

Strategic Planning Portfolio

Vice Provost for Instruction

- I. **Vision** – Michigan Technological University will be internationally recognized for the distinctive aspirations, effectiveness and efficiency of its instructional programs.

Distinctive aspirations of our educational programs emphasize science and technology, and their integration in the multidisciplinary framework of knowledge. Throughout the curriculum, these aspirations take the form of ambitious goals for the quality and quantity of student learning, and their abilities to transfer knowledge and skills across disciplines. In the major, these include both foundational and cutting edge knowledge, well-developed disciplinary skills, and an integrated understanding that allows graduates to work effectively on a variety of new problems within the discipline. Beyond that, we want every graduate to be able to work constructively with contexts: historic, cultural, economic, and environmental. Every graduate should value difference, be an effective communicator, and have developed those habits of mind that foster life-long learning.

Effectiveness will be judged by how well our educational aspirations and goals are realized. Realizing our goals will require systematic application and evaluation of diverse pedagogies such as cooperative learning, experiential learning, service learning, team projects, information technology applications, and undergraduate research. Assessment of student knowledge, understanding, and competencies at

completion of the baccalaureate degree provides the single best determination of effectiveness.

Efficiency will be judged in terms of alignment, with each program structure and process supporting effective learning, and in terms of the quantity and quality of learning supported per unit resource invested. The days in which increased spending was the universal means for increasing quality are past. Traditional curricular structures, teaching methods and classroom conditions, assumed to be essential and immutable a few years ago, are increasingly the subjects of incisive evaluation. We foresee a new a new level of discipline in resource use based on qualitative and quantitative analyses. We must identify and take full advantage of alternative pedagogical approaches that are at the same time more effective and more efficient.

Recognition will come from presentations made at meetings of ACE, AAC&U, AAHE, AGLS, NAFSA and the GE3 Consortium *inter alia*, and articles published in their journals.

Our Role in Supporting the Vision - The team lead by the Vice Provost for Instruction plays an essential and unique role in the development and administration of Michigan Tech's educational programs. Ours is the only group without responsibilities for support of specific academic disciplines. As such, we are able to develop a balanced, inclusive, university-wide approach to aspects of the instructional program important to the success of all students, and to the University as a whole. These are aspects that cannot be addressed effectively or efficiently by discrete academic departments working one department at a time. In order of priority, we will accomplish this by working with others within the University to: create and sustain synergies,

develop collaborative organizational structures, and provide direct support in critical areas that must be addressed on a university-wide scale.

University-wide Aspects of Instructional Programs – The aspects of Michigan Tech’s instructional programs listed below are directed, coordinated and/or supported by the integrated team reporting to the Vice Provost for Instruction.

- Advising
- Assessment of Learning Outcomes
- Curriculum Review and Integration
- Distance Learning
- Effectiveness and Efficiency in use of Faculty Time and Instructional Space
- General Education
- Instructional Technologies
- International Education
- Learning Centers
- Retention
- Student Diversity
- Teaching Quality and Innovation

A new program important to Michigan Tech’s future that should be developed with leadership from the Vice Provost for Instruction’s team is a University-wide, Research Based Undergraduate Honors Program

II. Strengths, Weaknesses, Opportunities, Threats

- Strengths
 - Knowledgeable, creative and adaptable directors and staff who are committed to the long term success of Michigan Tech
 - The high priority attached by the University in its public statements to our areas of responsibility – diversity, global education, teaching quality and faculty development, and distance education

- Ability to recognize opportunities and build alliances with other units on campus, and with external agencies
- MTU's exceptional information technology infrastructure
- Weaknesses
 - An entrenched tradition of individual and departmental independence that works against collaboration in addressing shared opportunities and challenges.
 - A tacit assumption on the part of some that undergraduate education is “a given” , will take care of itself, and thus requires little attention
 - The presumption of a monodimensional faculty culture in which the traditional scholarship of discovery is emphasized to such an extent that other forms of scholarship are discouraged.
 - Ineffective communication within groups and across campus
- Opportunities
 - The value that society attaches to science and technology as the engine of today's economy and the basis of America's future leadership
 - The importance attached by business, industry and the public in general to several of our group's priorities, especially working with domestic and global diversity, breadth of education, and distance education
 - The increasing need of professionals for continuing education to be available where they currently live and work
 - Rapidly increasing availability to networked computers for potential distance learners around the world
 - The agility of our units in identifying and responding to new opportunities

