STATE UNIVERSITY SYSTEM of FLORIDA
Board of Governors

AGENDA
Academic and Student Affairs Committee
Conference Call
Dial-in Number: 888-808-6959
Conference Code: 8502450
June 9, 2011
9:00 a.m. – 10:00 a.m.

1. Call to Order — **Governor Ann Duncan**

2. Academic Programs Items

a. Ph.D. in Materials Science and Engineering CIP 40.1001, University of Florida — **University Representatives**

b. Ph.D. in Security Studies, CIP 45.0902 University of Central Florida — **University Representatives**

3. Board Regulations — **Mr. Richard Stevens**

a. Public Notice of Intent to Amend Regulation 6.010 Student Affairs Administration

b. Public Notice of Intent to Amend Regulation 6.017 Criteria for Awarding the Baccalaureate Degree

4. Concluding Remarks and Adjournment — **Governor Duncan**

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
June 9, 2011

SUBJECT: Ph.D. in Materials Science and Engineering (CIP 40.1001) at Florida State University

PROPOSED COMMITTEE ACTION

Consider approval of the Doctor of Philosophy (Ph.D.) in Materials Science and Engineering at Florida State University, CIP Code 40.1001.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Section 7(d), Art. IX, Florida Constitution
Board of Governors Regulation 8.011

BACKGROUND INFORMATION

Florida State University (FSU) is proposing to offer an interdisciplinary Doctor of Philosophy in Materials Science and Engineering (MS&E) degree program. This field involves the study of relationships among the processing, structure, properties, and performance of materials. The program will be administered by the Graduate School on behalf of nine departments and will require a minimum of 54 post-baccalaureate credits, including at least 27 credits of letter-graded courses and at least 24 credits of dissertation research. The nine affiliated departments that will support the program are Biological Science, Chemistry and Biochemistry, Physics, and Scientific Computing within the College of Arts and Sciences, as well as Chemical and Biomedical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Industrial and Manufacturing Engineering, and Mechanical Engineering within the FAMU/FSU College of Engineering. Although this will not be a joint FAMU/FSU program under the College of Engineering, FAMU faculty will have opportunities to participate in teaching and research related to the program.

The FSU Board of Trustees approved the program on March 14, 2011. If the proposal is approved by the Board of Governors, FSU will implement the program in Fall 2011.

Supporting Documentation Included: Staff Analysis

Facilitators/Presenters: FSU Representatives

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BOARD OF GOVERNORS
STATE UNIVERSITY SYSTEM OF FLORIDA
NEW DOCTORAL DEGREE PROPOSAL STAFF ANALYSIS

Program: Ph.D. in Materials Science and Engineering **CIP Code:** 40.1001
Institution: Florida State University **Proposed Implementation Date:** Fall 2011
Staffed By: Lynda Page, Richard Stevens **Initial Review Date:** 04/29/11 **Last Update:** 05/16/11

Estimated Costs:

	Total	% & $ Current Reallocated	% & $ New Recurring	% & $ New Non-Recurring	% & $ C&G	Cost per FTE	SUS 09-10 Average Cost per FTE
Year 1	$460,185	85% $390,375	0% $0	0% $0	15% $69,810	$72,292	$23,267 14 CIP
Year 5	$2,785,415	39% $1,078,807	0% $0	0% $0	61% $1,706,608	$27,876	$27,711 40 CIP

Projected FTE and Headcount are:

	Student Headcount	**Student FTE**
First Year	6	5.4
Second Year	14	12.6
Third Year	23	20.7
Fourth Year	33	29.7
Fifth Year	43	38.7

On March 29, 2007, the Florida Board of Governors approved Regulation 8.011, which sets forth criteria for authorization and implementation of new doctoral programs by the Board of Governors, as well as criteria for authorization and implementation of bachelor's, master's, and specialist degrees by boards of trustees. The following staff analysis is an assessment of how well the university meets Board of Governors Accountability and Readiness criteria for implementation of this degree program.

Proposal Page Numbers:

INTRODUCTION		**ACCOUNTABILITY**		**READINESS**				
Program Description	**System Analysis**	**Overall**	**Budget**	**Mission and Strength**	**Program Quality**	**Curriculum**	**Faculty**	**Resources**
8	9	10	23	31	37	37	48	57

A. Program Description:

Florida State University is proposing to offer an interdisciplinary Doctor of Philosophy in Materials Science and Engineering (MS&E) degree program. This field involves the study of relationships among the processing, structure, properties, and performance of materials. The program will be administered by the Graduate School and will involve a minimum of 54 post-baccalaureate credits, including at least 27 credits of letter-graded courses and at least 24 credits of dissertation research. Utilizing faculty members spanning nine departments that are spread across two colleges, the University anticipates that the interdisciplinary approach will position students to work and conduct world-class research on materials. The nine affiliated departments are Biological Science, Chemistry and Biochemistry, Physics, and Scientific Computing within the College of Arts and Sciences, as well as Chemical and Biomedical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Industrial and Manufacturing Engineering, and Mechanical Engineering within the FAMU/FSU College of Engineering.

The program is designed so that students may complete both the course work and dissertation in five years. It includes check points of passing a written qualifying exam and the presentation and defending of a prospectus. Throughout the program, students will have the opportunity to participate in the interdisciplinary seminar series designed for students to obtain information on advances in materials research. The seminar series will involve presentations from visiting scientists and from MS&E faculty.

According to the proposal, the program will emphasize research and anticipates supporting research assistants through research grants. Current faculty have been very successful in obtaining outside research grants from federal and private agencies such as the National Science Foundation, Department of Defense agencies, NASA, National Institutes of Health, and others. This research focus should prepare graduates of the program for cutting-edge innovation as they move into the MS&E area as professionals.

B. System-Level Analysis and Evaluation in accordance with Board of Governors Regulation 8.011:

Florida State University believes that the proposed program addresses the four State University System Strategic Planning Goals, positioning its graduates to assist in the development of a "New Florida." MS&E is found within the science, technology, engineering, and mathematics (STEM) area of focus and will help to produce a high-skilled workforce in these critical areas. The program will also assist in meeting the FSU mission statement for "promoting excellence in graduate education and research and encouraging the dissemination and transfer of knowledge by providing broad access to institutional resources and services to the community and to the State." The proposed program falls within the STEM Area of Programmatic Strategic Emphasis as

adopted into the Board of Governors 2005-2013 Strategic Plan and updated in November 2008. It is also aligned with strategic guidance provided in the plan for the development of new doctoral programs in research with regard to being aligned with the University and System missions and being in a targeted discipline.

A strong argument of need is made for the program based upon economic development goals of the state. By building upon an active research-based faculty and resources already in place, the program will be able to assist in meeting the increased demand for materials scientists and will assist in bringing industry into the Northwest region. This region, one of the 10 included in the Enterprise Florida Roadmap, has an urgent need for high-tech companies and jobs.

The proposal further provides that the Bureau of Labor Statistics states in its *Occupational Outlook Handbook, 2010-11 Edition,* that "…the employment of materials scientists is projected to grow by 12 percent as manufacturers seek to improve the quality of their products by using new materials and manufacturing processes." The University points to key economic sectors in the state, such as aerospace, defense, marine, and space, found to employ materials scientists. It is reported that several faculty members working closely with colleagues in military research located in the panhandle have learned that defense labs have been directed to increase the number of Ph.D.-level researchers, including materials scientists. The implementation of the proposed program will address an employment need in the community while increasing the opportunity for students to seek a Ph.D. in the area. Having the support of the three universities currently offering a Ph.D.in Material Science (i.e., University of Florida, University of Central Florida, and Florida International University) and Florida A&M University, their partner in the joint FAMU-FSU College of Engineering, the University proposes a program that will meet the needs of their students and community.

The program duplicates existing doctoral level MS&E programs at the University of Florida, University of Central Florida, and Florida International University. Materials science programs are interdisciplinary by nature, typically relying on the research strengths of affiliated departments. The proposed FSU program would follow a different administrative model than others in the state by being housed within the Graduate School rather than within a single department, with leadership rotating among affiliated departments. This model is similar to the model that was used when FSU implemented its program in computational science within an interdisciplinary center.

The proposal makes a strong argument for implementing the degree based upon existing faculty and research resources already in place within other programs. However, it should be noted that four of the nine affiliated programs are relatively new, and three of the older programs have experienced low enrollment and degree

productivity in the past five years. The question that might be asked of FSU is whether the proposed MS&E program may weaken these programs by reallocating resources or strengthens these programs through gained efficiencies in faculty effort.

As illustrated in the following tables, enrollment in the State University System's existing doctoral materials science and engineering programs has shown some decline over the past four years, and it would appear that implementation of the FIU program in 2007 may have had a marginal impact on enrollments at UF and UCF. However, degree production does not appear to have been significantly affected at existing programs when FIU implemented its program, but this may be a result of prior enrollees finishing their dissertations. Beginning on page 13, the proposal provides a comparison of the proposed program with existing programs, identifying gaps and overlap in areas of concentration. FSU has gathered letters of support for the proposed program from the universities with the three existing programs; copies of these letters can be found in Appendix C.

Materials Science and Engineering Doctoral Enrollments

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
FIU	0	0	0	0	0	0	2	2	9	22
UCF	13	16	21	38	39	36	42	35	37	29
UF	116	146	146	140	132	132	150	145	122	106
Total	*129*	*162*	*167*	*178*	*171*	*168*	*194*	*182*	*168*	*157*

SOURCE: Board of Governors Online Interactive Data Tool

Materials Science and Engineering Doctoral Degrees

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
FIU	0	0	0	0	0	0	0	0	3	1
UCF	1	6	3	3	1	6	5	6	8	7
UF	25	20	16	35	43	35	19	26	40	43
Total	*26*	*26*	*19*	*38*	*44*	*41*	*24*	*32*	*51*	*51*

SOURCE: Board of Governors Online Interactive Data Tool

C. Assessment of the University Review Process in accordance with Board of Governors Regulation 8.011:

Due to the system of stair-step accountability set in place by the Board of Governors in Regulation 8.011, it is now incumbent upon university boards of trustees to verify that all doctoral programs coming before the Board of Governors have met the requirements of the regulation. The following is an assessment of the university review process to ensure that all criteria set forth have been considered by the university prior to submission to the Board of Governors office.

ACCOUNTABILITY

Check 'yes' or 'no' box, and make comments beneath each criterion, as appropriate.

1. *Overall –* *The proposal is in the correct format, includes all necessary signatures, and contains complete and accurate tables for enrollment projections, faculty effort, and the proposed budget.*

YES NO

☒ ☐ **The proposal has been approved by the university board of trustees and includes all required signatures.**

The FSU Board of Trustees approved the proposal at their meeting on March 4, 2011. A signature coversheet with all required signatures is provided.

☒ ☐ **The university has provided a proposal written in the standard SUS format which addresses new academic program approval criteria outlined in Board of Governors Regulation 8.011.**

The proposal is written in the standard SUS format, addressing the required academic program approval criteria.

☒ ☐ **The university has provided complete and accurate projected enrollment, faculty effort, and budget tables that are in alignment with each other.**

All tables are added correctly and correlate with each other.

☒ ☐ **The university has included a statement in the proposal signed by the equity officer as to how this proposal will meet the goals of the university's equity accountability plan.**

The proposal notes that the program anticipates actively recruiting students from FAMU in science and mathematics, plus FAMU engineering students in the FAMU-FSU College of Engineering. It also specifies that faculty members will be encouraged to have minority students in the Research Experiences for Undergraduates summer internship programs at the National High Magnetic Field Laboratory at FSU to get first-hand research experiences on materials.

A letter of support is provided from Dr. Cynthia Hughes-Harris, FAMU Provost and Vice President for Academic Affairs; however, she does note that FAMU would not want the initiation of the FSU program to preclude FAMU from initiating its own future MS and Ph.D. program in Materials Science in niche areas that do not duplicate the FSU research efforts.

2. Budget – *The proposal presents a complete and realistic budget for the program consistent with university and Board of Governors policy, and shows that any redirection of funding will not have an unjustified negative impact on other needed programs.*

YES NO

☒ ☐ **The University Board of Trustees has approved the most recent budget for this proposal.**

Budget tables were included in the proposal approved by the University Board of Trustees.

☒ ☐ **The university has reviewed the budget for the program to ensure that it is complete and reasonable, and the budget appears in alignment with expenditures by similar programs at other SUS institutions.**

The projected cost per FTE is slightly higher than the State University System average for doctoral Engineering, totaling $27,876 per student FTE in Year Five versus the $27,711 SUS average for 2009-10. However, the System average is calculated at the two-digit CIP Code level across all universities and programs, so it cannot be considered anything more than a "ballpark" estimate for what a new program should cost.

☒ ☐ **In the event that resources within the institution are redirected to support the new program, the university has identified this redirection and determined that it will not have a negative impact on undergraduate education, or the university has provided a reasonable explanation for any impact of this redirection.**

As an interdepartmentally administered program, the program will be supported by some reallocation of resources, but it is expected that graduate students in this program will also provide instructional and research resources back to the affiliate programs.

READINESS

Check 'yes' or 'no' box, and make comments beneath each criterion, as appropriate.

3. Program Quality *– The proposal provides evidence that the university planning activities have been sufficient and responses to any recommendations to program reviews or accreditation activities in the discipline pertinent to the proposed program have been addressed.*

YES NO

☒ ☐ **The university has followed a collaborative planning process for the proposed program in accordance with policies and procedures adopted by the University Board of Trustees.**

The proposal provides a timeline that shows initial discussions about the possibility of establishing a Ph.D. program in MS&E beginning in 2006. The interdisciplinary Master of Science in Materials Science was developed first. Extensive interdepartmental planning has since taken place, especially after 2009. The process also included communication with other state university MS&E programs, along with consideration of the involvement of FAMU students.

☒ ☐ **An external consultant has reviewed the proposal and supports the department's capability of successfully implementing this new program.**

Dr. John D. Wiley, Chancellor Emeritus of the University of Wisconsin-Madison, reviewed the university proposal in order to judge compliance with the Board of Governors' new degree criteria. He notes that the interdepartmental, inter-college model that is proposed has been successfully implemented at other institutions, including Wisconsin. Additionally, he notes that because of the quality and quantity of excellent materials science research at FSU, the approval and implementation of the proposal "would almost immediately vault FSU into the very top ranks of Materials Science and Engineering PhD programs nationally."

☐ ☒ **The university has found the level of progress that the department has made in implementing the recommendations from program reviews or accreditation activities in the discipline pertinent to the proposed program to be satisfactory.**

The proposal responds as N/A to this section. This response may be due to the fact that the Master of Science in Material Science was newly approved in 2008 and will not come up for a Quality Enhancement Review until 2018 – 2019. However, as an interdisciplinary program, it would seem reasonable that there would be reviews associated with the affiliated departments.

☒ ☐ **The university has analyzed the feasibility of providing all or a portion of the proposed program through distance learning.**

The university indicates that the MS&E courses will be delivered on campus using traditional delivery methods. The research lab nature of this program does not readily lend itself to coursework being provided via distance learning.

☒ ☐ **If necessary, the university has made allowances for licensure and legislative approval to be obtained in a timely manner.**

Legislative approval is no longer necessary and would not have applied to this particular program.

4. Curriculum *- The proposal provides evidence that the university has evaluated the proposed curriculum and found that it describes an appropriate and sequenced course of study, and that the university has evaluated the appropriateness of specialized accreditation for the program.*

YES NO

☒ ☐ **The university has reviewed the curriculum and found that the course of study presented is appropriate to meet specific learning outcomes and industry driven competencies discussed in the proposal.**

The University includes the specific learning outcomes for the program that tie back to student performance in core courses. It includes a detailed outline of degree program expectations along with a thorough description of the fundamental core courses of the program. Additionally, there are shorter descriptions of elective specialization courses included in the proposal.

The proposal notes that the program is a research-oriented degree program. The students will be supported on faculty members' research grants that add significant, cutting-edge research in areas important to the industry.

☒ ☐ **The university anticipates seeking accreditation for the proposed program, or provides a reasonable explanation as to why accreditation is not being sought.**

The university notes that Materials Science and Engineering is accredited at the undergraduate level by the Accreditation Board for Engineering and Technology; however, there is no agency or society that accredits such programs at the M.S. and Ph.D. level.

5. Faculty *– The proposal provides evidence that the university is prepared to ensure a critical mass of faculty will be available to initiate the program based on estimated enrollments, and that faculty in the aggregate have the necessary experience and research activity to sustain a doctoral program.*

YES NO

☒ ☐ **The university has reviewed the evidence provided and found that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

No new faculty will be hired in the establishment of the degree program. The workload for the program will be spread among 26 current faculty members found among 9 different departments.

☒ ☐ **The university has reviewed the evidence provided and found that the faculty in aggregate has the necessary experience and research activity to sustain the program.**

The consultant notes that "…FSU already has a strong materials science and engineering faculty. They simply need authority to name the degree appropriately, in a way that is recognized by potential faculty, students, and recruiters." Many of the faculty members are already involved in teaching graduate level MS&E coursework through the master's program.

☒ ☐ **The university has reviewed the evidence provided and found the academic unit(s) associated with this new degree to be productive in teaching, research, and service.**

The proposal provides evidence that the faculty members bring with them an extensive breadth of experience in publications, funded research, and direction of student research. Only seven of the 26 are noted as not having previously directed student research. All have experience with being published and actively pursue grants. The group totals more than 31 million dollars in externally-funded grants received 2005 through 2010.

☒ ☐ **If appropriate, the university has committed to hiring additional faculty in later years, based on estimated enrollments.**

No new faculty will be hired through Year Five with the establishment of the proposed program. Faculty will, however, have an increased workload by that year. Funding for the faculty is based on reallocated funds and contracts and grants. The University notes that there will be no change in any department budget or the budgets of the College of Arts and Science or College of Engineering due to the reallocation.

6. Resources *– The proposal provides evidence that the university has ensured the available library volumes and serials; classroom, teaching laboratory, research laboratory, office space, equipment, clinical and internship sites, fellowships, scholarships, and graduate assistantships will be sufficient to initiate the program, and that if applicable, funding has been secured to make more resources available as students proceed through the program.*

YES NO

☒ ☐ **The university has provided a signed statement from the Library Director verifying that the library volumes and serials available are sufficient to initiate the program.**

The University's extensive collection that already supports the nine departments involved with the proposed interdisciplinary program will be available to the MS&E

students. The University notes that an expansion of statewide electronic journal packages will be provide additional science journal content.

☒ ☐ **The university has ensured that the physical space necessary for the proposed program, including classrooms, laboratories and office space, is sufficient to initiate the program.**

The Ph.D. program will be supported by current classroom and laboratory space spread throughout campus in buildings supporting the faculty from the nine different departments. Students will be provided with office space by their advisor's home department.

☒ ☐ **The university has ensured that necessary equipment is available to initiate the program.**

The MS&E faculty members already have their own research equipment. FSU has previously invested in shared equipment for materials research. There is no need for additional specialized equipment.

☒ ☐ **The university has ensured that fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

The proposal notes that the institution will start with the provision of six full fellowships ($20,000 each for the academic year) plus tuition waivers for first-year students. Already successful in obtaining outside research grants, MS&E will be actively seeking funds to support fellowships and research assistantships. Faculty members have a history of receiving outside research grants from a variety of federal and private agencies.

☒ ☐ **If applicable, the university has ensured that the department has arranged a suitable number of clinical and internship sites.**

Although the program does not include clinical or internship experiences, it does include the opportunity for students to work with faculty members utilizing state-of-the-art resources while conducting cutting-edge research as identified by the scientific community.

Florida Board of Governors

Request to Offer a New Degree Program: Doctor of Philosophy in Materials Science and Engineering at Florida State University

Florida State University	Fall 2011
University Submitting Proposal	Proposed Implementation Date
Graduate School	None
Name of College or School	Department(s)
Materials Science and Engineering	Doctor of Philosophy in Materials Science & Engineering (40.1001)
Academic Specialty or Field	Complete Name of Degree (Include CIP code)

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

Date Approved by the University Board of Trustees	President	Date
Signature of Chair, Board of Trustees	Vice President for Academic Affairs	Date

Provide headcount (HC) and full-time equivalent (FTE) student estimates for Yrs 1 through 5. HC and FTE estimates should be identical to those in Table 1. Indicate program costs for Years 1 and 5 of implementation as shown in the appropriate columns in Table 2. Calculate an Educational and General (E&G) cost per FTE for Yrs 1 & 5 (Total E&G divided by FTE).

Implementation Timeframe	Projected Student Enrollment (From Table 1)		Projected Program Costs (From Table 2)		
	HC	FTE	Total E&G Funding	Contract & Grants Funding	E&G Cost per FTE
Year 1	6	5.4	$390,375	$69,810	$72,292
Year 2	14	12.6			
Year 3	23	20.7			
Year 4	33	29.7			
Year 5	43	38.7	$1,078,807	$1,706,608	$27,876

Rationale and Executive Summary

This is a proposal to create an interdisciplinary Doctor of Philosophy in Materials Science and Engineering (MS&E) program at the Florida State University that will be administered by the Graduate School. The MS&E program will begin with faculty members whose tenure homes span nine departments currently spread across two colleges. This Ph.D. program builds on the recently created interdisciplinary Master of Science in Materials Science program that started in 2008.

Materials science and engineering is a broad-reaching and interdisciplinary field, where gigabyte memory sticks, human joint replacements, lightweight and smart prostheses, touch screen cell phones, and the advanced composites (more than 50% by weight) in the new generation of commercial jet airliners are all or in part the results of MS&E. Materials science involves the relationships between the processing, structure, properties, and performance of materials. MS&E graduates develop or synthesize new materials and create new products or systems using existing materials. Fundamental to MS&E is the design and simulation of the properties of new and existing materials through advanced computational methods. There is an inter-weaving of basic and applied experiences that creates a unique skill set that allows graduates to successfully pursue the frontiers of MS&E research.

This program advances the State and Federal calls to increase competence in science, technology, engineering, and math (STEM) in upcoming generations, and to promote interdisciplinary approaches to solving fundamental problems in a global environment. FSU is situated in the "Northwest Region" in the I-10 transportation corridor, one of the 10 regions that comprise the Enterprise Florida Roadmap demographics[1]. In this region, there are urgent needs and a strong push to create high-tech companies and jobs. MS&E can play a critical role in these. In addition, there are a number of federal research laboratories in the region including Eglin and Tyndall AFBs, the Naval Surface Warfare Center, and the Naval Air Station Pensacola that need new and well trained doctoral graduates to replace the retiring employees in the MS&E field. The program, through the many faculty, departments, centers, and facilities that will comprise its core, addresses many of the Roadmap priorities. Specifically, students will be exposed to or can contribute to university start-ups, advanced manufacturing, aviation and aerospace, energy, multidisciplinary research, STEM pipelines, alignment with industry, expansion of academic R&D, World Class Scholars, Centers of Excellence, development of universities as Best-in Class, Federal facilities, and the culture of commercialization.

FSU has made significant investments to create a materials-oriented environment that is ready to fully support an interdisciplinary MS&E Ph.D. program. These investments include state-of-the-art atomic resolution transmission electron microscopy (TEM) instruments and laboratories, high performance computing capabilities for modeling and

1 *Enterprise Florida's Roadmap To Florida's Future, 2010-2015 Strategic Plan for Economic Development, eflorida.com/roadmap*

simulation, and establishing two materials-related Faculty Cluster Hires in (1) Growth, Processing and Characterization of Advanced Materials and in (2) the Integrative NanoSciences Institute. To date, these Clusters have recruited 8 new faculty members (4 in the Engineering and 4 in Arts and Sciences) with tenure homes in 5 different Departments. An additional 4 to 6 hires are planned in the future. Moreover, in the past few years, four new major institutes and centers have been created in one newly-renovated and three new buildings that were purpose made for these entities. These institutes and centers, all of which are connected with materials research, are: the Center for Applied Power Systems, the Applied Superconductivity Center, the High-Performance Materials Institute, and the Florida Center for Advanced Aero-Propulsion. The Department of Scientific Computing has materials science faculty who bridge theory with the real world through advanced computational techniques.

The core faculty members named in this proposal do materials research and actively participate in the new Master of Science program. They have successful, on-going research programs investigating materials, having brought in more than $31M in materials-related contracts and grants since 2005.

Three universities in Florida offer Ph.D. degrees in MS&E: the University of Florida, the University of Central Florida, and Florida International University. As shown in the body of the proposal, the main research interests of the FSU MS&E faculty members are unique to FSU, and complementary to research areas in the three existing programs. Support letters for the program from these three schools, plus a support letter from FAMU, which is interested in programs that may potentially impact its engineering faculty members, are included as appendices.

Three important reasons to create this program are to be able to recruit students whose primary interest is to earn a Ph.D. in materials science and engineering, to educate these students in a broad, interdisciplinary environment, and to better leverage educational and research resources in multiple units across campus. At present, there is no Ph.D. degree *per se* in MS&E at FSU, and in particular, no departmental curriculum that provides a route to a core competence in MS&E. Although some departments have expanded their doctoral curricula to address materials related areas, there is a need to provide a broader educational experience for MS&E students at the inter-college level.

This interdisciplinary program, which will be administered by the Graduate School, is designed to avoid departmentalizing the program (Fig. 1). It will begin with faculty members with tenure homes in 9 departments across two colleges but is designed to easily incorporate faculty members from other departments and colleges. The initial faculty members come from Biological Science, Chemistry and Biochemistry, Physics, and Scientific Computing in the College of Arts and Sciences, plus Chemical and Biomedical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Industrial and Manufacturing Engineering, and Mechanical Engineering in the College of Engineering.

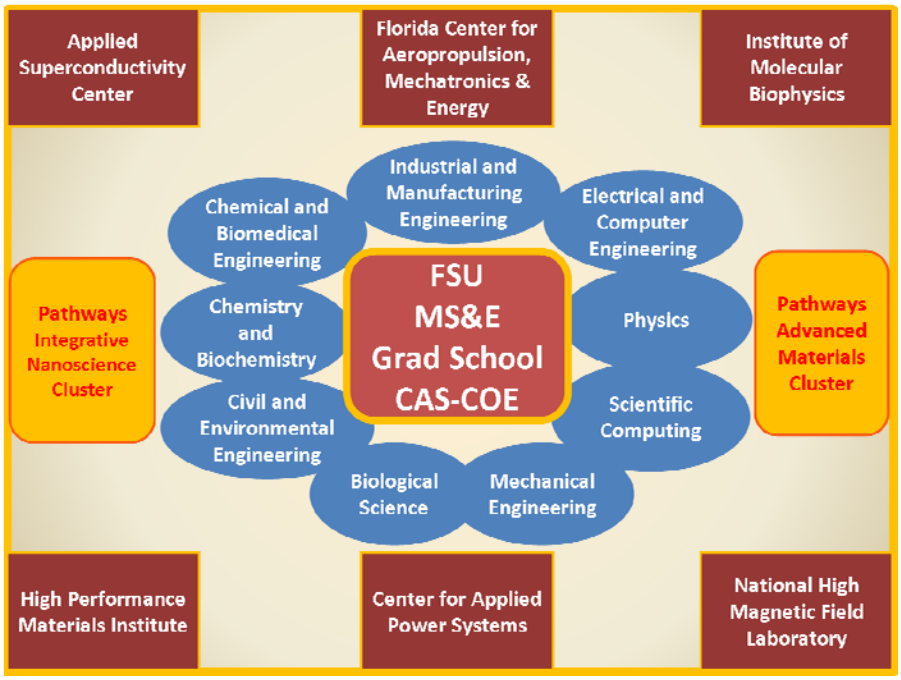

Fig. 1. Overview of the institutional structure of MS&E. The center crimson rectangle shows the Graduate School that will administer the program. The blue ovals are the academic departments in which MS&E faculty members have their tenure homes. The crimson rectangles along the edges are the centers, laboratories, and institutes. The gold rectangles are the Pathways Clusters.

In their first year, students will gain a firm basis in the fundamentals of MS&E through a series of complementary core courses taught by faculty members from different departments and through the weekly Interdisciplinary Seminar Series (ISS). In the ISS students will gain exposure to both FSU and external researchers working in the area of MS&E, they will learn presentation skills and present their own research in ISS, and outside speakers will be brought in to talk on business related topics such as entrepreneurship and how to bring research ideas to market. The ISS will also serve as a forum for MS&E faculty members who wish to recruit MS&E students.

Creating the MS&E Ph.D. program has many benefits. It will produce more engineers for the State; it will significantly contribute to research, economic development and job creation in the Panhandle area – in Feb. 2011 Bing Energy announced it will move from California to Tallahassee where it will manufacture commercial fuel cells using advanced technology developed and patented by faculty members in the MS&E Ph.D. program; it will help FSU grain ground on the AAU frontier; and it will better position FSU in the area of materials science and engineering in terms of federal research grants, particularly large-scale, interdisciplinary grants. It builds on the sizable investments FSU has already made in MS&E, it is composed of faculty members who are currently at FSU, it augments the existing M.S. program in materials science allowing students to pursue a Ph.D. in MS&E, it provides a means for FSU faculty members to recruit students who are primarily interested in studying MS&E, it provides a way to educate and train these students in a broad, interdisciplinary manner, it is relatively inexpensive to implement, and its graduates will benefit the State and the Nation.

TABLE OF CONTENTS

Proposal for a Doctor of Philosophy in Materials Science and Engineering at Florida State University

INTRODUCTION

Note: Appendix A is a list of abbreviations we use in the proposal.

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration,
including (a) level; (b) emphases, including concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

We propose an interdisciplinary Doctor of Philosophy in Materials Science and Engineering (MS&E). The proposed Ph.D. program goals are to educate students in the broad field of materials science and engineering through an interdisciplinary approach where they are taught by faculty members with a variety of backgrounds from different departments and colleges. It will train students to conduct world-class research on materials and provide the students the opportunity to acquire professional written and oral communication skills.

The interdisciplinary MS&E program will be administered by the Graduate School to provide balanced access to, and investment in, the program throughout various colleges and departments. MS&E will begin with faculty members with tenure homes in nine departments (Biological Science, Chemical and Biomedical Engineering, Chemistry and Biochemistry, Civil and Environmental Engineering, Electrical and Computer Engineering, Industrial and Manufacturing Engineering, Mechanical Engineering, Physics, and Scientific Computing) spanning two colleges (Arts and Sciences, and Engineering). In the future MS&E can expand to include faculty members who do materials related research in other departments and colleges.

The MS&E Ph.D. program will require a minimum of 54 credit hours beyond the bachelor's degree.

The program will emphasize research in materials science and engineering. Materials science and engineering has an enormous impact on modern society. Discoveries and advances in materials are helping shape modern life. For instance, materials scientists at Intel convert silicon wafers into the integrated circuits that are the heart of all new consumer electronic devices; Boeing and Airbus's newest planes are lighter and more fuel efficient because they have replaced aluminum components that were designed by materials scientists decades ago, with new, lighter and stronger carbon-fiber composites; and the superconducting magnets that are crucial for MRI scanners were developed by materials scientists. Our MS&E graduates will be employed doing research and

development in the manufacturing industry, research in industrial and federal/national research laboratories, and teaching and research in academia. Some well-known companies in which materials scientists play key roles include 3M, Alcoa, Boeing, Cummins, DuPont, Exxon Mobil, General Dynamics, GE, General Motors, HP, IBM, Intel, Lockheed Martin, Motorola, and Xerox.

The Program Directorship will rotate on a regular basis. The Director, chosen from the participating faculty members in the MS&E program, approved by the deans of participating colleges, and appointed by the Dean of the Graduate School, will oversee the program with input from an executive committee. This committee, called the Governing Executive Committee, will be formed with representation from all participating colleges/departments in which MS&E faculty members have tenure homes. Any faculty member at FSU who does research in materials science can apply to be an MS&E faculty member and advise MS&E Ph.D. students. FAMU faculty members with an appointment in the FAMU-FSU College of Engineering and who do materials research will be eligible to be a member of MS&E and co-advise MS&E Ph.D. students.

B. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which goals the program will directly support and which goals the program will indirectly support.
(See the SUS Strategic Plan at http://www.flbog.org/StrategicResources/)

MS&E directly addresses several of the SUS Strategic Planning Goals, including:

- I.A.4 Access to and production of degrees – emerging technologies doctoral degrees;
- I.B.3.a Meeting statewide professional and workforce needs – Economic development;
- I.C. Building world-class academic programs and research capacity;
- I.D. Meeting community needs and fulfilling unique institutional responsibilities.

As the Board of Governors notes in its *"New Florida" Initiative* in January 2010, Florida's future depends on developing a knowledge and innovation economy that is built on high-technology, high-wage jobs in the fields of science, technology, engineering and mathematics (or "STEM"). Building this new economy requires new talent, so we need to increase the percentage of Floridians who have advanced degrees in these critical fields. In the *2010-2015 Roadmap* developed by Enterprise Florida[1], it is stressed that the key to Florida's future economic growth is to expand and transform foundational industry clusters (e.g., Advanced Manufacturing, Marine and Space), expand existing industry clusters (e.g., Aviation and Aerospace, Clean Energy and Life Science) and develop new clusters (e.g., Nanotechnology). MS&E plays a key role, as it is related to almost all of these fields critical to Florida's economic growth. A new Ph.D. program in MS&E will help the State achieve its goals by producing more, high-skilled workforce in these critical fields.

FSU has made considerable recent investments hiring first-rate faculty members, acquiring research equipment, supporting research infrastructure, and building laboratories and new buildings to support research in materials science. With these resources, the new Ph.D. program will directly address SUS Goals by attracting students who will be educated in the STEM field of materials science and engineering and carry out world-class research in an interdisciplinary environment.

The new MS&E Ph.D. program will also directly address the FSU mission and goals defined in the University's mission statement (2005) for promoting excellence in graduate education and research and encouraging the dissemination and transfer of knowledge by providing broad access to institutional resources and services to the community and to the State. It will provide new opportunities for graduate education and research in the area of MS&E and offer technology transfer opportunities to industry in the State.

INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level.
Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

The first materials science and engineering programs were created in the early 1960s, but the discipline is much older than that, having deep, broad roots in metallurgy and ceramics. Materials science and engineering has been a multi-disciplinary field since its inception, having merged metallurgy and ceramics, and included parts of other disciplines such as solid-state physics and polymers, and has incubated new fields such as nanotechnology. It bridges condensed matter physics, chemistry, the engineering disciplines, and most recently biology, and nanoscience and nanotechnology. Materials science experimental, computational, and theoretical research forms an important vehicle to create new materials and improve existing materials that underpin the development of new technologies in medicine, energy, transportation, electronics, communications, information, building, construction, homeland security and national defense. All major federal funding agencies, including the National Science Foundation, Department of Energy, Department of Defense, and National Institutes of Health, support large research programs in materials science and engineering. In the 2010 *U.S. News and World Report* rankings of America's Best Graduate Schools[2], 7 of the top 10 graduate programs in materials science and engineering are at state universities like FSU. Materials research and engineering are strong components at many AAU member universities.

2 *http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-engineering-schools/material-engineering*

There is an increasing demand for materials scientists by high-technology industries including manufacturing, automotive, aerospace, catalysis, electronics, construction, medical science, and metal and mineral extraction. The Bureau of Labor Statistics states that "…the employment of materials scientists is projected to grow by 12 percent as manufacturers seek to improve the quality of their products by using new materials and manufacturing processes" [3]. Growth is expected to be particularly strong for materials scientists and engineers working on nanomaterials and biomaterials. Also, according to the Aerospace Industries Association, there will be a need for more people in the aerospace industries, including materials scientists, as baby boomers retire and the industry creates more advanced designs with greater capabilities and higher efficiencies.

Several faculty members in our recently created (Fall 2008) interdisciplinary Master of Science in Materials Science work closely with colleagues at the military research laboratories in the Panhandle. These faculty members have recently learned that these defense labs have been directed to increase the number of Ph.D. level researchers in the labs, including materials scientists.

Florida has strong national presence in key economic sectors such as aerospace, defense, marine and space. Lockheed Martin, Boeing, Raytheon, Northrop Grumman, and General Dynamics – top aerospace/defense companies in the U.S. – all have substantial operations in Florida, and all employ materials scientists. New materials are key to advances in these industries, such as the carbon-fiber composites being used in military aircraft and the latest commercial Boeing and Air Bus planes.

Other large companies in Florida, such as Siemens Westinghouse Power Corp., employ materials scientists who improve the efficiency of power systems by incorporating new, higher-performance materials in advanced systems designs.

Enterprise Florida cites data from the Food and Drug Administration that "Florida has one of the country's largest medical device sectors, ranking 2nd in the U.S. for the number of FDA-registered medical device establishments." There are over 20,000 people in Florida who work in this sector. Advanced materials are critical to this industry sector[4].

There are also many small companies in Florida that depend on advanced materials and employ Ph.D. materials scientists, including Quantachrome, Applicote, Semiconductor Diagnostics, Inc., nScrypt, Inc., and Fractal Systems, Inc.

In Feb. 2011 Bing Energy, a high-tech company that manufactures commercial fuel cells to generate electricity, announced it will move from California to Tallahassee. A key component of their fuel cells competitive advantage comes from a new electrode material that was developed and patented by FSU faculty members in the MS&E program. Bing

3 *Bureau of Labor Statistics - Occupational Outlook Handbook, 2010-11 Edition*
4 *eFlorida - http://www.eflorida.com/Life_Sciences.aspx?id=220*

Energy cited being close to the faculty members where the technology was developed as one of the reasons they decided to move their operations to Tallahassee.

The federal science and engineering (S&E) workforce is shrinking. For example, the Department of Defense S&E workforce declined from 45,000 to 28,000 in the decade between 1990 and 2000 and more will soon retire, many of them in areas related to materials science and engineering[5]. This is evidenced by the recent increasing recruitment effort for FSU doctoral graduates from some federal research laboratories. A unique feature of the proposed MS&E doctoral degree program is to address this critical issue by complementing existing work and needs of the federal research labs in the Florida panhandle (Tyndall and Eglin AFBs, the Naval Air Station Pensacola, and the Naval Surface Warfare Center) and beyond. Emphasis will be placed on DoD areas of current and future needs including advanced structural materials, nanomaterials, energy materials, multifunctional materials, and multiscale materials. Our goal is to enhance our nation's global leadership position in MS&E by training current and future federal employees (uniformed and civilian) to be world class leaders in areas of critical national needs, matching the core competencies available within the MS&E program at FSU. The students working at the federal labs will work on innovative research funded through the labs as their dissertation work. The new MS&E program will provide the flexibility in core course delivery to accommodate the targeted students' rigorous work environments.

On the national level, well-known companies in which materials scientists and engineers play key roles include 3M, Alcoa, Boeing, Cummins, DuPont, Exxon Mobil, General Dynamics, GE, General Motors, HP, IBM, Intel, Lockheed Martin, Motorola, and Xerox. The graduates from MS&E can also work in research and development in academia, national labs and industrial labs.

The increasing budget and scales of federal agencies' SBIR/STTR programs in MS&E fields have created and will continue to generate higher demand for the doctoral graduates in these fields. Recently, more and more doctoral graduates work for high-tech small businesses, with many of them taking leadership roles in those companies working on SBIR/STTR projects. The new Ph.D. program will help enhance the graduates' capabilities of running SBIR/STTR programs with the proposed interdisciplinary training programs, research experience with federal funded projects, and entrepreneurship/ commercialization education/practice.

Recent placements of our own students indicate that the job-market for graduates in MS&E will be strong. Over the past few years, graduating Ph.D. students who worked with MS&E faculty members have been employed at Air Force Research Laboratory, Boeing, Lexar, GE, Fermi National Accelerator Lab, Intel, and Sandia National Laboratory to name a few. These examples show that advanced materials play a central role in many advanced, new technologies, and MS&E graduates will be readily employed.

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5 *"Envisioning A 21st Century Science and Engineering Workforce for the United States: Tasks for University, Industry, and Government," The National Academies Press, 2003*

Creating the MS&E program will also enhance FSU's ability to increase federal research funding, graduate student recruitment, and Ph.D. production. Over the past decade, federal research awards to interdisciplinary teams in materials areas have increased substantially. This is seen for example in the DoD MURI program, the NSF Division of Materials Research Centers programs, including the MRSECs, NSECs, CEMRIs and most recently MIRTs. The interdisciplinary MS&E Ph.D. program at FSU will help build strong bridges between MS&E faculty across campus and it will help make FSU more competitive for these interdisciplinary grants.

B. Demand: Describe data that support the assumption that students will enroll in the proposed program.
Include descriptions of surveys or other communications with prospective students.

According to a recent NSF Graduate Enrollment Survey[6], from 2001 to 2007, the growth of graduate student enrollment in the materials engineering field grew 13.6%. This indicates materials science and engineering is a steadily growing field so we can confidently expect students to apply to MS&E. In addition, several students who inquired about the new FSU Master of Science in Materials Science program were interested in whether FSU had a Ph.D. program. Those interested in earning a Ph.D. in materials science and engineering applied to other schools. One student who was admitted to the Master of Science in Materials Science program chose chemical and biomedical engineering over the masters program in materials science because she could earn a Ph.D. in chemical engineering but not in materials science. A growing number of the current students in our new Master of Science in Materials Science Program have told their advisors they plan to continue on for a Ph.D. and would like to be able to earn their Ph.D. in MS&E at FSU. This adds an important imperative to the timing of this proposal.

