UNIFYING GOAL: LEARNING AND DISCOVERY

Promote a vibrant learning and discovery environment that produces extraordinary student and scholarly outcomes.

Objective 1: Prepare students for success at Miami and beyond through a liberal and applied education emphasizing inquiry-based experiential learning that integrates many disciplines.

Metric 1: Miami will achieve a 6-year graduation rate of 85% (4-year graduation rate of 75%).

Strategies:

- Increase the size of CEC faculty to decrease the student – faculty ratio, provide smaller classes and enhance advising and mentoring.
- Enhance collaboration with the departments of physics, mathematics, and chemistry to improve students’ performance in those important courses and enhance their preparation for rigorous courses in CEC programs.
- Review the content, format, course objectives, and delivery mode of the introductory CEC 101 course, “Engineering, Computing and Society”, and revise it to improve retention.
- Embed retention strategies in the recently developed, department-based, 102 introductory courses.
- Design curricular and other strategies to improve the sophomore to junior retention rate.

Challenges:

- Tracking students across divisions and major.

Metric 2: Within one year after graduation, 100% of graduates (excluding those enrolled in graduate or professional school) will be employed.

The most recent statistics compiled by Miami’s Institutional Research reveals that all CEC students who graduated in August 2012 were employed one year later. Present successes, nonetheless, will not prevent us from enhancing our partnerships with Career Services and the University Advancement Corporate and Foundation team.

Strategies:

- Implement strategies related to internship placement (see also metric 6).
- Enhance partnerships with major employers (see also metric 28).
- Provide support to faculty to network with alumni.
- Enhance career mentoring and advising, particularly for bioengineering majors.
- Develop more corporate-sponsored capstone projects.
Challenges:

- Securing reliable, statistically significant, and timely data from the Office of Institutional Research to better trace career developments of our recent graduates.

Metric 3: Upon graduation, 80% of students who apply to graduate or professional school will receive at least one offer of admission.

Strategies:

- Increase opportunities for undergraduate research.
- Provide guidance on the admission and application processes for graduate schools.
- Explicitly offer help to our seniors in applying to graduate schools, asking for references, writing a statement of purpose, etc.
- Inform students of Graduate School fairs.
- Offer faculty mentoring about these issues to students.

Challenges:

- Securing reliable, statistically significant, and timely data from the Office of Institutional Research to better trace graduate school admission rates of our recent graduates.

Objective 2: Immerse faculty, undergraduate and graduate students in research and creative scholarship that forms a vital part of the learning experience.

Metric 4: Continue to increase the quality and impact of scholarship and creative performance.

Strategies:

- Regularly assess the research efforts of all faculty members (not just candidates for tenure or promotion) on the quality and impact of their scholarly work through such means as journal rankings, impact factor, h-factor, etc. Take steps for improvement based upon assessments.
- Differentially lower faculty teaching loads for research productive faculty members.
- Provide additional support for faculty travel.
- Strategically assign faculty service responsibilities to maximize research opportunities.
- Provide additional support for undergraduate and graduate students’ engagement in faculty research activities.
- Enhance mentoring of junior faculty by senior faculty and chairs.
- Strengthen existing graduate programs by increasing the size of CEC faculty.
- Redesign MS in Computational Science and Engineering.
- Develop new MS programs in Mechanical Engineering and Electrical and Computer Engineering.

Challenges:

- Faculty teaching loads exceeding those mandated by Miami University.
- Lack of MS programs in Mechanical Engineering and Electrical and Computer Engineering.
Metric 5: Upon graduation, all Miami students will have participated in a research (40%) or a similar experiential learning activity (100%), e.g., fieldwork, field or clinical placement, service-learning, public or private sector engagement, performances, and other applied learning activities.¹

Strategies:

- Revise appropriate courses to incorporate research-oriented outcomes.
- Encourage quality undergraduates to enroll in introductory graduate courses.
- Provide opportunities for faculty to mentor promising students.
- Augment research opportunities with scholars within and outside CEC.
- Engage the Engineering and Computing Scholars in research activities as early as possible in their undergraduate careers.
- Increase student involvement in conferences, seminars, workshops, and exhibitions.
- Increase budgets for undergraduate research during the fall and spring semesters and in the summer and winter terms.
- Create courses that require service learning (e.g., courses that involve students in the Myaamia project).
- Increase current levels of students’ involvement in Lockheed Martin Leadership Institute, Agile Launchpad and the Mobile Learning Center.
- Operationalize the Augmented Reality Center.