- Threats
 - The perception among many potential students that science and engineering are too difficult and may not lead directly to personal wealth
 - The declining levels of education and motivation of high school graduates
 - Declining growth of financial resources available to support higher education in general and Michigan Tech in particular
 - Intense competition for minority and international students, corporate sponsorship, foundation, state, and federal grants, and distance education clients

III. Current Status and Goals

A note on terminology – The overarching *goal* of the Vice Provost for Instruction and reporting units is to achieve the vision stated at the beginning of this report. We pursue this by means of several broad *strategies*. We expect these strategies will be employed and emphasized by the reporting units working individually and collectively in the next decade. *Strategic initiatives* are specific actions that employ a strategy in achieving specific goals. As we understand these concepts, goals articulated in a vision statement reflect values that are immutable, but not fully attainable. Strategies are more adaptive, but they span a considerable period of time so that many strategic initiatives are implemented within a given strategy. Strategic initiatives are complex but discrete projects intended to make measurable progress toward goals.

Since the creation of this position in August, 1997, the Vice Provost has had responsibility for leading (1) MTU's program for outcomes assessment, (2) the NCA accreditation self study on undergraduate education, (3) the taskforce that developed

the plan for changing our academic calendar from quarters to semesters, and (4) the taskforce that developed the new General Education curriculum. Subsequently, the Vice Provost has had overall responsibility for organizing and managing the calendar transition process including the review of over 1,700 new courses and more than 100 sets of degree requirements, and for implementation of the new General Education curriculum.

Reporting to the Vice Provost for Instruction are five units: Center for International Education, Center for Teaching, Learning and Faculty Development , Department of Educational Opportunity , Office of Student Records and Registration, and Extended University Programs . For the last two years, we concentrated on sharpened focus and increased effectiveness of each unit in achieving their core missions. Three of the unit directors are new in the last year, and their groups have been thoroughly reorganized. The principal means for developing focus and realignment has been unit-level strategic planning. Each of the units sat aside time during the year for an inclusive, strategic planning retreat. Unit Vision Statements, Goals, Objectives and Strategies were updated and reported to the Vice Provost to be shared throughout the University. It is our understanding that a summary of those unit strategic plans is not what is wanted here. Instead, we report below our shared plans reflecting the organizational level at which this “portfolio” is being prepared.

IV. Ten year Plan with Strategies - Preparations for the calendar transition are nearing completion, and each of the reporting units is well organized and focused. We are now ready to coalesce as a substantially more coherent team. We will develop

purposeful, active linkages among our units and to others across and beyond campus to establish higher levels of aspiration, effectiveness and efficiency in our educational programs at Michigan Tech. Specifically, we will concentrate on the following goals and strategies

Strategy 1 –Stimulate students’ development of intellectual values and habits that lead to lifelong learning, active curiosity, and creativity grounded in a broad understanding of knowledge.

Strategic Initiative 1 – Strengthen Effective Implementation of the General Education Curriculum by Creating the University College

The current Strategic Planning process was anticipated in our development of MTU’s new General Education Curriculum. Beginning in January of 1989, a Taskforce of about 30 faculty, students and professional staff lead a campus-wide process informed by extensive benchmarking and consultation with national authorities, and clarification of our own educational values¹. The result was an ambitious, exciting curriculum that is ideal for students in a technological university². The curriculum has as its foundation multi- and interdisciplinary understandings of knowledge and skill development. In the first four semesters, the structured and purposeful core curriculum inculcates in students the intellectual values, habits of mind and knowledge of the world around them that should be characteristic of any university-educated person. In semesters 5 through 8, the curriculum is more flexible and encourages students to

¹ For detailed arguments supporting the importance of General Education to the lives and careers of our technological graduates, see the Final Report of the General Education Development Task Force (August 20, 1998) (<http://www.admin.mtu.edu/admin/vpinst/freport.htm>)

² Carol Geary Schneider, President of AAC&U, described MTU’s new General Education curriculum as “...a very judicious combination of core courses and guided choice around intelligently chosen themes”.

exercise their imaginations and satisfy their curiosities in elective courses.

