commendations for their involvement in this capstone experience.
* The department provides students with a number of exciting offerings that have the potential to attract enrollment. In addition to the chassis project mentioned above, for years the guitar lab has been a strong attraction for students, and something that the department can use as a real showcase. Engineering programs tend to involve a great deal of structure, which in some cases can may lead to offerings that lack imagination and fail to draw attention. The department has been very creative in developing initiatives that make the content matter exciting for their students. Project Lead the Way is another example of this creativity, this ability to develop “outside the box” approaches.
* The department has developed a strong internship component of their program. Faculty visit students at internship sites, which promotes connections between the department and local businesses. Faculty report that business are always satisfied with interns, and ask for more students to participate in internship experiences.
* The department has had remarkable success in cultivating donations of equipment from local companies and in receiving grant awards. The dollar amounts in terms of both grant awards and value of donated equipment are substantial, and speak to both the department’s commitment to cost effectiveness as well as the strong relationships with local companies.

**RECOMMENDATIONS:**

* What can this department do to get the word out about the exciting things it is doing? While many on campus may be aware of the Guitar Lab, there are other activities that are less well-known. For example, the cutting-edge quality of the labs, the attention-grabbing Multi-disciplinary Capstone projects, and other remarkable assets of the department are not widely known, even by other departments on campus. Several members of the Review Team heard about these things for the first time during the discussion with the department. More people need to know about what the department is doing – because there are a lot of things that would attract students and that should be capitalized on in our marketing efforts.
* The department is moving towards use of social media to increase awareness of its programs. The department is strongly encouraged to continue these efforts. The department chairperson is strongly encouraged to meet with the Manager of the Student Enrollment Center to discuss building a social media strategy to increase the visibility of the department’s activities and attract more students to its programs. The use of videos is a promising approach to market the program – for example, when the chassis that the department has designed is used in racing, it should be captured in video form and shared online. The department has a number of “success stories” of graduates that could be used to attract new students that should also be utilized. Recent online videos produced by the College have attracted a great deal of positive attention, and the department is encouraged to utilize this approach.
* Similarly, the department webpage should be used to showcase some of the impressive activities the department is engaged in (e.g. the guitar lab, the superb lab facilities, the Multi-disciplinary Capstone projects, etc).
* The department is strongly encouraged to develop a strategy to reclaim enrollment from for-profit competitors. These efforts should include a direct comparison of costs of Sinclair programs with those of for-profit competitors, perhaps in the form of a flyer, and certainly available electronically. However, the department should also highlight the other benefits to enrolling in Sinclair’s programs relative to for-profit institutions, because price is not the determining factor for all students. The fact that Sinclair offers the only commercial HVAC program in the area should be strongly emphasized. Perhaps specific groups should be targeted for recruitment in these efforts. For example, how can displaced workers be attracted to Sinclair’s programs over others in the area?
* On a related note, the department is strongly encouraged to push forward with its efforts to build a cohort-based two-semester model for HVAC certificate completion. This effort should be based on a strong marketing approach that ensures a sufficient number of students are recruited to make sure the courses for the cohort run.
* The department is also strongly encouraged to continue development of the virtual labs it has already spearheaded, and to also explore development of mobile labs that would allow for course offerings at remote locations. Perhaps an economically feasible means could be found for a mobile lab to be available at Courseview one term, and then at the Preble Learning Center the next, for example. The department should determine the cost of such an approach, and determine the enrollment that would be required to offset those costs. The Budget Office should be utilized in making this analysis.
* There is already some curricular synergy between the HVAC-R and Energy Management programs – can certificate programs from each be marketed to graduates of the other as a means of providing additional skill sets and increasing earning potential? Is there the potential for development of a hybrid program that combines elements of both programs?
* Does the department have a strategic plan for activities it will prioritize in the coming years to better meet student and local industry needs? The department is encouraged to develop a brief but specific plan outlining activities over the next 5-10 years.

**OVERALL ASSESSMENT OF DEPARTMENT’S PROGRESS AND GOALS:**

The Review Team would like to express its sincere admiration for this department. The collegiality, the dedication to students, the creative and innovative approaches to learning, the resourceful acquisition of grants and donations, the strong connections to local industry – all of these are exemplary. While the modesty of this department is creditable, colleagues across the college and the external public should be more aware of the exciting learning activities this department has developed. This is a department with clear goals and a laser focus on helping students succeed, and more students should be taking advantage of its opportunities. The department needs a spotlight on the exciting things they are doing. The department doesn't seem to be aware of the remarkable nature of many of its activities – but the Review Team was very impressed, as would be others across campus if they knew of them.

The faculty and department leadership deserve high praise, and it is hoped that the department will maintain its high level of support for students, superb interdepartmental relationships, and creative approach to supporting learning in the years to come.

**OVERAL INSTITUTIONAL OR RESOURCE BARRIERS TO THE DEPARTMENT’S ABILITY TO ACCOMPLISH ITS GOALS, IF ANY:**

* Like many other departments on campus, space remains a challenge. The department utilizes space in the leased facility in Eaker Street that entails travel between that facility and the Dayton Campus. This department, along with others facing space constraints, will need to be able to accurately describe its space needs in detail and provide information that will help the College prioritize needs as space is reassigned as part of future master planning.
* It is common for departments to talk about the need for marketing resources. However, there are not enough marketing resources to meet the needs of all departments on campus. Departments will need to be actively engaged in raising program awareness for the purpose of recruiting students, and will need to be proactive in developing strategies in this regard. Taking responsibility for promotion of programs will be paramount for departments at Sinclair in the future.
* This Program Review illustrated that in many cases much of the Sinclair community is unaware of the impressive things that other departments across campus are doing. What mechanisms could be employed to help disseminate knowledge of accomplishments of the various departments across campus?
* This department has developed synergies between the HVAC-R and Energy Management components of the department. Can similar synergies be found across different departments? This department already does something along these lines with the Multi-disciplinary Capstone, where several departments collaborate every year in a project. Can similar activities be developed by other departments across campus? This capstone should be emulated by other departments.