Faculty members at FSU who do materials science research regularly receive inquiries from students asking about pursuing a Ph.D. in materials science and engineering under their guidance. In recent years, many students have either not applied to or have left FSU due to the lack of MS&E related programs that satisfy their interests and professional aspirations.

C. If similar programs (either private or public) exist in the state, identify the institution(s) and geographic location(s).
Summarize the outcome(s) of any communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). Provide data that support the need for an additional program.

There are three materials science and engineering Ph.D. programs in Florida: at Florida International University (FIU), the University of Central Florida (UCF), and the University of Florida (UF). UF and FIU are single-department programs in which all of

6 *National Science Foundation: Graduate Students and Post doctorates in Science and Engineering: Fall 2007 http://www.nsf.gov/statistics/nsf10307/pdf/nsf10307.pdf*

the faculty members in the Ph.D. program come from a single department, the students take their courses within that department but may take elective courses outside the department, and the students are mainly taught by faculty from that department. UCF is centered in a single department but has faculty members associated with it from other departments. These models work well for the existing programs. The research areas in these three programs are multi-disciplinary covering a wide range of topics in MS&E.

The proposed FSU program follows a different model. It will initially be made up of faculty members with tenure homes in nine different departments across two colleges and is administered by the Graduate School, but can expand in the future to include faculty members in other FSU departments and colleges. It could also include faculty members from another university, such as FAMU, if they establish a Ph.D. degree in MS&E. Collaborative arrangements could be made for efficient use of resources if FAMU were to initiate such a degree. Students will have their academic home in the Graduate School; they will take a set of required core courses and elective specialization courses to give them both breadth and depth in MS&E. These courses will be taught by faculty members from multiple departments in Arts and Sciences and in Engineering; they will meet weekly for their entire time as graduate students in a new Interdisciplinary Seminar Series; and they will meet regularly with their research committee, composed of faculty members from across campus. The rationale for this model at FSU is to build a strong, new Ph.D. program using the components that already exist at FSU. These components are: faculty members who are already doing materials research and participating in the interdisciplinary Master of Science in Materials Science program (created in fall 2008); diverse, strong scientific and educational expertise from faculty members in nine different departments who will instruct and train MS&E students; extensive investment FSU has already made hiring new faculty, purchasing research equipment, creating research laboratories, and building new buildings for materials research. In short, all the components for the MS&E Ph.D. program already exist at FSU. This proposal brings them together in an effective, cost efficient new program.

The new Ph.D. program in Materials Science and Engineering at FSU will have minimal research overlap with the three existing MS&E Ph.D. programs at UF, UCF and FIU. We have surveyed the research areas in each of these three programs from their websites and talked with each of the three programs. We had a retreat at UF between FSU and UF MS&E faculty members in December 2010 where we presented this proposal to UF faculty members, discussed research areas in the two programs, and sought areas for collaboration. The UF faculty members had a positive reaction to this proposed MS&E program at FSU. The faculty members determined that there are unique, strong research programs at FSU that do not overlap or compete with UF's research programs; rather, the two programs are complementary. With the MS&E program at FSU, UF and FSU can write joint proposals to federal funding agencies for major, multi-university grants.

Appendix C contains support letters from FIU, UCF, and UF for this MS&E Ph.D. program. Support for the FSU program was discussed internally up to the provost level at each of these schools. We also have a support letter from FAMU. We asked FAMU to review the program, even though it does not have a Ph.D. program in MS&E, because we

wanted the FAMU administration to be able to have the opportunity to review the program an evaluate potential impact on engineering faculty members with FAMU lines in the joint FAMU-FSU College of Engineering.

The UF Ph.D. program is in the Department of Materials Science and Engineering. It is the largest and highest nationally-ranked program in Florida. It is broad in scope having faculty members who do processing and characterization of materials and as well as advanced computational studies to understand, model, and predict properties of materials. Table II.C.1 lists the research areas in MS&E at UF and FSU. Although it is natural that there is some overlap in research areas between two large MS&E programs, the top portion of the table shows those areas where FSU has developed strong research thrusts that are not major research areas at UF. Likewise, the UF MS&E program is particularly strong in biomaterials, which is an area FSU has chosen not to emphasize over the past few years so as not to duplicate the UF program.

TABLE II.C.1

Summary of MS&E research activities at FSU and UF. This table is not meant to be a full and comprehensive comparison.

Research Areas	Description of FSU MS&E activities	Related UF MS&E activities
----- Research areas at FSU with little overlap at UF -----		
Fundamental theory: bulk and low dimensional materials	Fundamental understanding of interactions in materials, including effects of disorder, dimensionality, temperature, and magnetic field.; Dobrosaljevic, Rikvold, Vafek	No apparent program
Superconducting devices, quantum computing elements	Superconducting devices, and quantum computing elements; Chiorescu	No apparent program
Fundamental magnetism	Molecular magnetism, magnetic and hybrid materials; Chiorescu, Latturner, Shatruk	No apparent program
Nanocomposites	Carbon nanotube based functional materials, fundamental research, processing and testing of nanocomposite materials.: Alamo, Liang, Liu, Wang, Zhang	Durability of epoxies for infrastructure applications; nanoparticle-metal matrix composites; E. Douglas, M. Manuel
Applied Superconductivity	Fundamental and applied research on technologically important and emerging superconducting materials. Materials for next generation high-field magnets; Hellstrom, Larbalestier	High Temperature Superconducting Thin Films and Devices; D. Norton (now Assoc. Dean for Res. and Grad. Prog.)
Chemical Vapor Deposition for Nanostructured Materials	Unique methods to use CVD to produce carbon nanotube forests and directed synthesis of nanowires on microelectromechanical (MEMS)-type platforms; O. Englander, M. Zhang	CVD on VII-V - Nitrides; C. Abernathy (now Dean of UF COE)
Thin film structures	Oxide thin films produced by molecular beam epitaxy (MBE) and pulsed laser deposition (PLD) for sensors, devices, and low dimensional novel materials properties; Chiorescu, Warusawithana, Zheng	Oxide and semiconductor films growth ; C. Abernathy, D. Norton (both are now UF COE administrators), S. Pearton
Materials characterization under novel and extreme conditions	Broad spectrum of characterization techniques for materials characterization and testing; Brooks, Chiorescu, Hellstrom, Larbalestier, Liang, Siegrist	Advanced diffraction tools for electroactive ceramics; J. Jones, K. Jones
----- Research areas at both FSU and UF -----		
Polymer Science and Engineering	Experimental and computational aspects of polymers including: rheology, crystallization, morphology, structure-properties relations, and polymer-nanostructure composites; Alamo, Collier, Shanbhag, Liu	General efforts in polymer science, bio-polymers, etc.; C. Batich, A. Brennan, E. Douglas, K. Powers
Materials chemistry and energy related-materials.	Materials synthesis for energy harvesting, storage, and fuel cell applications. Various growth techniques for new materials.; Latturner, Shatruk, Siegrist, Strouse	Complex alloys, thin film photonics, electroactive ceramics, ferroelectrics. F. Ebrahimi, P. Holloway, K. Jones, J. Jones, J. Nino, S. Pearton, R. Singh
Modeling, Simulation, Computation of materials.	Modeling and simulation of macro and nanoscale structures, semiconductor devices, magnetic materials, and biomaterials.; Andrei, El-Azab, Liang, Oates, Rikvold, Sobanjo	Molecular dynamics studies; S. Sinnott, S. Phillpot
----- Research areas at UF with little overlap at FSU -----		
Biomaterials	Bio-lithographic and self organized bio-structures, functional applications of cellulose, electronic properties of natural and functionalized silks; Brooks, Lenhert	Major departmental effort in biomaterials, biomimetrics, and biomedical areas by 11 UF-MS&E Faculty
Ceramics, metals, minerals	Small research effort at FSU	Major departmental effort involving 6 faculty members

TABLE II.C.2

Summary of MS&E research activities at FSU and UCF. This table is not meant to be a full and comprehensive comparison.

Research Areas	Description of Unique FSU MS&E activities	Related UCF MS&E activities
----- Research areas at FSU with little overlap at UCF -----		
Applied Superconductivity	Fundamental and applied research on technologically important and emerging superconducting materials. Materials for next generation high-field magnets; Hellstrom, Larbalestier	No research effort
Superconducting devices, quantum computing elements	Superconducting devices, and quantum computing elements; Chiorescu	No research effort
Chemical Vapor Deposition for Nanostructured Materials	Unique methods to use CVD to produce carbon nanotube forests and directed synthesis of nanowires on microelectromechanical (MEMS) platforms; Englander, Zhang	No research effort
Fundamental magnetism	Molecular magnetism, magnetic and hybrid materials; Chiorescu, Latturner, Shatruk	No research effort
----- Research areas at both FSU and UCF -----		
Nanocomposites	Carbon nanotube based functional materials, fundamental research, processing and testing of nanocomposite materials.: Alamo, Liang, Liu, Wang, Zhang	Carbon nanotube-based functional materials, e.g., conductive polymer/nanotube composites & 2-D circuits; fundamental research, processing & testing nanocomposite materials; An, Guo, Zhai
Fundamental theory: bulk and low dimensional materials	Fundamental understanding of interactions in materials, including effects of disorder, dimensionality, temperature, and magnetic field.; Dobrosaljevic, Rikvold, Vafek	Mesoscale models of thermal transport; atomic & electronic structure at solid/liquid interfaces; Schelling
Materials characterization under novel and extreme conditions	Broad spectrum of characterization techniques for materials characterization and testing; Brooks, Chiorescu, Hellstrom, Larbalestier, Liang, Siegrist	Broad spectrum of materials characterization and testing techniques, including neutron and x-ray studies at load and temperature; coatings for extreme environments; Sohn, Vaidyanathan
Thin film structures	Oxide thin films produced by molecular beam epitaxy (MBE) and pulsed laser deposition (PLD) for sensors, devices, and low dimensional novel materials properties; Chiorescu, Warusawithana, Zheng	Thin film solar cells and magnetic materials; IR bolometers; MEMS; Heinrich, Dhere, Coffey, Chow
Polymer Science and Engineering	Experimental and computational aspects of polymers including: rheology, crystallization, morphology, structure-properties relations, and polymer-nanostructure composites; Alamo, Collier, Shanbhag, Liu	Polymer research for functionalization of microfluidic system; soft lithography; liquid crystal imaging; soft materials; Zhai, Fang, Hun, Hickman
Materials chemistry and energy related-materials.	Materials synthesis for energy harvesting, storage, and fuel cell applications. Various growth techniques for new materials.; Latturner, Shatruk, Siegrist, Strouse	Solar cells; renewable energy; PEM & solid oxide fuel cells; batteries; Dhere, Heinrich, Fenton, Orlovskaya, Coffey
Modeling, Simulation, Computation of materials.	Modeling and simulation of macro and nanoscale structures, semiconductor devices, magnetic materials, and biomaterials.; Andrei, El-Azab, Liang, Oates, Rikvold, Sobanjo	Multiscale modeling; molecular dynamics; Schelling, Chen, Gou, Vaidyanathan
Biomaterials	Bio-lithographic and self organized bio-structures, functional applications of cellulose, electronic properties of natural and functionalized silks; Brooks, Lenhert	BioMEMs; microfluidic devices; biomaterials for drug screening; Cho, Hickman, Fang, Chen, Seal
----- Research areas at UCF with little overlap at FSU -----		
Optics and optical materials	Small program at FSU	Major program effort in optics and electro-optics; 5 faculty members
Nanoparticle and nanostructured materials	Small program at FSU	Synthesis and property studies of nanocomposite and nanostructured materials; 5 faculty members
Ceramic materials	Small program at FSU	Fabrication and characterization of ceramics; An, Orlovskaya
Diffusion, interactions, and reactions	Small program at FSU	Diffusion in bulk and grain boundaries; 4 faculty members
Nonequilibrium materials	Small program at FSU	Mechanical alloying; non-equilibrium materials; Suryanarayana, Heinrich

Table II.C.2 analyzes research at UCF and FSU. Again the table shows there is some research overlap between these two programs. The top of the table indicates the FSU research areas that are particularly strong at FSU and the bottom of the table shows the strong research areas at UCF. Faculty members in the UCF program have strong ties with the Center for Research and Education in Optics and Lasers (CREOL), the Florida Solar Energy Center (FSEC), and the NanoScience Technology Center (NSTC).

The FIU Ph.D. program, which is relatively new, is smaller (6 faculty members at present) than the other two existing Ph.D. programs and the proposed FSU program (26 faculty members). The research specializations of the individual FIU faculty members are in ceramics, memory alloys, fuel cells, thermodynamics, MEMS, high-density information storage, carbon nanotube-based devices and technology, nano electromechanical systems (NEMS), nanoparticle synthesis and characterization, bio/nanomaterials for drug delivery, modeling, and characterization.

Referring back to Tables II.C.1 and II.C.2 we see that the strong FSU research areas in the top of section of each table are not duplicated in the UF or UCF MS&E research programs. The unique research areas at FSU, which are complementary to research areas at UF and UCF are: nanocomposites; fundamental theory of bulk and low-dimensional materials, applied superconductivity, superconducting devices and quantum computing elements; chemical vapor deposition for nanostructured materials; and materials characterization under novel and extreme conditions.

Supporting the FSU research areas described in the Table in Section II.C are several strong research centers at FSU with which MS&E faculty members are associated. These include the National High Magnetic Field Laboratory (NHMFL), the Applied Superconductivity Center (ASC), the recently formed Analysis and Fabrication Facility in Physics under the direction of Condensed Matter and Materials Physics (CMMP), the Center for Advanced Power Systems (CAPS), the High-Performance Materials Institute (HPMI), the Florida Center for Aeropropulsion, Mechatronics and Energy (AME), and the Institute of Molecular Biophysics (IMB). These Centers and Institutes, which are all unique to FSU, actively support materials research at FSU. In addition to the facilities provided by these Centers and Institutes, several recent academic and organizational changes have defined the central role of materials at FSU and have provided a natural slate of classroom courses to educate Ph.D. students. For example, the Department of Chemistry and Biochemistry has recently established a degree in Materials Chemistry. The Department of Physics recently formed the Condensed Matter and Materials Physics group. The recently-formed Department of Computational Sciences offers a degree track in Computational Materials Science.

Over half (14) of the MS&E faculty members listed in the proposal are associated with FSU's National High Magnetic Field Laboratory (NHMFL). They do basic and applied research on magnetic materials or on materials that require the very high magnetic fields or specialized magnetic characterization capabilities available at NHMFL. The NSF-funded NHMFL is the only high-magnetic field laboratory in the US and is only one of a handful in the world. The NHMFL has branch laboratories at UF and Los Alamos

National Laboratory (LANL). The facilities at UF are the Microkelvin Laboratory in the Physics Dept. and the outside users program in the Advanced Magnetic Resonance Imaging and Spectroscopy within the McKnight Brain Institute. FSU does not have capabilities that duplicate these UF facilities. LANL has the Pulsed Field Laboratory, which is not duplicated at FSU.

The Applied Superconductivity Center is a world leader studying superconducting materials that are used to generate very high magnetic fields, to produce and transmit electricity, and to build high-power electric motors. Before moving to FSU from the University of Wisconsin-Madison in 2006, Larbalestier and Lee had developed the materials processing used to make the Nb(Ti) superconductors at the heart of commercial, medical MRI systems.

Several of the faculty members are associated with the High-Performance Materials Institute (HPMI). It is an international leader in composite materials, particularly nanocomposites made with carbon nanotubes. The research is to understand, develop, and commercialize new multifunctional materials technologies using carbon nanotubes. HPMI works closely with industrial and DOD research laboratories.

One may be wondering why FSU wants to offer a Ph.D. in materials science and engineering if its faculty members are already doing research in materials science. The answer is simple – students. Potential Ph.D. students interested in materials science recognize that to get a well-rounded education in materials science and engineering requires an educational infrastructure in materials science and engineering, such as this MS&E program. At present, without an MS&E Ph.D. program, we cannot effectively recruit, train, and certify students whose primary interest is in materials science and engineering. Currently FSU students doing Ph.D. research on materials cannot follow a Ph.D. curriculum that emphasizes materials science and engineering. Instead they have to follow the Ph.D. curriculum of their home department. These students do not, and cannot, get the broad educational background in materials science and engineering within the curricular confines of these traditional departments needed to develop a steady stream of high-quality, MS&E Ph.D. graduates from FSU. As discussed below, more than half of the students in the current Master of Science in Materials Science program have expressed strong interest in continuing with Ph.D. studies in MS&E at FSU if the new program can be created soon. Without the MS&E Ph.D. program, these students plan to go elsewhere to pursue their Ph.D. studies.

D. Use Table 1 (A for undergraduate and B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources.
Generally undergraduate FTE will be calculated as 40 credit hours per year and graduate FTE will be calculated as 32 credit hours per year. Describe the rationale underlying enrollment projections. If, initially, students within the institution are expected to change majors to enroll in the proposed program, describe the shifts from disciplines that will likely occur.

The enrollment estimates in Table 1B are based on the enrollment history and past experience from the participating departments, as well as national statistics for MS&E compiled by the National Science Foundation[7]. As soon as the MS&E Ph.D. program is implemented, we expect students will continue on from the Master of Science in Materials Science program and a few will transfer from other graduate programs at FSU. Undergraduates presently in science or engineering departments at FSU can pursue an interdisciplinary Ph.D. program in MS&E at FSU.

7 *http://www.nsf.gov/statistics/nsf10309/content.cfm?pub_id=3996&id=8*

TABLE 1B
PROJECTED HEAD COUNT FROM POTENTIAL SOURCES
(Graduate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Individuals drawn from agencies/industries in your service area (e.g., older returning students)	0	0	0	0	0	0	0	0	0	0
Students who transfer from other graduate programs within the university**	1	0.9	2	1.8	2	1.8	2	1.8	2	1.8
Individuals who have recently graduated from preceding degree programs at this university	2	1.8	4	3.6	6	5.4	8	7.2	10	9
Individuals who graduated from preceding degree programs at other Florida public universities	0	0	1	0.9	3	2.7	5	4.5	7	6.3
Individuals who graduated from preceding degree programs at non-public Florida institutions	0	0	0	0	0	0	0	0	0	0
Additional in-state residents***	0	0	0	0	0	0	0	0	0	0
Additional out-of-state residents***	0	0	0	0	1	0.9	2	1.8	3	2.7
Additional foreign residents***	3	2.7	7	6.3	11	9.9	16	14.4	21	18.9
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**6**	**5.4**	**14**	**12.6**	**23**	**20.7**	**33**	**29.7**	**43**	**38.7**

* List projected yearly cumulative ENROLLMENTS instead of admissions
** If numbers appear in this category, they should go DOWN in later years.
*** Do not include individuals counted in any PRIOR category in a given COLUMN.

E. Indicate what steps will be taken to achieve a diverse student body in this program, and identify any minority groups that will be favorably or unfavorably impacted.
The university's Equal Opportunity Officer should read this section and then sign and date in the area below.

The MS&E faculty members will strive for diversity within MS&E by actively recruiting students from the historically-black Florida A&M University (FAMU) with undergraduate degrees in chemistry, physics, and mathematics, plus FAMU engineering students in the FAMU-FSU College of Engineering. In addition, MS&E faculty members will be encouraged to have minority students in the REU summer program work in their laboratory to get first-hand research experience on materials. REU is the Research Experience for Undergraduates program funded by the National Science Foundation and is run through the National High Magnetic Field Laboratory (NHMFL) at FSU. Admission to this program is coordinated with the NHMFL offices of the Center for Integrated Research and Diversity to select a diverse cross section of REU students following NSF Diversity Guidelines. This hands-on summer research experience is an excellent tool for recruiting minority students for graduate school.

In the FAMU-FSU College of Engineering, about 24% of the undergraduates are from FAMU, an HBCU, and over 35% of the FSU students are minority or women students. MS&E includes faculty members in all departments in the College of Engineering. These faculty members can use their class-room interaction with FAMU and FSU students to recruit minority students into MS&E.

The NHMFL has a diversity program that targets minority students for research assistant positions in the lab. Since many of the MS&E faculty members are associated with the NHMFL, MS&E will encourage its faculty members to work with the NHMFL to recruit minority students.

In addition, the association of FSU with FAMU through the joint College of Engineering provides opportunities for collaborative research between FSU and FAMU faculty members. Further, FAMU students will be able to take materials classes at FSU.

_____ _____

Equal Opportunity Officer Date

III. Budget

A. Use Table 2 to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 to show how existing Education & General funds will be shifted to support the new program in Year 1.
In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

TABLE 2
PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1						Year 5				
	Funding Source					Subtotal E&G and C&G	Funding Source				Subtotal E&G and C&G
	Reallocated Base* (E&G)	Enrollment Growth (E&G)	Other New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)		Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	
Faculty Salaries and Benefits	103,555	0	0	0	0	**$103,555**	334,985	0	0	0	**$334,985**
A & P Salaries and Benefits	0	0	0	0	0	**$0**	0	0	0	0	**$0**
USPS Salaries and Benefits	19,200	0	0	0	0	**$19,200**	19,776	0	0	0	**$19,776**
Other Personnel Services	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Assistantships & Fellowships	250,370	0	0	0	69,810	**$320,180**	706,278	0	0	1,706,608	**$2,412,886**
Library	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Expenses	17,250	0	0	0	0	**$17,250**	17,768	0	0	0	**$17,768**
Operating Capital Outlay	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Special Categories	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Total Costs	**$390,375**	**$0**	**$0**	**$0**	**$69,810**	**$460,185**	**$1,078,807**	**$0**	**$0**	**$1,706,608**	**$2,785,415**

*Identify reallocation sources in Table 3.

**Includes recurring E&G funded costs ("reallocated base," "enrollment growth," and "other new recurring") from Years 1-4 that continue into Year 5.

***Identify if non-recurring.

Faculty and Staff Summary

Total Positions (person-years)	Year 1	Year 5
Faculty	0.578	1.967
A & P	0.000	0.000
USPS	0.500	0.500

Calculated Cost per Student FTE

	Year 1	Year 5
Total E&G Funding	$390,375	$1,078,807
Annual Student FTE	5.4	38.7
E&G Cost per FTE	$72,292	$27,876

TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION & GENERAL FUNDS

Program and/or E&G account from which current funds will be reallocated during Year 1	Base before reallocation	Amount to be reallocated	Base after reallocation
058000-110 - Provost Instruction and Research	11,602,554	-295,497	11,307,057
113000-110 - Dean of Graduate School	790,320	295,497	1,085,817
Academic year faculty member salaries & fringe benefits given below - faculty will continue to be paid from their existing department			
074000-110 - Biological Science	6,214,495	-4,186	6,210,309
075000-110 - Chemistry & Biochemistry	5,117,185	-8,342	5,108,843
084000-110 - Physics	4,687,587	-14,285	4,673,302
137000-110 - Scientific Computing	1,934,985	-7,141	1,927,844
212000-110 - College of Engineering	5,285,258	-60,924	5,224,334
Totals	**$35,632,384**	**-$94,878**	**$35,537,506**

Tables 2 and 3 present information on the projected costs and existing funds, respectively. It is important to note that reallocation of faculty salaries and benefits does not change the budgets for the College of Arts and Sciences or the College of Engineering, or any departments in these colleges, since the faculty members will remain entirely in their home department and be paid by their home department.

Six full fellowships per year will be provided for first-year students through the Graduate School. These fellowships will include in-state tuition waivers for all six fellowships and out-of-state tuition waivers for 3 of the fellowships. Out-of-state tuition waivers for 2 additional first-year students will be available each year. Beginning the summer after their first academic year, the students will be supported on research grants that will pay the stipend and in-state tuition waiver. Out-of-state tuition waivers for up to 50% of the students in MS&E through graduation will be offered.

A half time office staff assistant will be provided for MS&E, as well as funds for supplies for the MS&E office, funds to recruit students, and for travel for four outside speakers per year for the Interdisciplinary Seminar Series, which is described below in Section VIII.C. The Director of MS&E will be provided with a half month of summer salary.

No new faculty members will be hired for the MS&E program. All faculty members associated with MS&E have a tenure home in a specific department, so their costs are reallocations of existing funds within their home department. The expenses associated with the faculty members are for teaching courses, being the major advisor for MS&E students in their research groups, and for committee work in MS&E.

Most of the courses that form the basis of this program already exist and have the capacity to accommodate the MS&E students. The courses are typically open to any FSU student as well as FAMU student. The exercise of sharing the distribution of students by program amply documents this with no real impact on the availability of courses.

By the end of the summer of their first academic year, each incoming student who has received fellowship support will find a research advisor who will support the student on C&G funds from that point through graduation. Students who enter without a fellowship will be supported on faculty members' C&G funds from the time they enter MS&E.

B. If other programs will be impacted by a reallocation of resources for the proposed program, identify the program and provide a justification for reallocating resources.
Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research

opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

Overall, we expect there will be little negative impact on existing programs by creating MS&E. The curriculum, save for the new Interdisciplinary Seminar Series, is built around existing courses across campus. Several of the core courses that will be used for the MS&E Ph.D. program were developed for the recently created Master of Science in Materials Science program. The new Interdisciplinary Seminar Series will be cross-listed in all the departments with participating MS&E faculty members. It will be team taught by MS&E faculty as part of their teaching assignment.

A strong positive impact from the MS&E Ph.D. program is providing a mechanism for faculty members doing materials research to recruit students who want to earn a Ph.D. in the field of materials science and engineering. Currently there are untenured MS&E faculty members who are building research programs and need graduate students that have a keen, primary interest in MS&E. There are also newly-hired senior faculty members who also need students interested in MS&E. Because there is no materials science Ph.D. program, these faculty members currently can only recruit Ph.D. students through their home departments. Students who want to pursue MS&E are not inclined to enroll in these traditional departments, where many of them earned their BS degree.

In addition the existence of the MS&E program will provide a richer experience for FAMU students who are enrolled in engineering or disciplines related to the MS&E degree by having more students to interact with and by their being able to enroll in the MS&E Interdisciplinary Seminar Series (see Section VIII). The MS&E program will also provide new opportunities for potential collaborations between FSU and FAMU faculty members that may benefit FAMU students.

C. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

We expect MS&E will have minimal impact on related programs and departments. MS&E students will attend existing courses. The curriculum is built almost entirely around exiting courses, with about 43% of the courses being in Arts and Sciences . We anticipate a steady-state matriculation of about 10 students per academic year. These students will all take the required fundamental core courses (see Section VIII for a list of all courses) together, which will add roughly 10 students per core course per year. There is currently room for the 10 additional MS&E students in all of these core courses. Each of the MS&E students will also take an elective core course plus elective specialization courses chosen from the roughly 30 courses that are offered. Thus there will be just a few MS&E students in the elective courses each year. There is room for the MS&E students in these courses. The MS&E courses that MS&E students will take make up a small fraction of the total number of courses that are taught in each department and college. Students will need to meet all prerequisite requirements for the classes they take.

D. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.).
Describe the external resources that appear to be available to support the proposed program.

External support for the Program will come in two forms. First is fellowship support for graduate students. In addition to the availability of the six university fellowships provided through the Graduate School for first-year students, the MS&E faculty members will write proposals for grants to support graduate students to the Department of Education Graduate Assistance in Areas of National Need (GAANN), Florida-Georgia Alliance for Minority Participation (FGAMP) Graduate Fellowships, NASA Graduate Student Researchers Program (GSRP), and NSF Integrative Graduate Education and Research Traineeship (IGERT). We will also work with individual students to apply for fellowships from organizations such as the National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM), NSF - Graduate Student Fellowships, the Ford Foundation Diversity Fellowships, Sloan Foundation Graduate Fellowships, and the Bill and Melinda Gates Foundation.

The second type of support is for Research Assistantships paid from faculty member's research grants. MS&E faculty members are very successful in obtaining outside research grants (more than $31M since 2005, see the table in Section IX.C) to federal and private agencies such as the National Science Foundation, Department of Defense agencies, NASA, National Institutes of Health, Department of Energy, Petroleum Institute. These winning proposals are for top-quality, cutting-edge research as identified by the scientific community in the peer review process used to evaluate proposals.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Table 1, Table 2, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

In this section, we first provide the Benefits of the Program, and then the Benchmarks we will use to gauge its success.

Benefits of the Program

Students, the University, the local community, the State, and the Nation will benefit from the program:

- It will provide a means to recruit students interested in studying MS&E and create a way to educate and train these students in a broad, interdisciplinary manner.

- It will augment the existing M.S. program in materials science allowing students to pursue a Ph.D. in MS&E.
- It will build on the sizable investments in faculty members and research infrastructure FSU has already made in MS&E.
- It will be relatively inexpensive to implement.
- It will help FSU as a whole in gaining ground on the AAU frontier.
- It will better position FSU in the area of materials science and engineering in terms of federal research grants, particularly large-scale, interdisciplinary grants.
- It will address one of the three areas of critical education need for the State: producing more engineers.
- It will significantly contribute to research, economic development and job creation in the Panhandle area.
- It will add to the Nation's technical capability by the additional research it will attract and enable, and the highly trained researchers who will graduate from the program.

Specifically the MS&E program is right on target with promoting Florida's future. Quoting from the Enterprise Florida's Roadmap to Florida's Future[1], "The Florida High Tech Corridor Council is a state best practice model with potential applicability for other regions and state transportation corridors." Florida State University is situated in the "Northwest Region" as one of the 10 Regions that comprise the Enterprise Florida Roadmap Demographics. FSU must step to the plate to provide leadership in this Region to fulfill many of the action items recommended in the Enterprise Florida Roadmap. A strong Ph.D. program in MS&E is an essential component in FSU's role in Florida's future. Priority areas listed in the Roadmap to which MS&E will respond include:

- Advanced Manufacturing – through MS&E faculty members and students being associated with High-Performance Materials Institute and Industrial and Manufacturing Engineering.
- Aviation and Aerospace – through MS&E faculty members and students being part of the Florida Center for Advanced Aeronautics and Propulsion.
- Clean Energy - by MS&E faculty members and students being exposed to seminars given by the Institute for Energy Systems, Economics and Sustainability.
- Multi-disciplinary research – by MS&E faculty members participating in interdisciplinary research efforts as seen in the existing Master of Science in Materials Science program and this new proposed Ph.D. program, and by FSU having initiated cluster hires that span several departments.
- Development of universities as "Best-in Class" – by MS&E faculty helping guide ongoing investments in research for FSU to achieve its goal of being best in class.
- Alignment with industry clusters for economic growth – by MS&E faculty members and students being associated with the High-Performance Materials Institute.
- STEM pipeline – by creating a new Ph.D. program that will graduate MS&E students with backgrounds in science and engineering. MS&E is particularly

important because the development of new materials underlies many advances in technology. It will actively recruit diversity students and women who are FSU and FAMU undergrads and mentor them through graduation.

- Expansion of academic R&D – by MS&E faculty members pursuing major research centers from NSF, DOE, DoD, and NIH in the area of materials science.
- World Class Scholars – by FSU having hired Larbalestier and Hellstrom from the University of Wisconsin-Madison.
- Centers of Excellence – by MS&E faculty members having won competitions creating the Center of Excellence in Advanced Materials within Industrial and Manufacturing Engineering and the High-Performance Materials Institute.
- Federal Facilities – by MS&E faculty members and students associating with the National High Magnetic Field Laboratory and guiding its renewal process.
- Culture of commercialization – by having students exposed to business ideas and concepts, through the Interdisciplinary Seminar Series that all of the MS&E students will take each semester. Students will be able to take Technology Entrepreneurship, and Commercialization as an elective specialization course to broaden their understanding of how to commercialize their ideas. Also, students can participate in existing and planned entrepreneurship programs at FSU such as ChemPreneur program offered by the Department of Chemistry and Biochemistry and the College of Business. With the unique entrepreneurship/commercialization training, this new Ph.D. program should generate significant impact on economic development and create jobs in Florida.
- Regional Innovation Networks – by MS&E faculty members working with the Tallahassee Economic Development Council to bring new businesses to the Florida Panhandle region.
- Retention of talent – one of the biggest problems faced in the Panhandle is the loss of recently trained graduates to other major centers of industry, academics, and technology, most of which are outside Florida, and in some cases, even outside the US. In coordination with the FSU Office of Technology Transfer, the College of Business, programs such as SBIR and STTR, existing University-Industry connections, and emerging entrepreneurial efforts sponsored by the FSU Office of Research, the new Ph.D. program will provide an effective mechanism to encourage our brightest talent to consider growing their businesses and careers locally after graduation.

Benchmarks

Specific targets and benchmarks for MS&E within the first 5 years are the following:

- Enroll 10 new students per year by year 5.
- Improve the quality of the students entering the program as shown by increasing the average GRE score of admitted students over 5 years by 50 points (based on the current 1600 point scale and using the first year enrollees as the baseline)
- Have active participation from all MS&E faculty members as shown by faculty members (1) supporting MS&E students from their research grants, (2)

participating in MS&E functions such as attending faculty meetings, serving on supervisory committees, and participating in the qualifier exam, (3) teaching and speaking at the Interdisciplinary Seminar Series, (4) teaching core and elective specialization courses, and (5) helping recruit new students.

- MS&E faculty members obtaining multi-investigator center funding from federal agencies for funding in materials science.
- MS&E faculty members obtaining block grants to support and train graduate students, such as the NSF-IGERT and the Dept. of Education GAANN. An IGERT will be submitted in year 2 of the program.
- Implement graduate training programs with major Department of Energy labs such as the "shared graduate student training concept" now under discussion between Oak Ridge National Laboratory and Florida State University.
- Attract students who work with faculty members across campus in rough proportion to faculty member participation in each college by the end of year 4.

FSU Review of the program

In the seventh year after MS&E is implemented and every 7 years thereafter, MS&E will be reviewed as part of the Quality Enhancement Review, as well as by a committee made up of members of the FSU Graduate Policy Committee. Continuation of MS&E will be contingent on recommendations stemming from these reviews and provided to the office of Academic Affairs.

V. Access and Articulation – Bachelor's Degrees Only

Not applicable.

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan.

The goals of MS&E address the State of Florida's needs and embody the Mission of Florida State University to "…preserve, expand, and disseminate knowledge in the sciences, technology…"[8].

Within the SUS Strategic Plan, FSU's distinctive institutional mission[9] is as a "...graduate research university that puts research into action for the benefit of our students and society." It recognizes that the "…notable research faculty provide a range of

8 *http://president.fsu.edu/plan/strategicPlan_Nov2009.pdf*
9 *http://www.flbog.org/about/_doc/strategicplan/StrategicPlan_05-13.pdf*

interdisciplinary offers that transcend the traditional disciplines, including … Materials Science…". And it notes that FSU "…provides world class opportunities for graduate … students to: …work with faculty to forge new relationships among professions, including … the physical sciences and engineering…".

Florida has a strong national presence in key economic sectors including aerospace, defense, marine and space, and a growing presence in the medical device industry. These industries are dependent on materials science and engineering. Florida's current leadership in some of these economic sectors is slipping. Companies in Florida as well as other states are facing unprecedented challenges and are aggressively developing their own capabilities. In addition, Florida is behind many states in some key emerging economic sectors such as nanotechnologies. Florida has recognized the need to foster engineering education and research. Recently, Florida identified engineering as one of the areas where critical education needs exist (education and nursing are the other two areas). To bolster the economy, Florida needs an increasing number of well-trained engineers in emerging fields, including materials science and engineering. The MS&E Ph.D. program will produce the graduates in this emerging field to meet the demand.

In keeping with its mission of excellent graduate education and its role as a comprehensive graduate-research university, FSU inaugurated the Pathway of Excellence Initiative in 2006, which leverages the University's unique strengths with significant new investments in research and graduate education through academic clusters, new facilities and new graduate programs. Recognizing the importance of materials education and research, FSU funded two cluster hiring initiatives in Advanced Materials and in Integrative NanoSciences. Establishing the MS&E Ph.D. program is a major component in this cluster program.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

MS&E is an essential element to a number of existing and growing institutional strengths in materials research at FSU. Over the past 5 years, FSU and the State of Florida have made significant investments in materials research and education; the MS&E Ph.D. program is an integral component of the success of these initiatives. New and existing programs include:

- Applied Superconductivity Center (ASC). FSU invested ~$4M to recruit and relocate ASC from the University of Wisconsin-Madison to FSU. This included two tenured faculty members (Larbalestier, a member of the National Academy of Engineering, and Hellstrom) and a number of senior Scholar/Scientist researchers. Both of the faculty members were in the Department of Materials Science and Engineering and in the interdisciplinary Materials Science Program at the University of Wisconsin-Madison and thus bring important experience and insight to develop and run MS&E. They also bring with them a longstanding track record in graduate education in materials science and engineering.

The State of Florida selected Larbalestier and Hellstrom as 21st Century Scholars representing a significant investment in materials research and education at FSU. Only 16 faculty members were selected as 21st Century Scholars.

- Cluster Hiring Initiative in Growth, Processing and Characterization of Advanced Materials. This FSU initiative includes six new faculty lines over several years and represents a $5.7M FSU commitment to materials research and education. The promise of establishing an MS&E Ph.D. program was an element to recruit world-class faculty to fill these new positions and is needed to recruit graduate students to work with them. The Cluster faculty will play a significant role in MS&E. The Cluster has hired four of the six faculty members:). Englander (ME), T. Siegrist (CBE), M. Warusawithana (Physics), and M. Zhang (IME). All of these new faculty members will benefit from having access to MS&E students.

- Cluster Hiring Initiative in the Integrative NanoScience Institute (INSI), which is building a program in the emerging area of bio-nanoscience. The program is at the interface of materials science, device engineering, synthetic chemistry, and molecular biology, blending "hard" (metals and semiconductors) and "soft" (organic and biological) materials: the science, engineering and art of tailoring and harnessing biomolecular function in nano-fabricated settings. Research is on fundamental nanoscale phenomena and processes that will be required for successful integration of hard and soft materials, and for putting such hybrid materials to practical use. Representing a broad area of bio-related devices and materials, hires to date include J. Guan (Chemical and Biomedical Engineering), Sourav Saha (Chemistry and Biochemistry) H. Mattoussi (Chemistry and Biochemistry). INSI hired S. Lenhert (Biological Science) who will benefit from having access to MS&E students due to the diverse needs of the bio-materials program he is developing.

- Related Clusters. Pathways Clusters that can provide potential synergistic relationships to the MS&E program include Clusters in Neuroscience, Biological Sciences, and Psychology.

- High-Performance Materials Institute. HPMI is a NSF Industry/University Cooperative Research Center, in partnership with the Ohio State University and the University of Wisconsin-Madison. HPMI is recognized nationally and internationally as a leader in developing cost-effective, high-performance composite materials and systems. The HPMI has a close working relationship with researchers and practitioners in local and national industries and laboratories. Currently, HPMI is focused on investigating high-performance and multifunctional nanotube-based nanocomposites. HPMI recently moved into a new Materials Research Building (2009) that was purpose built for their research on advanced composite materials.

- National High Magnetic Field Laboratory (NHMFL). The NHMFL grant is one of the biggest contracts from the NSF Division of Materials Research to a university. 14 of the faculty members involved with MS&E are associated with the NHMFL and have their graduate students work within the NHMFL using its unique magnetic capabilities to synthesize and characterize materials, carrying out theoretical and computational studies on materials, and developing new materials for high-field magnets. After MS&E is implemented, many of the graduate students who work on these projects will be in MS&E where they can get a stronger education in materials science and engineering.

- Chemistry and Biochemistry. Most of the instrumentation area in the new 168,000 sq ft chemistry building is dedicated to materials characterization, including: NMR, X-ray, XRF, mass spec, laser spectroscopy, atomic force microscopy, EPR, optical spectroscopy. The Department of Chemistry and Biochemistry has recently created a specialization area in Materials Chemistry, which offers courses and research work for students related to various aspects of the chemistry of materials. Faculty members in the materials chemistry specialization area will participate in MS&E.

- College of Engineering. All five departments in the College of Engineering are actively involved in materials research. Civil and Environmental Engineering has research in composite materials reinforced with natural fibers; an energy materials group is emerging in Electrical and Computer Engineering; Industrial and Manufacturing Engineering's High Performance Materials Institute (HPMI) is a world leader in carbon nanotube composites; and Mechanical Engineering has more materials-focused faculty and activities than any other department.

- Physics. The Department of Physics has a long history of excellent research in the areas of materials. Five faculty members are associated with MS&E. They actively pursue research projects in magnetic materials, semi-conducting materials, and nanoscience/nanotechnology.

- Scientific Computing. Scientific computing is a new department, having been established in 2008. It has a Ph.D. program with a specialization in Computational Materials Science. Being able to recruit students with a background in materials science and engineering will benefit scientific computing faculty members who do computational studies on materials.

- The Institute of Molecular Biophysics (IMB) is associated with *the Graduate Program in Molecular Biophysics* (MOB). This interdisciplinary research institute brings together biologists, chemists, mathematicians, physicists, and engineers. The structural biology and computational biophysics faculty are a sub group of MOB faculty members who reside in IMB.

- The Interdisciplinary Program in Neuroscience promotes interdisciplinary research into neural processes. It includes faculty members from biological sciences, biomedical sciences, mathematics, and psychology. Neurosciences is included because in discussions with its director, the breadth of neuroscience research includes interesting problems that MS&E students and faculty might be interested in such as biomaterials or bioengineering methods to study implanted electrode arrays.