In any university dominated by strong disciplinary departments, General Education struggles along as a neglected orphan until it has an official administrative home within the academic structure of the university. Acknowledging this reality, 160 American colleges and universities have created special academic units to support general education. After months of wrangling over implementation issues in which departmental interests were obstacles, many members of the General Education Council argued that we need to form a University College to provide support essential to the realization of the curriculum's potential. The difference is largely one of perception and emphasis. Council members argued that a Dean of the University College is needed to both oversee and advocate for this critical segment of the undergraduate curriculum. That leadership by a large committee was insufficient to provide the recognition and support for teaching faculty that such a program needs, and that our students deserve.

Strategic Initiative 1 Time Line – The University College should be formed immediately (Spring of 2000), prior to initiation of the new General Education curriculum. It will be responsive to the needs of the needs of the curriculum as identified in part through outcomes assessment, and both its structure and function will evolve during the coming decade.

Strategic Initiative 1 Resource Allocations - The University College can be established and funded with no additional resources beyond those already committed to the General Education curriculum. On a continuing basis, we anticipate that \$80K will be sufficient for faculty development to support the nearly 80 faculty teaching the core curriculum. The \$280K already committed to buy faculty time from their departments

will meet that need for the foreseeable future. It is useful to note that in the context of performance based budgeting, faculty time bought by and transferred to the University College results in reduced departmental FTEF's while preserving the faculty's full capacity for scholarship as a departmental resource.

Strategy 1 Measurable Outcomes – The Dean of the College will provide more focused and purposeful leadership for ambitious, effective and efficient delivery of the General Education curriculum. Faculty will take increasing pride in their involvement and identify more strongly with this segment of our academic programs. The number of faculty eager to teach the General Education curriculum will double. Quantitative outcomes assessment will document students' improvement in achieving the goals of General Education.

Strategy 2 – Take advantage of new educational technologies and MTU's superior information technology infrastructure to optimize the effectiveness and efficiency of our on-campus and distance educational programs.

Strategic Initiative 2 - Develop the Integrated Instructional Technology Center.

New instructional technologies hold huge potential to enhance learning for students both on and off campus. Virtual project teams, automated quizzes with immediate, constructive feedback to the student, real time access to grades, access to extensive course materials from any location with internet access are a few of the enhancements that students and their teachers find valuable. Use of these technologies, however, requires expertise in pedagogy, software applications, graphic design, specialized instructional hardware and networks that few faculty possess or can practically expect to develop. As a result, it is only efficient for campuses to take

advantage of new instructional technologies if a team of experts can be assembled to work with the faculty.

With leadership from the Center for Teaching, Learning and Faculty Development, Extended University Programs, we want to establish a one-stop service center that works with the faculty to enhance their courses and prepare them for delivery anywhere in the world via the internet. A project manager will work with each faculty member on specific course projects. Our purpose is to have technology serve educational goals. Accordingly, the instructor and the project manager will begin by defining course goals in terms that let us assess the potential value of the many technological enhancements available. The faculty serve as content authorities, the Center staff as technology experts, and the two groups collaborate in working out the most effective pedagogies.

Strategic Initiative 2 Time Line – There is an immediate need for this service on campus. The instructional potential of our network infrastructure is seriously underutilized for lack of it. We expect the need to become critical in the next three months if we successfully complete current negotiations for specific certificate and degree programs that will bring us tens of thousands of distance learners over the next decade. As enrollments in those programs grow, we anticipate a need to expand the capacity of this center steadily over the next five years.

