



Item: Vd. AS: A-2

WEDNESDAY, MAY 26, 2010

SUBJECT: APPROVAL OF NEW ACADEMIC PROGRAMS

PROPOSED BOARD ACTION

To request the approval of new academic programs:

- a) 40.0801 (PSM) Medical Physics
- b) 26.120 (PSM) Business of Biotechnology
- c) 13.1201 (MEd) Early Childhood Education

BACKGROUND INFORMATION

The Charles E. Schmidt College of Science proposes two new Professional Science Masters degrees, one in Business Biotechnology and one in Medical Physics. Both are interdisciplinary programs and terminal degrees designed for students to move directly into the workforce upon graduation. Both have been developed in close cooperation with Florida Atlantic University's scientific and health care industry partners.

The College of Education proposes a new Master of Education degree in Early Childhood Education to replace a current track within the existing MEd in Curriculum and Instruction. This development responds to a significant increase in demand for early childhood professionals educated in the latest research, theory, and quality practice. It is designed to meet the needs of practicing professionals in the field.

IMPLEMENTATION PLAN/DATE

Fall 2010

FISCAL IMPLICATIONS

Implementation of all three new programs will be accomplished primarily through reallocation of existing resources.

- a) PSM Medical Physics: No additional resources are requested beyond a minor adjustment to physics department staffing.
- b) PSM Business Biotechnology: No additional resources are requested beyond the salary of one adjunct professor to teach one new course in Biotechnology Business Development.

c) Med Early Childhood Education: No additional resources are requested.

All three new programs are responsive to perceived needs and anticipate high demand and full enrollment. Enrollment related revenues and tuition revenues should be commensurate with full enrollment.

Supporting Documentation:

Executive Summaries

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Item AS: A-2 (a)

Degree Proposal for the Professional Master of Science in Medical Physics (CIP 400801) at Florida Atlantic University

The Department of Physics at Florida Atlantic University proposes to offer a professionally oriented Professional Master of Science in Medical Physics (PSMMP) degree with an implementation date of the 2010-2011 academic year. The PSMMP is an interdisciplinary program that develops advanced scientific knowledge and professional skills with hands-on learning through on site training. The proposed PSMMP program was prepared in consultation with professional medical physicists and medical doctors in the community. It aims to engage students interested to develop a career in the health related industry and help them become scientists uniquely suited to the 21st-century workplace. Below are some important features of the 37 credit hour degree proposal:

- 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 statistics of the American Institute of Physics, Medical Physicists are in demand and well-compensated professionals (www.aip.org).
- According to the American Association of Physicists in Medicine (AAPM) and the Duke University (www.duke.edu) there are about 4,000 Medical Physicists in the U.S. The current need is for approximately 250-300 new Medical Physicists per year. In addition, about 50% of current Medical Physicists are over the age of 50, meaning that there is likely to be an increasing shortage in the coming years due to retirement. Thus, there is a healthy job market for medical physics graduates, especially within the population growth of South Florida.
- Career paths for Medical Physicists include: (1) Radiation Therapy (2) Diagnostics (3) Nuclear Medicine (4) Health Physics (5) Academia (6) Companies that produce treatment equipment, treatment planning systems, and support materials. National statistics from the American Association of Physicists in Medicine (AAPM), www.aapm.org, show that approximately 76% of Medical Physicists work as Radiation Therapy Physicists. The proposed PSMMP 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 by 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. To the advantage of the proposed PSMMP, the Medical Physics Graduate Certificate Program (MPGCP) has started Spring 2009; four out of the five core courses in the proposed program are already offered to the students registered for the Certificate, while one is a prerequisite for the MPGCP.
- A major asset in developing this PSMMP program is the support shown by Medical Physicists and Doctors in the area hospitals. They serve as members of the PSMMP Advisory Board. They already offer clinical training and classroom instruction to the current students of the MPGCP through courtesy appointments.

This kind of support, combined with the overall growth of South Florida, provides unique opportunities for professional placement of our graduates.