C. Provide a narrative of the planning process leading up to submission of this proposal.
Include a chronology (table) of activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program. Planning Process

The idea for an interdisciplinary MS&E Ph.D. program originated in the discussions to create an interdisciplinary program in Materials Science. These discussions were begun in 2006 and culminated in the creation of the interdisciplinary Master of Science in Materials Science program. This was approved in 2008: the first student matriculated in 2008 and the first student graduated in 2010. The plan was to establish the M.S. degree first then follow it with the Ph.D. program. Informal planning for the Ph.D. degree started as soon as the Master of Science degree was created and the materials science faculty members began to meet about the M.S. program. The first formal discussions with the FSU administration about the Ph.D. program occurred in late 2009. The Proposal to Explore was written and approved in spring 2010. The Proposal to Implement has been written over the summer and fall of 2010.

Date	Participants	Planning Activity
Nov. 19, 09	Kirby Kemper, Nancy Marcus, Jennifer Buchanan, Ben Wang, Chuck Zhang, Jim Brooks, and Eric Hellstrom	Discussed strategy and for creating interdisciplinary Ph.D. program in MS&E based on the newly created interdisciplinary Master of Science in Materials Science.
Jan. 7, 10	Larry Abele, Kirby Kemper, Nancy Marcus, Joe Travis, Marty Chen, Chuck Zhang, Jim Brooks, and Eric Hellstrom	Discussed plans to create Ph.D. program with FSU upper administration.
Jan. 20, 10	Faculty from participating departments	Discuss plans to create Ph.D. program based on the M.S. Program in Materials Science
Jan. and Feb. 10	Jim Brooks, Eric Hellstrom, and Chuck Zhang	Drafted Proposal to Explore and got approval from 9 dept. chairs and two deans
Feb. 22, 10	Marty Chen, Bruce Locke, Eric Hellstrom plus FSU Graduate Planning Committee	Presented Proposal to Explore to GPC. It was approved.
Mar. 15, 10	Nancy Marcus and Eric Hellstrom	Discussed broad issues about funding the program and how to make sure the Ph.D. program was truly interdisciplinary
Apr. 23, 10	Faculty from participating departments	Discussed curriculum issues.
July 9, 10	Nancy Marcus and Eric Hellstrom	Discussed specific issues for funding graduate students in year 1 and beyond
July and Aug. 10	Nancy Marcus and several department chairs	Discuss issues that individual departments have with funding graduate students.
June – Sept. 10	Jim Brooks, Eric Hellstrom, Chuck Zhang	Draft the Proposal to Implement
Sept. 13, 10	Nancy Marcus and MS&E faculty	Discuss the interdisciplinary nature of MS&E and funding options
Sept. 21, 10	MS&E faculty	Discuss core curriculum
Oct. 20, 10	Nancy Marcus, Kirby Kemper, Jim Brooks, Eric Hellstrom, Chuck Zhang	Discuss administrative structure of MS&E
Dec. 14, 10	6 FSU faculty members met with 10 UF faculty members	Retreat at UF to discuss this proposal, review research areas, and look for possible areas to collaborate
Dec. 2011 and Jan. 2010	Hellstrom, UCF and FIU MS&E directors	Discussed research strengths and unique programs at UF and FSU, and potential collaborations
Jan. 3, 11	Deans, Dept. Chairs, Jim Brooks, and Eric Hellstrom	Discuss important issues for the proposal to satisfy wide range of academic stakeholders
Jan. 24. 2011	FSU Graduate Planning Committee	Proposal approved by FSU Graduate Planning Committee
Mar. 4, 2011	FSU Board of Trustees	Approved by FSU Board of Trustees

Events Leading to Implementation

Date	Implementation Activity
June 2011	Draft MOU between participating departments, colleges, and the Grad School. This will be based on the MOU for MS Program in Materials Science.
Aug. 2011	Approve MOU by participating departments, colleges, and the Grad School
Aug. 2011	Create administrative codes for the program within FSU. These codes already exist for the MS Program in Materials Science, so the protocol for doing this is known.
Fall 2011	Start MS&E Ph.D. program with students who have earned an MS degree in FSU's Master of Science in Materials Science. Already have students from the MS Program in Materials Science who will be on hold waiting for the Ph.D. program to start.

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit.
List all recommendations and summarize the institution's progress in implementing the recommendations.

N/A

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program.
If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

The specific learning outcomes are:

(1) Ability to demonstrate a thorough knowledge of materials science and engineering: Students graduating with a Ph.D. in materials science and engineering must demonstrate an understanding of a range of topics in materials science and engineering and must also demonstrate the ability to carry out meaningful, independent research.

Assessment Plan: This learning outcome will be assessed by the student performance in the core courses with a written exam, an oral presentation of the research topic with an oral examination (prospectus) of the elective specialization courses and the final oral defense of the dissertation. The evaluation will be based on the following measurements: (1) at least 75% of all students in MS&E will pass the written qualifying exam covering the core courses; (2) at least 80% of the students who pass the qualifying exam will pass their oral

prospectus; and (3) at least 80% of the students who pass their prospectus will pass their dissertation defense.

(2) Ability to Communicate in a Professional Setting: Students graduating with a Ph.D. in MS&E will be able to demonstrate technical communication skills at an appropriate level.

Assessment Plan: This learning outcome will be assessed by the student performance by participation in the ISS (Interdisciplinary Seminar Series), in the dissertation defense, publications, and oral presentations. The evaluation will be based on the following measurements: (1) at least 80% of the students in the program will pass their prospectus exam; (2) at least 80% of the students who pass their prospectus exam will pass their dissertation defense; (3) at least 80% of the students who pass their prospectus exam will complete a paper and submit it to a journal or a technical conference before graduating; and (4) at least 80% of the students will have given an oral presentation of their research in a public forum other than their dissertation defense.

B. Describe the admission standards and graduation requirements for the program.

MS&E will follow FSU's admission standards and adds some additional requirements. These are:

FSU requirements

- An earned bachelor's degree from a regionally accredited U.S. institution, or a comparable degree from an international institution, with a minimum 3.0 (on a 4.0 scale) grade point average (GPA) in all work attempted while registered as an upper-division undergraduate student working towards a bachelor's degree; or
- A graduate degree from a regionally accredited U.S. institution, or a comparable degree from an international institution;
- Test scores from a nationally standardized graduate admission test which is acceptable for the program to which the applicant is applying.
- International students whose first language is not English are required to take the TOEFL exam and to have a minimum score of 80 on the Internet-based examination.
- Three (3) letters of recommendation

MS&E specific requirements

- Undergraduate or graduate degree in a STEM field.
- Have a minimum combined score of 1100 on the verbal and quantitative GRE exam.
- A statement of professional goals
- The student's application materials will be reviewed by an MS&E admissions committee composed of faculty members from participating departments.

Admissions process

Students will apply to the MS&E program through the FSU Graduate School Admissions Portal. Each applicant will be evaluated by the admissions committee, which will be made up of MS&E faculty members with tenure homes covering all the departments across campus. This committee will decide whether to admit each student and will also evaluate each student for one of the first-year fellowships.

Graduation Criteria for the Ph.D. in MS&E

All students must pass all of the required coursework (27 credit hours of graded course work) with a minimum 3.0 GPA. In addition to meeting the university requirement to maintain an overall GPA of 3.0 or above, MS&E students need to achieve a grade of "B" or better in each core course. Students not achieving a "B" must either retake the course or take another core course in a different topic area that will be selected by MS&E in consultation with the instructor of the core course in which the student did not achieve at least a "B."

All MS&E students must take a written qualifying exam. This will be based on the required core courses.

All MS&E student must write, present, and defend a prospectus on their proposed research. As part of the oral prospectus presentation and defense, the research committee will evaluate the student's mastery of the breadth of materials science based on oral questions covering the topics in the student's elective specialization courses.

A dissertation is required, which must be an original work and will serve in part to demonstrate the student's ability to carry out research. On completion, the dissertation will be defended orally in front of the dissertation committee.

Dissertation Advisor and Supervisory Committee

The student will choose a major professor (dissertation advisor) from the MS&E faculty by the end of his/her second semester. The Ph.D. supervisory committee consists of a minimum of five faculty members with Ph.D. directive status. The major professor is the chair of the supervisory committee and must be an MS&E faculty member. The student and the major professor will select the supervisory committee. A maximum of 2 members of the supervisory committee can be from the advisor's department, a maximum of 3 can be from the advisor's college, and the committee must have members from at least 3 different departments. In addition at least 4 of the 5 committee members must be from MS&E. Additional members may be appointed to the committee if deemed desirable by the major professor. The supervisory committee must be selected by the end of the semester in which the student passes the Ph.D. qualifying exam covering the core courses.

FSU faculty members who participate in the MS&E Ph.D. program must be approved for graduate faculty status in MS&E. The university representative on the committee will be a faculty member who does not have graduate faculty status in MS&E.

After passing the qualifying exam, and following existing Graduate School policy, the student will submit a summary of his/her research results and plans for ongoing research in August of each year and will discuss this in a meeting with all of his/her supervisory committee in September of each year. The committee will write a short evaluation of the student's progress. This evaluation procedure is done yearly until the student graduates.

Ph.D. Qualifying Examination

The Ph.D. qualifying exam will be a written examination based on the content of the four core courses completed by the candidate. It will be taken after the first year. Students have two chances to pass the qualifying exam.

Preliminary Examination and Prospectus

After passing the Ph.D. qualifying exam and finishing all the elective specialization courses, the student will prepare a prospectus. This is a written document that includes preliminary research results and a plan and timeline to complete the research. The student will submit the written prospectus to his/her supervisory committee and will also present the prospectus orally. During the oral prospectus presentation, the student will have oral questions from the supervisory committee based on the student's elective specialization courses to gauge the student's understanding of the breadth and depth of materials science. This oral examination and presentation of the prospectus will constitute the preliminary examination.

Ph.D. Dissertation Defense

Upon satisfactorily completing the preliminary examination and prospectus, the student will finish his/her research and then prepare a written document for his/her dissertation and defend the dissertation orally.

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements.
Identify the total numbers of semester credit hours for the degree.

Students entering the program with a B.S. degree (or equivalent) will be required to a take a minimum of 54 credits including at least 27 credits of letter-graded courses and at least 24 credits of dissertation research. Students will also take the Interdisciplinary Seminar Series (0 credits) the entire time they are in MS&E. The letter-graded credits are described below.

27 credits (minimum) of letter-graded courses

- 4 core courses (minimum 12 credits).
  - Fundamental Core Courses: - Three required
  - Elective Core Courses: - One required
- 5 elective, specialization courses (minimum 15 credits)

24 credits (minimum) of dissertation research

Fundamental Core Courses – All three courses are required.

Survey of materials. – This topic includes an introduction to advanced materials, biomaterials, nanomaterials, and/or topics in materials chemistry, and is covered in several existing courses in mechanical engineering in chemistry and biochemistry, and in biological science. Incoming MS&E students will have a wide variety of backgrounds. The survey course provides fundamental understanding about materials these students need for the other MS&E courses. This topic area can be taught by faculty members in Chemical Engineering, Chemistry, and Mechanical Engineering.

- *Topics in Materials Chemistry I*: Introduction to materials chemistry, focusing on the structure, properties, and functions of metals and alloys, glasses and ceramics, semiconductors and nanomaterials. This course is intended for graduate students involved in materials research (CHM 5715)

Thermodynamics and kinetics. – This topic concerns the fundamental properties of thermodynamics, and the kinetics of the transformation of materials. Existing courses in chemical and biomedical engineering cover these topics. This topic area can be taught by faculty members in Chemical Engineering, Chemistry, Industrial Engineering, Mechanical Engineering, and Physics.

- *Materials Thermodynamics and Kinetics:* The course offers students the foundation of thermodynamics and kinetics applied to materials research (ECH 5934)
-

Solid state science for materials scientists/engineers. - This topic covers the essential areas of structural, thermal, electronic, and magnetic properties of materials, including superconducting, magnetic, semiconducting, and ferroelectric materials of strong current technological interest. The essential theoretical background for materials properties will be provided in the course. This topic area can be taught by faculty members in Chemical Engineering, Electrical Engineering, and Physics.

- Presently, this course is entitled *Materials and Measurement*. It was created by Physics and is being taught as one of the MS core courses. For the Ph.D. program, the emphasis of the syllabus will be more focused on the underlying physics of materials. Measurements will be treated in a separate course in the Characterization of Materials elective. (PHY 6937)

Elective Core courses - Students select one course from the following list

Survey of synthesis and processing. - This topic address the synthesis of materials in bulk, thin film, amorphous, single crystals; morphologies and their transformation into structures for measurement; applications in technology and commercialization. Existing courses in industrial engineering and chemical engineering cover these topics, and new courses in physics and mechanical engineering will be considered as the program develops. This topic area can be taught by faculty members in Chemical Engineering, Chemistry, Industrial Engineering, Mechanical Engineering, and Physics.

- *Synthesis and Processing of Advanced Materials:* This course provides a basic understanding and up-to-date knowledge on the material structures and design, synthesis methods, and processing technologies of various advanced materials. A broad range of materials from inorganic ceramics and metal oxides to organic soft matters is covered with emphasis on processing/structure/property/function relationship of a number of advanced materials mainly for structural, electrical and electronic, and optical applications. (EIN 5930)

Computational methods for materials. - This topic is central to the theory, modeling, computation, and understanding of materials formation and materials properties. This topic area can be taught by faculty members in Chemical Engineering, Mechanical Engineering, Physics, and Scientific Computing.

- *Molecular Dynamics: Algorithms and Applications*: This course provides a comprehensive introduction to molecular dynamics simulation algorithms and their corresponding applications in molecular science.(ISC 5225)
- *Multiscale Modeling of Materials:* This course covers mathematical and algorithmic basis for atomic scale, mesoscale and continuum scale modeling approaches in material sciences. Emphasis is on the atomic-to-continuum connection, statistical approaches and homogenization problems in continuum modeling of heterogeneous materials. (ISC 5229)

Characterization of materials. - This topic covers materials measurement, including optical, physical, electronic, magnetic, resonant, and scattering methods, and microstructural probes. This topic area can be taught by faculty members in Chemical Engineering, Chemistry, Mechanical Engineering, and Physics.

- *Characterization of Materials I:* Characterization of solid state materials by optical and electron microscopy, X-ray, electron, and neutron diffraction methods, and transport and magnetic measurements. The course covers fundamental principles and practical aspects of measurements used in materials research. (CHM 5716)
- *Characterization of Materials II:* Polymer and small molecule characterization using NMR and other physical and spectroscopic techniques. The class is

comprised of lectures and a practical component performed at an instrument germane to the specific section of the course. (CHM 5717)

Interdisciplinary Seminar Series - taken every semester the student is in MS&E (0 credits)

- This seminar-type course will be offered by MS&E faculty to provide students with an opportunity to obtain information on advances in materials research though presentations from visiting scientists and from MS&E faculty. Students will learn and practice presentation skills in this seminar. In addition to technical topics, this seminar series will also have talks on business related topics to help prepare the students to take leadership roles as they move from the university setting to industry and society. The ISS will serve as a forum for MS&E faculty members who wish to recruit MS&E students, and hence some seminar periods will be set aside to allow multiple faculty members to make short presentations advertising their research programs. This new, interdisciplinary course will be cross-listed by all departments with MS&E faculty members.

This core curriculum is built on existing courses at FSU, which are available to FAMU students. Topic areas and course content will be regularly reviewed. Changes in the selection of courses that meet the core-course requirements will be made when necessary to insure the MS&E program is responsive to the changing needs of the students, the particular talents and interests of the faculty members, and changes in the field.

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

Suggested course sequence a student entering MS&E will take. The sequence also shows when other actions, such as selecting an advisor and taking required exams need to be done.

Semester - 1	**Semester – 2**
2 Required Core courses 1 Elective Specialization course ISS graduate seminar	1 Required Core course 1 Elective Core course 1 Elective Specialization course ISS graduate seminar *Choose research advisor by end of semester*
Semester - 3	**Semester – 4**
2 Elective Specialization courses ISS graduate seminar Research *Take Ph.D. preliminary exam during semester*	1 Elective Specialization course Research ISS graduate seminar
Semester – 5	**Semester – 6**
ISS graduate seminar Research *Prepare and defend prospectus*	ISS graduate seminar Research
Semester – 7	**Semester – 8**
ISS graduate seminar Research	ISS graduate seminar Research
Semester – 9	**Semester – 10**
ISS graduate seminar Research	ISS graduate seminar Research *Defend Ph.D. dissertation*

E. Provide a one- or two-sentence description of each required or elective course.

The required and elective core courses plus the Interdisciplinary Seminar Series were described above in Section VIII.C. The elective specialization courses are briefly described below. Elective courses may be added or removed by the Curriculum Committee.

- *Technology Entrepreneurship and Commercialization.* This course provides students with a hands-on educational experience proposing and analyzing technology-based ideas for development as a product and introducing the product into the market. (Currently offered as a directed independent study (DIS) course through each student's home department.)
- *Composite Materials Engineering.* This course offers students fundamental knowledge of constitutional materials, interface, fabrication and basic mechanical behaviors of composite materials. (EMA 5182)

- *Advanced Composite Engineering Topics.* A survey course on advanced composite topics, including fabrication process modeling and simulation, high temperature resins and composites, fiber preform and liquid composite molding (LCM), electrical and EMI shielding properties of composite materials. (EIN 5930)
- *Introduction to Micro- and Nanoscale Science and Engineering.* Introduction to nanoscale materials processing and properties, quantum mechanics of nanoscale materials, statistical mechanics and thermodynamics of finite systems, self-assembly and morphological growth in nanoscale systems, pattern formation at the nanoscale, and nanoscale mechanics. (EML 5930).
- *Experimental Methods in Nanoscale Science and Engineering.* Introduction experimental methods used to fabricate nanoscale materials. Course includes lab section fabricating nanoscale systems. (EML 5930).
- *Introduction to Advanced Materials*: The course provides the fundamentals of the science and practical uses of materials. (EML 5930)
- *Topics in Materials Chemistry II:* Introduction to materials chemistry, focusing on the structure, properties, and functions of polymers, organic and soft materials, and bio-inspired materials. This course is intended for graduate students involved in materials research. (CHM 5718)
- *Survey of Physical Chemistry.* An intense survey of physical chemistry covering the areas of thermodynamics, statistical mechanics, quantum mechanics, and chemical kinetics. The course emphasizes the application of mathematical methods in treating physical quantities. (CHM 5530).
- *Physical Methods.* This course offers description and applications of physical methods of molecular characterization. (CHM 5681).
- *Physical and Chemical Kinetics.* Comprehensive reaction kinetics and dynamics, phenomenological rate laws, mechanisms, diffusion-control and activation-controlled reactions and experimental and numerical techniques for kinetic studies. (CHM 5440).
- *Polymer Science and Engineering.* The course offers graduates fundamental concepts and structure-property relationships of polymeric materials. (ECH 5828)
- *Biomaterials and Biopolymers.* The course offers graduates an introduction to naturally occurring and synthetic biomaterials and biopolymers. Their structure, synthetic paths, properties and uses will be covered. (BME 5105)
- *Colloidal Engineering.* This course offers graduates thorough understanding of the primary forces acting between particles, colloidal stability, methods of characterizing particles and suspension mechanics. (ECH 5934)
- *Polymer Processing.* This course offers graduates a basic understanding of the major techniques used for processing thermoplastics, thermosets and polymeric solutions. (ECH 5937)
- *Polymer Characterization I &II.* This course describes synthesis and chemical mechanisms of polymerization reactions (Part I) and the theoretical basis of major methods of characterization of polymers in solution and the solid state (Part II).

Included are spectroscopic methods, molecular mass determination, surface studies and mechanical properties. (CHM 5454).

- *Chemical and Physical Characterization of Biopolymers*. Course covers biopolymer types and conformations; solution properties of biopolymers; macromolecular equilibria; hydrodynamic behavior; determination of size and shape; biopolymer separations; introduction to biological spectroscopy. (BCH 5745).
- *Polymeric Materials Manufacturing and Processing.* Introduction to fundamentals of polymeric materials processing including polymerization and rheology, and manufacturing processes including extrusion, injection molding and liquid composite molding. (EIN 5930)
- *Applied Superconductivity.* This course offers students an introduction to superconductivity, superconducting materials, and the technology challenges related to their processing and application. (EML 5072)
- *Electronic Materials and Devices.* A survey course on advanced conductive and semiconductor materials. (ECE 5930)
- *Materials for Energy Systems.* Introduction to several classes of Materials that are used in systems that produce, store or transfer energy. It concentrates on three main areas in which energy is transformed to useful sources: solar to chemical energy by photocatalysis, nuclear to electric energy by controlled nuclear reactions, and chemical to electrical energy in solid oxide fuel cells. (EML 5930)
- *Condensed Matter Physics I.* Crystal structure phonons, electron in metals, semiconductors, magnetism, ferroelectrics, and liquid crystals. (PHZ 5491)
- *Condensed Matter Physics II.* Elementary excitations in solids, the many-body problem, quantum fluids and superconductivity, magnetism, dielectrics, collective effects in fluids. (PHZ 5492)
- *Techniques in Experimental Physics*. The course is designed for students to become acquainted with modern techniques in experimental physics, learn lab skills, and understand the limiting factors of an experiment and how the results can be improved by using an optimal design. Modern trends in nanoscience and quantum experimental physics will be emphasized in this course. (PHY 5846C)
- *Electrochemistry.* Instrumentation and techniques in electrochemistry, including such topics as electrode processes, potentiometry, voltammertry, and coulometry. (CHM 5153).
- *Electrochemical Engineering.* This course offers graduates basic principles of electrochemical properties of materials and major and specialty applications. (ECH 5937)
- *Multiscale Modeling of Materials*. Prerequisites: basic knowledge of atomic structure of materials, mechanics, and graduate level knowledge in engineering mathematics and/or mathematical physics. This course emphasizes the use of mathematical and computational techniques to solve problems of materials structure and properties. The computational algorithms used in each of these areas will also be emphasized. Concrete examples will be used to explain the basic ideas, and the students will pursue projects in which they apply the concepts discussed in the lectures. (ISC 5935)

- *Applied Computational Science I*. This course provides students with high-performance computational tools necessary to investigate problems arising in science and engineering, with an emphasis on combining them to accomplish more complex tasks. A combination of course work and lab work provides the proper blend of theory and practice with problems culled from the applied sciences. Topics include numerical solutions to ODEs and PDEs, data handling, interpolation and approximation, and visualization. (ISC 5315)
- *Applied Computational Science II*. This course provides students with high-performance computational tools necessary to investigate problems arising in science and engineering, with an emphasis on combining them to accomplish more complex tasks. A combination of course work and lab work provides the proper blend of theory and practice with problems culled from the applied sciences. Topics include mesh generation, stochastic methods, basic parallel algorithms and programming, numerical optimization, and nonlinear solvers. (ISC 5316)
- *Theory of Elasticity.* The course offers upper division undergraduate and entry-level graduate foundation of advanced mechanics of materials. (EGM 5653)
- *Continuum Mechanics.* This course offers student fundamentals of continuum mechanics. (EML 5611)
- *Engineering Data Analysis.* Analysis of experimental and observational data from engineering systems. Focus on empirical model building using observational data for characterization, estimation, inference and prediction. (ESI 5417)
- *Applied Optimization.* The course offers student fundamental of Heuristic Optimization and its applications in engineering design, production and materials research. (ESI 5408)
- *Mechanical Metallurgy*. This course offers students fundamentals of metallurgy. (EMA 5226)
- *Physical and Chemical Kinetics.* Comprehensive reaction kinetics and dynamics, phenomenological rate laws, mechanisms, diffusion-control and activation-controlled reactions and experimental and numerical techniques for kinetic studies. (CHM 5440)

F. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and identify if any industry advisory council exists to provide input for curriculum development and student assessment.

The Ph.D. in MS&E is a research-oriented degree. The graduate students will be supported on faculty members' research grants, which are typically funded by a federal agency or industry. The federal grants are won in competitive grant procedure where the MS&E faculty member writes a winning proposal that addresses a significant research question in a cutting edge research area. Industry funds significant, cutting-edge research in areas that are important to the industry. Thus the MS&E students will do research on topics the scientific and technical community believes are important, relevant, and timely.

G. For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program.
Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.

N/A

H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program.
Are the programs accredited? If not, why?

Materials Science and Engineering is accredited at the undergraduate level by ABET (Accreditation Board for Engineering and Technology). There is no agency or society that accredits the M.S. degree in Materials Science and Engineering.

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.

The MS&E courses will be delivered on campus using traditional delivery methods.

IX. Faculty Participation

A. Use Table 4 to identify existing and anticipated ranked (not visiting or adjunct) faculty who will participate in the proposed program through Year 5.
Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).

TABLE 4 (page 1 of 3)
ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Person and department	Rank	Contract Status	Initial Date for Participation in Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5
A	Alamo, Rufina; PhD Chemical and Biomedical Eng.	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Andrei, Petru; PhD Electrical and Computer Eng.	Assoc. Prof.	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Brooks, James; PhD Physics	Professor	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Chiorescu, Irinel; PhD Physics	Asst. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Collier, John; PhD Chemical and Biomedical Eng.	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	El-Azab, Anter; PhD Scientific Computing	Professor	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Englander, Ongi; PhD Mechanical Engineering	Asst. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Hellstrom, Eric; PhD Mechanical Engineering	Professor	Tenure	Fall 2011	9	0.75	9.00%	0.068	9	0.75	15.00%	0.113
A	Larbalestier, David PhD Mechanical Engineering	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Latturner, Susan; PhD Chemistry and Biochemistry	Assoc. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Lenhert, Steve; PhD Biological Sciences	Asst. Prof.	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Liang, Richard PhD Industrial and Manufact. Eng.	Professor	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083

TABLE 4 (page 2 of 3)
ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Person and department	Rank	Contract Status	Initial Date for Participation in Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5
A	Liu, Tao (Ted); PhD Industrial and Manufact. Eng.	Asst. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Oates, William; PhD Mechanical Engineering	Asst. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Rikvold, Per Arne; PhD Physics	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Shanbhag, Sachin; PhD Scientific Computing	Asst. Prof	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Shatruk, Mykhailo; PhD Chemistry and Biochemistry	Asst. Prof.	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Siegrist, Theo; PhD Chemical and Biomed. Eng.	Professor	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Sobanjo, John; PhD Civil and Environmental Eng.	Assoc. Prof.	Tenure	Fall 2011	9	0.75	4.50%	0.034	9	0.75	11.00%	0.083
A	Strouse, Geoffrey; PhD Chemistry and Biological	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Vafek, Oskar; PhD Physics	Asst. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Wang, Hsu-Pin (Ben); PhD Industrial and Manufact. Eng.	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Warusawithana, Maitri; PhD Physics	Asst. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Zhang, Chun (Chuck); PhD Industrial and Manufact. Eng.	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Zhang, Mei; PhD Industrial and Manufact. Eng.	Assoc. Prof.	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070
A	Zheng, Jianping (Jim); PhD Electrical and Computer Eng.	Professor	Tenure	Fall 2011	9	0.75	1.91%	0.014	9	0.75	9.28%	0.070

TABLE 4 (page 3 of 3)
ANTICIPATED FACULTY PARTICIPATION

Faculty Code		Source of Funding	PY Workload by Budget Classification Year 1		Year 5
A	Existing faculty on a regular line	Current Education & General Revenue	0.578		1.967
B	New faculty to be hired on a vacant line	Current Education & General Revenue	0.000		0.000
C	New faculty to be hired on a new line	New Education & General Revenue	0.000		0.000
D	Existing faculty hired on contracts/grants	Contracts/Grants	0.000		0.000
E	New faculty to be hired on contracts/grants	Contracts/Grants	0.000		0.000
		Overall Totals for	**Year 1** **0.578**		**Year 5** **1.967**

B. Use Table 2 to display the costs and associated funding resources for existing and anticipated ranked faculty (as identified in Table 4).
Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

In Year 1, the total reallocated E&G funds for faculty salaries and benefits will be $103,555 with $94,878 being reallocated within department accounts in Arts and Sciences and within department accounts in the College of Engineering and $8677 from the Provost Instruction and Research Account. It will increase to $334,985 in Year 5 due mainly to faculty members having more MS&E students in their research groups. There will be no change in any department budget or the budgets of the College of Arts and Science or College of Engineering's due to these reallocations.

In Year 1 there are also $286,820 in reallocated E&G funds from the Provost Instruction and Research account for a half time OPS position, first year fellowships, student tuition waivers, and expenses.

No new faculty members will be hired explicitly for MS&E. MS&E faculty members will teach courses with MS&E students, will participate in running the interdisciplinary program, and will pay for and supervise MS&E students' research.

C. Provide the number of master's theses and/or doctoral dissertations directed, and the number and type of professional publications for each existing faculty member (do not include information for visiting or adjunct faculty).

The following table summarizes the graduate degree and research productivity for the faculty members who will participate in MS&E. It also contains research information used in Section IX.D.

TABLE IX.C. - M.S. and Ph.D. students, publications, and external research funding (page 1 of 4)

This table shows the number of M.S. and Ph.D. students directed and the publication record of MS&E faculty members (career totals). The information on research activities from 2005 through 2010 is used in Section IX.D. Note: contracts and grants awarded after June 2010 are not included in the table. The footnotes at the end of the table describe how the data in the column "Total $ From Grants" were determined.

Faculty Member (Dept.)	M.S. Theses	Ph.D. Dissertations	Professional Publications (in referred journals)[1]				Externally-funded research activities – 2005 through 2010[1,2]		
			Referred Journal Arts.	Proceedings	Book Chpts.	Books	No. of research contracts and grants Total (PI, CoPI)	Total $ from grants	Entities that funded the research
Rufina Alamo (CBE)	8	4	165	155	15		6 (3,3)	$1,150,000	NSF, Exxon Chemical Co, Engelhard Corp.
Petru Andrei (ECE)	0	2	25	24	4		4 (2,2)	$371,208	NSF
James Brooks (Phy)	0	6	53	18	2	1	4 (4,0)	$488,417	NSF
Irinel Chiorescu (Phy)	0	2	24	5	0	0	3 (3,0)	$526,000	Arrived in 2005: NSF, Univ. of New Orleans, Sloan Foundation
John Collier (CBE)	59	18	64	52	18	0	9 (7,2)	$1,485,968	NSF, U.S. Army Res. Off, SunGrant, Bush Brothers, EPA, Brown-Forman, USDA, DOE
Anter El-Azab (SC)	3	1	50	30	1	1	16 (16,0)	$977,038	U.S. Dept. of Energy, Univ. of Florida, Battelle Energy Alliance, LLC, Universal Technology Corporation, U.S. Army Research Office, Oak Ridge Associated Universities, Lawrence Livermore Nat'l Security, LLC, UT-Battelle, LLC
Ongi Englander (ME)			5	6			2 (1,1)	$39,975	Arrived in 2007: NSF, Proctor & Gamble
Eric Hellstrom (ME)	6	8	120	20	3		4 (1,3)	$573,119	Moved to FSU in 2007: Fermi National Lab., U. S. Department of Energy, NSF

TABLE IX.C. - M.S. and Ph.D. students, publications, and external research funding (page 2 of 4)

Faculty Member (Dept.)	M.S. Theses	Ph.D. Dissertations	Professional Publications (in referred journals)[1]				Externally-funded research activities – 2005 through 2010[1,2]		
			Referred Journal Arts.	Proceedings	Book Chpts.	Books	No. of research contracts and grants Total (PI, CoPI)	Total $ from grants	Entities that funded the research
David Larbalestier (ME)	15	33	350	~75	2	0	21 (11,10)	$4,006,685	Moved to FSU in 2006: NSF, U.S. Department of Energy, Air Force Research Lab., Alameda Applied Sciences Corporation, Fermi National Accelerator Lab., Consiglio Nazionale Delle Ricerche (CNR-, Superpower, Inc., University of Wisconsin, New Energy and Industrial Development, American Superconductor, ITER (Int'l Fusion Energy Org), Univ. of Florida, UT-Battelle, LLC
Susan Latturner (Chem)	0	5	15	0	0	0	4 (4,0)	$470,082	NSF, American Chemical Society, Oak Ridge National Lab.
Steve Lenhert (BS)	1	0	20	7	2	0	2 (1,1)	$1,315,000	Arrived in 2009: Funding was at KIT in Germany before he came to FSU
Richard Liang (IME)	21	9	40	42	3		20 (11,9)	$3,640,924	Lockheed Martin, Northrop Grumman Corporation, Transformational Technologies, Inc., National Composite Center, Spirit Aerosystems, Inc., General Dynamics Corporation, Universal Technology Corporation, U.S. Department of the Army, Air Force Office of Scientific Research, ATK Launch Systems, Inc., HX5, LLC, U.S. Army Research Lab., Georgia Aerospace Systems
Tao Liu (IME)			21	9			3 (3,0)	$316,016	Arrived in 2007: NEI Corporation (NASA), Universal Technology Corporation (Air Force Research Lab), Georgia Institute of Technology (DARPA)
Billy Oates (ME)	1	1	11	10	8		6 (3,3)	$625,000	Arrived in 2006: Space and Naval Warfare Systems Center, Proctor & Gamble, U.S. Army Research Office, Spectral Energies, LLC

TABLE IX.C. - M.S. and Ph.D. students, publications, and external research funding (page 3 of 4)

Faculty Member (Dept.)	M.S. Theses	Ph.D. Dissertations	Professional Publications (in referred journals)[1]				Externally-funded research activities – 2005 through 2010[1,2]		
			Referred Journal Arts.	Proceedings	Book Chpts.	Books	No. of research contracts and grants Total (PI, CoPI)	Total $ from grants	Entities that funded the research
Per Arne Rikvold (Phy)	0	3	37	13	2	0	5 (3,2)	$517,000	NSF, IESES
Sachin Shanbhag (SC)	0	0	29	1			4 (2,2)	$218,000	Arrived in 2006: NSF, Dept. of Energy, Petroleum Research Fund
Mike Shatruk (Chem)	0	0	26	26	1	0	2 (2,0)	$304,667	Arrived in 2007: NSF
Theo Siegrist (CBE)	0	0	197	26	1				Arrived in 2009
John Sobanjo (CEE)	6	1	7	3	0	0	4 (4,0)	$705,000	Federal Highway Administration, Florida Dept. of Transportation
Geoff Strouse (Chem)	4	17	126	20	1	0	8 (6,2)	$1,076,259	Northern Nanotech, National Institute of Biomedical Imaging, Univ. of California Santa Barbara, National Center for Research Resources, National Institute of General, NSF, ONR
Oskar Vafek (Phy)	0	0	23	0	0	0	1 (1,0)	$84,000	Arrived in 2006; NSF
Ben Wang (IME)	40	18	186	151	15	8	39 (18,21)	$7,268,454	Lockheed Martin, Georgia Aerospace Systems, Ohio State University Research, NSF, Florida Board of Governors, U.S. Army Research Lab, Simula, Inc., Boeing Company, 2Phase Technologies, Spirit Aerosystems, Inc., Siemens Westinghouse Power Corporation, TA Instruments, Air Force Office of Scientific Research, Office of Naval Research, Air Force Research Lab, ATK Launch Systems Inc., General Dynamics Corporation, Sikorsky Aircraft Corporation, Transformational Technologies Inc., Northrop Grumman Corporation
Maitri Warusawithana (Phy)			17	3	0	0			Arrived in 2009

TABLE IX.C. - M.S. and Ph.D. students, publications, and external research funding (page 4 of 4)

Faculty Member (Dept.)	M.S. Theses	Ph.D. Dissertations	Professional Publications (in referred journals)[1]				Externally-funded research activities – 2005 through 2010[1,2]		
			Referred Journal Arts.	Proceedings	Book Chpts.	Books	No. of research contracts and grants Total (PI, CoPI)	Total $ from grants	Entities that funded the research
Chuck Zhang (IME)	13	9	111	149	8		23 (12, 11)	$3,827,159	NSF, Universal Technology Corporation, Federal Highway Administration, Univ. of Florida, Transformational Technologies, Inc., Lockheed Martin, Ohio State University Research, ATK Launch Systems, Inc., General Dynamics Corporation, Office of Naval Research, Sikorsky Aircraft Corporation, Georgia Aerospace Systems, U.S. Army Research Laboratory, Spirit Aerosystems, Inc., National Composite Center, Air Force Office of Scientific Research
Mei Zhang (IME)	0	0	24	11	1	0	2 (1,1)	$99,000	Arrived in 2007: NSF, Air Force Research Lab
Jim Zheng (ECE)	10	6	92	100	1	0	9 (8,1)	$989,513	NSF, Ionova Technologies, Inc., Savannah River Nuclear Solutions, LLC, General Technical Services, Battelle Energy Alliance, LLC, BAE Systems, Bing Energy, Inc.
Total Research $								**$31,074,484**	

[1] Career total for numbers of M.S. and Ph.D. students and publications.

[2] The total dollar figures were calculated so as not to double count any dollars. The total amount is conservative as some people show smaller amounts than would ordinarily be accredited to them.

The algorithm that was used to calculate the funding is as follows.

a. Each contract and grant that spanned years before or after 2005 – 2010 was prorated to count only the fraction of money for 2005 – 2010.

b. The amount of money in each contract and grant in 2005-2010 was divided by the number of co-PIs on the grant. For multi-investigator awards, each co-PI was credited with an equal amount of money. If one of the PIs on the award was not an MS&E faculty member, the $ for that PI were not counted in the table. This leads to a conservative calculation of the total research money brought in for research on materials.

c. This table was started during summer 2010, so only contracts awarded by June 30, 2010 have been counted. Funds awarded in the second half of 2010 were not counted. This also leads to a conservative calculation of the total research money for materials.

[3] Some of the MS&E faculty members receive funding from the $26M per year from NSF that funds the NHMFL. None of this funding is counted in the table. This also leads to a conservative calculation of the total research money brought in for research on materials.

D. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service.
Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.

MS&E is a Ph.D. program with a strong emphasis on research. It is composed of faculty members with tenure homes in 9 different departments. Each of the nine departments in which MS&E faculty members have their tenure homes has been productive in teaching, research, and service. However, since this Ph.D. program is administered by the Graduate School, instead of giving statistics for each of these departments, we have taken the pertinent portion of this question to be about the external research funding awarded. This is the strongest indicator of the ability of the faculty members to support the MS&E Ph.D. program. The table for Section IX.C includes additional information listing a summary of the contracts and grants the MS&E faculty members have won over the past 5 years (2005-2010). As described in the footnotes for this table, the total amount listed on the table is conservative and does not double-count any of the funds.

Conservatively, the total research funding brought in by the MS&E faculty members over the past 5 years is more than $31M. This shows that the faculty members have productive research programs. Creating MS&E will increase the research productivity since some of the faculty members on this list are relatively new hires at FSU, including 6 NSF CAREER awardees (Chiorescu, Latturner, Oates Shanbhag, Shatruk, and Vafek) and a DARPA Young Faculty Award recipient (Oates), who all do materials science research. They are just starting their research programs and having MS&E will help them strengthen their research portfolios and output by being able to recruit students whose primary interest is studying materials science and engineering. Englander, Lenhert, and Warusawithana have submitted full proposals in fall, 2010 for Career Award to the Department of Energy.

X. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5.
Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved for all doctoral level proposals.

Students enrolled in the Ph.D. MS&E program will have access to all library resources owned or licensed by FSU. Resources related to MS&E are in the following areas: materials, materials science and engineering, physics, chemistry, mechanical engineering, industrial engineering, chemical engineering, nanoscience and nanotechnology engineering as well as bio-materials and computational science. These resources include

4,010 print books, 422 print journal titles, journal back files in print and micro forms, 4,785 eBooks, and 3,726 ejournals. Thirteen electronic databases give students access to over 6,000,000 summaries of journal articles, technical reports, and conference papers and proceedings dating from 1970 to this present time as well as more than 10,000 web site abstracts, and 80 full-text searchable handbooks, patents and standards. Excellent science databases, including Web of Science, Engineering Information Village, IEEE Explore, ACM Digital Library and SciFinder Scholar are available by remote access on the students' computers, or can be accessed at the libraries. Students and faculty members are included in the FSU IP Address Ranges for all electronic resources, and with their FSU computer account or FSU ID cards, they can access these resources through EZProxy or the Proxy Service. In addition, interlibrary loan is available through the FSU Libraries' website via the ILLiad interlibrary loan management system. For research support, students and faculty have access to chat virtual reference systems and face-to-face assistance from professional librarians and support staff located at the College of Engineering or on the main campus.

Engineering books, electronic resources, databases and journal holdings may be accessed on the FSU Libraries' website at http://www.lib.fsu.edu/. This website address gives access to resources and services available to all graduate students in the program.

FSU University Libraries, as a member of the Association of Research Libraries (ARL), is among the top academic research libraries in the nation. The libraries' holding report to ARL in 2007-2008 lists 2,844,624 volumes, 62,093 current periodicals and serials subscriptions, 300,000+ e-books, 450+ databases, and 9,109,694 in microforms. The electronic journals are available instantly via password-protected EZ-Proxy service. Article-specific linking capabilities, along with the cooperative borrowing arrangement, bring the world's literature to students or faculty members at their desktop or notebook computers.

In 2010, addition and expansion of statewide electronic journal packages are planned and the University Libraries at FSU will be a beneficiary of receiving access to additional science journal content. The new electronic packages cover all disciplines. Statewide electronic journal packages include Wiley-Blackwell, Nature, Sage and Taylor & Francis, Elsevier, Springer, Cambridge, Oxford, Univ. of Chicago, and bePress. In summary, the library volumes and serials resources are sufficient to meet the requirements of course instruction and research for the proposed program.