Challenges:

- It is difficult to administer service learning in Oxford because of limited options in the community.

Objective 3: Engage students with substantive co-curricular and internship opportunities that augment their learning and establish a strong foundation for lifelong success, growth, and adaptability.

Metric 6: 70% of Miami students will have completed an internship before they graduate.

Strategies:

- Enhance networking with key employers in engineering and computing fields.
- Provide clear information to students about available internships.
- Partner with Career Services to enhance customized support for students.
- Leverage alumni connections.
- Incorporate opportunities in the fall and spring advisory council meeting for alumni-student networking.

Metric 7: 95% of Miami students will have two or more co-curricular experiences before they graduate.

In addition to being engaged in CEC activities addressed in our response to metrics five and six, many of our students:

¹ Note: In the CEC context, experiential learning activities include, but are not limited to, service learning, ethics /leadership/environmental training, active participation in professional organizations and advisory councils, and other activities listed under metric 7. Capstone senior design projects are not included in this category.
are members of Miami student organizations and clubs;
play an intramural sport;
are engaged in creative activities;
serve on university committees;
serve as tutors;
are engaged in community organizations;
organize events and field excursions, etc.

**Strategies:**
- Provide increased support for student chapters of major professional and honors societies.
- Reinvigorate student advisory groups within the CEC.

**Objective 4:** Offer flexible pathways to and through the university, including interdisciplinary, e-learning and multiple degree options, to help students achieve timely and cost-effective completion.

**Metric 8:** 20% of our students will graduate with multiple degrees, majors, or co-majors, and 4% will graduate with a combination of a bachelor and master’s degree.

Currently, about 14% of CEC students pursue two or more majors, co-majors, or degrees. Research suggests that double-majoring does not necessarily give our students an edge in the job market. On the other hand, students graduating with a master’s degree do have an edge in the job market. Appropriately, we will continue our efforts to enroll undergraduate students into 4+1 programs and keep the percentage of students pursuing double majors at the current level.

**Strategies:**
- Encourage students to pursue double majors when it is appropriate to their career plans and has the likelihood of enhancing their success (e.g., combining BS majors in mechanical engineering and engineering management).
- Assist appropriate students to pursue relevant co-majors (e.g., energy co-major).
- Attract appropriate students to pursue 4+1 programs.
- Develop articulation agreements for dual bachelor-master’s degree programs such as the one recently signed with the College of Mount Saint Joseph.

**Challenges:**
- Meeting this metric given the rigor, demands, multi-year sequencing of engineering programs and steep credit hours programmatic requirements

**Metric 9:** 60% of degree programs can be completed in 3 years or less through curriculum revision and by using different pedagogical approaches and modes of delivery.

Although three (or 30%) CEC programs (computer science, software engineering, and general engineering) could hypothetically be completed in three years (if students matriculate with a high number of college credit), the rigor, demands, multi-year sequencing of engineering programs and steep credit hours programmatic requirements make it very difficult for our students to graduate in less than four years.

**Metric 10:** Increase the online and hybrid credit hours to 10% of the total credit hours.

March 2014
All four CEC departments projected, independently, that online and hybrid courses will produce 4-6% of the total credit hours generated by the departments. Hence, CEC projects that 5% of the total credit hours will be generated by online and hybrid courses.