- Three companies (Nucletron, Best Medical International and SERNOX) support the proposed program while their representatives serve on the PSMMP Advisory Board.
- Likely pools of students include:
 - The graduate and undergraduate students of the Physics Department. Four of them are enrolled in the Medical Physics Graduate Certificate Program (MPGCP).
 - Graduate students of the Department of Chemistry and Biochemistry. Two of them are enrolled in Medical Physics courses as one of their electives, without officially being admitted in the program yet.
 - Students in the College of Engineering have expressed interest in PSMMP.
 - Professionals working in hospitals as dosimetrists with a BS in Physics or Engineering and want to improve their professional status have expressed interest. One of them is currently enrolled in MPGCP.
- 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. It offers Master and Doctoral degrees in Medical Physics and is accredited by the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP). According to the Interim Chairman and Director Dr. David E. Hintenlang, DABR, FACMP, they graduate an average of 9 students per year about evenly divided between MS and PhD degrees.
- 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. Summer 2009 two students of the Medical Physics Graduate Certificate Program (MPGCP) were enrolled for the course Radiation Therapy Track Practicum and trained at Lynn Cancer Center of the BRCH.
- A similar partnership contract was signed March 2010 with the Wellington Regional Medical Center.
- The Cancer Institute at the FAU Research Park supports the PSMMP program.

Institutional and State University System Missions

The proposed professional PSMMP program fits well with the goals and mission statements of both the SUS (<http://www.flbog.org/StrategicResources/>) and Florida Atlantic University (<http://www.fau.edu/strategicplan/mission>, <http://www.fau.edu/strategicplan/goals.php>).

The four, broader goals set forth by the SUS include:

Goal 1: Access to and production of degrees

Goal 2: Meeting statewide professional and workforce needs

Goal 3: Building world-class academic programs and research capacity

Goal 4: Meeting community needs and fulfilling unique institutional responsibilities.

The 7 goals within the FAU Strategic Plan include:

Goal 1: Providing increased access to higher education

Goal 2: Meeting statewide professional and workforce needs

Goal 3: Building world-class academic programs and research capacity

Goal 4: Meeting community needs and fulfilling unique institutional responsibilities

Goal 5: Increasing the university's visibility.

- The highly technological interdisciplinary education in the proposed PSMMP is in alignment with the SUS Strategic Plan's Goal 2 on Meeting Statewide Professional and Workforce Needs.
- The proposed PSMMP has established partnerships with local hospitals for the clinical practicum of the students. This is consistent with the SUS the Florida Atlantic University's Strategic Plan Goal 4 to build partnerships in key areas of the community, and the Mission Statement of the Charles E. Schmidt College of Science.
- The proposed PSMMP is the only professional MS in Medical Physics listed under PSM Professional Science Master's Initiative State of Florida (www.FLPSM.org). Also, it is included in the proposal: A Statewide Initiative in Florida for Professional Masters Programs –A Proposal for Implementation. From the Florida Council of Graduate Deans Request of the Board of Governors. These both support FAU's Goal 5 by increasing the university's visibility in the community and the State of Florida.
- In addition PSMMP meets Nation's needs for professional degrees as stated by the NSF program solicitation 09-607.

Fiscal Implications

- The main cost of implementing the program is met through reallocated dollars from current salary resources, therefore providing an important educational opportunity for FAU's service area.
- No additional funding is requested for the program apart from a minor adjustment to the physics department staff.
- No additional space is required for the program, except for two offices for the Research Affiliate Professors.
- No special equipment or library resources are needed to implement the program.
- Of the eight courses in the proposed PSMMP to be offered by the Department of Physics, six are already in current programs of the department while one is listed in the catalog as elective. Only one course is new and it will be offered by the Affiliate Research Professors/Medical Physicists (courtesy appointments).
- The elective courses were selected from those that are offered at FAU in the Charles E. Schmidt College of Science, or the Charles E. Schmidt College of Biomedical Science.

Degree Proposal for the Professional Science Masters (PSM; CIP 26.1201) in Business Biotechnology at Florida Atlantic University

The Department of Biological Sciences and the Center for Molecular Biology and Biotechnology (CMBB) propose to offer a new professionally oriented graduate program leading to the Masters in Business Biotechnology. The Professional Sciences Masters (PSM) is intended as a terminal degree for students planning to move directly into the workforce following graduation. The proposed program will provide cross-disciplinary training between science and business to fill an employment niche in the emerging biotechnology industry in southeast Florida. New biotechnology-based companies are beginning to locate in to our service area following the establishment of Scripps Florida and the Max Plank Florida Institute on the MacArthur campus of FAU in Jupiter, FL, as well as the arrival of the Torrey Pines Institute in Port St. Lucie, FL.