Strategic Initiative 2 Resource Allocations – We are currently seeking support from the State and from corporate clients to establish the necessary facilities, and to support the staff over a three year period. We currently have elements that would make up this center in various units across campus, but these comprise something less than 10% of the immediate need.

Strategic Initiative 2 Measurable Outcomes

- Significant technological enhancements to 15 or more courses per year
- Increased student engagement in active learning
- More effective use of instructors' time in supporting student learning (less time and/or more learning)
- Improved quality of instruction resulting from fundamental re-evaluations of goals and means
- Development of five or more courses per year for delivery via the Internet at levels of sophistication and effectiveness comparable to the best in the world.

Strategy 3 – Take a more active and comprehensive role in optimizing curriculum design and student course-taking behavior to better achieve educational goals and improve institutional efficiency

Strategic Initiative 3.1 - Establish First Year Advising program

The First Year Advising program will meet the special needs of first year students with (1) support for the transition from high school to university, and (2) balanced advice and guidance on selection of major, specific courses for the first and second years, and participation in the diverse educational options available to MTU students today.

Leadership will come from the staff of our current First Year Programs, Office of Student Records and Registration, and the corps of faculty and professional advisors/mentors who currently advise all students. Also critical to the success of the First Year Advising program will be the participation of the Center for International Education and the Educational Opportunity Department.

The Advising Task Force's 1999 report details the chronic weaknesses of our current student advising system. The Retention Task Force also identified first year advising as a serious weakness. Both recommended creation of a centralized advising program for first year students. Plans currently being developed by the College of Engineering to not admit first year students directly into specific degrees increase the need for centralized first year advising.

Strategic Initiative 3.1 Time Line, Resource Allocations, and Measurable

Outcomes

These have been addressed in the "portfolio" prepared by the Vice Provost and Dean of Student Affairs.

Strategic Initiative 3.2 – Initiate an ongoing study of curriculum structure and function, and student course-taking behavior

This will be a joint project of the Office of Student Records and Registration, the Center for Teaching, Learning and Faculty Development, and the Vice Provost for Instruction. Rapidly evolving goals we set for student learning, the changing backgrounds and interests of each new class of students, and new understandings of how students learn and the pedagogies they spawn are all factors that urge us to re-examine which teaching approaches to use, and how to structure the curriculum as a whole. Further, unintentional changes in courses and curriculum accumulate over time creating inefficiencies that, once addressed, can release resources to be applied to other needs.

For example, some universities have found it beneficial to weed out courses that are not serving significant numbers of students. They distinguish between the *essential*

curriculum and the *discretionary* curriculum. The essential curriculum is made up of courses required for one or more degrees, whereas the discretionary curriculum is made up of elective courses not specifically required for any degree. There are good reasons for maintaining a significant discretionary curriculum. Students enjoy variety in course selection, and faculty get to teach favorite subjects. But some curricula may contain excessive numbers of discretionary courses that are taught inefficiently to small enrollments. A reduction of the discretionary curriculum in some departments by 10 or 20% may maintain variety but free faculty time for increased teaching quality, or for other activities such as service or research.

It is said there are three forms of every curriculum – the one described in the university catalog, the one taught by the faculty, and the one experienced by the students. Students often establish course-taking patterns intended to maximize convenience, maximize GPA, or minimize academic rigor. None of these criteria results in institutional efficiency in meeting its educational mission. In this project, we will conduct ongoing analyses of transcripts to determine the extent to which students are making effective and efficient use of the curriculum. We will work with the First Year Advising program and departmental advisors to address problems that are discovered.

Finally, we will work with departments to assess the efficiency and effectiveness of teaching methods and instructional resources. For a give set of course goals, some teaching methods and resources are more appropriate than others. The consequences of mismatched goals and resource investments can be considerable inefficiency. Can a class be taught at double the enrollment with the support of an additional GTA and appropriate web resources, and thereby better accomplish its goals? Taking a curriculum as a whole, are the resources invested in a way that maximizes benefits?

The Director of the Center for Teaching, Learning and Faculty Development can initiate and facilitate this kind of evaluation on a curriculum by curriculum basis.