**Strategies:**

- Engage the recently hired assistant provost for e-Learning and her staff in the development of a relevant CEC strategic plan.
- Identify courses that are taken by Miami students at other institutions, and explore the possibility of offering highly demanded courses in online format by Miami faculty.
- Develop a curricular plan for progressing high priority courses from a traditional to a hybrid and/or to an online format. Priority courses include those that already have an online component and that students are likely to take elsewhere if the Miami course are not available online.
- Encourage faculty participation in relevant e-learning workshops offered by CELTUA or the E-Learning Office.

**FOUNDATION GOAL 1: TRANSFORMATIONAL WORK ENVIRONMENT**

Ensure vitality and sustainability by building a forward-looking, efficient, and caring culture that stimulates, recognizes, and rewards creativity, entrepreneurial thinking, and exemplary performance.

**Objective 1:** Promote a work environment built upon continuous improvement and evaluation that empowers employees through ongoing professional development and career growth opportunities.

**Metric 11:** All employees will have an annual evaluation that aligns with the overall university objectives and a measurable professional development plan.

CEC has already met this metric.

**Objective 2:** Recognize and reward Miami employees for increasing effectiveness and productivity by utilizing their expertise, creativity, and collaboration to constantly improve accountability, productivity, and efficient utilization of resources.

**Metric 12:** At least 25% of the merit salary improvement pool for faculty and unclassified staff will be allocated to recognize and reward exemplary performance that contributes to university and unit goals and objectives.

CEC has already made significant advancements toward this metric. In the past three fiscal cycles, 16 - 20% of the total merit salary improvement pool for both faculty and unclassified staff was allocated to reward exemplary performance.

**Strategies:**

- Increase the merit salary improvement pool to 25% by FY 2016, and continue at this level in the future.
Objective 3: Implement flexible and accountable governance structures that increase the university’s responsiveness and ability to make timely decisions.

Metric 13: The time line for the process of soliciting input and recommendations for governance purposes should not exceed one semester as appropriate.

CEC is committed to following the time line put forth in this goal, with the following few exceptions:

- a major revision of CEC governance document;
- development of a new undergraduate degree or major;
- development of a new graduate program.

Objective 4: Minimize tuition increases through a transparent, strategic financial and budgetary system that incentivizes new revenue streams, reallocates resources, and promotes team-oriented solutions to fiscal challenges.

Metric 14: An average of 1% of Oxford campus total revenues annually will come from new or expanded revenue initiatives other than tuition rate increases.

Strategies:

- Expand existing revenues and create new revenues that include, but are not limited to:
  - Summer and winter semester income;
  - Additional 4+1 and transfer students;
  - Contract research;
  - Grant overheads.

Metric 15: Divisional deans will annually realign 1% of their divisional University budgeted funds by phasing out low priority organizational structures, programs, and activities. These funds will be set aside to support new, or expanding successful, programs and collaborations with an emphasis on inter- and multi-disciplinary activities.

Strategies:

- Set aside 50% of new and expanded revenues (see response to metric 14), amounting to 0.5% of CEC budget, to enhance interdisciplinary programs such as engineering management, general engineering, and computational science & engineering.

Metric 16: 0.5% per year of permanent budgetary funds will be captured from divisions, and these funds will be collected centrally and redistributed.

In light of a dramatic increase of the number of CEC students (83% in the last six years) and deep cuts of the CEC budget over the same period of time, our budget has been reduced to its bare bones. Further cuts would be very detrimental to our ability to offer high quality instruction and to retain faculty.

Metric 17: Implement, and annually update, a transparent, flexible and dynamic 10-year budget plan that will ensure a sustainable and financially viable foundation.

This metric will be met at the University level.
FOUNDATION GOAL 2: INCLUSIVE CULTURE AND GLOBAL ENGAGEMENT

Promote a diverse culture of inclusion, integrity, and collaboration that deepens understanding and embraces intercultural and global experiences.

Objective 1: Attract and retain a diverse community of students, faculty, staff, and administrators.

Metric 18: Grow the diversity of our students, faculty, and staff.