The curriculum for the program was developed in consultation with faculty in the College of Business and an Advisory Board established for the program, which includes individuals and executives directing biotechnology-oriented business' or are directly involved in helping individuals gain employment in these companies. A recent study by the Council of Graduate Schools (CGS) found that 70% of graduates with the PSM degree in 2006 had found employment prior to or shortly after graduation in nonacademic sectors at salaries significantly higher than those of individuals with either a baccalaureate degree or traditional Masters in Science (Nature 2008 455:704).

Highlights of the program include:

- The proposed program requires a total of 34 graduate credits.
- The proposed program is considered to be a terminal degree in that graduates will transition to the work force rather than continuing their graduate training.
- The program is designed to provide a student with a solid background in science with the business savvy to provide the skills needed by for-profit biotechnology 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 Chares E Schmidt College of Biomedical Science.
- A key aspect of the training is a two-part internship. The first will allow the

student 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 the students to the business aspects of running
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a biotechnology 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.

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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.

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We anticipate that most of the students in the program will be traditional 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.

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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.

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The proposed program has an Advisory Board consisting of industry and workforce development leaders as well as FAU faculty.
Institutional and State University Missions

The proposed graduate program fits well within Goals 2 and 4 of both the State University System (SUS) and FAU's Strategic Plans.

Goal 2: Meeting statewide professional and workforce needs.

Goal 4: Meeting community needs and fulfilling unique institutional responsibilities.

The intended effect of Scripps Florida and the Max Plank Institute, both located on the FAU-Jupiter campus, to draw biotechnology companies to southeast Florida is underway. The majority of these companies will undoubtedly be for-profit. There will be a clear need for individuals with both a strong science background and knowledge of business and management practices. Nearly 50 companies in the region from the Treasure Coast to Miami were identified by an advisory board member at the Workforce Alliance of Palm Beach as life science companies and potential employers of graduates of the proposed program.

The Center for Molecular Biology and Biotechnology (CMBB) was established by Professor Herb Weissbach in 1995 and part of its mission was to begin to train a workforce to support a biotech industry in this region. The CMBB together with

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the Department of Biological Sciences has already implemented a Certificate Program in Biotechnology and this new PSM program in Biotechnology Business is a logical extension of those efforts to include business training relevant to biotechnology.

Fiscal Implications

- The main cost of implementing the program is met through reallocation of dollars, principally faculty salaries, thus the true NEW cost of the program minimal.

- No additional funding is requested for the program beyond that of an adjunct professor. The curriculum includes one new course entitled Biotechnology Business Development (ENT 6188). Funds will be needed for the salary of the adjunct professor who will teach the course. However, the course will be open to all science graduate students. Thus, the course will generate graduate-level teaching FTE's beyond those of only students in the proposed program.

- All other courses in the curriculum are part of regularly offered academic programs.

- Graduate stipends for students in the program are not being requested. Students will pay the tuition themselves. However, we will attempt to obtain support for students in the program from sources outside the university, such as companies interested in its graduates. Some companies that have been contacted about internships have indicated the possibility of stipends for the students.

- No additional space is needed for the program since students will be attending regularly scheduled classes.

- No additional library resources, specialized equipment or research space will be needed.

Item AS: A-2(c)

Request to offer a new Master of Education degree in Early Childhood Education

The Department of Curriculum, Culture, and Educational Inquiry (CCEI) is proposing a new 36 credit degree program, Master of Education in Early Childhood Education. This new program replaces the current Prekindergarten/Primary Education track in the Master of Education degree in Curriculum and Instruction. The new program represents and includes recent research, theory, and quality practice in the interdisciplinary field of early childhood education and responds to the current increase in demand for early childhood professionals. To strengthen the interdisciplinary focus, the Department of Exceptional Student Education (ESE) additionally supports the program with courses that incorporate a more inclusive content so that graduates gain knowledge and teaching skills for young children with a range of developmental issues.

The M.Ed. in Early Childhood Education program will provide early childhood content expertise for practicing professionals who will assume a variety of leadership roles in their respective educational settings, school districts, or the non-profit sector. Some of these early childhood leadership roles are: classroom teacher, curriculum consultant, curriculum supervisor, child and family advocate, child services coordinator, education services coordinator, family services coordinator, program administrator, and program director.

