PROPOSAL 13-02

(Voting Units: Academic Departments)

ENTERPRISE MINOR

The Senate adopts the Enterprise Minor as described below.

Introduction

This proposal recommends establishing a formal 'Enterprise Minor,' which will formally recognize student completion of a unique and innovative educational experience and at the same time provide an incentive for non-engineering majors to participate in the Enterprise Program. The Enterprise Program was developed in parallel with curricular revisions associated with the academic calendar change from quarters to semesters. The program was fully implemented with the change to semesters in the fall of 2000. Although the success of the program will not be completely determined for several years, the initial response from students and industry has been very enthusiastic. Eleven enterprises were started for the 2000-01 AY. Over 200 students were involved from 19 disciplines and representing two colleges and two schools at MTU. In the second year of the program (AY2001-02) there are 15 established enterprises with ~310 students from 15 disciplines. It is expected that the program will eventually grow to approximately 20 enterprises involving over 450 students representing all majors on campus. This will be more easily realized if all majors on campus can more readily participate in the program.

Although the Enterprise Program by its very nature is multidisciplinary, the curricular structure was originally developed within the framework of the engineering degree programs. Consequently, participation by students in non-engineering programs has been less than optimal. The low participation by non-engineering majors in this unique experience is likely due to the fact that curricular requirements in the Enterprise Program have not been clearly articulated for majors outside engineering. One way to remedy this confusion would be to establish a generic 'Minor' that builds of the original Enterprise curricular framework. Furthermore, after completing the first year of the program it appears that an efficient way to administer the participation of engineering students in the Enterprise Program is also through the use of the 'Minor' framework. This proposal describes the 'Enterprise Minor.'

I. Title of Minor
Enterprise Minor

II. Catalog Description
The Enterprise Program, and the Enterprise Minor described herein, is multi-year, multidisciplinary experience within which students run their own company and work on real-world problems in the context of an entrepreneurial venture. The enterprises, for the most part, operate much like a real company in the private sector. The employees (students) work on real problems identified by industry or on products/ideas generated by the students themselves. A major part of the experience includes a strong business and communication component in addition to the application of science, engineering and technology to the solution of a design and/or business problem. Within the projects, the employees solve problems, perform testing and analyses, build prototypes, manufacture parts (where appropriate), stay within budgets, make recommendations, and manage multiple timelines and projects. The Enterprises are standing organizations within the university made up of students in their 2nd through 4th year.

III. Rationale
An Enterprise Minor will allow students to develop better business sense while at the same time providing an opportunity to apply their science, engineering, technology, communications and/or business knowledge and skills directly toward student defined projects. In addition, the program will promote a heightened awareness of the importance of teamwork and communication associated with working on a diverse, cross-functional team. Furthermore, the program provides students with the opportunity to address simultaneously multiple objectives, accomplish multiple goals, and communicate effectively with diverse constituents.

IV. List of Courses
One of the following courses must be taken:

ENG2961	Teaming in the Enterprise	2 credits*
BA2700	Business Problem Solving	4 credits

A minimum of 7 Project Credits from the following list:

(ENG1960 or ENG2950)	Enterprise Orientation	1 credit
ENG2960	Enterprise Project Work I	1 credit
ENG3950	Enterprise Project Work II	1 credit
ENG3960	Enterprise Project Work III	1 credit
ENG4950	Enterprise Project Work IV	2 credits
ENG4960	Enterprise Project Work V	2 credits

A minimum of 2 Communication Credits from the following list:**

ENG2962	Communication Contexts	1 credit*
ENG3962	Communication Strategies	1 credit*
ENG4952	Complex Communication Strategies	1 credit*

ENG4953	Writing about Engineering in a Societal Context	1 credit*
CM3410	Technical Communications for Chem. Engr.	3 credits*
HU3120	Scientific and Technical Communications	3 credits*

** Students completing BA2700 are not required to complete any additional communication credits in fulfilling the Enterprise Minor requirements

A minimum of 5 business credits from the following list:

| EC3400 | Economic Decision Analysis | |
| | (or EC/ENG3401, 3402 or 3403) | 1-3 credits* |

| EC3001 | Principles of Economics | 3 credits* |

| (ENG3954 | Enterprise Market Principles | 1 credit |
| or BA3800) | Principles of Marketing | 3 credits |

(ENG3961	Enterprise Strategic Leadership	1 credit*
or BA4760	Strategic Leadership	3 credits*
or AF3001)	Leadership Studies	3 credits

| (ENG3963 | Enterprise Entrepreneurship | 1 credit |
| or BA3780) | Entrepreneurship | 3 credits |

| (ENG3964 | Project Management | 1 credit |
| or BA4610) | Project Management | 3 credits |

ENG3971	Seven Habits of Effective People	1 credit
ENG4951	Budgeting - Intrapreneurial Engineering	1 credit
ENG4954	Global Competition	1 credit*

Remaining credits to fulfill the minor requirements may be taken from any of the courses listed above as well as the following list:

| ENG2963 | Electronic Circuit Design and Fabrication | 1 credit |
| ENG3955 | Conceptual Design/Problem Solving | 1 credit |

| (ENG3956 | Industrial Health and Safety | 1 credit |
| Or CM4310) | Chemical Process Safety/Environment | 3 credits |

| ENG3957 | Product and Process Development I | 1 credit |

| (ENG3958 | Engineering Ethics in Design and Implementation | |
| Or CE3331) | Professional Practice | 1-2 credits |

ENG3965	Material Flow in an Industrial Society	1 credit
ENG3966	Design for Manufacturing	1 credit
ENG3967	Product and Process Development II	1 credit
ENG3968	Manufacturing Processes and Simulation	1 credit
ENG3969	Design Implementation Project Phases	1 credit

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ENG4955        Concurrent Engineering and Project

               Data Management              1 credit
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* May be used to satisfy General Education Distribution Course Requirements if not required by major.

NOTE - Fulfillment of the minor requires a minimum of 6 credits at the 3000 level or higher which are not specifically required for a student's major, except as free electives.

Total Requirements 20 credits

V. Estimated Costs
The Enterprise Program is presently supported through generous gifts from industrial partners interested in supporting the enterprise concepts. The majority of these funds directly support the specific projects within each enterprise. However, some of the monies are used to support faculty in the delivery of the instructional modules listed in the required and elective course requirements for the Enterprise Minor. No additional university resources are required to deliver this minor.

Draft of 27 November 2001