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5.
Include projected costs of additional library resources in Table 3.

No additional library resources are needed to implement and sustain MS&E through Y-5.

_____ _____

Library Director Date

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

The MS&E program uses existing courses that are currently taught in classrooms equipped with computers, LCD projectors, and overhead projectors. The courses will be taught in the buildings where they are normally taught, which may on the College of Engineering campus or on the FSU main campus in the biology, chemistry, physics, and scientific computing buildings. Students can ride the FSU shuttle bus to commute between COE and the main campus.

The courses with associated labs sections already have the laboratory space and equipment they need. MS&E students will have access to these laboratories when they register for the courses.

Research laboratories belonging to the individual MS&E faculty members will be available for their students' research. In addition, through the Pathways program, FSU Centers and Laboratories (see Section VI.B for a list of Centers), and the Office of the Vice-President for Research, an inter-college initiative is underway to provide a network of shared facilities for student and faculty research.

Students in MS&E will be provided with office space by their advisor's home department.

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5.
Include any projected Instruction and Research (I&R) costs of additional space in Table 2. Do not include costs for new construction because that information should be provided in response to X (J) below.

Due to the relatively small size of MS&E student body and the availability of classrooms and laboratories in participating departments, MS&E does not require additional space to implement and maintain MS&E through Year 5.

E. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

Since the curriculum is based on already existing courses, any specialized equipment needed for course instruction is already in place and no additional, new equipment is needed for instructional purposes.

In addition, no new equipment for research is needed. Over the past few years, FSU has invested heavily in equipment for research on materials. As an example we describe FSU's support of electron microscopes, which are central to research in materials science and engineering. FSU has purchased a state-of-the-art scanning electron microscope with a focused ion beam that allows one to cut into a sample where one wants to study the microstructure below the surface of the sample. FSU's latest investment is a new scanning transmission electron microscope (TEM) that can resolve individual columns of atoms. This microscope, a JEOL ARM200F, which has the highest resolution in its class, is the first of its kind in Florida and is only the second such TEM in the US.

There is an enormous amount of equipment at FSU available for MS&E students to use for their research. Since it is a very long list, we have included only a partial list of some of the larger pieces of equipment in Appendix B, which is in research centers (see Section VI.B) and also distributed over many individual faculty members' research laboratories. It will be available to MS&E students on an as-needed basis.

Further, through the Pathways program, FSU Centers and Laboratories, and the Office of the Vice-President for Research, an inter-college initiative is underway to provide a network of shared facilities for student and faculty research.

F. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5.
Include projected costs of additional equipment in Table 2.

Because faculty members in MS&E have their own research equipment and because of FSU's extensive investment in shared equipment for materials research, no additional specialized equipment is needed to implement and sustain MS&E through Year 5.

G. Describe any additional special categories of resources needed to implement the program through Year 5
(access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2.

No special categories of resources are needed to implement MS&E through Year 5.

H. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5.
Include the projected costs in Table 2.

The Graduate School will provide 6 full fellowships ($20,000 each for the academic year) plus in-state tuition waivers and up to three out-of-state tuition waivers for first year students.

It is expected that, as an ongoing policy of MS&E, the MS&E faculty members will actively seek "training grant" funds to support the new students. These include proposals to the Department of Education Graduate Assistance in Areas of National Need (GAANN), NASA Graduate Student Researchers Program (GSRP), and NSF Integrative Graduate Education and Research Traineeship (IGERT).

I. Describe currently available sites for internship and practicum experiences, if appropriate to the program.
Describe plans to seek additional sites in Years 1 through 5.

N/A

J. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list.
Table 2 includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

N/A

Appendix A –Abbreviations used in the body of the proposal

Initials	Full Name
MS&E	MS&E refers to the proposed program in materials science and engineering. Its use includes faculty members, departments, colleges, facilities, funding, and students associated with the new program.

Initials	Full Name	Initials	Full Name
AAU	Association of American Universities	IGERT	NSF - Integrative Graduate Education and Research Traineeship
ASC	Applied Superconductivity Center	IMB	Institute of Molecular Biophysics
BOG	(Florida) Board of Governors	IME	Industrial and Manufacturing Engineering
BS	Biological Science (in CAS)	INSI	Integrative NanoScience Institute
CAPS	Center for Advanced Power Sources	ME	Mechanical Engineering
CAS	College of Arts and Sciences at FSU	MIRT	NSF – Materials Interdisciplinary Research Teams
CBE	Chemical and Biomedical Engineering	MRSEC	NSF – Materials Research Science and Engineering Center
CEE	Civil and Environmental Engineering	NEMS	Nano-Electromechanical Systems
CEMRI	NSF - Centers of Excellence for Materials Research and Innovation	NHMFL	National High Magnetic Field Laboratory
Chem	Chemistry and Biochemistry (in CAS)	NIH	National Institutes of Health
COE	College of Engineering at FSU	NSEC	NSF – Nanoscale Science and Engineering Centers
DoD	Department of Defense	NSF	National Science Foundation
ECE	Electrical and Computing Engineering	Phys	Physics (in CAS)
FCAAP	Florida Center for Advanced Aeronautics and Propulsion	SBIR	Small Business Innovation Research
FGAMP	Florida-Georgia Alliance for Minority Participation	SC	Scientific Computing (in CAS)
FIU	Florida International University	STEM	Science, Technology, Engineering and Mathematics
FSU	Florida State University	STTR	Small Business Technology Transfer
GAANN	Department of Education - Graduate Assistance in Areas of National Need	SUS	(Florida) State University System
GSRP	NASA - Graduate Student Researchers Program	UCF	University of Central Florida
HPMI	High-Performance Materials Institute	UF	University of Florida

Appendix B - Partial list of equipment available for materials science research

Microscopes SEM and TEM

- Zeiss 1540EsB Field emission scanning electron microscope
- ElectroScan E3
- FEI CM300 FEG (TEM)
- FEI Nova 400
- JEOL-2011
- JEM-ARM200F

Optical Microscopy

- Zeiss LSM 510 laser scanning confocal microscope
- Titan Krios (cryo TEM); currently being installed
- Nikon Eclipse Ti inverted fluorescence microscope
- Leica DMLP polarizing microscope with fluorescence source, digital imaging and thermal stage
- Olympus Scanning laser confocal microscope
- Magneto optical imaging microscope facility
- Standard polarized and dark field light microscopes
- Low Temperature laser Scanning Microscope (LTLSM)

Magnet Systems

- Quantum design 16 T PPMS
- Quantum design 9 T PPMS
- Quantum design 5.5 T SQUID magnetometer MPMS
- Oxford 14 T dedicated VSM
- Oxford 14/16T general purpose 2 inch magnet with VTI set up for nV transport
- Oxford 15/17T general purpose 2 inch magnet set up for high current testing with 2000 A battery supply
- 1 T transverse access electromagnet
- SQUID (AC/DC) (Quantum Design MPMS 7T)
- Magneto-circular dichroism (7/8 T; RT to 2.1K)
- Quantum Design 5T MPMS SQUID magnetometer
- Lakeshore Cryotronics 7300 series vibrating sample magnetometer (VSM) with high and low temperature attachments

NMR, EPR

- 500 MHz solid state NMR
- 500 MHz wide bore imaging NMR spectrometer
- 500 MHz solid state NMR spectrometer
- Fully outfitted condensed matter NMR instrumentation to 17 T and 0.3 K
- EPR (Bruker); X-band, Q-band

X-ray Diffraction

- Powder diffractometer (Rigaku dMax Ultima 3, Mercury COD)
- Single crystal diffractometer (Bruker AXS Apex II)
- Siemens D500 powder diffractometer
- Siemens D500 powder diffract. w/ high/low/near ambient heads
- Powder X-ray w/ 10 K stage
- Rotating anode X-ray
- Single Xtal X-ray

Thermal Analysis

- DTA/TGA (Differential thermal analysis/Thermal gravimetric analysis) with mass spectrometry
- Perkin Elmer Diamond differential scanning calorimetry (DSC)
- Thermomechanical Analyzer (TA Instruments TMA 2940)

DNA Analysis

- FSU-NimbleGen microarray facility
- Applied Biosystems 3130xl genetic analyzer (DNA sequencer)
- 7500 ABI real-time OCR (gene expression analysis)

Spectrometers

- X-ray fluorescence (Oxford ED 2000)
- PHI 5100 X-ray photoelectron spectroscopy (XPS)
- Mossbauer spectrometer with magnet and cryostat
- Biorad IR spectrometer
- Infrared absorption FT-IR (Perkin Elmer Spectrum)
- Raman (Horiba JY LabRam HR800), microscope
- Absorption (Perkin Elmer Lambda 950)
- Photoluminescence/Lifetime TCSPC (JY Fluoromax 4)
- FTIR spectrometer
- Dynamic light scattering
- IXRF energy dispersive X-ray spectroscopy (EDS)
- Gaertner single wavelength (HeNe) ellipsometer (non-scanning)

Scanning Probe Microscopes

- AFM (Asylum MFP-3D)
- Environmental AFM
- Digital Instruments Dimension 3000 scanning probe microscope (SPM)
- Omicron UHV scanning probe microscope (SPM), LEED and Auger electron spectroscopy (AES)

Lithography

- Tencor Alpha-step 200 scanning profilometer
- Photolithography (including spinner, hot-plate/oven, mask aligner)
- Electron-beam lithography (JEOL 840 SEM with Raith Elphy Quantum)
- Reactive ion etcher (Southbay Technology 2000)
- Westbond ultrasonic wire bonder
- Thermal evaporators (Edwards and home-built)
- AJA UHV Sputtering system (five 2" magnetron sources, 2 DC and 2 RF power supplies, two gases)

Facilities for computation and modeling

Shared-High Performance Computing (HPC) facility: The HPC has 12 login nodes, 526 compute nodes (2688 cores), 156 TB usable storage, and Infiniband and IP communication fabrics. The system is divided into general access and owner-based components. General access consists of 812 cores and the owner-based part consists of 1876 cores. Physics owns 152 cores (11.3 TB) and the PI's group has full access.

Scientific Visualization: The general access laboratory for scientific visualization hosts five high-end visualization workstations each equipped with NVIDIA GPU video cards that are compatible with the CUDA SDK. One workstation has software and emitters for 3D visualization. All workstations have access to over 15 TB of storage. It has a high-resolution stereographic projection system to support multidisciplinary scientific visualization.

Appendix C – Support letters

FIU FLORIDA INTERNATIONAL UNIVERSITY

February 21, 2011

Dean Nancy Marcus
Graduate School
Westcott Hall
Florida State University
Tallahassee, FL 32306

Dear Dean Marcus:

At the recommendation of the Materials Science and Engineering group and the Chair of the Department of Mechanical and Materials Engineering, I am pleased to support your PhD program in Material Science and Engineering.

Researchers at Florida International University and Florida State University have discussed the Florida State University proposal for a PhD in Materials Science. From these discussions, they determined there is little overlap between the materials science research areas here at FIU and at FSU. A topic they discussed was equipment and infrastructure and the possibilities for cooperative use of the specialized equipment at the two universities. For instance FIU has an electron microprobe analyzer that is useful for materials science research, which they do not have at FSU. Likewise FSU has just purchased a new state-of-the-art transmission electron microscope for materials science research that can be used by FIU researchers.

We do not anticipate that a new PhD program in Materials Science and Engineering at FSU will negatively impact the MS&E program at FIU. Materials Science and Engineering is an important area for Florida and the nation, and the new PhD program will help satisfy the need for more people in this area.

For the above reasons, I endorse your PhD program in Materials Science and Engineering.

Sincerely,

Amir Mirmiran, PhD, PE, FASCE, FACI
Professor and Dean
College of Engineering and Computing

CC: Douglas Wartzok, Provost and Executive Vice President

OFFICE OF THE DEAN
COLLEGE OF ENGINEERING AND COMPUTING

10555 W. Flagler Street, EC 2130 Miami, FL 33174 • Tel. 305-348-2522 • Fax: 305-348-1401 • www.eng.fiu.edu

University of Central Florida

Mechanical, Materials and Aerospace Engineering

March 1, 2011

Dean Nancy Marcus
Graduate School
Florida State University
Westcott Hall
Tallahassee, FL 32306

Dear Dean Marcus,

This letter is to support the PhD program in Materials Science and Engineering (MS&E) that is being proposed by Florida State University. There have been discussions between UCF faculty in MSE and FSU about the proposal and the research thrusts in each of the programs. While there is necessarily overlap in the course offerings of both programs, the research areas at FSU including fundamental magnetism, applied superconductivity, superconducting devices, and chemical vapor deposition methods for nanostructured materials are real strengths at FSU that would be enhanced by a doctoral program in MS&E.

The discussions also included ways in which UCF and FSU can collaborate in the future. One thing that was discussed was the possibility of setting up an annual meeting of the directors of Florida's Materials Science and Engineering programs to learn what the different programs are doing and look for areas to collaborate.

We expect that this new PhD program in MS&E will not negatively impact our successful graduate student recruitment. We also think that FSU will be successful in recruiting graduate students in the areas of their unique research thrusts.

Sincerely,

Suhada Jayasuriya, Ph.D., P.E.
Distinguished Professor and Chair
Department of Mechanical, Materials and Aerospace Engineering
University of Central Florida
Orlando, FL 32816-2450
Phone: (407)-823-5792
Email: suhada.jayasuriya@ucf.edu

UF UNIVERSITY of FLORIDA

Office of the Provost
and Senior Vice President

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352-392-2404 Tel
352-392-8735 Fax

March 16, 2011

Dr. Robert Bradley, Interim Provost
Florida State University
212 Westcott Bldg
Tallahassee, FL 32306-1310

Dear Bob:

I apologize for this last-minute letter and its perfunctory nature, but this matter came to my attention only yesterday. (It would be helpful to have a uniform understanding in the SUS that these matters need to run through Provost offices for official response.)

Based on my understanding of discussions that have taken place between the relevant chairs and deans of engineering, UF has no objection to FSU's proposal to establish a Doctor of Philosophy degree in Materials Science and Engineering.

Regards,

Joseph Glover
Provost

xc: Cammy Abernathy
Dottie Minear
Richard Stevens

Florida Agricultural and Mechanical University
TALLAHASSEE, FLORIDA 32307-3200
TELEPHONE: (850) 599-3276
FAX: (850) 561-2551
OFFICE OF THE PROVOST AND
VICE PRESIDENT FOR ACADEMIC AFFAIRS

March 1, 2011

Dr. Robert Bradley
Interim Provost
Florida State University
212 Westcott
Tallahassee, FL 32306

Dear Dr. Bradley:

Thank you for sharing with me a copy of Florida State University's (FSU) proposal for a PhD in Materials Science. Former Dean Chen and Dr. Eric Hellstrom have discussed the proposal with me.

Florida A&M University (FAMU) is supportive of this proposal to establish an interdisciplinary PhD program administered by the Graduate School at FSU. The proposed degree appears to provide opportunities to students in a field that is important to the State of Florida, and to have the potential for cooperation between our two institutions that would be mutually beneficial. FAMU faculty in the joint College of Engineering may participate, as appropriate, provided that their responsibilities pertaining to FAMU are not adversely affected. We do not want the initiation of this program by FSU to preclude FAMU from initiating its own MS and PhD degree programs in Materials Science in the future in niche areas that are not duplicative of FSU's research efforts. We would appreciate FSU's expression of support of FAMU, should we seek to implement MS and PhD degrees in Materials Science in the future, and your offer to collaborate on such an endeavor, thus making efficient use of the resources at the two universities.

Sincerely,

Cynthia Hughes Harris

Cynthia Hughes Harris, PhD
Provost and Vice President for Academic Affairs

Cc Dr. John Collier, Interim Dean FAMU-FSU College of Engineering
Dr. Eric Hellstrom

Appendix D – External review of the proposal by John Wiley

WISCONSIN INSTITUTES FOR
DISCOVERY

Dr. Eric Hellstrom
2031 East Paul Dirac Drive
Tallahassee FL, 32310

February 5, 2011

Dear Dr. Hellstrom,

Enclosed is my review of the proposal for establishing a PhD program in Materials Science and Engineering at Florida State University. As you will see, I found it to be an excellent proposal in all respects. If you, or the Florida Board of Governors, have any further questions or requests for clarification, please don't hesitate to contact me.

Sincerely,

John D. Wiley, Interim Director
Wisconsin Institute for Discovery
and
Chancellor Emeritus
University of Wisconsin-Madison

Wisconsin Institute for Discovery
University of Wisconsin-Madison
302 Lathrop Hall 1050 University Avenue Madison, WI 53706-1304
Phone: 608.265.8414 Fax: 608.262.4881

EXTERNAL REVIEW OF A PROPOSAL BY FLORIDA STATE UNIVERSITY FOR THE ESTABLISHMENT OF A PHD PROGRAM IN MATERIALS SCIENCE AND ENGINEERING

John D. Wiley, Chancellor Emeritus
University of Wisconsin – Madison
February 2, 2011

I have reviewed the proposal entitled "Request to offer a new Degree Program: Doctor of Philosophy in Materials Science and Engineering at Florida State University". This review was conducted to judge compliance with the Florida Board of Governors New Degree Criteria.

This is an extremely well-conceived, timely, and well-written proposal that addresses all of the Board of Governors' criteria, and includes both qualitative and quantitative documentation that the proposal does, indeed, meet all those criteria. The inter-departmental, inter-college model being proposed has been successfully implemented at other institutions (including Wisconsin). Indeed, several of the FSU faculty have already helped to build or have participated in Materials Science PhD programs of this sort at other institutions before joining FSU. The proposal to house this program in the FSU Graduate School (as opposed to within one of the participating Colleges) is a wise one that bodes well for successful implementation.

Because of the quality and quantity of excellent materials science research at FSU, approval and implementation of this proposal would almost immediately vault FSU into the very top ranks of Materials Science and Engineering PhD programs nationally. I could argue that they are already there, but the PhDs they are awarding carry the names of the academic departments of the faculty advisors: Physics, Electrical Engineering, Chemistry, etc – not Materials Science and Engineering, even when the research is clearly materials science and engineering.

Please allow me to digress and offer some background context. Doctor of Philosophy degrees are unique among academic credentials: They are research degrees, as opposed to degrees awarded for successfully completing rigid curricula of coursework. After some relatively flexible set of graduate-level courses and some comprehensive evaluations and

examinations, PhD candidates undertake the sole essential work required for the awarding of a PhD: They conduct an original piece of research, under the approval and guidance of a thesis advisor and a thesis committee of experienced faculty, and then publish their findings. In effect, PhD candidates must answer some previously unanswered question or solve some previously unsolved problem, thereby adding significantly to the store of human knowledge, as judged by the faculty committee and the peer reviewers of their publications. In this sense, every PhD that has ever been awarded is unique. They could all be given different names: "PhD in German History from 1881-1895" or PhD in Elliptic Differential Equations." Instead, we traditionally group similar PhDs under (usually departmental) umbrella names such as PhD in History or PhD in Mathematics. What the FSU faculty are asking is that you approve moving appropriate PhDs from under the departmental umbrellas and label them more accurately and appropriately as PhDs in Materials Science and Engineering. This is more a matter of packaging and marketing than a matter of establishing an entirely new program from scratch.

In contrast, adding a new, strictly curricular degree (a baccalaureate, masters, or professional degree) generally requires significant new investments in new space, new equipment, and a whole new set of faculty. Adding a Dentistry program, or a College of Engineering, or even a department of Anthropology where one did not previously exist requires new investments in the millions or tens of millions of dollars. That's not what is being requested here, and it explains the very modest cost of the proposed new PhD in Materials Science and Engineering.

Another criterion the Board of Governors is rightly concerned about is wasteful duplication: "Are we being asked to devote new state resources to a program that already exists elsewhere?" Again, PhD programs are different, making this question almost irrelevant. FSU already has a strong materials science and engineering faculty. They simply need authority to name the degree appropriately, in a way that is recognized by potential faculty, students, and recruiters. These points are addressed in Section II.B of the proposal.

Having said that, I must also say that the FSU faculty did an exceptionally good job of surveying the other Materials Science degree

programs in Florida (UF, UCF, and FIU) and consulting with their colleagues at those institutions. FSU has unique strengths in areas of materials science not as strongly represented elsewhere, so the fit is more complementary than competitive or redundant. This should not be a controversial or contentious change at all.

I believe this is an excellent proposal that can be easily and comfortably approved by the Board of Governors. To be sure there is no uncertainty, though, I will list the Florida Board of Governors Criteria separately and address each one briefly and individually:

(a) INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

1. THE PROGRAM IS CONSISTENT WITH INSTITUTIONAL AND BOG STATE UNIVERSITY SYSTEM STRATEGIC PLAN

Yes. This case is made strongly in sections I and II of the proposal. If anything, I believe the demand projections (for Materials Science and Engineering PhDs in Florida's mix of high-tech industry) are conservative.

2. DEMONSTRATE NEED FOR PROGRAM GRADUATES, RESEARCH, OR SERVICE

Yes. Same answer as in (1), above.

3. FINANCIAL PLANNING AND RESOURCES ARE SUFFICIENT FOR IMPLEMENTATION

Yes. The faculty lines already exist, and normal turnover will provide for replacement and possible augmentation as the relevant fields evolve. The Graduate School has allocated fellowships for this program, as well as modest (but appropriate) funds for administration and oversight. The FSU materials science faculty already have a superb complement of instruments that would be the envy of most any materials science program in the country. No other campus or Florida institutions will be seriously impacted by the reallocations implied here.

4. PROJECTED BENEFIT OF THE PROGRAM TO THE UNIVERSITY, LOCAL COMMUNITY, AND STATE

Yes. The benefits to FSU, the community, and the state (indeed, the nation) are thoroughly and convincingly presented in Section IV of the proposal.

5. ACCESS AND ARTICULATION ARE MAINTAINED FOR ALL PROGRAMS

Yes. Sections a, b, and c of this criterion are tailored for baccalaureate programs, and are largely irrelevant, here. Section II.D of the proposal outlines the strong track record and future plans FSU faculty have for continuing to assure access and diversity.

(b) INSTITUTIONAL READINESS

1. INDICATION OF ABILITY TO IMPLEMENT A HIGH QUALITY PROGRAM

Yes. There is no doubt, whatsoever, that FSU has a high-quality Materials Science and Engineering program already, and is poised to take it to a new level of excellence.

2. CURRICULUM IS APPROPRIATE FOR THE DISCIPLINE AND PROGRAM LEVEL

Yes. FSU already offers an impressive array of graduate-level courses that can fill any holes in the undergraduate preparation of new graduate students and prepare all students for their comprehensive examinations prior to commencing dissertation research.

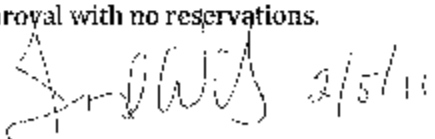
3. SUFFICIENT QUALIFIED FACULTY ARE AVAILABLE

Yes. The existing faculty, based on their records of accomplishment, range from very promising (for the relatively new faculty) to internationally recognized leaders in Materials Science and Engineering. The flexible, collaborative, inter-departmental structure being proposed for this degree program assures that the program will always be able to recruit new faculty from the participating departments, and to change the mix of faculty expertise as the field evolves. The very existence of a Materials Science and Engineering PhD program will undoubtedly help those participating departments in attracting new faculty and graduate students to FSU, so everyone "wins."

4. SUFFICIENT INSTITUTIONAL RESOURCES ARE AVAILABLE

Yes. As noted previously, this proposal requests and requires no new resources, aside from some modest reallocations already approved by the Graduate School. All other resources needed to implement a strong Materials Science and Engineering PhD program already exist and are already being used to produce Materials Science and Engineering PhD graduates under different labels.

After completing this report and re-reading it, I had the nagging feeling that I should have been able to find some areas of concern or some things to suggest for improvement. So I re-read the proposal again. I find no such things to criticize or suggest. It is a superb proposal, and I recommend approval with no reservations.



John D. Wiley
Chancellor Emeritus,
University of Wisconsin-Madison

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John D. Wiley, Chancellor Emeritus
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John D. Wiley
Chancellor Emeritus
University of Wisconsin-Madison

UF UNIVERSITY of FLORIDA

Office of the Provost
and Senior Vice President

235 Tigert Hall
PO Box 113175
Gainesville FL 32611-3175
352-392-2404 Tel
352-392-8735 Fax

March 16, 2011

Dr. Robert Bradley, Interim Provost
Florida State University
212 Westcott Bldg
Tallahassee, FL 32306-1310

Dear Bob:

I apologize for this last-minute letter and its perfunctory nature, but this matter came to my attention only yesterday. (It would be helpful to have a uniform understanding in the SUS that these matters need to run through Provost offices for official response.)

Based on my understanding of discussions that have taken place between the relevant chairs and deans of engineering, UF has no objection to FSU's proposal to establish a Doctor of Philosophy degree in Materials Science and Engineering.

Regards,

Joseph Glover
Provost

xc: Cammy Abernathy
Dottie Minear
Richard Stevens

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
June 9, 2011

SUBJECT: Ph.D. in Security Studies (CIP 45.0902) at University of Central Florida

PROPOSED COMMITTEE ACTION

Consider approval of the Doctor of Philosophy (Ph.D.) in Security Studies at the University of Central Florida, CIP Code 45.0902.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Section 7(d), Art. IX, Florida Constitution
Board of Governors Regulation 8.011

BACKGROUND INFORMATION

The University of Central Florida (UCF) is proposing to offer a Ph.D. degree program in Security Studies. Serving the state's need for analysts and security specialists for international corporations, military, and ports, it will "produce specialists capable of analyzing and communicating security issues to policy makers, the general public and the government." The program's advisory board is comprised of representatives from Siemens Energy, Inc., Georgetown University, the National Defense University, George Washington University, and the U.S. Naval War College. Documentation confirms that external consultants and security industry leaders are supportive of the program. The proposed program will require 62 hours of course work beyond the master's, including dissertation. Estimated enrollment will stabilize at 20 students, primarily full-time. Communication with FIU, FSU, UF, USF, University of Miami, and Nova Southeastern has confirmed the lack of overlap with their Political Science programs.

The proposal provides evidence that start-up costs will be covered by the College of Sciences and the Department of Political Science and paid from new undergraduate growth money. The College of Graduate Studies will hire one senior and two junior faculty members with expertise in security studies, and fund Graduate Teaching Assistants positions. Faculty will be expected to help generate external funding for this program.

The UCF Board of Trustees approved the program on March 17, 2011. If the proposal is approved by the Board of Governors, UCF will implement the program in Fall 2013.

Supporting Documentation Included: Staff Analysis

Facilitators/Presenters: UCF Representatives

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BOARD OF GOVERNORS
STATE UNIVERSITY SYSTEM OF FLORIDA
NEW DOCTORAL DEGREE PROPOSAL STAFF ANALYSIS

Program: Ph.D. in Security Studies

CIP Code: 45.0902
(university proposed 45.1001 is Political Science)

Institution: University of Central Florida

Proposed Implementation Date: Fall 2013

Staffed By: Marion Merzer

Initial Review Date: 5/11/11 **Last Update:**

Estimated Costs:

	Total	% & $ Current Reallocated	% & $ New Recurring	% & $ New Non-Recurring	% & $ C&G	Cost per FTE	SUS 09-10 Average Cost per FTE
Year 1	$329,265	45.29% $149,111	54.71% $180,154	0% $0	0% $0	$110,910	$27,193 45 CIP
Year 5	$552,083	25.22% $139,254	74.78% $412,829	0% $0	0% $0	$46,662	

Projected FTE and Headcount are:

	Student Headcount	**Student FTE**
First Year	5	2.97
Second Year	10	6.88
Third Year	15	9.69
Fourth Year	17	10.44
Fifth Year	20	11.83

On March 29, 2007, the Florida Board of Governors approved Regulation 8.011, which sets forth criteria for authorization and implementation of new doctoral programs by the Board of Governors, as well as criteria for authorization and implementation of bachelor's, master's and specialist degrees by boards of trustees. The following staff analysis is an assessment of how well the university meets Board of Governors Accountability and Readiness criteria for implementation of this degree program.

Proposal Page Numbers:

INTRODUCTION		**ACCOUNTABILITY**		**READINESS**				
Program Description	**System Analysis**	**Overall**	**Budget**	**Mission and Strength**	**Program Quality**	**Curriculum**	**Faculty**	**Resources**
2	5	9	22	33	39	42	59	73

A. Program Description:

The University of Central Florida (UCF) is proposing to offer a Ph.D. degree program in Security Studies. This program will serve the state's need for analysts and security specialists for international corporations, military, and ports. According to the proposal, the goal of the program is to "produce specialists capable of analyzing and communicating security issues to policy makers, the general public and the government." Future employment of program graduates will be available in the military, government, international corporations, and security agencies.

The proposal lists the program's advisory board as comprised of representatives from Siemens Energy, Inc., Georgetown University, the National Defense University, George Washington University, and the U.S. Naval War College.

Students admitted to the program will be predominantly from master's degree programs in Political Science, International Studies, or other related fields. The proposed program will require 62 hours of course work beyond the master's, including dissertation, a modern language proficiency requirement, and two 1-credit courses in professional development. Coursework will emphasize issues and theories of security studies and advanced research methods. It is expected that students earning the Ph.D. will be highly qualified to work in an academic career or for government or private or non-profit organizations.

B. System-Level Analysis and Evaluation in Accordance with Board of Governors Regulation 8.011:

The UCF proposal makes the argument that, since the terrorist attacks of September 11, 2001, national security is now one of the primary concerns of U.S. policy. Developing experts in the field of national security in an international context is a priority. Despite this priority, the proposal lists only three other programs in this field offered nationally (Tufts, Georgetown, and George Washington University), and no graduate program in this field exists at any institution of higher education in Florida. The Federal Government has acknowledged a need for more formal educational programs to prepare future employees in this area of national security. The consultants' report, included in the proposal, concluded that there is a need for this type of program, as jobs in this field have increased dramatically since 9/11. It is up to higher education institutions to take up this role. Few of the currently available Ph.D. programs in Political Science focus on Security Studies, "especially one as in this proposal that emphasizes this specific focus and career track by design." (See Appendix I.1.) Authors of the proposal contend that the UCF Ph.D. program is situated perfectly to take up the challenge.

In 2002, the Center for Homeland Defense and Security (CHDS) was created by several federal agencies, including the Naval Post-Graduate School. Believing that gaps existed in traditional training programs, they envisioned the need for an "evidence-based homeland security leadership development educational curriculum" to develop state, local, and federal leadership for defeating terrorism. CHDS purports that graduate programs focus on analysis, synthesis, and evaluation, teaching graduate students to think critically. These skills are needed so leaders in homeland security can "successfully prepare for the unknown." The proposed UCF Ph. D. program in Security Studies aims to produce highly qualified graduates in the field of Security Studies with the knowledge and training to make them competitive for employment in this field.

The proposed doctoral program would fall into one of the State University System Board of Governors Strategic Plan's Areas of Programmatic Strategic Emphasis. In 2008, The Board of Governors of the State University System of Florida established goals related to meeting statewide professional and workforce needs. Homeland Security and Defense was listed, among others, as an area of interest by key Florida economic and workforce councils. The Board recognized the importance of developing more programs with an international focus, in which graduates and research emphasize globalization. Professionals working in these areas are typically graduates of master's and doctoral programs. The UCF Ph.D. in Security Studies meets this goal.

The proposed program is also consistent with the institutional mission of providing excellent graduate programs and partnerships with the community. The proposal explains that the program meets the following institutional goals of UCF:

- Goal #1: Offer the best undergraduate education available in Florida.
- Goal #2: Achieve international prominence in key programs of graduate study and research.
- Goal #3: Provide international focus to our curricula and research programs.
- Goal #4: Become more inclusive and diverse.
- Goal #5: Be America's leading partnership university.

According to the proposal and its supporting documentation, employment trends at the state, national, and international level show that there is a need for students with doctoral-level training in international security for work in governmental, non-governmental, military, corporate, and academic occupational environments. Florida alone is home to seven Navy and Marine bases, six Air Force bases, 11 Coast Guard bases, and two strategic military commands. UCF proposes that, with Florida's military installations, diverse populations, proximity to Central America, and large coastline, there will be employment opportunities for students with the Ph.D. in Security Studies. A staff review of www.usajobs.gov in April, 2011, shows that there are presently 149 job openings on military bases in Florida described as "security specialist."

The U.S. Bureau of Labor Statistics, 2010-2011 Edition of the Occupational Outlook Handbook (OOH), projects a faster-than-average growth (increases of 14 to 19 percent) for employment of political scientists. The Handbook states that, "job opportunities should be best for jobseekers with a master's or Ph.D. degree in a social science and with strong quantitative skills." The students graduating from the UCF program will be prepared to meet these qualifications. According to the OOH, the median annual wages for a political scientist in 2008 were $104,130.

The Occupational Outlook Handbook also projects that government employment between 2008 and 2018 will increase by 7 percent, and that candidates with a master's or Ph.D. degree will have the best employment prospects. According to the OOH, in 2008 there were 4,100 jobs held by political scientists, and 63 percent worked for the Federal Government.

According to employment website, www.wherethejobsare.org, the Department of Homeland Security is projected to hire over 65,000 positions over the next 3 years. A recent staff review of the website www.USAJOBS.gov shows more than 900 available positions in the Department of Homeland Security nationwide.

Letters of support from Siemens, the CIA, and the Naval War College all express the opinion that a high demand exists for such a program and suggest the numerous employment opportunities that are available for the graduates with a Ph. D. (See Appendix I.2-I.6.) As reported, many security organizations and agencies, both government and private, are locating themselves outside of Washington, D.C., and can be found in many different parts of the country, including Florida.

Addressing the issue of student demand, the proposal provides evidence of a high degree of local demand for the program. First, a survey of students enrolled in topical undergraduate courses showed 85% of the students interested in applying for the proposed program (page 14). Additionally, a focus group conducted with graduate students in a Master's in Political Science program showed high interest (page 14). However, the argument that existing programs in Political Science are admitting more students than they actually enroll does not in and of itself support broader demand for the proposed degree program. There is no clear evidence provided that the students who chose not to enroll in existing programs would have enrolled in a more specialized program such as Security Studies.

Addressing concern over potential program duplication, the UCF proposal states that there are no other Ph. D. programs specifically focusing on Security Studies, in the State of Florida. There are Ph.D. programs in political science or international studies at FIU, FSU, UF, USF, University of Miami, and Nova Southeastern. (See Table II.2.) Letters of support from FIU, FSU, UF, and USF confirming communication with UCF and the lack of overlap with their programs are included in the proposal. (See Appendix I.14.)

The proposal provides evidence that start-up costs will be covered by the College of Sciences and the Department of Political Science and paid from new undergraduate growth money. (See letter of commitment from Dean Panousis in appendix II.3.) Documentation of an agreement with the College of Graduate Studies (see Appendix II.4) shows the programs intention to hire one senior and two junior faculty members with expertise in security studies for the program, and to fund Graduate Teaching Assistants (GTA) positions. (See section X, Table X.3) The Dean's letter also states that new faculty will be expected to help generate external funding for this program.

C. Assessment of the University Review Process in accordance with BOG Regulation 8.011:

Due to the system of stair-step accountability set in place by the Board of Governors in Regulation 8.011, it is now incumbent upon university boards of trustees to verify that all doctoral programs coming before the Board of Governors have met the requirements of the regulation. The following is an assessment of the university review process to ensure that all criteria set forth have been considered by the university prior to submission to the Board of Governors office.

ACCOUNTABILITY
Check 'yes' or 'no' box, and make comments beneath each criterion, as appropriate.

1. *Overall –* *The proposal is in the correct format, includes all necessary signatures, and contains complete and accurate tables for enrollment projections, faculty effort, and the proposed budget.*

YES NO

☒ ☐ **The proposal has been approved by the university board of trustees and includes all required signatures.**

The University of Central Florida Board of Trustees approved the program on March 17, 2011.

☒ ☐ **The university has provided a proposal written in the standard SUS format which addresses new academic program approval criteria outlined in Board of Governors Regulation 8.011.**

The Board of Governors new degree program proposal format was used, as expressed in Board of Governors Regulation 8.001.

☒ ☐ **The university has provided complete and accurate projected enrollment, faculty effort, and budget tables that are in alignment with each other.**

The proposal provides information on each of these areas. Detailed tables are provided on projected enrollment (Table 1-B); on faculty effort (Table 4); and on budget (Tables 2 & 3).

☒ ☐ **The university has included a statement in the proposal signed by the equity officer as to how this proposal will meet the goals of the university's equity accountability plan.**

The program plan for achieving diversity was reviewed and signed by the UCF Equal Opportunity Officer on March 9, 2011.

2. Budget – *The proposal presents a complete and realistic budget for the program consistent with university and Board of Governors policy, and shows that any redirection of funding will not have an unjustified negative impact on other needed programs.*

YES NO

☒ ☐ **The University Board of Trustees has approved the most recent budget for this proposal.**

The proposal budget was approved by the UCF Board of Trustees on March 17, 2011.

☒ ☐ **The university has reviewed the budget for the program to ensure that it is complete and reasonable, and the budget appears in alignment with expenditures by similar programs at other SUS institutions.**

Details of the budget in the UCF proposal reveal that the current budget will fully support the proposed program through Year 5. (See Appendix II.2.) According to the proposed budget, undergraduate growth funds within the College of Sciences (COS) and the Department of Political Science will cover most of the cost of the program. (See Dean's letter in Appendix II.3.) Commitments with the College of Graduate Studies and the College of Sciences will provide funding to hire three new faculty and to support graduate teaching assistant (GTA) positions. (See Appendices II.3 & II.4.) Staff review of the tables referenced in the UCF proposal confirm the proposal's explanation that the College's support will not exceed the annual tuition/stipend commitments (see section X, Table X.3 "total Student Support, COS Student Support, Department Student Support") and will not exceed the total recurring and non-recurring new program costs ($585,975) by the end of Year 5.

The cost per FTE for the Ph.D. in Security Studies is calculated higher than the average cost per FTE in similar SUS programs. However, the System average is calculated at the two-digit CIP Code level (45) across all universities and programs, so it cannot be considered anything more than an average estimate for what a new program should

cost. The Ph.D. in Security Studies is a new, unique and specialized program requiring additional costs.

Additionally, the proposal explains that two tuition waivers will be provided by the Graduate College, and the department will transfer three masters' program tuition waivers to the doctoral program for a total of five tuition waivers. A review of Table X.4 shows that these waivers will offset tuition by $29,560 to $41,055 each year, depending on enrollment.

☒ ☐ **In the event that resources within the institution are redirected to support the new program, the university has identified this redirection and determined that it will not have a negative impact on undergraduate education, or the university has provided a reasonable explanation for any impact of this redirection.**

According to the budget description and supporting tables and documentation, the proposed Ph.D. program may impact the department's B.A. and M.A. programs in the area of faculty shifting from the bachelor's program to the doctoral program. UCF states that this impact will not be negative because of the intent to hire three new faculty members and the ability of the GTAs to serve as teaching assistants in their first year and as instructors of record in their second year. The proposal projects that the use of the GTAs in this manner will offset the need to hire adjuncts, saving money.

The proposal also describes benefits that students in the bachelor's and master's programs will receive from the advent of the new Ph.D. program. Students will benefit from access to new esteemed faculty, cutting-edge research opportunities, and the exposure to Ph.D.-level activities and courses, familiarizing master's-level students for future study.

READINESS

Check 'yes' or 'no' box, and make comments beneath each criterion, as appropriate.

3. Program Quality *– The proposal provides evidence that the university planning activities have been sufficient and responses to any recommendations to program reviews or accreditation activities in the discipline pertinent to the proposed program have been addressed.*

YES NO

☒ ☐ **The university has followed a collaborative planning process for the proposed program in accordance with policies and procedures adopted by the university board of trustees.**

As described in the proposal, the planning process began with discussions in the Department of Political Science, with other UCF departments and administrators, and with other SUS institutions, conducted over the past 15 years. The growth of the master's degree program increased a focus on international studies and a program review conducted in 2003-2004 by an external consultant emphasized the need for the department to develop a Ph.D. program. A white paper describing a proposed program was accepted by the Dean of the College of Sciences and the Provost in spring 2010, and the program was added to the three-year Program Plan of the University. In spring 2010, a four-member departmental Ph.D. committee wrote the proposal for a Ph.D. in Security Studies. (See Table VI.1, Planning Process.) Upon approval of the proposal, the first students will be admitted in fall 2013 with an expected graduation date of spring 2016 (Table VI.2., Implementation Activities).

☒ ☐ **An external consultant has reviewed the proposal and supports the department's capability of successfully implementing this new program.**

Dr. Richard K. Hermann, Director, The Mershon Center for International Security Studies at The Ohio State University, and Dr. Thomas M. Nichols, Professor, National Security Affairs, United States Naval War College, visited the UCF campus on August 25-26, 2010, at the request of the Department of Political Science to review the proposed Ph.D. in Security Studies. Their findings and comments were very favorable for the establishment of the new program. The reviewers commented that the new program would "advance the institution's goals for achieving greater international prominence in graduate study and research." They concluded by stating that, "there is a need for a program that focuses on Security Studies especially one as in this proposal that emphasizes this specific focus and career track by design." (See complete report in Appendix I.1.)

