

# **Professional Science Masters Degrees**

**Charles E. Schmidt College of Science**

**Presentation to FAU Board of Trustees**

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**by**

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## **What are PSM degrees?**

- **Professional Science Master programs are innovative programs that develop advanced scientific knowledge and professional skills.**
- **They are interdisciplinary and provide hands-on learning through internships and team projects.**
- **They are not intended to displace traditional programs. Instead, they aim to engage students with professional goals and help them become scientists uniquely suited to the 21st-century workplace.**
- **They equip graduates with a deeper and broader scientific knowledge than that acquired with a Bachelor of Science degree and the skills to apply it.**



## Students enrolled in PSM programs learn to be:

- **Interdisciplinary scientists.** PSM students receive advanced training at the cutting edge interfaces of science and technology. The combination of science with workplace skills and experience means PSM graduates require minimal additional training, saving employers time and money in professional development.
- **Excellent communicators.** PSM programs attract students who: 1) are looking for scientific careers in business, government, or nonprofit sectors; 2) thrive in team-oriented environments and; 3) seek career advancement.
- **Innovative problem-solvers.** The PSM capstone experience is a team-oriented, multidisciplinary research project addressing challenges and opportunities in the real world. The PSM graduate's capstone and internship experiences prepare them to hit the ground running.

## History of the Professional Science Masters Degree

### 1997 - Sloan Foundation

- funded 14 grants to develop PSM in Mathematics and Natural Science
- funded 12 grants to develop PSM in Bioinformatics

### 2001 - Council of Graduate Schools

- extended the Sloan Foundation initiative

### 2007 - America COMPETES Act (Public Law 110-69)

- establishes a PSM initiative at NSF

### 2010 - 175 PSM Programs at 89 Institutions

## Professional Science Masters in Florida

- Many of the PSM programs will build on existing programs by refocusing them to be comprised of more applied curricula. Other programs will be completely new.
- All of these programs will support Florida's workforce and economic development plans. Workforce Florida, Enterprise Florida, and the Agency for Workforce Innovation have been helpful in identifying those industry sectors where programs could most help Florida. Therefore, the 28 programs will be directed to the following industry sectors:
  - Biotechnology
  - Environmental sciences/sustainability/energy
  - Healthcare
  - Homeland security and forensic science
  - Modeling and simulation

## PSM in Business of Biotechnology

CIP-2126201

- The program is designed to provide a student with a solid background in science with business savvy to provide the skills needed by for-profit bio-industry related companies.
- The proposed program will draw from existing resources and expertise in the Center for Molecular Biology and Biotechnology, the Charles E Schmidt College of Science, the College of Business, and the Charles E Schmidt College of Biomedical Science.
- A key aspect of the training is a two-part internship. The first will allow students to work directly with the research scientists in a biotechnology company to learn the process of taking basic science observations to a marketable product. The second internship will expose students to the business aspects of running a biotechnology company, including such issues as start up funding, understanding the role of intellectual property, patents, animal and human drug trial experiments and other requirements to bring a drug to the market place. When possible, students will be placed in companies where there is an opportunity for employment following graduation.
- Discussions with Scripps Florida, Max Planck Florida Institute and the Torrey Pines Institute have shown a keen interest in offering internship positions to students in this program.



# PSM in Business of Biotechnology

CIP-2126201

- We anticipate that most of the students in the program will be full-time students; however, the program could be successfully completed by part-time students since all of the required courses prior to the internships are offered on a regular basis as part of the normally scheduled academic programs.
- A similar program is offered at the University of South Florida (Tampa), but is clearly distinct from the proposed program, which has a much stronger emphasis on the business components. To our knowledge, the proposed program is novel within the State University System.
- The proposed program is considered a terminal degree - graduates will transition to the workforce. The Florida Agency for Workforce Innovation predicts about 13,000 job openings in Florida between 2008-16 in areas of operations, sales and marketing managers with science background. Such jobs will be found in established and start up Biotechs, Pharma, and ancillary bioindustry. Salary \$85,000+
- The proposed program has an Advisory Board consisting of industry and workforce development leaders as well as FAU faculty

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Florida Atlantic University

# PSM in Business of Biotechnology

CIP-2126201

## Curriculum: 34 credits

Core Curriculum – 10 credits  
Science courses – 15 credits  
Business courses – 9 credits

## Projected Enrollment/Cost:

|        | HC | FTE   | Total E&G | E&G/FTE  |
|--------|----|-------|-----------|----------|
| Year 1 | 10 | 5.3   | \$97,313  | \$18,318 |
| Year 5 | 28 | 12.75 | \$142,479 | \$11,175 |

## Fiscal Implications:

No new cost; reallocation of resources  
No graduate stipends requested  
No additional space or equipment needs  
No additional library needs

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## PSM in Medical Physics

CIP-400801

- Medical Physics is an applied branch of physics devoted to the application of concepts and methods from physics to the diagnosis and treatment of human disease.
- According to the American Association of Physicists in Medicine (AAPM) there are about 4000 Medical Physicists in the U.S. The current need is for approximately 250-300 new Medical Physicists per year. Salary ~\$160,000
- National statistics from the AAPM show that approximately 76% of Medical Physicists work as *Radiation Therapy Physicists*. The proposed PSM program provides specialization in Radiation Therapy. As the program grows, specialization in Diagnostic Imaging will be added.
- At FAU there are opportunities for developing this program using existing resources across three Colleges involving faculty and courses from the: Charles E. Schmidt College of Science, Charles E. Schmidt College of Biomedical Science, and College of Engineering and Computer Science.



## PSM in Medical Physics

CIP 400801

- A major asset in developing this PSM program is the support shown by Medical Physicists and Doctors in the area hospitals. They serve as members of the PSM Advisory Board.
- There is only one similar program in the state of Florida. It is at the University of Florida, but it is not listed as a Professional MS.
- A partnership contract was signed last May between FAU and Boca Raton Community Hospital for the clinical training (practicum) of the students in the Medical Physics Program. A similar partnership contract was signed March 2010 with the Wellington Regional Medical Center. Other partners: The Cancer Institute at FAU Research Park, Best Medical International, Nucletron and SENORX.
- Builds on Graduate Certificate program in Medical Physics.



# PSM in Medical Physics

CIP 400801

## Curriculum: 37 credits

Core Curriculum – 15 credits  
Track specific courses – 15 credits  
Masters Thesis – 7 credits

## Projected Enrollment/Cost:

|        | HC | FTE   | Total E&G | E&G/FTE  |
|--------|----|-------|-----------|----------|
| Year 1 | 5  | 3.75  | \$94,833  | \$25,288 |
| Year 5 | 15 | 11.25 | \$94,833  | \$8,430  |

## Fiscal Implications:

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**Thank you**

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