Institutional and State University System Missions

This program is designed to build upon the knowledge and experience of practicing educators. This focus is consistent with the mission and philosophy of the graduate programs in the CCEI Department. The design also reflects an expanded approach to the current field of early childhood teacher education, emphasizing the role of teacher as practitioner, researcher, and advocate. Faculty from the departments of CCEI and ESE developed the program and adhered to the goal of preparing educators to respond to challenges both local and worldwide.

The proposed M.Ed. program in Early Childhood Education builds on existing institutional strengths in several significant ways. First, it completes a high quality career path for early childhood educators, providing a “next step” career option for graduates of FAU’s recently approved Bachelor of Early Care and Education degree program. Second, the Toppel Early Childhood Education Institute, recently established at FAU, includes graduate students in its academic learning community, thus extending their research, advocacy, and practice

opportunities and activities. And third, but not least, the Karen Slattery Child Development Center will serve as the demonstration school for students in the new program. The center has been fully accredited by the National Association for the Education of Young Children (NAEYC) and has participated in the Quality Instruction System (QIS) of Palm Beach County, and has received a 4-star rating (highest), an indicator of program excellence.

The proposed new program is consistent with the current State University System (SUS) Strategic Planning Goals for 2005-2013, adopted by the Board of Governors in 2005. The new degree directly supports Goal #1: Access to and production of degrees; Goal #2: Meeting statewide professional and workforce needs; Goal #3: Building world-class academic programs and research capacity; and Goal #4: Meeting community needs and fulfilling unique institutional responsibilities, based on Florida Atlantic University's commitment to the development of the Toppel Family Early Childhood Education Institute.

Florida's Next Generation PreK -20 Education Strategic Plan, approved in 2008, intends to educate and prepare a globally competitive workforce. The proposed new early childhood education degree directly supports the Plan's focus area #3: Expand opportunities for post-secondary degrees and certificates, with the objective of increasing the diversity and number of SUS students who enroll in and complete upper division programs of study. The new degree program similarly supports the Plan's focus area #4: Improve the quality of teaching in the education system, with the objective of improving the quality of preparation programs and professional development. Additionally, the new degree program indirectly supports the Plan's focus area #1: Strengthen foundational skills, with the objective of producing highly qualified early childhood teachers and leaders who will, in turn, more effectively educate young children.

Curricular Framework and Sequence of Study

The program emphasizes three areas – research, early childhood, and capstone experiences – and is proposing the following sequence of study:

Fall Semester (Year 1) – 9 credits

STA 6113 Educational Statistics

EEC 6666 Principles and Models of Early Childhood Curriculum

EEX 5017 Atypical Development Early Childhood/ESE

Spring Semester (Year 1) – 9 credits

EDF 6481 Educational Research

EEC 6711 Creative Arts for Young Children

EEX 5015 Survey and Assessment in Early Childhood Education/ECSE

Summer Semester (Year 1) – 3 credits

EEC 6219 Integrated Curriculum in Early Childhood

Fall Semester (Year 2) – 9 credits

EEX 5245 Methods in Early Childhood and Exceptional Student Education

EEX 6264 Strategies and Environments that Promote Positive Behavior in Young Children

EEC 6932 Seminar in Early Childhood Education: Local, National, and International Issues

Spring Semester (Year 2) – 6 credits

EEX 5755 Family and Community Resources in Early Childhood/ESE

EDG 6285 Program Evaluation **OR**

EDF 6918 Action Research in School and Communities **OR**

EEC 6947 Field Project/Portfolio in Early Childhood Education

The new program is responsive to multiple needs at the university, local, and state levels. By including the recommendations of two prominent professional national organizations (the National Association for the Education of Young Children and the Council for Exceptional Children) and the incorporation of content from eight education disciplines (Art, Mathematics, Multicultural Education, Science, Social Studies, Special Education, Reading Education, and TESOL/Bilingual Education), a state-of-the-art program is created. This benefits the university as students from sources previously not served will now be able to enroll in a program that meets their varied learning needs at the university. The new sources of students include teachers, education staff, and administrators from federally-funded (e.g., Head Start), state-funded (e.g., Voluntary Pre-Kindergarten), and private programs.

Fiscal Implications

The new degree program will be delivered in the same way as the program it is replacing. Courses will be offered through in-person on the Boca, Davie, and Jupiter campuses. The degree is cost neutral and will require no further funding. No additional space, special equipment, or library resources are needed to implement the program.