☒ ☐ **The university has found the level of progress that the department has made in implementing the recommendations from program reviews or accreditation activities in the discipline pertinent to the proposed program to be satisfactory.**

According to the proposal, the Department of Political Science conducted a comprehensive review of its programs in 2003-2004. An external consultant provided a positive evaluation of the programs. (See Appendix I.9 for report.) The UCF proposal details the consultant's recommendations and the Department's plans to implement suggestions and changes in areas such as preparation for a Ph.D. program, growth of the M.A. program, faculty, and enrollment growth. (See pages 39-41.) The Dean of the College of Arts and Sciences also reviewed the program and provided a list of recommendations for the growth of the M.A. program and the development of the Ph.D. program (pages 40-41).

☒ ☐ **The university has analyzed the feasibility of providing all or a portion of the proposed program through distance learning.**

As presented in the UCF proposal, the basic delivery system for doctoral programs is the small class size seminar. Currently, UCF personnel anticipate that all required courses will be offered as in-person seminars. Current faculty members have been trained in the use of online learning, and the ability to offer future courses online will be explored. According to the proposal, there is no expectation of collaboration with other institutions. All courses will be offered in face-to-face, on-campus seminars, and therefore a collaborative model would require travel to other locations. UCF reports that, in communication with other institutions, no one has expressed interest in collaboration or shared courses at this time. (See letters in Appendix I.14.)

☒ ☐ **If necessary, the university has made allowances for licensure and legislative approval to be obtained in a timely manner.**

The proposed program does not lead to licensure and legislative approval is no longer required for such programs.

4. Curriculum *- The proposal provides evidence that the university has evaluated the proposed curriculum and found that it describes an appropriate and sequenced course of study, and that the university has evaluated the appropriateness of specialized accreditation for the program.*

YES NO

☒ ☐ **The university has reviewed the curriculum and found that the course of study presented is appropriate to meet specific learning outcomes and industry-driven competencies discussed in the proposal.**

As presented in the proposal, the curriculum has been designed to prepare students for non-academic careers in security and international affairs careers, as well as careers in academia. According to the proposal, students will be prepared to analyze and understand a variety of problems related to the pressing problem of security in an increasingly interconnected world. A major emphasis will be on research.

According to the proposal, there are several professional organizations affiliated with the fields of political science or international studies. However, currently none of the organizations have accreditation standards or methods of review. The UCF proposal includes a detailed annual assessment plan for the program. (See pages 41-42.)

☒ ☐ **The university anticipates seeking accreditation for the proposed doctoral program, or provides a reasonable explanation as to why accreditation is not being sought.**

There is no accrediting agency for programs in security studies at the doctoral level.

5. Faculty *– The proposal provides evidence that the university is prepared to ensure a critical mass of faculty will be available to initiate the program based on estimated enrollments, and that faculty in the aggregate have the necessary experience and research activity to sustain a doctoral program.*

YES NO

☒ ☐ **The university has reviewed the evidence provided and found that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

There are 11 current faculty members (see Table 4) who will take on primary responsibility for program delivery. There is a commitment to hire three new faculty members. (See Table 4.) Financial support for hiring Graduate Teaching Assistants is also documented in the proposal (Table X.3).

☒ ☐ **The university has reviewed the evidence provided and found that the faculty in aggregate has the necessary experience and research activity to sustain the program.**

All of the current faculty members hold terminal degrees in their fields. Five are full Professors, four are Associate Professors, one is an Assistant Professor, and one is Professor Emeritus and Lecturer. Nine are tenured and four are tenure-earning. (See Table 4.) According to the proposal, this will provide ample faculty resources for mentoring, research, and teaching.

☒ ☐ **The university has reviewed the evidence provided and found the academic unit(s) associated with this new degree to be productive in teaching, research, and service.**

The proposal provides evidence that the 11 faculty members have been productive in teaching, research, and service, including publications and thesis and dissertation supervision. (See Tables 4, IX.1, & IX.2). According to the UCF proposal, growth in the total number of graduate students enrolled in the Department of Political Science from fall 2005 to fall 2009 increased more than 50%, from 42 to 65 (Table IX.2). Graduates increased as well, from 9 in AY 2005-06 to 15 in AY 2008-09. (See page 70.)

According to the proposal, since 2007, the academic unit has acquired external funding amounting to approximately $1.9 million. Additionally, the proposal details plans for seeking grants and partnerships with federal agencies, private, and non-profit organizations, as well as international programs. (See pages 71-73.)

☒ ☐ **If appropriate, the university has committed to hiring additional faculty in later years, based on estimated enrollments.**

According to the proposal, the College of Sciences and Department of Political Science has committed to hiring three new faculty members in advance of the establishment of the program. (See Dean's letter, Appendix II.3.)

6. Resources *– The proposal provides evidence that the university has ensured the available library volumes and serials; classroom, teaching laboratory, research laboratory, office space, equipment, clinical and internship sites, fellowships, scholarships, and graduate assistantships will be sufficient to initiate the program, and that if applicable, funding has been secured to make more resources available as students proceed through the program..*

YES NO

☒ ☐ **The university has provided a signed statement from the Library Director verifying that the library volumes and serials available are sufficient to initiate the program.**

The proposal provides documentation from the library review (see Section X.B) showing that, although the library currently has adequate book collections to support this program, some additional resources will be needed. The authors calculate these additional resources to cost $116,823 for Years 1-5. Costs will include non-recurring items (books) and recurring items (subscriptions to databases, etc.). It is proposed that library expenses will be covered by the College of Sciences and the Department's new enrollment growth funding. (See Table 2.) A memorandum from the Director of University Libraries is included in the proposal. (See Appendix II.10.)

☒ ☐ **The university has ensured that the physical space necessary for the proposed program, including classrooms, laboratories, and office space, is sufficient to initiate the program.**

According to the proposal, regular classroom space for seminars is available. There will be a need for some office space for graduate students, which can be accommodated through reconfiguring of current space and some newly vacant faculty space. The proposal concludes that space will be sufficient to address identified needs through Year 5. (See page 79.)

☒ ☐ **The university has ensured that necessary equipment is available to initiate the program.**

The proposal states that all Political Science faculty members are provided with computer equipment and software for research and teaching needs. No additional specialized equipment is needed. (See page 79.)

☒ ☐ **The university has ensured that fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

As specified in the proposal, all full-time Ph.D. students will be funded with a stipend of $17,000 per year based on three semesters (fall, spring, and summer). The proposal shows evidence that students' tuition will be covered by waivers from the Graduate College and by tuition payments by the College of Sciences and the Department of Political Science. (See Tables X.2 and X.3.)

☒ ☐ **If applicable, the university has ensured that the department has arranged a suitable number of clinical and internship sites.**

According to the proposal, internships and practicum experiences are not central to the program. Because students will be able to take up to six hours of elective credit as internship credit, the possibility exists for a placement at an approved internship site. (See list on page 84.)

Florida Board of Governors

Request to Offer a New Degree Program

University of Central Florida
University Submitting Proposal

Fall 2013
Proposed Implementation Date

College of Sciences
Name of College or School

Political Science
Name of Department(s)

Security Studies
Academic Specialty or Field

Ph.D. in Security Studies
Complete Name of Degree
(45.1001 - Proposed CIP Code)

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

March 17, 2011
Date Approved by the University Board of Trustees

John C. Hitt 3/15/11
President Date

Signature of Chair, Board of Trustees 03/17/11 Date

Provost and Vice President For Academic Affairs 3-14-11 Date

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

Implementation Timeframe	Projected Student Enrollment (From Table 1)		Projected Program Costs (From Table 2)		
	HC	FTE	Total E&G Funding	Contract & Grants Funding	E&G Cost per FTE
Year 1	5	2.97	329,265	0	110,910
Year 2	10	6.88			
Year 3	15	9.69			
Year 4	17	10.44			
Year 5	20	11.83	552,083	0	46,662

**Year 4 and 5 include part-time students*

INTRODUCTION

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

This proposal is for a Ph.D. degree in Security Studies. National security is one of the primary concerns of U.S. policy and has been particularly prominent since the terrorist attacks on the United States on September 11, 2001. The attacks made it more obvious than ever that national security is intrinsically linked to international factors. Since then, national security has permeated all facets of political life as well as citizens' daily life, from airplane travel and civil liberties to the deployment of American troops in Afghanistan and Iraq. The U.S. defense budget totaled $693 billion and the intelligence budget amounted to $75 billion in 2009, signaling the crucial importance of security for the nation; the economic impact of the defense and security industry on the state of Florida amounts to $52 billion per year. The study of national security in an international context is thus of highest priority and has implications for UCF and the state of Florida, but also for the country at large.

Despite the urgency of the issue, only a few programs exist nationally with this focus. No institution of higher education, public or private, in the state of Florida offers specialized advanced graduate education in this field. The proposed program aims to fill the need for such a program to prepare graduates for careers in government, non-profit, and academic settings.

The proposed Ph.D. in Security Studies offers rigorous training for students interested in national security, international affairs, world politics, and transnational problems. The program emphasizes considerable flexibility in terms of the theoretical diversity and intellectual breadth that characterizes security studies. Students will be confronted with traditional theoretical approaches to international security such as realism and traditional topics such as the causes of war, terrorism, and political violence, but they will also be trained in the use of more recent theories such as social constructivism, feminism, and critical theory, and in "new" security issues such as environmental issues, genocide, poverty and inequality, economic security, and the global spread of epidemics such as AIDS. International security scholars today offer a broad range of theoretical approaches to a variety of traditional and non-traditional issues, and the program is designed to reflect this diversity in its course offerings. That diversity is also reflected in its broad theoretical and methodological eclecticism; students will be trained in both quantitative and qualitative methods, for instance, as appropriate to their chosen emphasis within security studies. Large-N quantitative surveys have traditionally been thought most appropriate in the study of war, for example, while more qualitative, case study-based approaches are often utilized in the study of terrorism. The program is designed to ensure that students graduate with a full range of theoretical tools and methodological skills. The external consultants that visited the UCF campus to evaluate the proposal conclude in their final report that "there is the need for a program that focuses on Security Studies especially one as in this proposal that emphasizes this specific focus and career track by design." (See Appendix I.1 for complete consultants' report).

The proposed Ph.D. program will admit students who have completed a Master's degree in Political Science, International Studies, or a related field. This ensures that admitted students will have a solid grounding in mainstream political science or international relations and are well prepared to take on the more specialized coursework and research required for a Ph.D. in Security Studies. Students admitted to the program will complete 62 hours of course work beyond the Master's degree, including dissertation research, to obtain a Ph.D. in Security Studies. The course work consists of 15 hours of required core classes in issues and theories of security studies as well as advanced quantitative and qualitative research methods; 15 hours of restricted electives in courses on security; 12 hours of unrestricted electives, which can include up to 6 hours of internship credit; and a minimum of 18 hours of dissertation research. In addition, students will be required to complete two 1-credit hour professional development courses that will prepare them for a career in academic and non-academic environments, including questions of research ethics in the field, grant proposal preparation, and teaching preparedness. Student progress will be assessed through annual reviews, an oral qualifying exam at the end of the first year, a written candidacy exam prior to enrollment into dissertation hours, an oral defense of the dissertation proposal, and an oral defense of the dissertation.

The proposed Ph.D. satisfies an existing demand among students in Florida and will equip graduates with qualifications that will make them highly competitive for employment in an academic career as well as for employment with government agencies or non-profit organizations. Students in the undergraduate program in political science as well as students in the M.A. program in political science at the University of Central Florida have expressed great interest in and enthusiasm for the proposed Ph.D. program and have shown a strong interest to apply. Student applications are expected to come primarily from universities located within the state, especially the M.A. program in Political Science – International Studies track at UCF, but also from other graduate programs within the SUS system and the M.A. in Conflict Analysis and Resolution at Nova Southeastern University.

In addition to a need for this program, there is also a clear demand for a Ph.D. in Security Studies. Employment opportunities for those with expertise in security studies are expected to grow faster than the national average. According to the Bureau of Labor Statistics, "demand for political science research is growing because of increasing interest in politics, foreign affairs, Political scientists will use their knowledge of political institutions to further the interests of nonprofit, political lobbying, and social and civic organizations." Agencies such as the CIA list multiple employment opportunities that require the qualifications Ph.D. graduates from the proposed program would possess, as do several government agencies, including the Department of Defense and the Department of Homeland Security. Dennis Bowden, Director of Policy Support at the CIA, states that "I can say that there is a need at CIA, and elsewhere in the Intelligence Community, for people with advanced security studies credentials, whether they came from the University of Central Florida or elsewhere. Given the spectrum and importance of challenges facing the country, there is a need in our national security establishment for a new generation of leaders with such academic training" (see letter of support in Appendix I.2). Focusing on Florida, the state's need for persons with advanced security studies training is tied to its political, economic, geographic, and military characteristics. Florida is home to one of the

nation's largest defense and homeland security clusters with an economic impact on the state of $52 billion. The military and defense communities now support more than 723,000 jobs with an additional $8 billion expected to be flowing into the state's defense and security sector in the next two years, providing new job prospects. Sarah Bynum, the Director of Security at Siemens confirms that the program will be of "great benefit" to businesses (see Appendix I.3). Dr. Joan Johnson-Freese, Professor at the Naval War College states that "Within Florida, organizations from CENTCOM and SOUTHCOM to Kennedy Space Center (and the associated aerospace industries) and Florida-based non-governmental organizations have strong demands for specialists in human security issues, as well as within the constituencies they serve" (see Appendix I.4). Many of these jobs require skill sets that the proposed Ph.D. program will provide its graduates. The external consultants comment that "The demand for expertise that the nation is currently in short supply of has become clear as the national security community within the Federal Government struggles to train and educate its work force. The military services and the civilian agencies have turned to the university system in the United States for expertise related to the numerous topics central to security studies." Dr. James Ludes, Executive Director of the American Security Project, similarly comments that "Graduates with a Ph.D. in security studies from UCF … would find many opportunities for government service" (see Appendix I.5).

Academic demand for qualified Ph.D.s in fields related to security studies is similarly strong. During the last five years, 332 open academic positions were listed by the American Political Science Association in the security-related fields. There are, however, only three Ph.D. programs in the country that specialize in security studies (Tufts, Georgetown, George Washington; a new interdisciplinary program at Kansas State University is too young to contribute to the job market), and none in the state of Florida. Given the focus of the proposed program, our graduates would thus be uniquely qualified for academic careers in the field of security studies.

In short, there is both a strong demand and need for a Ph.D. program in Security Studies, and the proposed curriculum will qualify graduates to pursue careers in the academic and non-academic sectors. Dr. Bernard Finel, Associate Professor at the National Defense University, comments that "The UCF program is, if anything, better integrated" than similar programs "at Georgetown, George Washington, and Tufts" (see Appendix 1.6).

The external consultants conclude in their report (see Appendix I.1) that this program "would advance the institution's goals for achieving greater international prominence in graduate study and research." They judge that the proposed curriculum is sound and that the faculty members are well qualified to implement the program. They also state that there is a need for this program. The proposed program would benefit UCF, the state of Florida, and the nation by adding highly educated Ph.D. graduates that are qualified to join the workforce in Florida and nationally in an area of central concern to the national interest.

Furthermore, undergraduate students at the University of Central Florida and the Department of Political Science will benefit from the new program. The Ph.D. program will make it easier to attract and retain top faculty members, outstanding graduate students conducting research, and will open broader opportunities to obtain federal funding. It will also increase the number of doctoral degrees granted by UCF. Furthermore, the proposal includes the hiring of three new

faculty members, whose primary responsibility will be to support the Ph.D. program but who will also teach undergraduate courses as the departmental teaching effort collectively shifts among the faculty within the program. Furthermore, undergraduates will benefit because the Ph.D. students, starting in their second year, will have the opportunity each year to teach at the undergraduate level as instructors of record. This will help meet the expected undergraduate course demand in a growing program, will increase the number and range of course offerings available to undergraduate students, and will further compensate for a shift in effort of existing faculty members from the undergraduate to the graduate level. Currently, many of the introductory sections Ph.D. students will be assigned to teach are covered by adjunct faculty or occasionally M.A. students. Consequently, having highly trained Ph.D. students cover some of these sections will reduce the need for adjunct faculty and Master's students, thereby saving money and improving the quality of instruction. During their first year, all Ph.D. students will serve as Graduate Teaching Assistants. This will increase the total number of GTAs available to assist professors with instruction, providing needed support to existing faculty in a growing undergraduate program. Undergraduate students will also benefit from the added emphasis on cutting-edge research that the Ph.D. will incentivize and from the additional library resources that are part of this proposed Ph.D. program. We will further strive to reduce the cost of the program by pursuing additional GTA support through external grants as well as external and UCF scholarships and fellowships. In sum, the proposed Ph.D. in Security Studies will be of benefit to the state, the region, and the University of Central Florida.

B. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which goals the program will directly support and which goals the program will indirectly support. (See the SUS Strategic Plan at http://www.flbog.org/about/strategicplan/)

The 2005-2013 SUS Strategic Planning Goals state that the Board of Governors encourages the advancement or establishment of world-class doctoral programs especially when they are (see SUS Strategic Plan, p. 6):

- Consistent with institutional mission and statewide goals
- In targeted fields
- Non-duplicative or sufficiently unique compared to similar SUS programs
- Demanded by both students and employers
- Capable of demonstrating that their costs, when weighed against their measurable benefits, make a compelling argument for return on investment

The proposed Ph.D. program in Security Studies directly supports the following criteria:

a. The proposed Ph.D. program is consistent with institutional mission and statewide goals.

- ***Institutional mission – UCF:***
  The University of Central Florida is a public multi-campus, metropolitan research university that stands for opportunity. The university anchors the Central Florida city-state in meeting its economic, cultural, intellectual, environmental and

societal needs by providing high-quality, broad-based education and experienced-based learning; pioneering scholarship and impactful research; enriched student development and leadership growth; and highly relevant continuing education and public service initiatives that address pressing local, state, national, and international issues in support of the global community.

The proposed program directly fits UCF's mission by meeting the needs of UCF's student population for a Ph.D. program in Security Studies, by expanding the educational opportunities in the metropolitan area, by promoting pioneering scholarship and impactful research on Security Studies, by enriching student development and leadership growth through a graduate education that challenges students to develop their potential and take on leadership positions both in the university setting and in future careers, and by promoting highly relevant continuing education that pertinently addresses regional, national, and international issues in support of the global community through the program's focus on security studies. Florida is home to one of the nation's largest defense and homeland security clusters and houses seven Navy and Marine bases, including the third largest naval facility in the U.S. In addition, Florida houses six Air Force bases and 11 Coast Guard bases. Among them is MacDill Air Force Base in Tampa, the chief headquarters for Central Command, which runs the wars in Iraq and Afghanistan. Florida has a coastline of nearly 2000 miles and 14 deepwater seaports, with Tampa being the largest port in the state. Central Florida is also the location of choice for international business corporations, such as Siemens, which have high security needs in the area of industrial security for their international projects. Security is thus an area that is of integral significance for the Central Florida region, the state, the nation, and the global community. In sum, the proposed program fully supports the University of Central Florida's mission.

- ***UCF's goals:***
  Goal 1: Offer the best undergraduate education available in Florida.
  While the proposed program is at the Ph.D. level, its institutional impact encompasses not just graduate, but also undergraduate education. Undergraduates will benefit from the proposed program by exposure to new faculty and the assistance of highly qualified Graduate Teaching Assistants. Ph.D. students, starting in their second year, will also teach courses as graduate instructors of record and replace less qualified adjuncts and Master's degree students. The new faculty members and the GTAs will offer new courses and improve instruction. Benefits will also be indirect as the Ph.D. program will raise the national profile of the department, which may help B.A. graduates find employment. Furthermore, the proposed program will result in increased research productivity in the department, which in turn will lead to increased opportunities for undergraduate research through collaborative projects with the current and new faculty members. Undergraduate students will also benefit from the additional library resources that are proposed as part of this proposal.

Goal 2: Achieve international prominence in key programs of graduate study and research.
The Ph.D. program in Security Studies will bring international prominence in graduate education and research in several ways. Upon approval of the program, UCF will become one of only four universities in the United States that offers a Ph.D. in Security Studies (the other ones being Tufts, Georgetown, and George Washington). The proposed program will differ from existing Ph.D. programs in Political Science in Florida by having a clear focus on Security Studies. In addition to its unique focus, the program will also bring international prominence to UCF through the excellent research conducted in an area of primary concern to the Central Florida community, the state of Florida, the nation, and the international community. These areas of concern include terrorism, armed conflict, and national defense, as well as other areas such as environmental, economic, and energy security. Moreover, the existence of a Ph.D. program will make it easier to attract and retain top faculty members, outstanding graduate students conducting research in this area, and will open broader opportunities to obtain federal funding. The proposed program will also result in an increased number of doctoral degrees granted by UCF.

Goal 3: Provide international focus to our curricula and research programs.
The Ph.D. program in Security Studies clearly supports UCF's mission to provide an international focus to curricula and research. The department already supports this mission through its B.A. in International and Global Studies, the Comparative Politics/International Relations track in its Political Science B.A. degree, and its M.A. track in International Studies. The proposed Ph.D. program builds on this strong international focus. Out of the current tenure-earning or tenured faculty members, ten (constituting over half of all tenure-track and tenured faculty) are foreign-born, providing a strong international perspective. The field of Security Studies is fundamentally concerned with relations between states that affect security in the United States, but also in the global community. Thus, we are proposing a Ph.D. curriculum that centers on an existing and very strong international focus. Current faculty research projects already examine international relations and politics around the globe, including the Middle East, Central and East Asia, Western Europe, Latin America, and the Caribbean. The new program will add to this international dimension by adding a focus on Security Studies.

Goal 4: Become more inclusive and diverse.
The proposed program in Security Studies will assist UCF in becoming more inclusive and diverse in part because it is one of just a few Ph.D. programs in the United States. By its nature, a program focused on international issues provides an intellectual outlet for understanding diverse cultures and populations. Because of the relative dearth of this type of program, UCF will be an attractive choice for members of minority groups interested in doctoral-level training in Security Studies. The Ph.D. program will also implement strategies to increase the diversity of the faculty as well as the student population. Specifically, women and

minorities will be actively recruited and encouraged to apply for positions in the department. Similarly, we will actively recruit women and members of minority groups as students for the Ph.D. program.

Goal 5: Be America's leading partnership university.
The Ph.D. in Security Studies will assist UCF in becoming America's leading partnership university through its focus on Security Studies. Partnerships at UCF include close collaboration with the Office of Global Perspectives, which regularly invites speakers on relevant topics, facilitates contacts, and houses an internationally known expert on terrorism, Dr. Stephen Sloan, the Lawrence J. Chastang Distinguished Professor of Terrorism Studies. Collaboration is also envisioned with the College of Science's Psychology Department, especially in the area of human factors. Another local collaboration is with the College of Arts and Humanities' History Department and its program on military history. Partnerships in the metropolitan area include Siemens, whose Security office has expressed a strong interest in the program; the Director of Siemens Security serves on the program's advisory board. Siemens also has established a grant program for research on economic security internationally. National partnerships have already been established through the creation of the program's advisory board, which includes individuals from American Security Project (a non-partisan think-tank), the National Defense University, Kroc Institute for International Peace Studies of the University of Notre Dame, George Washington University, and the U.S. Naval War College. We expect further partnerships to emerge from this program as we cement our existing relationships with internship sites and develop new ones, including with the security departments of local and regional industries. Moreover, we expect new partnerships to be built as faculty members engage in collaborative research with colleagues across the country and abroad. The department already has well-established collaborative research relationships with universities and research institutes in Europe and the proposed program will add new opportunities for partnerships within the U.S. and abroad.

b. **The proposed Ph.D. program is non-duplicative and sufficiently unique compared to similar SUS programs:** Rather than providing a Ph.D. degree in the general broad field of political science, the proposed program is focused on Security Studies, providing it with a unique character. No Ph.D. program within the SUS system focuses specifically on Security Studies, a field of crucial importance in an increasingly global world. The curricular focus lies on international security including the implications for the United States. This focus makes the program clearly unique and non-duplicative within the SUS system. Furthermore, the current demand for Ph.D.s with security knowledge surpasses the capacity of existing programs in the SUS system to meet existing demand: Between 2005 and 2010, the percentage of applicants that were admitted and enrolled in SUS institutions to political science programs varied from 15.8 percent to 36.8 percent at FIU, from 16.5 to 22.4 percent at UF, and from 13.4 to 24.1 percent at FSU. In national comparison, Florida lags significantly behind in the production of Ph.D. graduates (see Section II.B for more detail).

c. **Demand by both students and employers:** As Section II demonstrates, both undergraduate and current graduate students in the department's M.A. program have expressed broad demand for a Ph.D. in Security Studies. In a survey of students enrolled in undergraduate courses related to security issues, 85 percent (a total of 71 students) expressed interest in applying for the proposed program; an M.A. graduate student focus group similarly expressed strong interest in the program. Within the state of Florida, there is an unmet student demand for Ph.D. positions. Among the three established Ph.D. programs in Political Science (Florida International University, University of Florida, and Florida State University), only approximately 21 percent of applicants enroll, leaving a large number of students interested in pursuing a Ph.D. program in the state of Florida. Potential employers, in academic and applied settings as well as private industry, have also identified a need for such a program focused more on security and international security matters.

INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

The need for students with doctoral level international security expertise, with secondary expertise in languages other than English at the international, national, and state levels, is evidenced by both aggregate and individual-level factors. International, national, and state-level employment trends suggest that students with doctoral level training in international security are in demand in governmental, non-governmental, military, corporate, and academic occupational environments. Limited national-level growth in doctoral program offerings with an international security focus also show that students completing their doctorates in this field will be well prepared to be active contributors to academic and applied settings that require international security expertise.

Need in Non-academic Areas

Florida's need for persons with advanced security studies training is tied to its political, geographic, and military characteristics. Florida is home to one of the nation's largest defense and homeland security clusters with an economic impact on the state of $52 billion. There are seven Navy and Marine bases in Florida, including the third largest naval facility in the U.S. In addition, Florida houses six Air Force bases and 11 Coast Guard bases. Among them is MacDill Air Force Base, the chief headquarters for the wars in Iraq and Afghanistan, housing two strategic military commands — U.S. Central Command and Special Operations Command. Furthermore, Southern Command is located in Miami. Florida has a coastline of nearly 2000 miles and a 2300 mile tidal shoreline, more than 11,000 miles of rivers, streams and waterways, and 14 deepwater seaports, with Tampa being the largest port in the state. Lake Okeechobee, at

700 square miles, is its largest lake, and the second largest freshwater lake in the United States. The security of shorelines and ports is thus a crucially important issue for the state of Florida and its economy.

Enterprise Florida, a partnership organization devoted to the state's economic development, reports that the military and defense communities now support more than 723,000 jobs with an additional $8 billion expected to be flowing into the state's defense and security sector in the next two years, providing new job prospects. Clearance Jobs states there is an ongoing need for cleared personnel with backgrounds in international affairs, intelligence, and languages – skills that the proposed Ph.D. program will provide.

Florida's multiple military installations speak to an ongoing demand for persons with advanced security studies training. Coupled with Florida's dynamic and diverse population centers, large coastline, and its proximity to Central America, we expect that students completing the Ph.D. in Security Studies will enjoy employment opportunities in Florida upon degree completion and will thereby also make a contribution to Florida's economy as they take on high-paying employment. Florida's extensive coastline makes border security an important issue, for instance. Congress recently passed an emergency supplemental appropriations bill for $700 million on border security, including a Secure Freight Initiative, a Container Security Initiative, and an Unmanned Aircraft Systems Program – all areas germane to Florida with its many ports and NASA installations.

Several private companies focusing on homeland security that serve in a contracting role to the U.S. government are located in Florida. A review of these companies shows evidence of demand for persons with security studies backgrounds. These companies include Centauri Solutions (a member of the Inc. 500 list), which is hiring Senior All Source Analysts and Senior Intelligence Analysts in Tampa. Several private companies are currently recruiting to fill positions at Eglin Air Force Base in northwest Valparaiso, Florida. These jobs pay between $50,000 and $62,000 per year.

In the military community, a review of www.usajobs.gov shows that there are presently 324 job openings in Florida on military bases that include the term "security specialist" in the position description. The jobs are located all around the state. Starting salaries for these positions are in the $65,000-$80,000 range.

This review of position descriptions within the non-profit, governmental, private, and military sectors shows that graduates with advanced degrees in security studies will be well prepared to undertake multiple professional opportunities in competitive and well-paying arenas in the state of Florida as well as across the country. Much of the nation's security needs has been decentralized with less focus on the Beltway area. For example, the Department of Homeland Security has since 2002 established 12 Centers of Excellence that are housed at different universities across the country. Private security companies are also increasing and are spread over the country. This provides realistic opportunities for the proposed program to collaborate with the security industry, both public and private, and to lead to job growth in the Central Florida region. Practitioners who themselves are security studies experts, or who work with security studies specialists, reinforce these findings.

At the national level, students with international security studies backgrounds will find employment opportunities in numerous arenas. These opportunities include applied settings, as evidenced by the Bureau of Labor Statistics (BLS) *Occupational Outlook Handbook, 2010-11 Edition*. The BLS report notes that "most political scientists—about 63%—work for the Federal Government" and "higher degrees are required for a majority of positions." Many work in scientific research and development services as well. These positions require administrative and research skills, which will be included in the Ph.D. in Security Studies curriculum. Further, demand for policy analysts with government and professional and private organizations is also expected to increase, although the Bureau of Labor Statistics report does not specify the policy specialty where demand will occur. Still, the curricular emphasis on policy analysis in a security studies context will enhance students' ability to perform in policy analyst roles. In addition, expected retirements in these applied fields will increase demand for recent graduates.

The Bureau of Labor Statistics anticipates that employment in applied settings for political scientists will grow faster than the national average. National growth is expected to be 20 percent from 2008 to 2018 in applied fields regardless of field. Thus, it is expected that national growth over the next decade will exceed 20 percent for political scientists in applied fields. Among trained political scientists, "job opportunities should be the best for jobseekers with a master's or Ph.D…..with strong quantitative skills in public policy and research," skills emphasized in the Ph.D. in Security Studies curriculum.

The BLS report further states that:

> Demand for political science research is growing because of increasing interest in politics, foreign affairs, and public policy, including social and environmental policy issues, healthcare, and immigration. Political scientists will use their knowledge of political institutions to further the interests of nonprofit, political lobbying, and social and civic organizations. Job growth also may be driven by the budget constraints of public resources. As a growing population exerts excess demand on certain public services, political scientists will be needed to analyze the effects and efficiencies of those services, as well as to offer solutions.

The Ph.D. in Security Studies curriculum incorporates emphases on many of these demand areas, along with those areas within political science that will experience significant job growth.

The strength of the Ph.D. in Security Studies curriculum will also help graduates meet demand in other fields as graduates with expertise in policy and research will be qualified to pursue opportunities that would not apply to those with strictly political science training.

A recent review of the CIA's "Careers" found that the CIA is actively seeking multiple persons for the position of "Counterterrorism Analyst." The job description includes the following skills: "Counterterrorism analysts assess developments related to terrorism worldwide in support of US policymakers. They monitor and assess the leadership, motivations, plans and intentions of foreign terrorist groups and their state and non-state sponsors. Counterterrorism analysts also produce a range of current and longer-term intelligence products, brief key US policymakers and

provide tactical analytic support to law enforcement and intelligence operations. Agency analysts are encouraged to maintain and broaden their professional ties through academic study, contacts, and attendance at professional meetings. They may also choose to pursue additional studies in fields relevant to their areas of responsibility. Opportunities exist for foreign travel, language training, analytic and management training, and assignments in other offices in the Agency and throughout the US Government." The minimum position requirements are an advanced degree in international affairs or national security studies. The CIA's "Careers" website link currently lists multiple other positions, for which all the graduates of this program would be qualified. Furthermore, the CIA regularly holds Open Days on campus, and often exhibits a strong interest in hiring students trained in the political psychology of conflict and terrorism in particular; the Department of Political Science has noted strengths in this area, and the proposed Ph.D. program will contain doctoral-level courses on political behavior and decision making in international conflict and terrorism, qualifying graduates for these types of positions.

Multiple Cabinet-level departments include position announcements and descriptions for which the Ph.D. in Security Studies will serve as appropriate preparation. These Cabinet-level departments include the Department of Defense, the Department of Veterans' Affairs, the Department of Homeland Security and the Department of State. For example, multiple recent listings on the Department of Defense website include the "program analyst" position. While the position description does not specify educational preparation, it is clear from the description that the Ph.D. in Security Studies provides a solid fit. The position description includes skills such as "Comprehensive knowledge of the range of administrative, acquisition and budgetary laws, policies, regulations and precedents applicable to the administration of one or more missile programs." As of July 2010, there were 15 positions being recruited at the federal Department of Homeland Security within the category "Security Specialist." Further, recent reports published in *The Washington Post* state that the National Security Agency plans to grow its workforce by 25 percent in the next 15 years. The private sector, comprised of government contract employees whose key focus is domestic and international security, also exhibits growth. A 2007 report by the Office of the Director of National Intelligence stated that while the overall number of private and government intelligence employees is not public information, about 40 percent of all contract intelligence officers have been hired to collect or analyze information. Graduates from the proposed program will be well qualified as they will have the skills to frame problems independently and lead research teams. The Department of Defense recently advertised a position as Military Analyst for Space Systems, a civilian position at the Army Space and Strategic Defense Command in Huntsville, AL. In sum, the need for Ph.D. graduates with training in Security Studies in the non-academic area in Florida and nationwide is large and unmet.

Need in the Academic Area

In addition to preparing the graduates of the proposed program for employment in the government and non-profit sectors, the program will also prepare them to be competitive for an academic career. Again, the field of international relations and especially the areas related to Security Studies present growing employment opportunities for graduates from the proposed program. A review of all positions advertised by the American Political Science Association requiring security or security-related expertise going back five years (2005-2010) was conducted. The results demonstrate that colleges and universities across the country, and abroad, are seeking

specialists with doctoral-level expertise in International Relations, Peace Studies, International Studies, Strategic Studies, International Security, Security Studies, Conflict Resolution and Conflict Management. These positions are at all ranks—Assistant, Associate, and Full Professor, along with multiple named chairs and directors, as well as several visiting and multi-year positions. The list also includes multiple research associateships at think-tanks, along with several military colleges such as the American Military University, the Air Force Academy, the Army War College, and the Naval War College. The military professional education units also actively recruited non-military specialists at the 2010 American Political Science conference, indicating a need for trained political scientists for military education.

The large number of position listings speaks to meaningful opportunities for Ph.D.s in Security Studies. For 2005-2010, a total of 353 position openings were listed (see Appendix I.7); of these, 332 were academic positions while 21 were positions in applied settings. Most of the position announcements described entry-level positions for new Ph.D.'s possessing teaching and research skills and experience. The Ph.D. in Security Studies curriculum requires that students complete professional development courses, participate in seminars and symposia involving top-level scholars in the field, and serve as GTAs while also having the opportunity to serve as Instructors of Record in related courses. In completing this curricular and co-curricular program, students will graduate with the skills and knowledge needed to successfully compete for positions of the type most often advertised through the American Political Science Association.

The International Studies Association has also made available its position announcements for January through July 2010. These listings similarly demonstrate a high need for Ph.D.'s in security-related subfields. Of the 44 academic positions listed, 21, or just less than one half, identified security studies or a security-related discipline as a minimum qualification. In addition, there was one position listing in an applied setting requiring a security studies background.

Dr. Joan Johnson-Freese, Chair of the National Security Decision Making Department at the Naval War College, corroborates these macro-level data indicating a need for Ph.D. level experts in Security Studies. In her letter of support, she states that "there are very few doctoral programs focusing on security studies, at a time when specialists in that field are sought for an increasingly wide spectrum of public and private positions." Furthermore, she notes that in eight years as department chair, she hired about 30 new faculty members "and often had difficulty identifying qualified individuals," with few and poorly qualified applicants for many of the positions (see Appendix I.4 for letter of support).

These data from both applied and academic professional arenas demonstrate that there is and will continue to be high demand for Ph.D.s in Security Studies. Graduates will find employment opportunities in academia as teachers and scholars. Others working in an academic setting will likely find positions within centers and think-tanks, some of which are affiliated with universities. The opportunities for working in applied settings, such as the federal government, foundations, and other private organizations, is also present, both within the Security Studies field as well as in other fields where qualitative and quantitative research skills, along with policy and political analysis backgrounds, are marketable and desired. Clearly, there is a need for graduates from the proposed Ph.D. program in Security Studies both in academic and applied settings.

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

Demand by UCF Students

Section A clearly demonstrates the need for the Ph.D. program in Security Studies. In addition, there also exists a high level of demand for this program. Demand was assessed using two different methodologies within two groups of potential recruits for this program. First, survey research was conducted from among approximately 170 undergraduate students enrolled in UCF undergraduate political science courses within the international relations subfield. Second, a focus group was conducted with a graduate seminar in Quantitative Methods of the M.S. in Political Science program at UCF. A clear majority of undergraduate and graduate students expressed that they were interested in such a program.

At the undergraduate level, 170 students enrolled in INR 2002 (International Relations Theory and Practice), INR 4063 (The Cold War), INR 4084 (Politics of International Terrorism) and INR 4115 (Strategic Weapons and Arms Control), took part in a survey comprised of seven targeted questions pertaining to interest in a Ph.D. program in Security Studies. The survey results demonstrate that the sampled students are interested in issues related to security studies and also evince a broad interest among the sample in pursuing a graduate degree and in applying for the proposed program. Survey highlights include the following (see Appendix I.8 for a copy of the survey and the complete survey results):

1. 68% (116) stated that they intended to attend graduate school
2. About half (80) plan to pursue an MA
3. About one-fourth (29) of all surveyed plan to pursue a Ph.D.
4. 63% (71) of those who were interested in pursuing graduate school indicated that they were interested in a Ph.D. with a specialization in Security Studies program
5. 85% (71) of those who expressed interest in a Security Studies Ph.D. indicated that they would likely apply to the Ph.D. in Security Studies program if it were offered at UCF
6. 77% (131) of the students completing the survey identified a career goal; of these, one half (65) indicated that their professional pursuits included fields that incorporated security studies as a primary or secondary field.

Together, the survey of the undergraduate students exhibits strong program interest pertaining to Security Studies graduate programs including high interest levels in applying for the Ph.D. in Security Studies at UCF once it becomes operational. The survey included just 170 students out of an undergraduate population of about 1400 students in Political Science and International and Global Studies together; the fact that out of those 170 students, 71 expressed an interest in applying to the Ph.D. program is an indication that demand for the program is indeed high. It is also noteworthy that such a large percentage of these students intend to pursue a career in security studies or a related field.

The seminar in Quantitative Methods of Political Science is populated with political science graduate students from across the various tracks in political science offered in UCF's Political Science M.A. program because it is required for all tracks. A focus group of this class was conducted on June 23, 2010 by two Political Science faculty members (the course instructor and one other faculty member). Six students were asked questions gauging their interest in, and concerns about, UCF offering a Ph.D. in Security Studies.

Students were uniformly positive in their reaction to the possibility that UCF would be offering a Ph.D. in Security Studies. Statements such as "that's sounds really interesting", "that is the type of degree program that would really appeal to me", "that type of program is exactly what I am interested in" point to the recruitment potential of the current M.A. program and exemplify the existing demand for this program. Other indicators of student interest included questions about when the program would start, whether student assistantships and other funding opportunities would be available, and otherwise very positive body language such as head nodding and smiles.

The demand is also evidenced by existing growth patterns of the department's enrollment in the M.A. program. The number of students enrolled in the program grew in excess of 50 percent from 42 students in 2005 to 65 students in 2009 (see Section IX.D for further detail on program growth).

These data, based on a survey of undergraduate students and a focus group of graduate students, demonstrate strong demand from two UCF feeder populations for the Ph.D. in Security Studies. Clearly, as student reactions exemplify, a strong demand exists in Florida to offer such a Ph.D. in Security Studies.

Within the context of this demand evidenced by UCF undergraduate and graduate students, an environmental scan of available graduate programs in Florida was conducted. It shows that several master's level graduate programs exist that would serve as ideal feeder programs for the Ph.D. in Security Studies offered at UCF. These feeder programs are available at both public and private institutions and ensure a sufficient number of qualified applicants (see Table II.1).

Table II.1: M.A. Programs in Political Science and International Studies in Florida

Institution	Degree Program	Public/Private
Florida Atlantic University	MA in Political Science	Public
Florida International University	MA in Political Science	Public
Florida State University	MA in Political Science	Public
University of Florida	MA in Political Science	Public
University of South Florida	MA in Political Science	Public
Nova Southeastern University	MA in Conflict Analysis and Resolution	Private
University of Miami	MA in International Studies	Private

C. If similar programs (either private or public) exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of any communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). Provide data that support the need for an additional program.

No Ph.D. program in Security Studies exists in the state of Florida (see Table II.2). Thus, this program would provide an additional educational opportunity for students in the state that is currently lacking. There are private institutions in Florida that offer Ph.D. programs in related, albeit dissimilar disciplines. These programs include the Ph.D. in Conflict Analysis and Resolution at Nova Southeastern University and the Ph.D. in International Studies at the University of Miami and also at Florida International University.