Strategic Initiative 3.2 Time Line – This work will be most valuable if begun in conjunction with our new, semester based curricula. During the first two years, distinctions between essential and discretionary curricula will become apparent, and enrollment data will be available to identify opportunities for increased efficiency. Beginning in the first year, evaluations of transcripts will reveal course-taking patterns that may require changes in degree requirements or advising. To varying degrees, departments considered the relationships between course goals, pedagogies and resource investments when they planned semester curricula for Fall 2000. After two years' experience, it would be beneficial to assess whether or not the courses have worked as intended, and to consider new alternatives.

Strategic Initiative 3.2 Resource Allocations – We anticipate that resources currently supporting the Office of Student Records and Registration, the Center for Teaching, Learning and Faculty Development and the Vice Provost for Instruction will be sufficient to allow this work to begin. As the project develops, it is likely that educational technology investments and consultants may be needed, but these are likely to be available through other ongoing programs.

Strategic Initiative 3 Measurable Outcomes – We expect that this work will (1) make investments in instruction more productive, and (2) make student's experience of the curriculum more aligned with the university's educational purposes, thereby decreasing the time to graduation for many students.

Strategy 4 – Actively utilize the diversity of our university community, including both underrepresented American and International groups, as an educational resource

Strategic Initiative 4 – Foster constructive engagements among students from diverse backgrounds in classrooms and in extracurricular life. Michigan Tech has a relatively large international student population (8.4%) from 72 countries, and a smaller population (3.7%) of US minorities. These students significantly enrich the university community by their presence. Their contributions to organized activities like Black History Month, and informal activities like pick-up cricket make Michigan Tech a more interesting and more stimulating environment.

There is a common tendency for groups of students to segregate in their activities according to background and interest. The Educational Opportunity Department and the Center for International Education will work together to increase the constructive interactions among diverse groups of students to create learning situations. They will work with the General Education Council to increase the learning benefits of diversity in core courses: Perspectives, World Cultures, Institutions and Revisions. Ed Op and CIE will work with Enrollment Management to actively recruit more international and minority students to Michigan Tech. Extended University Programs will contribute to this initiative by involving international students working in their home countries in a variety of Internet based class activities.

Strategic Initiative 4 Time Line – This initiative has been anticipated for quite a while, and various elements have already begun. A significant new step will be taken with the implementation of the General Education curriculum in Fall 2000.

Strategic Initiative 4 Resource Allocations – All three units, CIE, EUP and Ed Op, depend to a large degree on non-general fund monies to support their work. In Ed Op,

fund raising has become a major focus and diminishes the group's capacity for directly supporting its mission. Through the annual budgeting process, we will seek adequate base funding to allow each unit to work efficiently.

Strategic Initiative 4 Measurable Outcomes – We expect to find evidence that Michigan Tech students from all backgrounds have learned to value difference, have increased knowledge and understanding of the great variety in human cultures, and have acquired skill in negotiating difference in personal interactions and in the workplace.

Areas to be de-emphasized – The programs we lead are intensively managed. In order to accomplish what we are currently accomplishing, inessential or inefficient areas have already been de-emphasized. As discussed earlier, our recent reviews of focus and alignment have produced a strategically efficient organization. If, in the event of a crisis, it were necessary to de-emphasize some areas, identification of those areas would depend on time-specific assessments.

Benchmark Institutions

Penn State: Academic Advising
Univ. of Southern California: Use of technology in Academic Records and Advising
Cal Poly: Use of technology in registration and schedule planning
Central Michigan University: Enrolled student services
Iowa State University Center for Teaching: Excellence for its breadth of services
Univ. of Michigan's Center for Research on Teaching and Learning: Research focus
Northwestern's Searle Center for Teaching Excellence: Programming and summer institutes.
Georgia Tech--minority/multiethnic programming & student support
MIT--youth programs, precollege and undergraduate research programs
RPI--youth programs, minority/multiethnic programming & student support, distance education - enrolls 1,000 students per semester in 15 different programs.
University of North Dakota - The only other institution in the country that offers a BS in Engineering at a distance