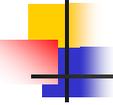
Request to Offer a New Degree Program

Master of Education in
Early Childhood Education
Executive Summary



Acronyms/Terms

- ECE = Early Childhood Education
- CCEI = Dept. of Curriculum, Culture, and Educational Inquiry
- ESE = Dept. of Exceptional Student Education
- NAEYC = National Association for the Education of Young Children



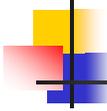
Early Childhood Education/ Needs the Program will Address:

- Quality early childhood education continues to be a high priority and focal point for educational initiatives at the national, state, and local levels.
- The National Association for the Education of Young Children (NAEYC) recommends graduate degrees in early childhood education with the purpose of creating a cadre of early education leaders for the future.



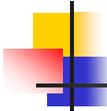
Early Childhood Education/ Needs the Program will Address:

- A significant positive connection has been made between professional development, quality programming, and positive childhood outcomes.
- States across the U.S. have identified the need for high quality early childhood education due to the increasing numbers of women in the workforce, corporations providing child care and education, and heightened attention to early literacy that is correlated with future school success.



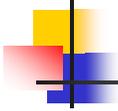
Early Childhood Education/ Program Overview:

- Degree (36-credits) awarded through the College of Education -- Department of Curriculum, Culture and Educational Inquiry
- Designed to build upon the knowledge and experience of practicing educators.
- Faculty from two departments – CCEI and ESE -- developed the program and adhered to the goal of preparing educators to respond to challenges both local and worldwide.



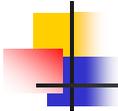
Early Childhood Education/ Program Overview:

- The design reflects an expanded approach to the current field of early childhood teacher education, emphasizing the role of teacher as practitioner, researcher, and advocate.
- The Karen Slattery Child Development Center will serve as the demonstration school for students in the new program. The Center has been fully accredited by NAEYC and has received a 4-star rating (highest) in the Quality Instruction System (QIS) of Palm Beach County.



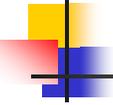
Early Childhood Education/ Correlation with State and University Goals

- The proposed new program directly supports Florida's Next Generation PreK-20 Education Strategic Plan (2008):
- #3: Expand opportunities for post-secondary degrees and certificates
- #4: Improve the quality of teaching in the education system
- #1 (indirectly): Strengthen foundational skills



Early Childhood Education/ Correlation with State and University Goals

- SUS Strategic Planning Goals for 2005-2013 adopted by the Board of Governors:
- Goal 1: *Access to and production of degrees*
- Goal 2: *Meeting statewide professional and workforce needs*
- Goal 3: *Building world-class academic programs and research capacity*
- Goal 4: *Meeting community needs and fulfilling unique institutional responsibilities*



Early Childhood Education/ Correlation with FAU Strategic Plan

FAU Strategic Plan Goal 1: Providing Increased Access to Higher Education

FAU Strategic Plan Goal 2: Meeting Statewide Professional and Workforce Needs

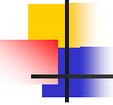
FAU Strategic Plan Goal 3: Building World-Class Academic Programs and Research Capacity

FAU Strategic Plan Goal 4: Meeting Community Needs and Fulfilling Unique Institutional Responsibilities



Early Childhood Education/ Distinctive Qualities

- This new program replaces the current Prekindergarten/Primary Education track in the M.Ed. in Curriculum & Instruction degree.
- To strengthen the interdisciplinary focus, the Dept. of ESE additionally supports the program with courses that incorporate a more inclusive content so that graduates gain knowledge and teaching skills for young children with a range of developmental issues.



Early Childhood Education Distinctive Qualities

- The program provides a “next step” career option for graduates of FAU’s recently approved Bachelor of Early Care and Education degree program.
- This program will provide early childhood content expertise for practicing professionals who will assume a variety of leadership roles such as classroom teacher, curriculum consultant, curriculum supervisor, child and family advocate, child services coordinator, education services coordinator, family services coordinator, program administrator, and program director.



Early Childhood Education/ Fiscal Implications

- No additional state funding required.
- The new degree program will be delivered in the same way as the program it is replacing.
- Courses will be offered through in-person on the Boca, Davie, and Jupiter campuses.
- No additional space, special equipment, or library resources are needed to implement the program.