Table II.2. Ph.D. Programs in Political Science and International Studies and their Specializations in the State of Florida

Institution	Ph.D. Program	Specializations
Florida International University	Ph.D. in Political Science	American, Comparative, International, Theory
Florida International University	Ph.D. in International Studies	Global Institutions and Issues, Comparative Area Studies, Foreign Policy and Security Studies, International Law
Florida State University	Ph.D. in Political Science	American, Public Policy, Game Theory, Comparative, International Relations
University of Florida	Ph.D. in Political Science	American, Comparative, International Relations, Pol. Behavior, Methodology, Theory, Public Policy
University of South Florida	Ph.D. in Government	Public Affairs, Sustainable Political Communities
University of Miami	Ph.D. in International Studies	International Relations, Comparative Politics, International and Comparative Pol. Economy
Nova Southeastern University	Ph.D. in Conflict Analysis and Resolution	Conflict & Crisis Management, Culture and Ethnic Conflict, International Peace and Conflict, Organizational and School Conflict

In sum, student surveys have demonstrated a high level of demand for the proposed Ph.D. program in Security Studies, while universities in Florida offer few opportunities for students to pursue these interests.

Table II.3 further demonstrates that the demand for an advanced graduate degree in security studies and the existing educational needs are not fully met by existing Ph.D. programs in the state of Florida. A large number of applicants do not pursue a Ph.D. in Political Science or International Relations in Florida.

Table II.3: Applications, Acceptances, and Enrollment in Ph.D. Programs at Public Florida Institutions and in the U.S.

	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Florida International University					
International Rel.-Applications	58	50	35	36	49
International Rel.-Admittance	12 (20.6%)	11 (22%)	9 (25.7%)	15 (41.7%)	13 (26.5%)
International Rel.-Enrolled	5 (8.6%)	6 (12%)	4 (11.4%)	8 (22.2%)	6 (12.2%)
Political Science-Applications	28	21	19	14	19
Political Science-Admittance	15 (53.5%)	10 (47.6%)	7 (36.8%)	7 (50%)	10 (52.6%)
Political Science-Enrolled	8 (28.6%)	6 (28.6%)	3 (15.8%)	2 (14.3%)	7 (36.8%)
University of Florida					
Applications		73	67	91	85
Admittance		34 (46.6%)	36 (53.7%)	41 (45.1%)	47 (55.3%)
Enrolled		14 (19.2%)	15 (22.4%)	15 (16.5%)	18 (21.2%)
Florida State University					
Applications	80	79	82	100	60
Admittance	32 (40%)	46 (58.2%)	31 (38.3%)	47 (47%)	24 (40%)
Enrolled	12 (15%)	19 (24.1%)	11 (13.4%)	19 (19%)	12 (20%)
George Washington University					
Applications			452	432	466
Admittance			110 (24.3%)	117 (27.1%)	125 (26.8%)
Enrolled			26 (5.7%)	25 (5.8%)	29 (6.2%)

At Florida International University, only about 25 percent of applicants are admitted, and just over 10 percent enroll (with the exception of 2008-2009); in Political Science, about 50 percent of applicants are accepted while the enrollment figures are considerably lower. The University of Florida accepts about 50 percent of its applicants for a Ph.D. in Political Science, and approximately 20 percent of applicants enroll. At Florida State University, between 38 and 58 percent of applicants are admitted to the Ph.D. program, but only between 13 and 24 percent enroll. Thus, a large number of students every year are interested in pursuing a Ph.D. in Political Science in the state of Florida but only a small fraction actually enrolls in a Florida university, and none have the opportunity to obtain specialized knowledge in security studies.

Table II.4 similarly illustrates the need for further offerings in Ph.D. programs with an emphasis in Security Studies. Less than one-quarter of applicants at George Washington University are accepted and only about 6 percent of applicants enroll.

The shortage of Ph.D. programs in the state of Florida is also reflected in comparison to other large states, as evidenced by Table II.3. Between 2004 and 2007, Florida awarded a total of 47 doctoral degrees in Political Science, while Texas awarded 83 degrees, New York 332, and California 362 during the same time period.

Table II.4: Political Science Ph.D. Programs and Productivity in Large States, 2004-2007

	Florida	Texas	New York	California
Number of Ph.D. Programs	3	7	13	11
Ph.D. Productivity	47	83	332	362

Source: IPEDS.
Note: The University of South Florida's new Ph.D. program, started in 2009, is not included in the 2004-2007 data (more recent data are not available from IPEDS).

Florida thus lags considerably behind other large states in the country in the production of Ph.D. degrees in security studies, political science, or international studies or related disciplines and only three in the US have the security studies focus. The proposed doctoral program will make a contribution towards closing this gap.

Concerning the potential for collaboration with other universities, the University of Florida in Gainesville is geographically closest to UCF and therefore the most likely institution for potential collaboration in student enrollment. Communication with the University of Florida on possible collaboration indicated that there is currently no interest at UF in regularly having UF students enroll in UCF courses or in opening up UF courses for UCF students (see Appendix I.10). However, individual students always have the opportunity to pursue courses at other universities through Travelling Scholar arrangements, which would be administered on an individual rather than programmatic basis. UCF's developing instructional technology, especially the video course model and videoconferencing, would make it possible for students at other universities within the state to attend courses at UCF from a distance.

D. Use Table 1 (A for undergraduate and B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 40 credit hours per year and graduate FTE will be calculated as 32 credit hours per year. Describe the rationale underlying enrollment projections. If, initially, students within the institution are expected to change majors to enroll in the proposed program, describe the shifts from disciplines that will likely occur.

Enrollment Projections
Table II.5 details admissions (full-time and part-time), completes, and total headcount by year. We project that the first cohort in AY2013-2014 will comprise five full-time students (this seems a realistic estimate given the trajectories of new Ph.D. programs in Sociology at UCF and in Political Science at USF, which both recruited about five students during their first year). This cohort size will remain constant for Year 4, leading to a total enrollment of 15 full-time students by Years 3 and 4. For Year 4, we also expect to enroll two part-time students for a total headcount of all students of 17 (the three students admitted in Year 1 will have graduated). For Year 5, we plan to enroll six full-time students and an additional two part-time students for a total headcount of 20 (three students admitted in Year 2 will have graduated).

Table II.5. Admissions and Headcount, Years 1-5

Year	Admissions			Completes	Headcount
	Full-time	Part-time	Total		
1	5		5		5
2	5		5		10
3	5		5		15
4	5	2	7	5	17
5	6	2	7	5	20

Note: Headcount includes funded and non-funded (part-time) students

Table 1-B details student enrollment, source of student enrollment, and FTE by year.

We estimate that during the first years of the program, the majority of students will come from graduates of Florida public institutions, especially the M.A. in Political Science at the University of Central Florida. The UCF Political Science M.A. program has undergone a steady growth over the last five years, from 42 students in Fall 2005 to 65 students in Fall 2009; during the same time period, at least half of all UCF Political Science M.A. students have been enrolled in the International studies track. Currently, about four M.A. graduates a year are admitted to prestigious Ph.D. programs across the country and are fully funded (e.g. FSU, UF, University of Massachusetts – Amherst, UNC Chapel Hill, Michigan State, Emory, Boston University, Connecticut, Western Michigan, Texas A&M). Many of these students focus on international relations. Data also demonstrate that the quality of graduate students admitted to the M.A. program has increased and that our top M.A. students are well qualified to conduct doctoral-level work successfully: During the academic year 2005-2006, admitted students had a mean GPA of 3.2 and a mean GRE of 1057; in fall 2010, admitted students had a mean GPA of 3.56 and a mean GRE of 1130.

Based on our demand assessment, we expect that a large number of these highly qualified students will apply to the Ph.D. program at UCF. To meet our expected enrollment for our first cohort, we anticipate that our applicant pool will be no smaller than 25, and we plan to offer admission to at least 12 students in Year 1 (based on data from other Florida universities, where approximately one-third to one-half of those admitted actually enroll; see Table II.3). The number of applicants and admitted students will likely increase as the program becomes established and we will meet the need for later, larger cohorts. We also anticipate that during the first years of the program, most other students will primarily come from within the state; once the program is more established, we expect to enroll more out-of-state students. This may include students who are currently employed in organizations or agencies focusing on Security Studies and who aim to earn a Ph.D. in this field to enhance their careers.

Within each cohort, full-time students will enroll during each academic semester, including summer semester (waivers and stipends will be offered for three semesters per year). The summer of Year 3 begins the dissertation process, to be completed by the spring of Year 3. A student who maintains this level of enrollment can graduate in three years as demonstrated by the schedule in Section VIII, D.

TABLE 1-B

PROJECTED HEADCOUNT FROM POTENTIAL SOURCES

(Political Science Ph.D. Degree Program)

SOURCE OF STUDENTS (Non-duplicated headcount in any given year)*	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Individuals drawn from agencies/ industries in your service area (e.g., older returning students)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Students who transfer from other graduate programs within the university**	0	0	0	0	0	0	0	0	0	0
Individuals who have recently graduated from preceding degree programs at this university	2	1.19	4	2.75	6	3.88	6	3.88	7	4.25
Individuals who graduated from preceding degree programs at other Florida public institutions	2	1.19	4	2.75	6	3.88	8	4.63	9	5.05
Individuals who graduated from preceding degree programs at non-public Florida institutions	0	0	0	0	0	0	0	0	0	0
Additional in-state residents***	0	0	0	0	0	0	0	0	0	0
Additional out-of-state residents***	1	0.59	2	1.38	3	1.94	3	1.94	4	2.53
Additional foreign residents***	0	0	0	0	0	0	0	0	0	0
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**5**	**2.97**	**10**	**6.88**	**15**	**9.69**	**17**	**10.44**	**20**	**11.83**

E. Indicate what steps will be taken to achieve a diverse student body in this program, and identify any minority groups that will be favorably or unfavorably impacted. <u>The university's Equal Opportunity Officer should read this section and then sign and date in the area below.</u>

The Department of Political Science has a sound track record in recruiting a diverse student population in both its undergraduate and M.A. degree programs in political science. We will continue to make every effort to seek minority students and women for the proposed program.

We expect that during the first 3-5 years, a significant percentage of students for the proposed program will be recruited from M.A. students in political science, the majority of whom in turn are recruited from UCF undergraduate students majoring in political science. Contact with these students occurs throughout their undergraduate and graduate courses and in informal interaction with departmental faculty. As indicated above, many of our current M.A. students are keenly interested in pursuing this proposed program.

To insure that qualified undergraduates at UCF have the opportunity to obtain graduate training at the master's and doctoral level, we will continue to send information to all our majors. We will use an e-mail list to do so. We will also disseminate information about the graduate program in upper-level courses in political science. We will post information about the program on the departmental website and have the information available at UCF workshops and other events in which graduate education is discussed, such as the annual Graduate Fair. Furthermore, we will distribute information about the program with other offices on campus that target minority students, such as RAMP/McNair. We will also establish contact with UCF student organizations that are categorized as "cultural, ethnic, international" in the listing of student organizations at http://rso.asf.ucf.edu/aspnet/(S(u43thcnzzu2zjuuf3cefvt45))/registered_org_search.aspx, including the African American Student Union, the African Students Organization, the Hispanic American Student Association, and others.

We will also contact other universities in Florida and throughout the United States and send them information about the Ph.D. program. This will contribute to building a more geographically diverse student population. We will also explore opportunities to announce the new program through the American Political Science Association, which reaches a nationwide audience.

Another target group consists of students who are earning a master's degree at military educational institutions, such as the Naval Postgraduate School and the National Defense University. Several members of the advisory board for the proposed program work at, or have close contacts with these institutions.

Our marketing strategy also includes advertising the new program in professional journals, sending announcements to organized sections of the American Political Science Association, and taking informational material to conferences such as the annual APSA meeting, the annual APSA Teaching and Learning Conference, the Midwest Political Science Association meeting, and the Southern Political Science Association meeting. We will also send information to political science departments in HBCUs, such as Jackson State University, where we already have faculty contacts. Furthermore, we will target African-American students within the state of Florida by establishing contacts with Florida's historically black colleges and universities, such as Bethune-Cookman College and Florida A&M University. Furthermore, we will explore advertising opportunities for the program with the National Women's Studies Association and its regional chapters, and the National Conference of Black Political Scientists. These advertising strategies insure that information about the program is distributed to a large and diverse audience.

The proposed program specializes in Security Studies, which makes it unique among Ph.D. programs in Florida; nationally, there are only a few universities that offer this educational opportunity. We expect that the program will therefore attract a diverse student population, including women and minorities. Our marketing strategies aim at encouraging qualified students from diverse demographic backgrounds to seek admission.

James Paul Gaboardi — 3/9/11

Equal Opportunity Officer — Date

III. Budget

A. Use Table 2 to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

Table 2 displays the projected costs and associated funding sources for Year 1 and Year 5. The total cost for the proposed program for Year 1 will amount to $329,265 and to $552,083 for Year 5 (see Appendix II.1 for projected costs for Years 2, 3, and 4). Cost items consist primarily of faculty salaries and student support through assistantships and tuition.

The current budget can fully support the proposed program through Year 5 (see budget details for Year 1-5 in Appendix II.2). The budget details reveal that a large proportion of the cost of the proposed program will be covered by new undergraduate growth money within the College of Sciences and the Department of Political Science (see letter of commitment by College of Sciences Dean Panousis in Appendix II.3). This growth, in the form of additional undergraduate SCHs, is currently strong and expected to continue for the foreseeable future. In addition, the College of Sciences is committed to providing the department a special program initiative allocation, which will be collected from the college's overall revenues generated from undergraduate SCH growth and additional, internal funding sources. To ensure quality faculty involvement in this program, an agreement with the College of Graduate Studies (see Appendix II.4) states that this program will hire two junior and one senior faculty for the program with expertise in security studies prior to the start of the program. Exceeding this commitment, we have the support of the College of Sciences to hire two new lines as a full and associate professor, and fill one replacement line with an assistant professor. The College of Sciences is also committed to provide funds to subsidize the GTA positions (see section X, Table X.3). These funds are committed in the event that the department itself is not able to generate the necessary SCH growth revenues to pay for these expenses, including Faculty/Staff/GTA hires and incidentals identified in the "College of Sciences Recurring and Non-Recurring New Costs" worksheet (see Table III.1). The College's support will be up to but not exceed the annual tuition/stipend commitments (see section X, Table X.3 "Total Student Support, COS Support, Department Student Support") and will be up to but not exceed the total recurring and non-recurring new program costs ($585,975) by the end of Year 5.

TABLE 2

PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1						Year 5				
	Funding Source						Funding Source				
	Reallocated Base * (E&G)	Enrollment Growth (E&G)	Other New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)	Subtotal E&G and C&G	Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	Subtotal E&G and C&G
Faculty Salaries and Benefits	$109,893	$19,627	$0	$0	$0	$129,520	$115,254	$40,128	$0	$0	$155,382
A&P Salaries and Benefits	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
USPS Salaries and Benefits	$0	$36,096	$0	$0	$0	$36,096	$0	$36,096	$0	$0	$36,096
Other Personnel Services	$15,218	$0	$0	$0	$0	$15,218	$0	$0	$0	$0	$0
Assistantships and Fellowships	$24,000	$61,000	$0	$0	$0	$85,000	$24,000	$315,002	$0	$0	$339,002
Library	$0	$51,431	$0	$0	$0	$51,431	$0	$16,603	$0	$0	$16,603
Expenses	$0	$12,000	$0	$0	$0	$12,000	$0	$5,000	$0	$0	$5,000
Operating Capital Outlay	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Special Categories	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Costs	$149,111	$180154	$0	$0	$0	$329,265	$139,254	$412,829	$0	$0	$552,083

*Identify reallocation sources in Table 3.
**Includes recurring E&G funded costs ("reallocated base", "enrollment growth", and "other new recurring") from Years 1-4 that continue into Year 5.
***Identify if non-recurring.

Faculty and Staff Summary

Total Positions (person-years)	Year 1	Year 5
Faculty	0.98	1.19
A&P	0	0
USPS	1	1

Calculated Cost per Student FTE

		Year 1	Year 5
Total E&G Funding		$329,265	$552,083
Annual Student FTE		2.97	11.83
E&G Cost per FTE		$110,910	$46,662

In addition to department and college funding, the Graduate College will also provide support to the program in the form of two additional tuition waivers each year, while the department will transfer three tuition waivers currently provided to the master's program to the doctoral program, for a total of five tuition waivers. These university tuition waivers will offset tuition in an amount between $29,560 and $41,055 each year (amount varies based on student enrollment year, see Table X.4).

Faculty Salaries and Benefits:
Faculty for the Ph.D. program include 11 current faculty members who will take primary responsibility for student instruction and supervision and an additional three hires, one of which will be an assistant professor position as a replacement on an already existing line; the other two positions will be new and at the senior level, one associate professor and one full professor (See Table 4 in Section IX for details and FTE assignment per faculty member involved). For Year 1, the expected cost of faculty salary and benefits amounts to $129,520, which will be funded by a reallocation of the department's E&G base budget ($109,893) and new undergraduate enrollment growth for the College of Sciences and the department ($19,627). For Year 5, faculty salaries and benefits will amount to a total of $155,382, which will be funded through the continuing E&G base allocation for the Department of Political Science ($115,254) and new enrollment growth ($40,128).

USPS Salaries and Benefits:
The program proposal includes the position of a Graduate Program Assistant, who will be classified as an Admissions Specialist. This is a new position to be hired in Year 1 and budgeted at $36,096 per year as a recurring cost item. The position will be funded by the college's special program initiative.

Other Personnel Services:
Other personnel services are listed for Years 1 and 3 in the amount of $15,218. These funds will be used for Professor Stephen Sloan, an internationally known expert on terrorism, who will serve as a resource consultant for the program (Dr. Sloan is currently the Lawrence J. Chastang Distinguished Professor of Terrorism Studies in the Office of Global Perspectives and a member of the Department of Political Science) and will also teach a course in Year 3. These expenses will be covered by reallocation of existing base E&G funds.

Table III.1 College of Sciences Recurring and Non-Recurring New Costs

Year	Faculty-Staff-GTA Hires	Salary	Benefits	Total	Total Costs by Year
Pre-startup-Year 1 [2010-2013]	3 new hires (Assistant, Assoc, Full Professor)	$263,000	$81,084	$344,084	$688,168
	GTA Stipend-Tuition Support [chart]	$40,000		$40,000	
	Staff-Admissions Specialist	$28,250	$9,639	$37,889	
	Non-Recurring Library			$5,000	
Year 2 [2014-2015]	GTA Stipend-Tuition Support [chart]	$111,202		$111,202	$498,175
	Non-Recurring Library			$5,000	
Year 3 [2015-2016]	GTA Stipend-Tuition Support [chart]	$192,257		$192,257	$579,230
	Non-Recurring Library			$5,000	
Year 4 [2016-2017]	GTA Stipend-Tuition Support [chart]	$190,615		$190,615	$572,588
Year 5 [2017-2018]	GTA Stipend-Tuition Support [chart]	$204,002		$204,002	$585,975

Assumptions Made

1. **Full Professor and Associate Professor Salary based on 2009-2010 AAUP Salary Data from Doctoral South-Atlantic Institutions**
2. **GTA Tuition Costs set at 328.44. Hours vary by year.**
3. **GTA Stipend based on $17,000 per academic year**
4. **Timing of when Faculty #'s 2-3 and Staff Would begin is best guess**
5. **Used USPS Admission Specialist - Class Code 176 to calculate salary [between Program Assistant & Office Manager]**

Assistantships and Fellowships:
In Year 1, the cost for student assistantships and tuition will amount to $85,000 for the first cohort of five full-time students. This includes assistantships at the rate of $17,000 per student. Assistantships will be funded by a reallocation of existing E&G funds ($24,000 per year) and new enrollment growth dollars. Tuition for the first cohort will be covered by university tuition waivers; for a detailed description of student support, see Section X.H.

In Year 5, the total cost of student support will amount to $339,002. This will cover assistantships for 16 funded, full-time students as well as tuition for 11 students not covered by university tuition waivers (five students will receive university tuition waivers; four part-time students will not be funded).

Library:
The library review (see Section X.B) recommends that additional resources are being acquired in the total amount of $116,823 for Years 1-5. The cost will be highest in Year 1 when new databases essential to the program will be acquired. Costs include non-recurring (primarily books) and recurring (primarily subscriptions to databases) expenses. The library expenses will be covered by COS and departmental new enrollment growth.

Expenses:
Expenses for Year 1 include several miscellaneous items, such as materials for recruitment and recruitment activities, and additional travel associated with the new program. By Year 5, as the program becomes more established, expenses will have been cut down to $5,000, which will cover travel costs for five students per year to a professional conference. Funds for expenses will be covered by COS and departmental new enrollment growth.

Table 3 displays how existing E&G funds will be shifted to support the new program in Year 1. In total, $149,111 out of the existing base allocation of $2,334,021 will be used to support the new program. These reallocated funds include $109,893 for faculty salaries and benefits, $15,218 for Other Personnel Services, and $24,000 for Ph.D. student stipends that will be reallocated from the department's M.A. program. The base after reallocation will amount to $2,184,910 for Year 1.

TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION AND GENERAL FUNDS

Program and/or E&G account from which current funds will be reallocated during Year 1	Base before reallocation	Amount to be reallocated	Base after reallocation
2411 2074 Department of Political Science	$2,334,021	$149,111	$2,184,910
Totals	$2,334,021	$149,111	$2,184,910

While the College of Sciences and the Department of Political Science have committed a sufficient portion of funding to support the proposed program through Year 5, the program will also provide savings and additional funding sources will be generated that can be used to supplement or substitute for expected growth money as the program progresses. This includes the following:

- The Lou Frey Institute, housed in the Department of Political Science, has committed to provide some level of funding for Ph.D. students; however, at this time, the exact amount cannot be specified. Furthermore, Dr. Doug Dobson, the Director of the Lou Frey Institute, has committed to include funding for Ph.D. students in future grant applications (see letter of commitment in Appendix II.5).

- Students, beginning in their second year in the program, will have the opportunity to offer courses as instructors of record. While students might teach a specialized, upper-level course as they near degree completion, they will also teach large undergraduate sections that are currently covered by adjunct faculty. This will help save the department adjunct cost of $3,000 per course offered, while specialized upper-level courses may produce additional growth dollars.

- The department has begun to offer large undergraduate sections online, which are available to students at regional campuses. Currently, the department receives money from the regional campuses to pay graduate stipends to assist with the courses. Currently, RCA provides $2,000 for online courses capped at 75 students, and an additional $500 if the enrollment cap is set for an additional 25 students (i.e. $2,500 for an enrollment cap of 100, $3,000 for an enrollment cap of 125, etc.). Thus, the department's online section of the GEP course POS 2041 American National Government, capped at 500 students, is supported by RCA by $10,500. All of these monies are designated to be used for GTA stipends. While the amount of money the department receives for this purpose cannot be accurately predicted for future years, funding from regional campuses for large online sections is likely to continue and will be used to support GTA assistantships for students in the program, thus reducing the need to rely on undergraduate enrollment growth money from the College of Sciences and the Department of Political Science.

- Currently, C&G funding is not identified as a funding source for the program. While the department has been grant active (see Section IX.D for details), these grants do not generally include assistantship funding. However, it is expected that the new senior hires for the proposed program, and especially the new hire of a Professor, will be able to attract grant funding that will include student support. We are currently identifying potential grant agencies, such as that by our partnership organization Siemens, which has established a $100 million fund for its "Integrity Initiative" to fight corruption and further economic security.

- Given the applied nature of the program with a focus on Security Studies, it is likely that some students will enter the program with external funding, e.g. students who work in the field of Security Studies and will pursue their Ph.D. funded by their employers. While the

proposal provides secure funding for all admitted full-time students, if externally funded students are admitted, the resulting savings would further help in assisting the program financially.

- Successful applicants for the Ph.D. program will be assisted in applying for external funding opportunities and will be proposed for UCF scholarships as detailed in Section X.H.

The department will continue to take advantage of these, and other, possibilities to attract additional funding for the program and to use savings resulting from the program to fund budget items. This will reduce the program's dependence on growth money.

Overall, as stated in the letters by College of Sciences Dean Panousis and Department of Political Science Chair, Dr. Handberg (see Appendix II.3 and II.6, respectively), the commitment by the College of Sciences and the commitment and reallocations by the Department of Political Science provide a budget for the program that is realistic and will allow the proposed program to succeed. Appendix II.7 provides a budget summary analysis that shows a decreasing cost/FTE and relatively stable program costs as of Year 3. Other sources of potential additional funding or savings will be pursued as available, will be used to support the program, and when acquired will offset college and departmental costs.

B. If other programs will be impacted by a reallocation of resources for the proposed program, identify the program and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

The biggest impact of the proposed Ph.D. program in Political Science will be on the department's B.A. program and on the department's M.A. programs.

Faculty effort will shift from the B.A. program to the Ph.D. program (see budget for details). We do not anticipate these shifts to have a negative impact on enrollment rates, however, because the shifts in faculty effort will be offset by the hiring of two new faculty members (in addition to one new hire on a replacement line). The program will offer 12 courses per year. The new hire at the rank of Professor is expected to teach three courses per year; the Associate Professor four courses; and the Assistant Professor five courses per year, for a total of 12 courses per year. This will cover the increased teaching load necessitated by the new program. While these new hires will be recruited with the primary aim of supporting the Ph.D. program, they will also teach undergraduate courses as the teaching effort collectively shifts among the faculty within the program.

Moreover, the addition of three new faculty members (two senior positions) with outstanding research records, and a heightened emphasis on research among the existing faculty members, will improve the quality of instruction at the undergraduate level as courses will be infused with knowledge of cutting-edge research.

Furthermore, we anticipate that Ph.D. students, starting in their second year, will have the opportunity each year to teach at least two courses at the undergraduate level as instructors of record. This will help meet the expected undergraduate course demand in a growing program, will increase the number and range of course offerings available to undergraduate students, and will further compensate for a shift in effort of existing faculty members from the undergraduate to the graduate level. While GTAs will be able to teach upper-level courses in their area of expertise in their last semester, most of their assigned courses as instructors of record will be lower-level courses. Currently, many of those introductory sections are covered by adjunct faculty. Consequently, having highly trained Ph.D. students cover some of these sections will reduce the need for adjunct faculty. We expect that starting in Year 3 (when the first two cohorts will be teaching), eight undergraduate sections currently taught by adjuncts would be covered by GTAs as instructors of record. Compensation for adjuncts is currently at $3,000 per section; thus, we expect the GTAs as instructors of record to save $24,000 per year. Overall, we expect that these additional undergraduate offerings will reduce the necessary budget reallocations by about .8 FTE, or approximately $110,000.

While Ph.D. students may teach as instructors of record starting in their second year, during their first year, all Ph.D. students will serve as Graduate Teaching Assistants. This will increase the total number of GTAs available to assist professors with instruction, providing needed support to existing faculty and valuable exposure and mentoring opportunities to the Ph.D. students. Undergraduate students will benefit from the GTAs, who will be available to assist with assignments, office hours, and assistance in the departmental computer lab and with online instructional technology.

Undergraduate students will also benefit from the added emphasis on cutting-edge research that the Ph.D. will incentivize. This additional emphasis on research will present new research opportunities for undergraduate students, for example through the UCF Research and Mentoring (RAMP) and McNair programs, Honors in the Major theses, Student Mentor Academic Research Teams (SMART), or independent research courses. The department's undergraduate population will also benefit from the additional library resources that are part of this proposal for a Ph.D. program (see Section X.B.).

The proposed Ph.D. program will necessitate that the department revise the existing M.A. program and carefully streamline the requirements and course offerings to synchronize them in preparation for the requirements of the Ph.D. program. This might, for example, impact the type of electives that are offered for the M.A. program and the number of tracks the department will continue to offer. In addition, the focus of student support will shift from the M.A. program to the Ph.D. Three of six M.A. tuition waivers and stipends will be allocated to students in the Ph.D. program. This means that the department's commitment to the master's program will continue, but the emphasis of financial support will lie with the Ph.D. program. Given the current

number of M.A. students who provide their own funding, we do not expect that M.A. student enrollment will be negatively affected.

We anticipate that the quality of the M.A. seminars will improve as Ph.D. students will be able to take graduate courses open to M.A. students for their elective courses. M.A. students will thus be familiarized with Ph.D. level work and expectations, which will raise the overall quality of our M.A. program and better prepare M.A. students planning on pursuing a doctoral degree. Students enrolled in the M.A. program will benefit by being able to attend several activities related to the Ph.D. program, such as dissertation defenses, and M.A. students planning on applying for a Ph.D. upon completion of their degree will be strongly advised by their faculty advisor to take advantage of such opportunities so they will be familiar with the expectations for Ph.D. level work and well prepared to undertake advanced graduate work. M.A. students will also benefit from the additional library resources made available through the proposed Ph.D. program.

C. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

Students in the proposed program will have the option of enrolling in up to six credit hours in courses offered by other departments. These courses (listed in section VIII) already exist and are already offered by the respective departments. We have contacted the department chairs to secure permission for our students to enroll in those courses. Permission has been granted by the chairs of the Criminal Justice Department, the History Department, and the Public Administration Department; these communications are located in Appendices I.11-13. No new resources would be needed as these courses already exist and the departments offering these courses will retain complete scheduling freedom.

D. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

The Department has already begun the search for funding among federal agencies including the Central Intelligence Agency, which has designated UCF as one of the institutions on which to focus its recruitment efforts. This opens up the possibility that students can be funded through the CIA's summer internship program, which carries over into the academic year and offers financial support. Furthermore, the Department of Political Science houses the Lou Frey Institute, which operates a joint center in partnership with the Bob Graham Center at the University of Florida. Preliminary conversations are under way to expand that partnership from its present focus on civic engagement to incorporate an initiative into the area of international security that would provide support for both faculty and students working in the program proposed here. In addition, through UCF's Office of Global Perspectives, the Department is engaged in developing several regional study programs and an interdisciplinary program in Peace and Security Studies Program. Several of those programs have received outside donor funding and include the Kurdish Political

Studies Program and the India Program. The Kurdish Political Studies Program has established a chaired professorship in Kurdish Political Studies, which supports the Middle East aspect of the proposed Ph.D. program, while the India Program is funding various activities and is proposed to expand to include a chaired professorship in India/South Asia Political Studies, which would greatly strengthen the area studies aspect of the proposed Ph.D. program. The first one of these chaired professorships is funded and is awaiting the match by the State of Florida. In addition, the Department of Political Science and the Office of Global Perspectives are engaged in establishing and funding the China-Taiwan Cross-Strait Program. All of these programs provide support for bringing in outside scholars and scholarships. We have also begun to identify outside granting agencies to pursue grants that could support doctoral students as part of the grant, such as the Siemens Integrity Initiative on fighting corruption and enhancing economic security in collaboration with the World Bank, a $100 million program administered over 15 years.

In addition to these potential funding opportunities, current and new faculty members as well as Ph.D. students will be encouraged to apply for grants to support their research. Federal funding agencies and private foundations that offer funding for research in security studies include the National Science Foundation, the United States Institute of Peace (which has a special program for Ph.D. students, the Jennings Randolph Peace Scholarship Dissertation Program), the Ford Foundation, the Social Science Research Council, the Rockefeller Foundation, the National Endowment for the Humanities, and the Pew Charitable Trust. Students who need to spend time abroad to complete their studies are encouraged to apply for a Fulbright scholarship.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Table 1, Table 2, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

The benefits of the proposed degree program for the university, the local community, the state, and the country as a whole will be substantial and significant. The program will benefit the university as it will add to UCF's prominence in research and education. Two additional senior faculty members (one at the rank of Professor, one at the rank of Associate Professor) will be hired prior to the start of this program in addition to the assistant professor who was hired this year. These faculty members are likely to bring additional funding to the university; once the program is established, we also expect that grant activity in the department will increase. Students in the existing undergraduate and M.A. programs will benefit from additional library resources; undergraduate students will benefit from improved instruction as additional GTAs will be available to assist instructors and advanced Ph.D. students will be able to offer additional courses as instructors of record. As the program will be one of only a few of its kind in the country, UCF will gain national prominence in this field.

The proposed program will make a substantial contribution to further the security interests of the state and the nation. The local and regional community and the state will benefit because the

program will produce highly qualified graduates who will be able to make a major contribution to the workforce, including for local and regional industries that have a security need for their international operations and projects. Nationally, few graduates will have similar qualifications as those of the proposed program, and we expect our graduates to make a major contribution as highly educated members of the workforce possessing a specific skill set and knowledge based needed of professionals in the field within the state and nationally. These highly developed skills and knowledge include data analysis, data mining, and a broad comprehension of issues specific to the security of the state of Florida and the nation. Florida houses defense industries, the Kennedy Space Center, a long coastline, and major ports, all of which are sensitive to security issues. Security is also an issue of utmost significance at the national level, and the industry related to security is large. Florida currently employs over 723,000 individuals in the security area; an additional $8 billion are expected to be added to the state's defense and security sector in the next two years, creating additional jobs in this field. The need for cleared personnel exists and will continue with relevant necessary backgrounds in international affairs, intelligence, and languages – skills that the proposed Ph.D. program will provide.

In sum, Florida's multiple military installations produce an ongoing demand for persons with advanced security studies training. The state offers many employment opportunities for graduates holding a Ph.D. in Security Studies who will thereby also make a contribution to Florida's economy as they take on high-paying employment.

To illustrate, several private security companies focusing on homeland security are housed in Florida and are expressing a need for individuals with security studies backgrounds. For example, Centauri Solutions (a member of the Inc. 500 list) is hiring Senior All Source Analysts and Senior Intelligence Analysts in Tampa. Several private companies are currently recruiting to fill positions at Eglin Air Force Base in northwest Valparaiso, Florida. These jobs pay between $50,000 and $62,000 per year. The military community currently lists 324 job openings in Florida on military bases that include the term "security specialist" in the position description with starting salaries in the $65,000-$80,000 range. Our graduates would thus make a valuable contribution to Florida's economy.

V. Access and Articulation – Bachelor's Degrees Only

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a request to the BOG for an exception along with notification of the program's approval. (See criteria in BOG Regulation 6C-8.014)

N/A

B. List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see the Common Prerequisite Manual at FACTS.org). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students

prior to entrance to the major program, not simply lower-level courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as "limited access."

If the proposed prerequisites ~~they~~ are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional "track" of prerequisites for that CIP. Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

N/A

C. If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation. Explain how the university will ensure that community college transfer students are not disadvantaged by the Limited Access status. NOTE: The policy and criteria for Limited Access are identified in BOG Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.

N/A

D. If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see Statewide Articulation Manual at FACTS.org). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.

N/A

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan.

The SUS Strategic Plan contains the following mission statement for the University of Central Florida:

> The University of Central Florida is a public multi-campus, metropolitan research university, dedicated to serving its surrounding communities with their diverse and expanding populations, technological corridors, and international partners. The mission of the university is to offer high-quality undergraduate and graduate education, student development, and continuing education; to conduct research and creative activities; and to provide services that enhance the intellectual, cultural, environmental, and economic development of the metropolitan region, address national and international issues in key areas, establish UCF as a major presence, and contribute to the global community.

The University of Central Florida's Strategic Plan contains a slightly modified mission statement:

> The University of Central Florida is a public multi-campus, metropolitan research university that stands for opportunity. The university anchors the Central Florida city-state in meeting its economic, cultural, intellectual, environmental and societal needs by providing high-quality, broad-based education and experienced-based learning; pioneering scholarship and impactful research; enriched student development and leadership growth; and highly relevant continuing education and public service initiatives that address pressing local, state, national, and international issues in support of the global community.

The proposed program in security studies relates directly to UCF's mission as contained in the SUS Strategic Plan and the university's Strategic Plan. It will expand the educational opportunities for students in the Central Florida city-state and provide continuing, high-quality education. The program will address central security issues for the state of Florida, which is affected by security concerns regarding its long coastline, major port facilities, and central military installations and industries. Florida houses one of the nation's largest defense and homeland security clusters that have an economic impact on the state of $52 billion. In addition to seven Navy and Marine bases, Florida houses eleven Coast Guard bases and six Air Force bases including MacDill Air Force Base, the headquarters for the wars in Iraq and Afghanistan, as well as Southern Command. Furthermore, Florida's extensive coastline establishes a need for border security. The military and defense communities currently fund more than 723,000 jobs and more positions are likely to open with an additional $8 billion expected to flow into the state's defense and security sector in the next two years. Florida's private industries have a security need for their international operations. Security issues are thus of central importance for Florida and its economy, and the proposed degree program would centrally feed into the existing security and defense economy in the state. The proposed program would provide highly relevant continuing education for the state of Florida that addresses security issues that present pressing local, state, national, and international issues in support of the global community.

The program's focus on international security will directly address the security needs of the region and the state, but it will also help establish international partnerships. The program will enhance the university's pioneering scholarship and research profile as research conducted by

faculty members and graduate students constitutes an integral part of the Ph.D. program. The program will enhance the intellectual and economic development of the metropolitan area by creating the opportunities for lectures open to the UCF population and the public and by contributing to a highly educated workforce that is qualified to take on leadership positions in diverse areas. Furthermore, the program has as its core national and international issues in the key areas of national and international security. As there are just a few programs nationally and no program exists within the state of Florida with this focus, it will establish UCF as a major presence and make a solid and valuable contribution to the global community. The proposed program is thus central to the mission of the University of Central Florida.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

The proposed program specifically relates to existing institutional strengths. The Department of Political Science offers a B.A. degree in International and Global Studies that has exhibited strong growth since its inception; similarly, the Comparative Politics/International Relations track within the Political Science B.A. attracts a large number of students.

The Department of Political Science also has a strong and successful M.A. program that has exhibited steady growth over the last five years. There is a consistent pattern that over half of the M.A. students are enrolled in the International Studies track (53 percent in 2005, 52 percent in 2006, 56 percent in 2008, and 50 percent in 2009). The Ph.D. program is designed to build on these existing institutional strengths that provide a strong international focus for the Department of Political Science.

In addition to the growth of both the M.A. and the B.A. programs, the department has been able to provide quality instruction and academic experience. These experiences are illustrated, for example, by a growing number of undergraduate students completing an Honors in the Major thesis and winning scholarships and awards for those theses; at the graduate level, M.A. students have presented their research at professional conferences, have co-authored peer-reviewed articles with professors, and have been accepted at top-ranked Ph.D. programs; at the level of faculty members, several professors have won university-wide and college-wide teaching awards. Thus, the Ph.D. program builds on existing faculty strengths in the area of teaching and individual student supervision.

Outside of the Department of Political Science, the proposed program relates to UCF's institutional strengths particularly through the Office of Global Perspectives. The Office of Global Perspectives regularly hosts speakers and events on international issues, including security issues. The Office's theme for 2010-2011 is "Global Peace and Security," directly relating to the proposed degree. For example, in spring 2010, speakers and events relating to security included, among others, Jeffrey Helsing (United States Institute of Peace), John Schindler (U.S. Naval War College), Ambassador Ulric Haynes, George A. Lopez (Kroc Institute for International Peace Studies, Notre Dame University), Anupam Srivastava (Center for International Trade and Security, University of Georgia), Scott Worden (United States Institute of

Peace), Jeff Smith (American Foreign Policy Council), Isaac Kfir (Institute for Counter-Terrorism, Herzliya, Israel), Ambassador Gary A. Grappo, Paul Hirschson (Deputy Consul-General, Consulate General of Israel, Miami, FL), Ambassador Myles Frechette (Senior Associate, Center for Strategic and International Studies), and Jamie McIntyre (Former CNN Senior Pentagon Correspondent). The Office of Global Perspectives is thus a UCF partner that will provide curriculum enrichment to the proposed program by offering students opportunities to attend events and talks. It also provides numerous opportunities for students in the program to make contacts with leading experts in the field of security studies, both from an academic and non-academic background.

Other existing institutional strengths at UCF include the Lou Frey Institute of Politics and Government, which hosts semi-annual symposia that often relate to the core interests of the proposed degree. For instance, the theme for the fall 2010 symposium was "Florida's Future: The Space Program and Beyond," directly addressing topics of space security and Florida's economic development. Previous symposia addressed issues such as immigration, Homeland Security, the United Nations, the Space Program, and the Middle East. The Lou Frey Institute thus affords students in the proposed program opportunities for curricular enhancement, as well as opportunities to establish contacts with academic and non-academic experts in the field.

In addition, the proposed program will have a multi-disciplinary component by offering students the opportunity to enroll in relevant courses (up to 6 credit hours) offered by other departments, including Criminal Justice, History, and Public Administration. The program will thus relate to existing expertise in the area of security outside of the Department of Political Science.

The Department of Political Science is also developing partnerships with the Department of Modern Languages to ensure that languages such as Russian, Chinese, and Arabic are regularly offered for a two-year sequence since those languages are spoken in areas of crucial importance for security studies. These expanded language course offerings would benefit students across the university by providing them with more choices to complete their language graduation requirement especially for programs that require proficiency in a foreign language. For example, the M.A. in Public History requires reading proficiency; the B.A. in International and Global Studies and the M.A. in Political Science – International Studies track require proficiency at the two-year level.

One of UCF's institutional strength lies in the area of human factors psychology in the Psychology Department. It is expected that newly recruited political science faculty members specializing on decision-making and conflict resolution will seek collaboration and partnerships with the Psychology Department in the area of human factors.

Furthermore, the proposed program will link to the Kurdish Political Studies Program and the India Program, which currently exist within the Office of Global Perspectives at UCF. Both programs are awaiting state matching funds. These programs provide support for bringing in outside scholars and scholarships. These programs will benefit the proposed Ph.D. program by expanding outreach to two core areas for security. They would also benefit the program by making a contribution to the university through the chaired professorships, which would bring nationally and internationally known scholars to UCF and thus add faculty resources. These

programs would also expand the range of guest speakers through the Office of Global Perspectives and potentially offer funding opportunities for Ph.D. students.