Strategies:
- Forge partnerships with high schools with diverse student populations (e.g., Dater High School in Cincinnati).
- Seek external funding for program transformation focused on increasing diversity (e.g., NSF Advance, NSF S – STEM).
- Get engaged in the new University Summer Program.
- Enhance direct involvement in the Bridges Program.
- Capitalize on having a faculty member serving on the Board of Overseers of M2SE (Minorities in Mathematics, Engineering and Science).
- Capitalize on Miami’s participation in the Louis Stokes Alliances for Minority Participation (LSAMP) Program.
- Increase the percentage of CEC female students.
- Follow best practices for diversity hiring in every future faculty and staff search.

Objective 2: Create an environment where our people live, learn, and work cooperatively with those of widely varied backgrounds, beliefs, abilities, and lifestyles, moving beyond boundaries to welcome, seek, and understand diverse peoples and perspectives.

Metric 19: 90% of Miami students will report that they feel welcome and have had significant and meaningful interactions with diverse groups.

Strategies:
- Enhance global experiences of CEC students.
- Ensure diversity on departmental and college-wide professional organizations, honors societies, and advisory councils.
- Ensure that a significant number of experiential learning activities offered by CEC address directly or indirectly diversity challenges.
- Encourage faculty and staff participation in university multicultural training.
- Ensure that a significant part of the responsibilities of the new part-time CEC director of communications be devoted to creating a welcoming environment described in Objective 2 (see above).
- Ensure that the new part-time CEC director of communication promote university multicultural events and training.

Objective 3: Achieve cultural competency among members of the Miami community by immersing them in domestically and globally relevant learning experiences.
Metric 20: By the time of graduation, 60% of Miami students will study abroad or study away.

We project that engineering and computing students’ participation in the study abroad programs will lag behind the university’s participation by about 10% due to a strong, and growing, competition with experiential learning activities enhanced as a result of implementing CEC 2020 Strategic Plan and due to financial needs of CEC students exceeding those in other academic divisions at Miami. Hence, we aspire to having 50% of our students studying abroad or away.

Strategies:

- Require each department in our college to develop (or enhance if applicable) and sustain international collaboration with two – three international partners.
- Seek to grow philanthropic support for study abroad.
- Focus on developing global internships across the whole globe, particularly in South America and Africa.
- Engage students in research conducted away of the campus.
- Market study abroad/study away opportunities more effectively.
- Capitalize on the establishment of the winter term to develop new international opportunities.
- Encourage participation in MU Study Abroad Fair.
- Develop international internship opportunities.
- Engage the MUDEC (Luxembourg) in developing international internship opportunities.
- Ensure that the new Miami Plan replacing the current Miami Global Plan does not eliminate the incentives to study abroad contained in the latter.
- Seek partnerships with other Miami departments to forge new international collaborations.
- Collaborate with AIMS to involve CEC students in the San Francisco internship program in the spring.

Metric 21: All Miami students will have a curricular or co-curricular cultural learning experience (e.g., intensive community engagement, service learning experience, intercultural or global learning requirement) by the time they graduate.

Implementing the same strategies listed for metrics five, six, seven, and twenty will result in meeting this goal.

Objective 4: Expand, virtually and physically, Miami’s global involvement.

Metric 22: All faculty and staff will engage in meaningful, globally diverse cultural activities (e.g., volunteer or community engagement; course or workshops on global and intercultural topics, professional training on diversity issues).

Strategies:

- Engage in research collaborations with international scholars.
- Host international scholars.
- Give presentations at international conferences.
- Lead a study abroad program.
- Secure international grant sponsorships and fellowships.
- Help recruit international students.
- Attend programming related to global diversity issues.
Metric 23: Miami will expand, virtually and physically, by 25%, its international partnerships and activities to increase its impact on the global stage.

Strategies:
- Require each department in our college to develop (or enhance if applicable) and sustain international collaboration with two – three international partners.

