Request for Name Change for the MS9 degree in Applied Biosciences, the MSP degree in Applied and Industrial Physics, and the MSM in Mathematical Sciences

1. REQUEST: The Master of Science degrees MS9, MSM, MSP should be renamed the Professional Science Masters (P.S.M.) degree with three different majors, Applied Biosciences, Applied and Industrial Physics, and Applied Biosciences. The content of the programs will remain unchanged.

2. RATIONALE

Professional Science Masters Degrees Nationally. Since the inception of the professional science master's in 1997 by the Alfred P. Sloan Foundation, the growth these programs has been phenomenal, clearly demonstrating the need expressed by Jesse H. Ausubel and Sheila Tobias, www.sciencemasters.com. There are now over 96 programs at 45 institutions. As new experiments in graduate education, each program developed its own degree creating a confusing array of designations for both the students seeking these degrees and the industries that seek to hire them. Since 2000, the Sloan Foundation has recommenced programs use a single designation for the Professional Science Masters degree -- the PSM. Common to all programs are curricula that offer more technical content than the MBA, more business than the science Ph.D. and typically more use of information technology. The programs are broader and more applications driven, and are designed and refined after consultation with a business/industrial advisory committee. Programs at Stanford and Worcester Polytechnic Institute in the Biosciences already have the official Professional Science Masters designation as well as Arizona State University. It is appropriate that the University of Arizona also recognize the professional status of their programs of study for their future development and success.

- Traditional Science Masters degrees at UA: Masters of Science degrees, which are 30 to 36 hour programs, are offered in many of the science departments on campus. Some departments offer both a thesis and non-thesis option where the non-thesis degree requires 30 hours and the thesis requires 36 units. The University of Arizona Professional Science Masters degree programs also include a range of unit requirements depending on the program. Attached are example programs of study for each. These programs differ from the traditional masters in the following ways:
  - Students complete a minimum of 6 hours of professional courses offered by the Eller School of Management. (BAD510 Business Fundamentals for Scientists, MIS578 Project Management)
  - The PSM programs are cross-disciplinary programs administered through the College of Science, and College of Agriculture and Life Sciences, with an even broader internal advisory committee which has faculty members from the College of Science, College of Agriculture and Life Sciences, College of Medicine, College of Pharmacy, and the Eller School of Management.
  - Prerequisites for admission to the degree program are stringent and include that students have undergraduate courses beyond the sophomore level in the sciences and mathematics.
  - Students must complete a professional internship and write a technical report on their project. The technical project is also presented to all students of the program. This contrasts to the standard masters thesis requirement, which is not a report of
professional training, and is not shared with all students of the program.

- Students complete several team work projects through their participation in the core courses, and learn communication and presentation skills for crossing the related disciplines.

The dedication of students to this broader and different educational model should be acknowledged through a transcript which reflects this professional training through the award of the Professional Science Masters (PSM) degree instead of the M.S.B., M.S.P., or M.S.M., Degrees.

3. IMPACT

- The Professional Science Masters programs at the University of Arizona are attracting a large number of highly qualified graduate students from around the country and, after graduation, are placing them in high profile jobs internationally as well as locally. The Applied Biosciences program has grown from 4 students in 2000 to 32 students for the 2005-06 academic year. It is increasing its enrollment of minority students as it provides a rewarding scientific career without the lengthy and uncertain commitment of the PhD.

- Faculty from 7 colleges now participate in the program serving as advisors and committee members for the students.

- In order to increase the national recognition for the program, and to further improve recruitment of high quality students who are interested to dedicate to this program, the name change to Professional Science Masters will be beneficial. Students need to present to future employees information which demonstrates the quality offered by the Professional Science Masters degree. UA has already invested substantially in these programs, through faculty support and facilities. Designating the degree as the Professional Science Masters offers increased opportunity for external industrial backing, national recognition and special funding opportunities because of the involvement of minority students.

Attachments:
1. Example Program of Study
2. List of Requirements for admission to the programs
3. Units involved in the programs
1. Example Program of Study

Applied Biosciences (Drug Discovery Track) - 36 units

Semester One
BAD 510    Business Fundamentals for Scientists (3)
MCB 568    Nucleic Acids (4)
MCB 516    Bioinformatics (3)

Semester Two
PCOL 550    Drug Disposition and Metabolism (2)
MCB 545    Advanced Genetics (3)
MCB 595f   Topics in Entrepreneurship for Scientists (1)

Summer
MCB693    Internship (6)

Semester Three
MIS 578    Project Management (3)
CBIO 555    Cancer Therapeutics (3)

Semester Four
MCB 510    Project Report (4)
PCOL 578    Signal Transduction in Molecular Medicine (3)
MCB 695e   Science, Society, and Ethics (1)

2. Prerequisites
1. Undergraduate degree in science, math or engineering
2. Graduate Record Exam

3. Units involved in the program
1. College of Science
2. College of Agriculture and Life Sciences
3. Eller School of Management
4. College of Medicine
5. College of Pharmacy
6. College of Law
7. College of Public Health
8. College of Engineering
9. Office of Technology Transfer