In addition, the Public Affairs doctoral program at UCF is very strong in risk assessment and homeland security issues and has received federal funding. Public Affairs has created the Center for Public and Nonprofit Management in 2009 and Dr. Kapucu received $1 million in funding from the federal Health and Human Services Agency for capacity building, $0.5 million from the federal Department of Education to research and improve the UCF emergency management plan, and $ 0.25 million from the National Science Foundation to develop emergency management team building in a metropolitan area. It is expected that the political science faculty will work closely with the Public Affairs faculty on these joint interests.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology (table) of activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

This proposal for a Ph.D. program in Security Studies has evolved from discussions within the Department of Political Science, other UCF departments, UCF administrators, and other SUS institutions over the last 15 years. While the department has long pursued the idea of a Ph.D., its vision for the program has not always matched the priorities of its proposed partners within the university and at other institutions, and has not always been a priority for UCF. This has resulted in a series of conversations and white papers that eventually needed to be revised and redrafted. During this process, the Department of Political Science has continued to grow its existing Master's program, increase the quality of the students admitted to the Master's program, and emphasize research expectations for existing and new faculty members in preparation for a Ph.D. program. The department has also extended its international focus through the addition first of an International Studies track and then a B.A. degree in International and Global Studies. At the M.A. level, the department also added an International Studies track. Faculty recruitment similarly emphasized the international area. A program review conducted in 2003-2004 by an external consultant emphasized the crucial significance for the department to develop a Ph.D. program. To quote from the report, "The real issue for the political science department is how best to develop an appropriate Ph.D. program." The report recommends that "over a 3-to-6 year time frame, the department should work with the Dean, the Provost, and the University to establish a well-conceived Ph.D. program."

The Department has followed this recommendation by conceptualizing a potential doctoral program with a focus on Security Studies as UCF had indicated it would reconsider the plan for a Ph.D. in 2007 and beyond. The white paper for such a program was accepted by the Dean of the College of Sciences and by the Provost in Spring 2010, and the program added to the 3-year Program Plan of the university. Beginning in Spring 2010, a four-member departmental Ph.D. committee, the Department Chair, the Vice Provost and Dean of the College of Graduate Studies, and the Assistant Dean of the College of Sciences, have written the proposal for a Ph.D. in Security Studies.

Table VI.1. Planning Process

Date	Participants	Planning Activity
1995-1996	Ph.D. Program Committee, Department, 7 members along with 4 faculty from the UCF Economics Department	Planning for a Ph.D. with emphasis in Political Economy, partnership with the Economics Department, withdrew proposal when Economics moved in direction of Ph.D. in Environmental Economics under its new Dean.
1996-1998	Departmental Ph.D. ad hoc committee, 7 members along with 5 faculty from USF Political Science/Public Administration Department	Planning for Cooperative Ph.D. with University of South Florida, preliminary proposal drawn up with planning meeting held in Lakeland at the Cracker Barrel Restaurant with USF Political Science and Public Administration faculty, proposal lapsed due to USF faculty demands that UCF Political Science adjust its proposal to accommodate other faculty at UCF that were not part of the planning concept.
2002-2003	Departmental Ph.D. Committee, 9 members with assistance from other department members, focus on Public Policy	White paper drawn up, Dean of Arts & Sciences did approve inclusion in CAS 5-year plan, as part of the analysis supporting the proposal analysis of faculty research found department ranked in upper half of all Political Science Ph.D. Departments nationally. Not included in university program plan.
2003-2004	Departmental Ph.D. Committee, 9 members, focus on International Politics and Security Studies	White paper generated, Dean of Sciences supportive although lower priority; it was decided that this request would be reconsidered in 2007 and beyond.
2003-2004	External program reviewer	Report emphasizes the crucial need for the department to develop a Ph.D. program
2008-2009	Departmental Ph.D. committee, 7 members, focus on Ph.D. in Security Studies	White paper accepted by Dean and Provost in Spring 2010. Program added to 3-year Program Plan of university.
May 2010	Departmental Ph.D. committee, 4 members, plus Department Chair	Committee began formulating program proposal. Curriculum section drafted. Library study undertaken.
June 2010	Proposal Committee, Graduate Dean, Department Chair, Assistant Dean of Sciences	Draft of curriculum section complete. Started formulating need and demand sections.
July 2010	Proposal Committee, Graduate Dean, Department Chair, Assistant Dean of Sciences	Completed all sections except for program review and budget.
August 2010	Proposal Committee, Graduate Dean, Department Chair, Assistant Dean of Sciences	Completed all sections of proposal. Invited consultants to talk with us and review the proposal on August 25 and 26.
September 2010	Graduate Committee of Department	Graduate committee of Political Science department recommends approval of proposal.
November 2010	College of Sciences Graduate Committee	College of Sciences Graduate Committee recommends approval of proposal.
December 2010	Graduate Council	University Graduate Council recommends approval of proposal
February 2011	BOT	Board of Trustees recommends approval of proposal for Fall 2012 start date
March 2011	BOG	Considers approval of proposal for Ph.D. program in Security Studies at UCF

Events Leading to Implementation

Upon approval of the proposal, the department will engage in activities leading to the implementation of the program. During AY 2011-2012, the activities will focus on developing and disseminating recruitment materials, admitting students, and reviewing the existing M.A. program to ensure coherence with the Ph.D. program. Beginning in fall 2013, the first cohort of admitted Ph.D. students will begin taking courses. The first class of Ph.D. students will complete their degree and graduate in spring 2016.

Table VI.2. Implementation Activities

Date	Implementation Activity
Summer 2011-Summer 2012	Development of webpage, flyers, and other promotional materials; sending out information about the program to relevant institutions and organizations; recruit students. New assistant professor with expertise in security studies is hired and arrives in Fall 2011. Focus on obtaining external funds to support the program.
Fall 2011-Spring 2013	Revise existing M.A. program to ensure coherence with Ph.D. program; actively recruit students; prepare Ph.D. Handbook; hire admissions specialist for Ph.D. program. Hire second senior faculty member with expertise in security studies for Fall 2012. Focus on obtaining external funds to support the program.
Spring 2013	Evaluate applications; admit first cohort of students
Summer 2013	Complete contract work for admitted students; make decisions on GTA assignments; assign faculty advisors to students; conduct orientation for admitted students at the end of summer.
Fall 2013	First cohort begins course work; recruit students for second cohort
Spring 2014	Admit second cohort of students; conduct Qualifying Exams and first annual review for first cohort of students.
Summer 2014	Recruit third cohort of students; conduct orientation for new students; assign faculty advisors to new students; make decisions on GTA assignments.
Fall 2014	Second cohort of students begins course work; recruit students
Spring 2015	Admit third cohort of students; conduct Qualifying Exams for second cohort; conduct annual review.
Summer 2015	Recruit fourth cohort of students; conduct orientation for new students; assign faculty advisors to new students; make decisions on GTA assignments.
Fall 2015	Third cohort of students begins course work; recruit students. First cohort will enter candidacy in the 2015-2016 academic year.
Spring 2016	Admit fourth cohort of students; conduct Qualifying Exams for third cohort; conduct annual review; first cohort defends dissertation and graduates with a Ph.D. degree; 2nd cohort has completed candidacy.

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

The Department of Political Science conducted a comprehensive review of its programs in 2003-2004. The external reviewer provided a positive evaluation of the department's undergraduate and graduate programs and supplied a list of recommendations to strengthen these programs further (see Appendix I.9 for report). The program review also included a review and recommendations by the Dean of the College of Arts and Sciences. The following is a list of the recommendations of the external consultant and the Dean and of the efforts undertaken in implementing these recommendations with respect to the graduate program.

Consultant's recommendations for the Political Science Master's Program:

- Over a 3-6 year time frame, establish a well-conceived Ph.D. program. *Implementation*: preparation of white paper and, upon approval, proposal for a Ph.D. in Security Studies.
- Growth of M.A. program. *Implementation*: The program has grown from 32 students in Fall 2002 to 65 in Fall 2009, an increase exceeding 100 percent.

Consultant's recommendations for the Political Science Department:

- Department needs to seriously address the idea of putting together a proposal for a doctoral program. This program should be "something beyond a 'niche' and something less than a comprehensive program." *Implementation*: current proposal emphasizing Security Studies.
- Stronger leadership and greater commitment to the doctoral program within the department. Suggestion to choose an international focus. *Implementation*: Leadership provided by Ph.D. proposal committee. Commitment to the doctoral program demonstrated by recent hire in the area of Security Studies. The area of Security Studies clearly provides an international focus.
- Strengthen leadership and improve quality of the program by hiring one or two senior faculty. *Implementation:* Ph.D. proposal includes request for two senior hires.
- Hire additional staff person. *Implementation*: Admissions specialist is part of the Ph.D. proposal.
- Improve the quality of research outlets and target major national journals. *Implementation*: Several faculty members have published their work in major national journals in their field.
- Seek grants of all types. *Implementation*: Several faculty members have successfully applied for grants from different funding agencies (see Section IX.D.).

Dean's recommendations for M.A. program:

- Increase enrollment and reallocate resources. *Implementation*: Program growth from 32 students in Fall 2002 to 65 in Fall 2009; reallocated resources to offer additional courses at the graduate level and to provide additional GTA support.
- Seek additional GTAs to help handle growth of introductory courses. *Implementation*: Additional GTA support to provide assistance to faculty members and for large introductory courses; growth of POS 2041 through an online section capped at 500 students (regular class size for the face-to-face section is 90).
- Develop focus area in line with Ph.D. emphasis. *Implementation*: Strengthening of International Studies track at M.A. level, which now attracts about half of all Political Science M.A. students; addition of International and Global Studies B.A. at the undergraduate level.

- Upgrade department computer lab. *Implementation*: With the move to Phillips Hall in 2007, the department upgraded its computer lab in PHP 310, shared with the Sociology Department. Hardware and software are regularly updated.
- Develop a classroom suitable for graduate seminars. *Implementation*: In conjunction with the College of Science's Technology Office, the department will prepare a UCF Technology grant to convert its file storage room into a multi-media seminar room.

Annual Assessment Plan

Once in place, the program quality will be monitored through an annual assessment process. The results will be discussed and used to continually ensure and improve the quality of the program. The following is the assessment plan for the proposed program:

Mission:

The doctoral program in security studies provides rigorous training, which includes, but is not limited to, national security, international affairs, world politics, and transnational problems. Students graduating from the program will acquire expertise in the area of Security Studies and advanced research methods for professional careers in government, non-profit, and academic settings.

Assessment Process:

Data are collected from all graduate faculty and students where appropriate and assembled by the graduate program director. Time frames are specifically identified in each of the outcome measures. Once the data are assembled the department's Ph.D. Committee – and where appropriate the full department – will discuss the results and their implications and the plan for the next year is updated as needed.

Outcome 1:

Students in the Security Studies doctoral program will acquire specialized knowledge in both advanced research methods and Security Studies.

Measure 1.1:

90 percent of students taking Part 1 of the Written Candidacy Exam will achieve an overall "4" or higher on a rubric 1-5 (with 1 being the lowest and 5 being the highest) in advanced research methods skills. These will be collected annually by the Graduate Program Director, who will evaluate and report scores. This information will be conveyed to the Ph.D. Committee for discussion about any needed changes in the required methods courses.

Measure 1.2:

90 percent of students taking Part 2 of the Written Candidacy Exam will achieve an overall "4" or higher on a rubric 1-5 (with 1 being the lowest and 5 being the highest) to assess the theoretical, epistemological, and methodological literature and issues in Security Studies from their core and elective coursework. These will be collected annually by the Graduate Program Director, who will evaluate and report scores. This information will be conveyed to the Ph.D. Committee for discussion about any needed changes in the core and elective courses.

Outcome 2:
Students in the Security Studies doctoral program will develop an active research agenda in by their third year in the program.

Measure 2.1:
80 percent of students will have developed an active research agenda by their third year in the program. On an annual basis, the Graduate Program Director will collect data from doctoral students' annual academic review and keep a record of doctoral students who have submitted original research papers to professional meetings for presentation.

Measure 2.2:
75 percent of students will have submitted their original research to a peer-reviewed journal by the end of their third year. On an annual basis, the Graduate Program Director will collect data from doctoral students' annual academic review and keep a record of doctoral students who have submitted original research to peer-reviewed journals and calculate the percent who have done so by their third year in the program.

Outcome 3:
At least 80 percent of graduating students from the Security Studies doctoral program will be gainfully employed in the private sector, the public sector, or the academic community in a field related to their education within six months of graduation and maintain such employment for two years.

Measure 3.1:
The Graduate Program Director will contact graduates and report the percentage of those who wanted a job in their degree field who say they were gainfully employed in a position related to Security Studies within six months of graduation.

Measure 3.2:
The Graduate Program Director will contact graduates and report the percentage of those who wanted a job in their degree field who say they were gainfully employed in a position related to Security Studies two years after graduation.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

The proposed Ph.D. in Security Studies offers rigorous training for students interested in security studies, national security policy and implementation, international affairs, world politics, cyber security issues, and transnational problems. The program prepares students for non-academic careers in security and international affairs careers, as well as for careers as teachers and scholars at universities and research institutes in both the private and public sectors.

The curriculum prepares students to analyze and understand a variety of problems related to the pressing problem of security in an increasingly interconnected world. This analytic approach will also prepare those students interested in working in a non-academic setting in how to respond to various security issues. The program emphasizes considerable flexibility in terms of the theoretical diversity and intellectual breadth characteristic of security studies. The curriculum combines core offerings in security studies, international politics, and methodology. To ensure the highest quality, these core seminars are limited to doctoral students only. Once students acquire a firm foundation, the structure of the doctoral program allows students considerable opportunities for pursuing further study with depth and focus. Major emphasis is placed on research, including research methodology in preparation for doctoral research. Methodological approaches include both quantitative and qualitative analysis at an advanced level to prepare students for research that comprises large-N, quantitative analysis and qualitative research focused on case studies, as is appropriate for the field of Security Studies.

To prepare students for an academic career, students are encouraged to present conference papers, engage in collaborative work with faculty members, and submit articles to refereed journals. The department already has a record in faculty-student collaboration for the existing M.A. program. At the recent 2010 Florida Political Science Association meeting, nine M.A. students presented a paper, and one co-authored a paper with a faculty member; at the September American Political Science Association meeting, one graduate student presented a paper co-authored with a faculty member; one has a paper accepted for the International Studies Association – South conference; other graduate students have presented single-authored or co-authored papers at the Southern Political Science Association meeting and the Midwest Political Science Association meeting (both are national conferences); one student presented a paper at a 2010 international conference in Ecuador. Several M.A. students have co-authored published work with faculty members over the past five years, including a book (Handberg and Li 2007) and/or refereed journal articles (e.g. Jacques, Dunlap, and Freeman 2008; Belton and Morales 2008; additional co-authored articles are under review). Students will be prepared for teaching by completing the UCF requirements to qualify them as GTAs or Instructors of Record through the Faculty Center for Teaching and Learning. In addition, the required Professional Development in Security Studies I course will further prepare students for teaching, grant writing, and other questions related to a professional career. Student research will thus have been exposed to peer review outside of the department, and classroom instruction and engagement with the profession will prepare students well to enter the professional world.

Students interested in pursuing a non-academic career will be further prepared by having the opportunity to pursue an internship in an area of their interest and through the Professional Development in Security Studies II course that is a required part of the curriculum. This course will also address questions of Ethics in the field of Security Studies. The Office of Global Perspectives regularly invites speakers from the field onto campus for students to meet. Several advisory board members have extensive experience in non-academic settings and will be able to provide informal mentoring.

Students interested in either an academic or non-academic career are expected to take full advantage of all professional development opportunities offered by the department and the

university, including brown bag seminars, speakers, defenses of dissertation proposals or dissertations by their peers, and job talks.

B. Describe the admission standards and graduation requirements for the program.

1. Admissions Requirements

The admission requirements for the proposed degree are consistent with most Ph.D. programs. Admissions will only be made during the Fall semester.

- An earned master's degree or its equivalent in Political Science, International Politics or International Relations, or related discipline. The Graduate Program Director will evaluate the suitability and applicability of MA degrees in other disciplines for admission purposes. Students must have a minimum cumulative GPA of 3.5 for all master's level work completed;

- A competitive score on each of the quantitative and verbal sections of the Graduate Record Examination taken within three years prior to admission to the program;

- A PPI score (Personal Potential Index from the Educational Testing Service);

- Three letters of reference that evaluate the applicant's academic performance and their suitability and potential for undertaking doctoral study, at least one of which must be written by a faculty member at the institution where the master's degree was earned, preferably the thesis advisor for those applicants who wrote a master's thesis;

- A personal statement of 200-300 words describing the applicant's academic and professional experience and goals;

- A writing sample of the applicant's work that is at least 2500 words long and demonstrates ability to complete graduate-level research;

- An interview with the department's Doctoral Program Committee, either in-person on campus or by phone or Skype; and

- International applicants whose first language is not English are required to submit results of the Test of English as a Foreign Language (TOEFL) or other equivalent test approved by the Graduate College, unless they hold a degree from a U.S. accredited institution. The TOEFL is strongly preferred. The minimum TOEFL score for full admissions consideration is 90 on the Internet-based test (IBT), 232 on the computer-based test, or 575 on the paper-based test. The minimum IELTS score is 7.0. Applicants should plan to take the appropriate test no later than December to ensure consideration of their applications by the January 1 deadline.

2. Graduation Requirements

The graduation requirements are summarized below. A more detailed discussion of each item is included in Section IV.C.

- 15 hours of required core course work;
- An oral Qualifying Exam (based on core course work);
- Completion of two required professional development seminars;
- 15 hours of restricted electives;
- 12 hours of unrestricted electives;
- A written Candidacy Exam;
- Competency in one modern language (four semesters college-level);
- A Dissertation Proposal Hearing;
- 18 hours of Dissertation work;
- Participation in mentoring, advising, and professional development opportunities, and
- Completion and Defense of Dissertation

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

1. Credit hours. The Ph.D. degree consists of 62 hours beyond the master's degree. A master's degree is required for admission to the program with at least 30 hours of master's level work (including both course work and thesis hours). The 62 hours consist of 30 credit hours of required course work, 12 hours of unrestricted electives (including courses offered in other departments, research, independent study, and internship), 2 hours of Professional Development courses, and a minimum of 18 hours of dissertation work.

2. Program of Study. During the first semester of course work, each student will meet with a faculty advisor, assigned by the Doctoral Program Committee, to design a Program of Study that will serve as an individual guide through the program. The Program of Study will include the student's primary area of interest, skill levels attained, required elective preferences, and long-range goals. Faculty will use student plans of study to determine future curriculum needs for

courses and research resources. The Program of Study will be used to make suggestions and recommendations to facilitate the socialization and professional development of new doctoral students in the program.

3. Annual academic review of doctoral students. Each student's academic progress will be evaluated annually by the department's Doctoral Program Committee, which will receive input from the student's faculty advisor, faculty with whom the student has taken courses, and, once the student is enrolled in dissertation hours, the student's dissertation advisor. The review will be conducted toward the end of the spring semester, thereby permitting appropriate academic planning for the following semester. The Doctoral Program Committee will communicate the annual academic evaluation to the student in writing. The review will include:

1. Review of the student's academic record including
   a) checking the overall grade point average;
   b) addressing any incomplete and/or withdrawn courses;
   c) monitoring overall progress toward completing the coursework phase of the program.
2. Checking on progress in completing or preparing for the candidacy exam;
3. Planning for a timely defense of the dissertation research proposal or prospectus.
4. Monitoring adequate progress in research including timeliness of degree completion.
5. Assessing participation in those events and activities pertinent to the socialization and professional development of the student in security studies

Note: The oral Qualifying Exam, given at the end of the first year (see below) will be a part of each student's first annual academic review.

4. Curriculum Composition.

a. Required Core Courses (15 hours). These core courses (3 credit hours each), required of all doctoral students, introduce advanced training in security studies, international politics, and research methods. Along with the student's masters-level training, they provide the research and technical skills necessary to pursue careers suited to doctoral-level education in academia and in the private and public sectors. The core courses are (for new courses, see Appendix III for Course Action Requests):

INR 7xxx Theoretical Approaches to Security Studies
INR 7xxx Issues in Domestic Security
INR 7xxx Issues in International Security
POS 7xxx Advanced Quantitative Methods of Political Research
POS 7xxx Advanced Qualitative Methods of Political Research

Professional Development Courses (2 hrs)
In addition to the substantive required core courses, doctoral students are required to take the following two 1-credit hour courses, which emphasize professional development within and socialization into the field:

POS 7xxx	Professional Development in Security Studies I
POS 7xxx	Professional Development in Security Studies II

b. Oral Qualifying Examination. The oral qualifying examination is given at the end of the semester in which core course work is completed. It will examine students on theoretical, epistemological, and methodological literature and issues from the five required core courses, although the scope of the examination is not limited to topics covered in the seminars. The exam is administered by an Exam Committee appointed by the Graduate Program Director (who is also a member of the committee). The oral qualifying examination evaluates students' preparation in subjects that are considered to be an essential foundation for their continued doctoral study and research in the program. Any student failing the examination must repeat the examination prior to the start of the next fall semester. A second failed attempt will result in dismissal from the program. The oral qualifying exam will also serve as part of the student's annual academic review for the first year of study.

c. Restricted Electives (15 hours). All students in the doctoral program must complete a minimum of 15 hours of course work in graduate seminars. The choice of specific courses taken will be based on the research interests of students and made in conjunction with their faculty advisor. In this way, our students achieve two distinct but related goals: a broad competence in the variety of methodological, theoretical and substantive approaches to security studies and advanced proficiency in the areas that are most germane to their research interests.

CPO 6058	Revolution and Political Violence
INR 6007	Seminar in International Politics
INR 6071	Seminar in Weapons of Mass Destruction
INR 6136	Seminar in American Security Policy
INR 6108	Seminar in American Foreign Policy
INR 6228	International Politics of the Caspian Sea States
INR 6275	International Politics of the Middle East
INR 6607	International Relations Theory
INR 6XXX	The Politics of International Terrorism
INR 6XXX	Seminar on War
INR 6XXX	Seminar on Intelligence
INR 6XXX	Peace Studies
INR 6XXX	Environmental Security
INR 6XXX	International Drug Policy
INR 6XXX	Political Behavior in International Conflict

d. Unrestricted Electives (12 hours). The unrestricted electives provide students with an opportunity to further expand their doctoral training beyond the program's core courses and the restricted electives. Unrestricted electives may include regularly scheduled graduate courses in political science, graduate-level courses in programs outside the department, independent study courses, doctoral research courses with a highly focused student/faculty research component, and internships that enable students to gain valuable experience in a non-academic setting. Restricted electives may be taken at any point in the student's program of study; however, no more than a total of twelve hours of graduate course work can be from outside of the department, dissertation research, independent study, or internship; in addition, no more than a total of six hours can be from either independent study or internship. Students with suitable academic backgrounds may work in areas such as cyber security or science and technology taking courses in relevant departments. A student's faculty advisor and the department's Graduate Program Director must approve all graduate courses taken outside the department and internships. The following courses have been approved to be taken outside of the political science department:

Approved courses outside the political science department:

AMH 5515 Colloquium in U.S. Diplomatic History
ASH 5485 U.S.-China Relations
ASH 5227 The Arab-Israeli Conflict
CCJ 5675 Human Rights and Criminal Justice
CCJ 6021 Criminal Justice Responses to Terrorism
CCJ 6067 Perspectives on Genocide
CCJ 6485 Issues in Terrorism
LAH 5713 Colloquium in U.S.-Latin American Relations
PAD 6399 Foundations of Emergency Management and Homeland Security

e. Written Candidacy Exams. On completion of all coursework, students must take a written candidacy examination. Candidacy examinations will usually be administered at a time arranged by the student's Examination Committee (three faculty members with whom the student has taken graduate seminars, of which two must be graduate faculty with expertise in security studies). A student must notify the Graduate Program Director in writing of their intent to take candidacy exams at least one month before the date fixed for examination. The exam must be successfully completed prior to enrollment in dissertation hours.

Each student will take two exams on separate days. The first exam will be in research methods. The content of this exam will be uniform for each matriculating class of students. The second exam will be a special field in Security Studies, devised by the student in consultation with his or her exam committee. The special field may be geographic or thematic in focus, reflecting the research interests of the student. Both examinations will be used to determine the student's knowledge of theory, methods and past and present research in their chosen areas. Students failing the comprehensive examination may retake the exam one time. If the exam is failed a second time, the student will be dismissed from the program.

f. Modern Language Requirement. Prior to enrollment in dissertation hours, students are required to demonstrate proficiency in one modern language (other than English). The requirement is two years (four semesters) of a single college-level modern language, which should normally be in an area relevant to the student's research. Students may meet the requirement by providing evidence of four semesters of enrollment or by passing a university-administered equivalent proficiency examination.

g. Dissertation Advisory Committee. It is the responsibility of the student to secure qualified members of their dissertation committee. The dissertation committee will consist of a minimum of four members who are approved members of the Graduate Faculty or Graduate Faculty Scholars. At least three members must be Graduate Faculty, one of whom must serve as the chair of the committee. One member must be from either outside the student's department at UCF or outside the university. Graduate Faculty members must form the majority of any given committee. A dissertation committee must be formed prior to enrollment into dissertation hours.

h. Dissertation Proposal Hearing. The purpose of the dissertation proposal hearing is to explain the subject under investigation, place it within the existing scholarly literature and to present the planned approach for writing the dissertation. The proposal hearing takes place in the first semester a student is enrolled into dissertation hours; therefore, students may not schedule a proposal hearing with their dissertation committee until they have completed all coursework and exams in their program of study. Students work with their dissertation committee to develop and refine the proposal. Students will present the dissertation proposal in a seminar open to the university community. Immediately after this defense, the student's Dissertation Committee will meet to decide whether the student passed the proposal hearing. A student who passes the proposal hearing then begins the actual research and writing of the doctoral dissertation.

i. Dissertation (minimum 18 hours). The dissertation is the culmination of the course work that comprises this research-based degree. It must make a significant theoretical, historical, intellectual, practical, creative, or research contribution to the student's area within the discipline. The dissertation will be completed through a minimum of 18 hours of dissertation credit, which students will use to accomplish original research. Students must maintain enrollment in dissertation hours until the degree is awarded. Students must successfully defend their completed dissertation in an oral examination, which takes place in an open seminar. Defense dates for the completed dissertation should be set during the first week of the semester in which the defense will take place. This date must be approved by both the student's advisory committee and the Graduate Program Director. Each chapter of the dissertation should be distributed to committee members in a timely fashion. The full dissertation manuscript must be submitted to all committee members at least thirty days before the scheduled defense. The final dissertation must be approved by a majority of the committee. Further approval is required from the Deans of the College of Sciences and of the College of Graduate Studies before final acceptance of the dissertation in fulfilling degree requirements.

j. Participation in additional mentoring, advising, and professional development processes and events. To ensure that students are adequately advised and socialized as professionals to enter the workforce in academic and non-academic settings, students are expected to participate

fully in all processes and events the department will offer to this end. Upon admission to the program, each student will be assigned a faculty advisor to provide guidance about UCF, the department, and the program in conjunction with the Graduate Program Director. All newly admitted students are required to attend an orientation session, led by the Graduate Program Director, prior to the beginning of their first semester. In addition, students will be required to participate in the program for GTAs offered by the UCF Faculty Center for Teaching and Learning and the College of Sciences. New graduate students will also meet during the start of their first semester with an assigned faculty advisor to develop an individually-tailored Program of Study. Students are expected to participate fully in all graduate workshops offered or organized by the department, attend brown bag research presentations, job talks, dissertation proposal hearings, dissertation defenses by their peers, and attend lectures organized by other UCF units (e.g. Office of Global Perspectives, Lou Frey Institute) when the topics are relevant to their field of study. Though participation in these activities is not graded, it will be included in the annual academic review for each student.

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

A typical sequence for full-time students would be as follows:

Year 1 (19 hours)

Fall:	**Spring:**
• POS 7xxx Advanced Quantitative Methods of Political Research (3) • INR 7xxx Theoretical Approaches to Security Studies (3) • INR 7xxx Issues in Domestic Security (3)	• POS 7xxx Advanced Qualitative Methods of Political Research (3) • INR 7xxx Issues in International Security (3) • Restricted Elective (3) • Professional Development in Security Studies I (1) *Oral Qualifying Exam taken at the end of the semester.*
Semester Total Hours: 9 Overall Total Hours: 9	Semester Total Hours: 10 Overall Total Hours: 19

Year 2 (25 hours)

Summer:	**Fall:**	**Spring:**
• Restricted Elective (3) • Unrestricted Elective (3)	• Restricted Elective (3) • Restricted Elective (3) • Unrestricted Elective (3)	• Restricted Elective (3) • Unrestricted Elective (3) • Unrestricted Elective (3) • Professional Development in Security Studies II (1) *Written Candidacy Exams taken at the end of Spring semester.* *Foreign language requirement must be met prior to enrollment in dissertation hours.*
Semester Total Hours: 6 Overall Total Hours: 25	Semester Total Hours: 9 Overall Total Hours: 34	Semester Total Hours: 10 Overall Total Hours: 44

Year 3 (18 hrs)

Summer:	**Fall:**	**Spring:**
• Dissertation (3) *Dissertation proposal hearing must take place in first semester a student is enrolled in dissertation hours.*	• Dissertation (9)	• Dissertation (6) *Dissertation completion and defense*
Semester Total Hours: 3 Overall Total Hours: 47	Semester Total Hours: 9 Overall Total Hours: 56	Semester Total Hours: 6 Overall Total Hours: 62

Year-by-Year Plan of Course Offerings for Years 1-5:
Table VIII.1 outlines a plan for course offerings for Years 1-5 and lists the faculty members involved. The curriculum builds on existing faculty strengths in the relevant curriculum areas and includes the contributions of future hires.

Table VIII.1 Course Offerings by Year

		Fall	Spring	Summer
Y 1	Core courses	POS 7XXX Advanced Quantitative Methods (Kinsey)	POS 7XXX Advanced Qualitative Methods (Wilson)	
		INR 7XXX Theoretical Approaches to Security Studies (Houghton)	INR 7XXX Issues in International Security (New hire 1)	
		INR 7XXX Issues in Domestic Security (Dolan)	POS 7xxx Professional Development I (Hamann)	
	Restr. Elect.	CPO 6058 Revolution & Political Violence (Morales)	INR 6108 Seminar in American Foreign Policy (Houghton)	INR 6XXX Peace Studies (New hire 2)
	Unrest. Elect.	INR 6275 International Politics of Middle East (Sadri)	INR 6136 Seminar in American Security Policy (Handberg)	GEO 6472 World Political Geography (Bledsoe)
Y 2	Core courses	POS 7XXX Advanced Quantitative Methods (Kinsey)	POS 7XXX Advanced Qualitative Methods (Wilson)	
		INR 7XXX Theoretical Approaches to Security Studies (Houghton)	INR 7XXX Issues in International Security (New hire 1)	
		INR 7XXX Issues in Domestic Security (Dolan)	POS 7XXX Professional Development II (Hamann)	
	Restr. Elect.	INR 6XXX Politics of International Terrorism (New hire 1)	INR 6XXX Seminar on War (Dolan)	INR 6XXX Pol Behavior in International Conflict (New hire 2)
	Unrestr. Elect.	INR 6507 International Organization (New hire 2)	INR 6XXX Environmental Security (Jacques)	POS 6743 Geographic Tools for Political Science Research (Kinsey)
Y 3	Core courses	POS 7XXX Advanced Quantitative Methods (Pollock)	POS 7XXX Advanced Qualitative Methods (Hamann)	
		INR 7XXX Theoretical Approaches to Security Studies (New hire 3)	INR 7XXX Issues in International Security (New hire 1)	
		INR 7XXX Issues in Domestic Security (Dolan)	POS 7XXX Professional Development I (New Hire 3)	
	Restr. Elect.	INR 6XXX Seminar in Intelligence (Sloan)	INR 6XXX Peace Studies (New hire 2)	INR 6108 Seminar in American Foreign Policy (Houghton)
	Unrestr. Elect.	INR 6XXX International Drug Policy (Morales)	INR 6275 International Politics of Middle East (Sadri)	INR 6507 International Organization (New hire 2)
Y 4	Core courses	POS 7XXX Advanced Quantitative Methods (Pollock)	POS 7XXX Advanced Qualitative Methods (Hamann)	
		INR 7XXX Theoretical Approaches to Security Studies (Houghton)	INR 7XXX Issues in International Security (New hire 1)	

(Y 4)		INR 7XXX Issues in Domestic Security (Dolan)	POS 7XXX Professional Development II (New hire 2)	
	Restr. Elect.	INR 6XXX Seminar in Weapons of Mass Destruction (New hire 3)	INR 6XXX Political Behavior in International Conflict (Dolan)	INR 6XXX Environmental Security (Jacques)
	Unrestr. Elect.	POS 6743 Geographic Tools for Political Science Research (Kinsey)	INR 6XXX Politics of International Terrorism (New hire 1)	GEO 6472 World Political Geography (New hire 3)
Y 5	Core courses	POS 7XXX Advanced Quantitative Methods (Kinsey)	POS 7XXX Advanced Qualitative Methods (Wilson)	
		INR 7XXX Theoretical Approaches to Security Studies (Houghton)	INR 7XXX Issues in International Security (New hire 1)	
		INR 7XXX Issues in Domestic Security (Dolan)	POS 7XXX Professional Development II (New hire 3)	
	Restr. Elect.	INR 6136 Seminar in American Security Policy (Handberg)	INR6XXX Seminar on War (Dolan)	INR 6108 Seminar in American Foreign Policy (Houghton)
	Unrestr. Elect.	CPO 6036 Political Development (Wilson)	INR 6275 International Politics of Middle East (Sadri)	INR 6507 International Organization (New hire 2)

E. Provide a one- or two-sentence description of each required or elective course.

Required Core Courses
(all courses are 3 credit hours unless indicated otherwise)

INR 7XXX *Theoretical Approaches to Security Studies* (Dr. David Houghton)
Survey of realist, liberal, constructivist, critical and other theories of international security.

INR 7XXX *Issues in Domestic Security* (Dr. Thomas Dolan)
Examination of national issues such as domestic terrorism, with a particular emphasis on challenges arising at the state level.

INR 7XXX *Issues in International Security* (Dr. Thomas Dolan)
Overview of international issues such as terrorism, genocide, nuclear proliferation, war, the spread of infectious diseases, fragile and failing states, transnational organized crime, and gender.

POS 7XXX *Advanced Quantitative Methods in Political Research* (Dr. Barbara Kinsey)
Survey of advanced quantitative methods used in political science research, including multiple and logistical regression models.

POS 7XXX *Advanced Qualitative Methods in Political Research* (Dr. Bruce Wilson)
Survey of advanced qualitative methods employed in political science research, including the use of case studies, the logic of comparison, and the use of archival and interview-based research.

POS 7XXX *Professional Development in Security Studies I* (1 credit hour; Dr. Kerstin Hamann)
Prepare students for teaching, submission of articles to peer-reviewed journals, grant writing, and other questions related to an academic career.

POS 7XXX *Professional Development in Security Studies II* (1 credit hour; new hire).
Addresses ethics in political science, specifically from a security studies perspective.

Elective Courses
(all courses are 3 credit hours; the elective courses will also supplement the existing M.A. program as elective courses)

POS 6743 *Geographic Tools for Political Science Research* (Dr. Barbara Kinsey)
Provides an introduction to theoretical assumptions, analytical possibilities and application of geographic tools of analysis for political science research.

CPO 6058 *Revolution and Political Violence* (Dr. Waltraud Morales)
Seminar addresses theory and analytical models of political revolutions and insurgencies with cases, especially Third World.

INR 6007 *Seminar in International Politics* (Dr. Waltraud Morales)
Introduces the student to the advances in international relations theory and research through a broad sampling of approaches and methods.

INR 6071 *Seminar in Weapons of Mass Destruction* (new hire)
Examination of the impact and proliferation of Weapons of Mass Destruction, and efforts at control and regulation.

INR 6108 *Seminar in American Foreign Policy* (Dr. David Houghton)
Domestic and international factors influencing the development of selected foreign policy issues.

INR 6136 *Seminar in American Security Policy* (Dr. Roger Handberg)
Examination of domestic and international factors influencing the development of selected American security policy issues.

INR 6228 *International Politics of the Caspian Sea States* (Dr. Houman Sadri)
A comprehensive analysis of the political issues of the Caspian region.

INR 6275 *International Politics of the Middle East* (Dr. Houman Sadri)
Examination of domestic and international factors influencing the development of selected American security policy issues.

INR 6607 *International Relations Theory* (Dr. David Houghton)
A survey of primary theoretical approaches to understanding and explaining international relations.

INR 6XXX *The Politics of International Terrorism* (Dr. Stephen Sloan)
An analysis of the causes of and political responses to the incidence of domestic and international terrorism. Emphasis on political science approaches to the study of past, current, and future developments in domestic and international terrorisim.

INR 6XXX *Seminar on War* (Dr. Thomas Dolan)
Examination of theories and empirical evidence locating the causes of war at the systemic, state and individual levels of analysis.

INR 6XXX *Seminar on Intelligence* (Dr. Stephen Sloan)
Examination of the organization and functions of the intelligence community, its interaction with national security policymakers, and the challenges it faces in defining its future role.

INR 6XXX *Peace Studies* (Dr. Peter Jacques)
Examination of the ways in which human beings may manage conflict, fostering justice and creative development. Surveys both international and domestic conflicts, outlining theories of peace and utilizing various case studies.

INR 6XXX *Environmental Security* (Dr. Peter Jacques)
Examination of the relationship between environmental degradation and both national and international security, introducing students to the technical and political debates on global environmental change.

INR 6XXX *International Drug Policy* (Dr. Waltraud Morales. Note: The course exists already as a Special Topics course)
Overview of drug use/abuse around the globe, debating the issues associated with international drug dealing and trafficking and analyzing the U.S. "War on Drugs."

INR 6XXX *Political Behavior in International Conflict* (Dr. Thomas Dolan)
Analysis of the ways in which cognitive and emotional theories of human behavior have been used to explain conflict between nation-state and other non-state actors.

Courses Outside Political Science
(All courses are 3 credit hours)

Students are responsible for completing any additional paperwork and procedures needed to enroll into these courses, such as registration by override through the respective colleges' student advising offices. The departments offering these courses will make them available for enrollment by the students in the Political Science Ph.D. program (see Appendices I.11-13)

AMH 5515 *Colloquium in U.S. Diplomatic History* (3 credit hours)
A survey of the historical literature of American foreign policy.

ASH 5485 *U.S.-China Relations* (3 credit hours)
An in-depth study of the significant relations between China and the United States since the 18th century.

ASH 5227 *The Arab-Israeli Conflict* (3 credit hours)
This course examines the history of the Arab-Israeli conflict, placing particular emphasis on its origins in 19th century imperialism and Zionism.

CCJ 5675 *Human Rights and Criminal Justice* (3 credits)
Provides in-depth analysis of the human rights movement and its potential impact upon criminal law as well as the juvenile and criminal justice systems.

CCJ 6021 *Criminal Justice Responses to Terrorism* (3 credit hours)
Critically examines phenomena of domestic and international terrorism to give students a solid grounding of salient issues in developing crime control strategies to prevent terrorism and mount appropriate responses to incidents.

CCJ 6067 *Perspectives on Genocide* (3 credits)
This course provides a critical examination of criminal justice perspectives on genocide.

CCJ 6485 *Issues in Terrorism* (3 credit hours)
This course examines the phenomena of terrorism from many angles. Topics include definitions of and motives for terrorist activity, and the history of both international and domestic Terrorism.

LAH 5713 *Colloquium in U.S.-Latin American Relations* (3 credit hours)
The course will analyze U.S.-Latin American relations from an historical perspective. It will be presented through readings and discussion of selected materials.

PAD 6399 *Foundations of Emergency Management and Homeland Security* (3 credit hours)
Analyzes the policy and organizational design issues confronting managers of emergency management and homeland security programs by examining natural and manmade threats, analysis of the network of actors - national, state, local, and private - and by assessing policies, plans and procedures at governmental and community levels.

F. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and identify if any industry advisory council exists to provide input for curriculum development and student assessment.

Security Studies is not a technology discipline and industry-driven competencies do not exist. However, the program will enhance the students' ability to work with statistical data models, including data mining and analysis. As much of the Security Studies field deals with large and complicated data sets, computer competency and familiarity with statistical analysis software is essential. At the same time, the field of security studies also often demands in-depth knowledge of specific fields and areas, which requires students to be competent in advanced qualitative analysis. To further address industry-driven competencies, we established an advisory council to provide input for curriculum development. Furthermore, the advisory board members work at organizations that are potential employers for program graduates. The individuals were chosen

based on their expertise in the area of Security Studies. All members have previous ties to UCF through their collaboration with the Office of Global Perspectives or other units. The advisory board members will provide feedback and advice on curricular matters and informally mentor Ph.D. students on dissertation topics and career options.

The advisory council consists of the following members:

Sarah Bynum, M.A., CPP, CISSP: Director of Security, Siemens Energy, Inc. Ms. Bynum is responsible for security at Siemens and is regularly involved in the security aspects of international projects. She is an expert on economic and industrial security and its international dimensions.