FOUNDATION GOAL 3: EFFECTIVE PARTNERSHIPS AND OUTREACH
Cultivate mutually beneficial partnerships and applied and service-oriented projects that strengthen our local, state, national and world communities.

Objective 1: Partner with educational and other public-and private-sector institutions to co-design academic and outreach programs that enhance access to and support of quality higher education.

Metric 24: Miami will increase the number of transfer students to 400 students on both the Oxford and regional campuses.

Strategies:
- Develop, cultivate and sustain a partnership with Sinclair Community College.

Metric 25: Miami will double the number of partnerships with high schools, community-based organizations, foundations, and other entities to expand the recruitment of talented, diverse college-bound students.

Strategies:
- Get engaged in the new University Summer Program.
- Develop three or four full-fledged modules for the University Summer Program.
- Enhance direct CEC involvement in the Bridges Program.

Objective 2: Increase lifelong learning opportunities, engagement, and giving from alumni, parents, and friends.

Metric 26: Miami will provide educational opportunities and career support to at least 10% of our alumni and to other external stakeholders.

Strategies:
- Offer webinars.
- Offer online classes.
- Ensure that the before mentioned opportunities are available for full-time workers.
- Contribute to Alumni Weekend activities at the 2013 level.
- Contribute to Winter College at the 2014 level.

Metric 27: Increase the total dollar amount raised annually from alumni, parents and friends by 10% per year.
Advancement has already agreed to achieve this goal by increasing private support by 10% annually beginning in FY 14 through FY20.

**Objective 3:** Grow Miami’s sponsored research, grants, intellectual property, internships, and co-curricular learning opportunities by helping corporate, governmental, and non-profit entities thrive through solutions-oriented partnerships.

**Metric 28:** Increase the total dollars of external funding (contracts and grants) to $30 million.

**Strategies:**
- Increase the size of CEC faculty.
- Differentially lower teaching loads for research active faculty members.
- Provide release time for research activities.
- Encourage faculty to attend workshops on grant writing.
- Offer pre-proposal reviews.
- Strengthen existing research-based graduate programs.
- Develop two new discipline-based master’s programs in MME and ECE.
- Conduct a feasibility study focusing on CEC becoming a PhD granting academic unit.
- Enhance financial support for graduate students.

**Metric 29:** Increase by 25% the number of mutually beneficial educational, governmental, corporate and non-profit partnerships.

**Strategies:**
- Conduct research to identify the top 25 – 30 prospects to pursue.
- Engage CEC leadership with major corporate prospects.
- Add representatives from selected corporate partners to the CEC advisory council.
- Expand the CEC corporate relations team to include faculty members
- Create a donor recognition display.
- Engage the new part-time director of communications in messaging to external constituents and to CEC faculty and staff.
- Communicate with CEC leadership and faculty on a regular basis.
- Create focused online presence and a comprehensive web site.

**Objective 4:** Advance Ohio’s economic development and prosperity by providing talent and expertise that helps shape policy and improves quality of life.

**Metric 30:** By 2020, 10% of the Miami University community will be engaged in providing expertise and advancing the success of public and private entities.

**Strategies:**
- Cultivate and enhance relations with:
  - Lockheed Martin (Lockheed Martin Leadership Institute);
  - Suncorp (Agile Launchpad);
Various paper companies that support scholarships through the Paper Science and Engineering Foundation (e.g., Weyerhaeuser, NewPage, Kadant Black Clawson, Georgia Pacific, Ashland, International Paper, OMNOVA, Nalco, Packaging Corp, Mohawk Paper, Wausau Paper and Georgia Pacific);

- Air Force Research Laboratories (AFRL);
- Proctor & Gamble American Axle and Manufacturing;
- Ohio Space Grant Consortium.

- Expand relations with external partners (see also metric 29)
- Encourage faculty external activities such as
  - Editorial board members;
  - Corporate and industrial boards;
  - Consulting;
  - Review and policy panels;
  - Expert witness.