Dr. Bernard Finel: Former Senior Fellow and Director of Research at the American Security Project, a non-partisan think tank located in Washington, DC. Previously, he was an Associate Professor of Strategy and Policy at the National War College, and Executive Director of the Security Studies Program at Georgetown University.

Dr. Sebastian Gorka: Professor in the Irregular Warfare Department at the College of International Security Affairs of the National Defense University. Previously, he was Founding Director of the Institute for Transitional Democracy and International Security in Budapest, Hungary.

Dr. George A. Lopez: Rev. Theodore M. Hesburgh, C.S.C. Professor of Peace Studies at the Kroc Institute for International Peace Studies of the University of Notre Dame. He previously was Executive Director of The Bulletin of the Atomic Scientists, and a Senior Research Associate at the Carnegie Council on Ethics and International Affairs in New York City.

Jack Mendelsohn: Professor at George Washington University. He is a former senior Foreign Service officer, was a member of the SALT II and START I delegations and served as deputy director of the Arms Control Association.

Dr. John R. Schindler: Professor, National Security Decision Making, U.S. Naval War College and Senior Fellow at Boston University's International History Institute. A specialist in terrorism, intelligence, and European area studies, he spent nearly a decade in counterterrorism and counterespionage operations and analysis with the Defense Department.

In addition, Dr. Stephen Sloan, an internationally known expert on terrorism, will serve as a resource consultant for the program (Dr. Sloan is currently the Lawrence J. Chastang Distinguished Professor of Terrorism Studies in the Office of Global Perspectives and a member of the Department of Political Science).

G. For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.

The American Political Science Association (APSA) is the national professional organization for the discipline of political science. Additional regional and state associations exist (e.g. Midwest Political Science Association, Southern Political Science Association, Florida Political Science Association). We will not be seeking accreditation of this program because at present, none of these professional organizations maintains accreditation standards for security studies or related disciplines at any degree level (B.A., M.A., Ph.D.) and no specialized accreditation agencies exist in the discipline.

The International Studies Association (ISA) is the main international professional organization for the field of international studies. The ISA does not maintain any type of accreditation standards for any degree level. The field of international studies (including security studies) has no specialized accreditation agencies.

H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?

N/A (no specialized accreditation agencies exist in the discipline)

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.

The basic delivery system for doctoral programs is the seminar. These are small classes where students, with the professor, critically examine a body of work focused on a particular topic or examine research procedures for data collection and analysis. The focus of the seminar is discussing readings and pushing the boundaries of the current literature in a field. The primary assignment for students is the writing of a research paper that, when presented to the class, becomes an additional focus of critical attention by the group. We anticipate that most of the courses including all the required core courses will be offered in a face-to-face seminar format.

All current full-time faculty members have completed IDL 6543, the UCF Course Development and Web Service's faculty development workshop on presenting a course online and the laboratory workshop on using Webcourses. In addition, the university supports use of the emerging classroom media of Adobe Connect and Tegrity. Distance learning has been incorporated into the political science undergraduate program, so that several courses are offered entirely on the Web or in a reduced seat-time format with a significant component offered online. Our faculty and UCF clearly have the expertise to offer part of the proposed doctoral program online. After the program is established, we will explore adapting some of the courses of this

doctoral program to a distance learning format. In particular, we envision that some of the elective courses might be offered in a reduced-seat time format with some components online or as fully web-based classes. Developing courses in this way would not require additional resources. It is unlikely, at least at this time, that there would be sufficient demand to justify offering the Ph.D. program on a regional campus; hence all graduate seminars will be held on the Orlando campus.

We do not anticipate close collaboration with other universities at this point. The courses in the program will be primarily taught as face-to-face seminars on campus, as are the Ph.D. courses of other universities in Florida. This means that attending class on another campus is tied to a considerable amount of travel time during which the students will not be able to attend other courses or complete work that is part of their GTA assignment. The same holds for students from other universities. Communication with the Ph.D. program in closest geographical proximity to UCF, the University of Florida, showed that UF is not currently interested in close collaboration or shared courses (see communication in Appendix I.10); however, individual students always have the option of applying to courses at other universities through a Travelling Scholar arrangement.

IX. Faculty Participation

A. Use Table 4 to identify existing and anticipated ranked (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).

Table 4 lists information on the number of faculty who are expected to participate in the doctoral program by Year 5 (for faculty curriculum vitae, see Appendix IV). Table 4 includes 11 current faculty, one replacement hire (completed by fall 2011), and two new hires (completed by fall 2012 and 2013 respectively). (Please see Appendix II.8 for additional information about Years 2, 3, and 4.) Each of the current faculty members holds the Ph.D. as the terminal degree in their field; five hold the rank of Professor, four are Associate Professors, one is an Assistant Professor, and one is Professor Emeritus and Lecturer. All faculty members are expected to participate in the program through the first five years of implementation by teaching scheduled courses and supervising individualized studies and internships. A detailed list of courses and faculty members assigned to teach courses is included in Section VIII. All faculty members are also expected to chair or serve on dissertation committees by Year 5.

During Year 1, 11 faculty members will cover the 12 courses required for the first year at .11 percent effort per 3-credit hour course and .04 percent per 1-credit hour course. By Year 5, ten faculty members – including the new hires – will cover all offered courses. All faculty members teaching courses during Years 1-5 will also be engaged in supervising students by serving as dissertation committee chair or serving on committees. Finally, faculty members will also participate in the program through the program's administration, as detailed below.

The hiring of new faculty and the Ph.D. students teaching as graduate instructors of record will benefit the department and reduce the overall undergraduate workload for the existing faculty. Starting in their second year in the program, graduate students will be offered the opportunity to offer an undergraduate course as instructors of record per semester. We expect that by Year 3 of the program, seven Ph.D. students will be teaching one or two courses per year as instructors of record, thus teaching an estimated 10 undergraduate courses, including GEP courses. As we expect one of the current faculty members to retire by Year 3 and thus not be able to offer any undergraduate courses, the overall contribution of the GTAs as undergraduate instructors of record will be approximately .7 courses per year per GTA. At the same time, the new hires will also make a substantial contribution to the undergraduate program. We expect that the Full Professor to be hired for the program will teach one undergraduate course per year, the new Associate Professor will teach three undergraduate courses per year, and the Assistant Professor will teach four undergraduate courses per year, for a total of eight undergraduate courses per year. Thus, the GTA instructors of record and the new faculty members hired for the program will add 18 undergraduate courses per year, leading to an overall reduction of workload of the faculty in the department and adding more courses to meet the student growth at the undergraduate level.

TABLE 4 (1,5)

ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Faculty Name or "New Hire" Highest Degree Held Academic Discipline or Speciality	Rank	Contract Status	Initial Date for Participation in the Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5
A	Bledsoe, Robert	Lecturer	Not TE	2013	9	0.75	11%	0.08	9	0.75	0%	0.00
A	Dolan, Thomas	Assistant Prof	TE	2013	9	0.75	11%	0.08	9	0.75	22%	0.17
A	Hamann, Kerstin	Professor	Tenured	2013	9	0.75	11%	0.08	9	0.75	8%	0.06
A	Handberg, Roger	Professor	Tenured	2013	12	1.00	11%	0.11	12	1.00	11%	0.11
A	Houghton, David	Associate Prof	Tenured	2013	9	0.75	22%	0.17	9	0.75	25%	0.19
A	Jacques, Peter	Associate Prof	Tenured	2014	9	0.75	0%	0.00	9	0.75	0%	0.00
A	Kinsey, Barbara	Associate Prof	Tenured	2013	9	0.75	11%	0.08	9	0.75	11%	0.08
A	Morales, Waltraud	Professor	Tenured	2013	9	0.75	11%	0.08	9	0.75	0%	0.00
A	Pollock, Philip	Professor	Tenured	2014	9	0.75	0%	0.00	9	0.75	0%	0.00
A	Sadri, Houman	Associate Prof	Tenured	2013	9	0.75	11%	0.08	9	0.75	11%	0.08
A	Wilson, Bruce	Professor	Tenured	2013	9	0.75	11%	0.08	9	0.75	22%	0.17
C	New hire 1	Professor	TE	2013	9	0.75	11%	0.08	9	0.75	14%	0.11
B	New hire 2	Assistant Prof	TE	2013	9	0.75	11%	0.08	9	0.75	14%	0.11
C	New hire 3	Associate Prof	TE	2015	9	0.75	0%	0.00	9	0.75	14%	0.11
	Total Person-Years (PY)							0.98				1.19

Faculty CODE		Source of Funding	PY Workload by Budget Classification		
			Year 1		Year 5
A	Existing faculty on a regular line	Current Education & General Revenue	0.85		0.86
B	New faculty to be hired on a vacant line	Current Education & General Revenue	0.08		0.11
C	New faculty to be hired on a new line	New Education & General Revenue	0.08		0.22
D	Existing faculty hired on contracts/grants	Contracts/Grants			
E	New faculty to be hired on contracts/grants	Contracts/Grants			
		Overall Totals for Year 1	0.98	Year 5	1.19

b. Graduate Program Assistant. The Graduate Program Assistant (a new staff position) will assist the Graduate Program Director in all areas. The Assistant's responsibilities include, but are not limited to:

- Keeping and updating graduate student records
- Processing all necessary paperwork
- Assisting the Program Director in preparing promotional and informational material concerning the Ph.D. program
- Publicizing Notices of Defense in accordance with UCF procedures
- Compiling a current e-mail list of Ph.D. students

c. Doctoral Program Committee. In addition to the Graduate Program Director, a Doctoral Program Committee, comprised of four graduate faculty members, will assist in advising and administering this program. Doctoral Program Committee members will be elected by the tenured and tenure-track program faculty to a two-year term. (For the first term, two members will be elected for a two-year term, and two members will be elected for a one-year term. Each following year, two members will be elected for a two-year term.) Doctoral Program Committee members must be tenured or tenure-track; hold the rank of Assistant Professor, Associate Professor, or Professor; and be active in the graduate program.

The duties of the Doctoral Program Committee will include, but not be limited to, the following:

- Admitting new graduate students to the Ph.D. program
- Appointing doctoral examination committees
- Deciding on graduate student appeals or petitions to university/college/program requirements
- Deciding on graduate student appeals of grades on doctoral examinations
- Recommending changes in graduate policies and procedures to the political science faculty
- Approving new graduate courses prior to their submission to the department faculty
- Approving the make-up of dissertation committees
- Deciding the status of graduate students who receive an unacceptable grade
- Interviewing applicants considered for admission
- Assigning GTAs
- Conducting students' Annual Academic Review, with input from student's faculty advisor and dissertation advisor (once the student is enrolled in dissertation hours)

B. Use Table 2 to display the costs and associated funding resources for existing and anticipated ranked faculty (as identified in Table 2). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

Faculty for the Ph.D. program include 11 current faculty members who will take primary responsibility for student instruction and supervision and an additional three hires, one of which will be an assistant professor position as a replacement on an already existing line; the other two positions will be new and at the senior level, one associate professor and one full professor (see Table 4 in Section IX for details and FTE assignment per faculty member involved). For Year 1, the expected cost of faculty salary and benefits amounts to $129,520, which will be funded by a reallocation of the department's E&G base budget ($109,893) and new undergraduate enrollment growth for the College of Sciences and the department ($19,627). For Year 5, faculty salaries and benefits will amount to a total of $155,382, which will be funded through the continuing E&G base allocation for the Department of Political Science ($115,254) and new enrollment growth ($40,128). Other Personnel Services in the amount of $15,218 will be used for Dr. Stephen Sloan, who is currently the Lawrence J. Chastang Distinguished Professor of Terrorism Studies in the Office of Global Perspectives, to provide advice on implementing the program and help with recruitment activities in Year 1, and teach a course in Year 3.

TABLE 2

PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1						Year 5				
	Funding Source						Funding Source				
	Reallocated Base * (E&G)	Enrollment Growth (E&G)	Other New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)	Subtotal E&G and C&G	Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	Subtotal E&G and C&G
Faculty Salaries and Benefits	$109,893	$19,627	$0	$0	$0	$129,520	$115,254	$40,128	$0	$0	$155,382
A&P Salaries and Benefits	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
USPS Salaries and Benefits	$0	$36,096	$0	$0	$0	$36,096	$0	$36,096	$0	$0	$36,096
Other Personnel Services	$15,218	$0	$0	$0	$0	$15,218	$0	$0	$0	$0	$0
Assistantships and Fellowships	$24,000	$61,000	$0	$0	$0	$85,000	$24,000	$315,002	$0	$0	$339,002
Library	$0	$51,431	$0	$0	$0	$51,431	$0	$16,603	$0	$0	$16,603
Expenses	$0	$12,000	$0	$0	$0	$12,000	$0	$5,000	$0	$0	$5,000
Operating Capital Outlay	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Special Categories	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Costs	$149,111	$180,154	$0	$0	$0	$329,265	$139,254	$412,829	$0	$0	$552,083

*Identify reallocation sources in Table 3.

**Includes recurring E&G funded costs ("reallocated base", "enrollment growth", and "other new recurring") from Years 1-4 that continue into Year 5.

***Identify if non-recurring.

Faculty and Staff Summary

Total Positions (person-years)	Year 1	Year 5
Faculty	0.98	1.19
A&P	0	0
USPS	1	1

Calculated Cost per Student FTE

	Year 1	Year 5
Total E&G Funding	$329,265	$552,083
Annual Student FTE	2.97	11.83
E&G Cost per FTE	$110,910	$46,662

C. Provide the number of master's theses and/or doctoral dissertations directed, and the number and type of professional publications for each existing faculty member (do not include information for visiting or adjunct faculty).

As Table IX.1 shows, current faculty members involved with the Ph.D. program have published extensively in peer-reviewed journals and book chapters as well as invited publications; most faculty members have also published books. The external consultants state in their report that the department currently has an accomplished faculty who have acquired national reputations for their publications and who are qualified to sustain this new program.

Faculty members also have ample experience in supervising graduate students. With the exception of the new Assistant Professor, they also have experience in supervising M.A. students and in one case, Ph.D. students. Furthermore, six faculty members have served as members on Ph.D. dissertation committees (not included in Table IX.1).

Table IX.1. Thesis Supervision and Publications

			Professional Publications	
Faculty Name	**Theses**	**Dissertations**	*Books*	*Articles and Chapters*
Robert Bledsoe	6	--	2	10
Thomas Dolan	--	--	--	1
Kerstin Hamann	4	--	4	49
Roger Handberg	26	--	9	163
David Houghton	40	3	4	15
Peter Jacques	3	--	3	22
Barbara Kinsey	9	--	--	9
Waltraud Morales	30	--	8	51
Philip Pollock	3	--	4	30
Houman Sadri	14	--	5	30
Bruce Wilson	2	--	2	33

Note: Thesis supervision includes those in progress during Fall 2010. Publications include those accepted for publication and forthcoming.

To mentor the new faculty member without experience in supervising graduate students, we will establish a process through which the junior faculty member will be actively encouraged to serve on M.A. thesis committees and then to direct M.A. theses. This will take place in the year prior to the beginning of the doctoral program and during Years 1 and 2 once the program is implemented. By the time the first cohort of students will enroll in dissertation hours, this faculty member will have gained sufficient experience in directing M.A. students to first serve on dissertation committees and subsequently direct a dissertation. All involved faculty members will thus be well equipped to guide Ph.D. students through the research and publication process.

The Department of Political Science currently has faculty expertise in several core areas of security studies. These areas include both traditional areas in Security Studies, such as decision making and foreign and defense policy, and newer areas, such as environmental security policy

and democratization. Furthermore, to provide a solid background for students who are specializing in specific geographic areas and need to be familiar with the politics of these areas, the department also offers expertise in several regions of the world. Currently, the following areas of strength exist within the departmental faculty: Political Psychology and Decision Making; Foreign Policy, Security Policy, and War; Space Policy and Security; International Environmental Security; Democratization and State Building; Political Violence, Extremism, and Revolution; and Area Studies (Latin America, Western Europe, Central Asia and Middle East). In addition, other faculty members can offer expertise in other areas for individual student supervision, as detailed at the end of this section.

Political Psychology of Decision-Making

Decision making is a crucial area of concern in Security Studies as it assesses how leaders make decisions to enter or terminate conflicts, for example. In this area, Dr. David Houghton has particular research expertise in political psychology and decision-making in international relations. His publications in this area include *U.S. Foreign Policy and the Iran Hostage Crisis, Controversies in American Politics and Society* (co-authored with David McKay and Andrew Wroe), *Political Psychology: Situations, Individuals, and Cases* and *The Decision Point: Six Cases Studies in American Foreign Policy Decision-Making* (forthcoming). He has published articles on political psychology of decision making, foreign policy, and international security in journals such as the *British Journal of Political Science, Political Psychology, Security Studies, Terrorism and Political Violence, Policy Sciences, Foreign Policy Analysis, International Studies Review, Peace and Conflict* and *International Politics*. He has also taught at the Universities of Pittsburgh and Essex, and from 2001 to 2002 was a Visiting Scholar at the Mershon Center for International Security Studies at the Ohio State University. Dr. Houghton supervised several PhD students to completion while a faculty member in the United Kingdom. In addition, Dr. Thomas Dolan recently joined the Department of Political Science from the University of Rochester, having earlier completed his Ph.D. in the area of International Security at the Ohio State University. His primary interests and research expertise lie in the study of the psychology of conflict, and foreign policy decision-making. He is the author of several articles, including "Personifying the State," recently published in *Political Psychology*.

Foreign Policy, Security Policy, and War

Dr. David Houghton's expertise in political psychology finds application in his research on American foreign policy, foreign policy analysis, and international security; he has published widely in these areas both in books and journal articles. Dr. Thomas Dolan has research interests and expertise in the study of war as well as in the area of foreign policy decision-making, which frames much of his emerging research agenda as a young scholar. Dr. Robert Bledsoe also has a particular interest in U.S. defense policy. Dr. Roger Handberg has published in the area of American Security Policy, especially on defense budgeting. His research is widely published including in the *Journal of Strategic Studies* and in *Armed Forces and Society* (co-authored with Robert Bledsoe).

Space Policy and Security

Several faculty members have extensive research interests and expertise in the area of space policy and security. Within this area, Dr. Roger Handberg focuses on International Space Policy

and Military Space Policy. His published research in this area includes a series of articles on military crewed spaceflight and books on the militarization of space and ballistic missile defense. Articles related to military activity in outer space appeared in *Joint Forces Quarterly*, *Defense Analysis*, and *Space Policy*. Additionally, he has published with several Chinese graduate students regarding Chinese Space and Technology policy and written a book on the Chinese Space Program. Other current work involves the dual-use aspects of space technologies and the issues that arise through the process of technology transfer both in relation to China and more generally in discussion of International Traffic in Arms Regulations and their impact on American security and economic competitiveness. All of these research foci tie into the question of the role of technology in security studies both domestically and internationally. In addition, Dr. Robert Bledsoe has a special interest in international and space law and has previously held positions in military intelligence. He has taught security-related topics at UCF for over three decades. He is currently Professor Emeritus and a Lecturer in the Department of Political Science.

International Environmental Security

Within this area, two faculty members have particularly focused on water as a security issue, which forms a crucial aspect of "new" issues in Security Studies. Dr. Peter Jacques (International Environmental Policy and Security) is the author of *Environmental Skepticism: Ecology, Power and Public Life*, *Globalization and the World Ocean*, *Ocean Politics and Policy: a Reference Handbook* (with Zachary Smith) and *Sustainability: The Basics* (forthcoming). His dissertation addressed environmental security. Two of his published books consider the implications of ocean management on various kinds of environmental and traditional international security. In addition, he has published in the area of environmental theory, sustainability, political economy, and science and society, all of which bear upon the study of environmental security. Dr. Bruce Wilson's recent and ongoing research focuses on water rights in less developed countries. Conflicts concerning water rights have occurred in Latin America but also in other regions, such as the Middle East. Increasingly, courts are taking a prominent role in deciding these disputes. Dr. Wilson's ongoing collaborative, international project combines quantitative and qualitative comparative data to analyze the intervention of courts in conflicts over water. In particular, it assesses the effect of a rights-based approach to water on the various dimensions of human development including questions of community and national security.

Democratization and State Building

Several faculty members have research expertise in issues of democratization and democratic stability. Dr. Kerstin Hamann has published extensively on democratization processes in Southern Europe and the significance of negotiated agreements for democratic transitions. Her publications in this area include *Institutional Development: Spain in Comparative Theoretical Perspective* as well as numerous journal articles and book chapters. Her expertise also includes questions of worker mobilization and organization during democratic transitions. Her book *The Politics of Industrial Relations: Labor Unions in Spain* (forthcoming) focuses on the significance of the democratization process for the organization of class conflict and economic policies. She also studies the causes for and effects of multi-level governance for democratization and stable government. Dr. Barbara Kinsey similarly has research expertise in democratization processes in Western Europe, both in early democracies in Northern Europe and younger democracies in

Southern Europe, and her work in this field has been published in numerous journal articles. Dr. Bruce Wilson's recent research, published as *Courts and Power in Latin American and Africa*, assesses the role of courts in stabilizing new democracies in less developed countries. Dr. Houman Sadri studies state building and democratization in the new states in the Caspian Sea region.

Political Violence, Extremism, and Revolution

Dr. Waltraud Morales focuses on areas in Security Studies that address the fields of International Drug Policy and Political Violence and Revolutions, particularly in Latin America. Her published research includes *A Brief History of Bolivia*, *Bolivia: Land of Struggle*, and *Human Rights: A User's Guide*. She is also the author of numerous articles with an international security focus, including work in the journal *Military Review*. Her interests in this area also include the specific security issues of Peacekeeping, Human Rights, Intervention, Insurgency, International Drug Policy, Resource Scarcity and Third World Development, and Andean and Bolivian Politics, especially Indigenous Populism, Resurgence and Social Movements. Dr. Barbara Kinsey's recent and ongoing research in this field analyzes rightist extremism as well as the effects of integration of immigrants in Western Europe, where political violence is frequently related to immigration processes and extreme right reactions to these processes. Rightist extremism in Western Europe has also led to the threat of international sanctions, for example in Austria, to prevent democratic stabilization and international conflict. Dr. Houman Sadri (Middle East, Central Asia) has research published in the area of revolutions in his book *Revolutionary States: Leaders and Foreign Relation*. Dr. Roger Handberg's early research also centered on political violence, and resulted in several publications. Dr. Kerstin Hamann's ongoing research assesses the causes and effects of worker mobilization through general strikes on democratic governments.

Area Studies

In order to provide Ph.D. students with the necessary expertise in international and comparative politics that provides the background for their more specialized analysis of security issues, a thorough grounding in areas studies is indispensible. The department has a range of faculty that are specialists in several geographic regions of interest for the Ph.D. program.

Latin America: Dr. Waltraud Morales and Dr. Bruce Wilson both have extensive research expertise in Latin American and Central American politics, including indigenous people, social movements, political economy, political parties, the judiciary, as well as human rights and development. Dr. Morales also has expertise on international politics and international relations of Latin America. All these areas are central for questions of democratic stability.

Western Europe: Dr. Kerstin Hamann and Dr. Barbara Kinsey have extensive research and publication expertise in West European politics. Their areas of interest concern political behavior, democratization, political parties, electoral systems, interest groups, and decentralization. Dr. Hamann's publications in this field include *Parties, Elections, and Policy Reforms in Western Europe: Voting for Social Pacts and Democracy*.

Middle East and Central Asia: Dr. Houman Sadri has numerous publications on politics in the Middle East and Central Asia, including *Global Security Watch—The Caucasus States* (2010). His current research in this area will be published as *The Caspian States in the 21st Century*.

Research Methods
Ph.D. students will need to get advanced training in research methods. Current faculty members have both published on research methods and are also applying a wide array of research methods in their own research and publications. Dr. Philip Pollock specializes in the teaching of advanced empirical methods. In his major research articles, he has employed confirmatory factor analysis, structural modeling, and MLE techniques, in addition to standard OLS regression. In addition, he is an expert in the use and instruction of IBM SPSS Statistics and Stata data analysis software. Two of Pollock's methods books, *An SPSS Companion to Political Analysis* and *A Stata Companion to Political Analysis*, have been widely adopted in the discipline. The *Stata Companion*, in particular, is widely used in graduate methods courses in political science. Dr. Barbara Kinsey is trained in the use of advanced statistical procedures, including spatial (or geographic) analysis techniques that are employed in international relations and security research. Several faculty members have widely employed advanced qualitative analyses, including case studies and institutional analyses.

Additional Faculty Resources
The three new hires for this program will make an additional core contribution in research and teaching for the Ph.D. program. Further, additional faculty members not listed in the tables are available to provide resources, guidance, and individualized study. Dr. Stephen Sloan, an internationally known expert on terrorism, is the Lawrence J. Chastang Distinguished Professor of Terrorism Studies in the Office of Global Perspectives at UCF and a member of the Department of Political Science. He will be able to offer a seminar on Intelligence and also offer student supervision. Dr. Terri Fine has additional expertise in Political Psychology and the Politics of Gender. Students interested in these fields can benefit from this expertise as applied to security issues. Dr. Dwight Kiel has experience in supervising Ph.D. students and can serve as a mentor to other faculty members in the process. Dr. Myunghee Kim offers additional area studies expertise in Western European and Asian politics. Dr. Drew Lanier offers additional resources in quantitative methodology. Dr. Kurt Young has expertise in African and Caribbean politics.

D. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.

Tenured and tenure-earning faculty members in the Department of Political Science have been productive in teaching, research, and service, and are well qualified to participate in the degree program.

The teaching productivity of the department at the graduate level is demonstrated in Table IX.2, which summarizes trends in total and graduate student credit hours (SCHs) over the past five years. The data show a high level of productivity as well as a pattern of significant growth. From Fall 2005 to Fall 2009, the total number of graduate students increased from 42 to 65, an increase of over 50 percent. SCHs and FTEs show similar growth patterns. The number of graduate degrees awarded has likewise increased from 9 in AY 2005-06 to 15 in AY 2008-09.

Table IX.2. Graduate Student Enrollment Credit Hour Production, Fall 2005-2009

	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009
Headcount	42	49	63	66	65
FTE Grad	22.6	25.8	28.3	27.8	22.2
FTE Thesis	3.4	2.3	4.9	5	5.3
SCH Grad	271	309	339	333	246
SCH Thesis	11	27	59	60.5	69

During spring and fall terms, the department regularly offers between four and seven graduate seminars per semester, in addition to independently supervised instruction (directed research, independent studies, and thesis hours). All tenure-earning and tenure-track faculty have been involved in graduate instruction in the growing master's program. The department also has a record of outstanding teaching. Two faculty members (Dr. Kerstin Hamann and Dr. Bruce Wilson) have received a university-wide teaching award; twelve faculty members have received other teaching awards.

In the area of research, one faculty member (Dr. Roger Handberg) has been awarded two university-wide research awards and two college-level research awards; another faculty member (Dr. Kerstin Hamann) also received a college-level research award. Two faculty members served as editors of peer-reviewed journals (Dr. Waltraud Morales and Dr. Bruce Wilson); eight faculty members serve or have served on the editorial boards of prominent journals in the discipline. Several faculty members have received "best paper" awards for research presented at national and international conferences; one was awarded a "best article" award for an article published in an international journal. Three faculty members (Dr. Kerstin Hamann, Dr. Philip Pollock, Dr. Bruce Wilson) have each received two university-wide Scholarship of Teaching and Learning awards.

External funding for the Political Science Department since 2007 amounts to approximately $1.9 million as recorded by UCF's Office of Research and Commercialization, split among the following faculty members (amounts listed with splits): Doug Dobson: $1,276,956; Terri Fine: $411,665; Aubrey Jewett: $81,718; Drew Lanier: $138,227.

Faculty members have also been awarded grants previously, additional grant monies not recorded by the Sponsored Research as PI or Co-PI (including grants from foreign organizations not channeled through UCF and smaller research and travel grants), or have been included as participants in external grants not channeled through UCF. These granting agencies include the NSF, the British Economic and Social Research Council, the British Academy, the American Political Science Association, the Norwegian Research Council, the Spanish Ministry of Science and Innovation, the U.S. Election Assistance Commission, the Jacob and Libby Goodman Institute, the Pew Foundation, the Canadian Embassy, Fulbright, USAID, the Florida Center for Solid and Hazardous Waste Management, and the Kuwait Environmental Protection Authority (Kuwait), among others. These grants have sponsored research on a multitude of projects. For example, Peter Jacques' involvement in an NSF grant has produced research on the social oceanography of top oceanic predators; Bruce Wilson's role as a co-PI in grants from the Norwegian Research Council (US$ 2 million) has resulted in a book and several articles on the role of Supreme Courts in less developed countries in Latin America and Africa in holding

governments accountable when they overstep their constitutional mandate; Houman Sadri's grant from the Kuwait Environmental Protection Agency has facilitated research on Kuwait Participation in International Environmental Conventions; Kerstin Hamann's role as a co-director of a grant from the British Economic and Social Research Council (US$ 200,000) has resulted in a book on governments' strategies in implementing welfare state reforms in Western Europe; her current grant (as the international collaborator) from the British academy investigates social peace and general strikes in Western Europe; Terri Fine and Doug Dobson's grants (through the Lou Frey Institute) have produced applied research on civic health in Florida as well as research reports on civic education in Florida; Philip Pollock and Bruce Wilson's (co-PIs) on a Pew Foundation grant has sponsored research on the effectiveness of online learning.

Faculty research is widely cited. A 2003 benchmarking study conducted by UCF's College of Arts and Sciences revealed that the Political Science Department fared well in comparison with Ph.D. programs nationwide: Productivity (number of publications) was above half of Ph.D. departments while the impact factor lay within the top 25 percent of Ph.D. departments. The department has thus a long-standing and established record of excellence in research that compares favorably with that of Ph.D. programs nationally. These data on the research productivity and impact underscore the readiness of the existing faculty to offer a Ph.D. program. Faculty members involved in the proposed Ph.D. program have remained research active and productive over the last three years (2006-2010, including accepted and forthcoming publications), as evidenced by Table IX.3.

Table IX.3 Average Number of Publications per Faculty Member per Year, 2006-2010

	Professional Publications	
Faculty Name	*Books*	*Articles and Chapters*
Robert Bledsoe*	--	--
Thomas Dolan	--	0.3
Kerstin Hamann	1.3	8.3
Roger Handberg	0.7	2.3
David Houghton	0.7	3.3
Peter Jacques	0.7	4.0
Barbara Kinsey	--	2.3
Waltraud Morales	0.3	1.7
Philip Pollock	1.0	2.7
Houman Sadri	1.3	4.0
Bruce Wilson	0.3	4.7

**note*: Robert Bledsoe is Professor Emeritus and Lecturer; thus, he is not expected to be research-active at this point. Thomas Dolan is a recent Ph.D. and will start as an Assistant Professor in spring 2011. Publications include those that are accepted for publication and forthcoming, or under contract for books.

In the area of service, the department has demonstrated leadership at the university. Four faculty members (Drs. Terri Fine, Aubrey Jewett, Kerstin Hamann, Bruce Wilson) have received university-wide Service awards; two (Drs. Terri Fine and Roger Handberg) have received University Academic Advising Awards.

Faculty members have also assumed leadership positions in the discipline in professional associations at the state, national, and international level. One faculty member was appointed as chair for a standing committee of the American Political Science Association and nominated to serve on the association's Council, the highest governing body; several faculty members have served as officers in APSA sections. Several faculty members have served as president of the Florida Political Science Association and as section chairs for conferences at the state, regional, national, and international level. The existing faculty members thus extensively engage in professional service at all levels and are well connected in the discipline.

X. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved for all doctoral level proposals.

The UCF Library has completed a recent report assessing current holdings showing "that the library has adequate book collections to support this program" and some additional databases would strengthen the library's ability to support the program (Appendix II.9). This assessment compared Library of Congress subject headings related to Security Studies at the University of Central Florida to those at Tufts University, George Washington University, and Georgetown University (see Appendix II.10). Each of these institutions has a well-established Ph.D. program concentrating on Security Studies or a related field.

Concerning holdings for monographs, the report shows that UCF currently owns 33,458 volumes in relevant fields, approximately the same as George Washington (32,584 volumes) and Georgetown (36,271 volumes) and significantly higher than the holdings at Tufts (16,863). Table X.1 details the holdings for fields related to Security Studies at UCF and the three benchmark institutions.

Table X.1. Library Holdings in Political Science and Security Studies

Keyword	UCF	Tufts	George Washington	Georgetown
Bioterrorism	383	213	347	425
Chemical Terrorism	164	87	183	153
Comparative Law	531	502	853	881
Criminal Justice Administration	3810	933	1727	2260
Criminal Law	3908	1013	2236	2934
Criminology	1148	501	706	767
Crisis Management	834	370	1153	832
Genocide	698	632	928	1139
Industrial Management	5831	1421	5012	4929
Maritime Terrorism	64	58	85	72
Narco-Terrorism	15	9	17	19
Nuclear Terrorism	319	255	456	410
Oklahoma City Bombing	35	16	38	31
Peace Treaty	732	350	844	851
Political Science	6,880	6,266	10,000	11,272
September 11, 2001	842	487	1117	1052
Social Pathology	99	59	114	63
Terrorism	5596	3560	6249	7709
Transportation & Communications	1569	131	519	472
Total	**33458**	**16863**	**32584**	**36271**

Concerning journals, the library report states that the major journals in the field of international security, international relations, and comparative politics are currently available at the UCF Libraries. They include:

- *Arms Control Today*
- *Asian Security*
- *Asian Studies Review*
- *Bulletin of the Atomic Scientists*
- *Central Asian Survey*
- *Comparative Political Studies*
- *Comparative Politics*
- *Defense and Security Analysis*
- *European Journal of International Relations*
- *European Security*
- *Foreign Affairs*
- *Foreign Policy*
- *Foreign Policy Analysis*
- *Intelligence*
- *Intelligence and National Security*
- *International Security*
- *International Organization*
- *International Studies Quarterly*
- *Journal of Conflict Resolution*
- *Journal of Development Studies*
- *Journal of Human Rights*
- *Journal of Latin American Studies*
- *Journal of Peace Education*

- *Journal of Slavic Military Studies*
- *Journal of Strategic Studies*
- *Latin American Research Review*
- *The Military Balance*
- *Nonproliferation Review*
- *Peace Review*
- *Peace and Conflict*
- *Review of International Studies*
- *Science and Global Security*
- *Security and Defense Studies Review*
- *Security Studies*
- *Strategic Analysis*
- *Studies in Conflict and Terrorism*
- *Survival*
- *Terrorism and Political Violence*
- *West European Politics*
- *World Politics*

The library report and confirms that at the time of this proposal, the library has adequate collections to support the proposed Ph.D. and that the library compared favorably to the chosen peers.

Concerning databases, the library subscribe to the following online databases that provide indexing and some full text access to materials relevant to this program:

- CIAO: Columbia International Affairs Online
- LexisNexis Academic
- LexisNexis Congressional
- LexisNexis Statistical Insight
- Military & Government Fulltext
- PAIS International.
- SAGE Journals Online
- Taylor & Francis Journals
- Worldwide Political Science Abstracts

In addition, as a participant in the Federal Depository Library Program, the UCF Libraries provide print and online access to much of the information from relevant federal agencies, including Congress, the Executive Office of the President, and the departments of Defense, Homeland Security, Justice, State, Transportation, and Treasury. Federal depository access is also provided to the online resources of the Homeland Security Digital Library of the U.S. Naval Postgraduate School.

Other Available Resources include:

- Terrorism: Special Studies (1975-1995) – 117 reels of microfilm
- World Development Indicators

The UCF Libraries' subscription to EBSCOhost Business Source Premier currently provides access to the following reports:

- Political Risk Yearbook
- CountryWatch's Country Reviews
- Datamonitor Country Profiles
- OECD Economic Surveys

These existing databases will be supplemented by the acquisition of additional databases, as detailed in section B, below.

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 3.

The library projects that this program will need the following investments to be made over the first five years for books, journals and databases appropriate to security studies:

First year (2013-14): $51,431
Second year (2014-15): $16.180
Third year (2015-16): $17,235
Fourth year (2016-17): $15,374
Fifth year (2017-18): $16,603

All of these expenses will be paid by the department, except for $5,000 per year for the first three years contributed from the College of Sciences (see Table III.1).

Table X.I confirms that the library has adequate monograph collections to support this proposed Ph.D. and that the library compared favorably to the chosen peers. Previous financial support for the UCF Libraries has resulted in a continued emphasis on print monographs, the foundation of a strong research library. The above analysis reflects that emphasis. However, the strides that have been made in the past decade to improve the collection at UCF are in jeopardy and current year funding levels will not permit the library to purchase any new materials in support of this program, and the expectations for 2010/2011 – 2011/2012 are not encouraging. Budget cuts combined with inflation have resulted in large reductions in the number of new monographs purchased across all disciplines. In addition, the library may cancel journals and databases in order to meet the university wide budget cuts.

The recommendation is that $3,000 per year for the next three years be allocated to acquire books when the anticipated library budget will not support the purchase of new materials for this program. The proposed budget for library expenses will be used to offset this trend and ensure that the print monograph collections to support the Ph.D. program will remain current and comprehensive (see Appendix II.10).

Comparison to Peer Institutions – Databases
An examination was made of the online resources available at the same three benchmark universities. The UCF Libraries already subscribe to many of the core databases available at those institutions while others are not currently available at UCF. The following three databases have been identified as priority needs for strengthening the library resources in support of the proposed program.

- National Security Archive – "a repository of government records on a wide range of topics pertaining to the national security, foreign, intelligence, and economic policies of the United States." – one-time purchase price of $47,567 and a recurring annual access fee of $864 + 8% inflation annually. Some of the 35 collections focus on historical coverage, e.g., The Berlin Crisis, 1958-1962, but approximately one-third are more directly relevant to the proposed program, e.g., The History of the National Security Agency 1945-2009.
- World News Connection – "an online news service, that offers an extensive array of translated and English-language news and information. Particularly effective in its coverage of local media sources, WNC provides you with the power to identify what really is happening in a specific country or region. Compiled from thousands of non-U.S. media sources, the information in WNC covers significant socioeconomic, political, scientific, technical, and environmental issues and events." – recurring annual subscription of $9,180 +8% inflation annually.
- Armed Conflict Database (ACD) – from the International Institute for Strategic Studies, the ACD "is an authoritative online source of data and provides independent analysis on current and recent conflicts." – recurring annual subscription of $2,160 + 8% inflation annually.

It is anticipated that these three databases will also be heavily used by the students and faculty in the undergraduate and master's programs in political science. Other UCF programs that would directly benefit from access to the Armed Conflict Database and National Security Archives include criminal justice, public administration, public affairs, and history. Although the heaviest use of World News Connection would most likely be the undergraduate and graduate students and faculty in political science, the content is relevant to most other disciplines looking for international and cross-cultural information.

The recommendation is that National Security Archive be purchased in 2012 and that subscriptions to World News Connection and Armed Conflict Database begin in 2013. However, for the subscriptions to continue beyond the initial three years the overall library budget would need to be increased to absorb the recurring costs.

New Database Costs:
- One-time costs: $47,567
- Recurring costs: $12,204 + 8% inflation annually

The inflation costs for database subscriptions have historically been between 6 and 10%. In the budget proposed at the beginning of this report a factor of 8% has been applied to subsequent years (see Appendix II.10).

Future Considerations:
Although the following two databases provide coverage across many UCF disciplines, it is anticipated that they would be most heavily used by the undergraduate and graduate students and faculty in political science and would provide strong support for the proposed program. Subscriptions to both databases should be a top priority for university funding in the future.

- OECD iLibrary: Books, Papers, and Statistics (formerly Source OECD) – "contains all the publications and datasets released by OECD (Organisation for Economic Cooperation and Development), International Energy Agency (IEA), Nuclear Energy Agency (NEA), OECD Development Centre, PISA (Programme for International Student Assessment), and International Transport Forum (ITF) since 1998" – recurring annual subscription of $18,600.
- PolicyFile – "a unique resource for U.S. public policy research. Users are able to access timely, updated information from over 350 public policy think tanks, non-governmental organizations, research institutes, university centers, advocacy groups, and other entities" – recurring annual subscription of $3,087.

As the proposed PhD program grows and develops more specific research concentrations, the following databases from the peer institution comparison list should be evaluated for additions as UCF subscriptions:

- Access UN
- Access World News
- American Bibliography of Slavic & Eastern European Studies (ABSEES)
- Bibliography of Asian Studies Online
- China Data Online
- CQ Homeland Security
- Europa World Plus
- FBIS Daily Reports, 1974-1996
- Global Development Finance (GDF) Online
- Hein Online
- Index Islamicus
- International Security & Counter-Terrorism Reference Center
- Jane's Intelligence Centres
- LexisNexis Statistical DataSets
- Middle Eastern & Central Asian Studies
- MideastWire.com
- War & Terrorism Collection
- World Bank eLibrary

Library Director

2/28/2011
Date

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

Most courses will require a "smart" seminar room, equipped with multi-media access. These types of classrooms are readily available in teaching facilities across campus. To limit the need for classroom space in other buildings, the department is planning on converting its conference room (Phillips Hall 305G) into a graduate seminar room, equipped with a computer and projection system. The Political Science Department will pursue a UCF Technology Grant to cover the cost of this conversion and will be aided by the College of Science Technology Office in this effort. Research methods courses will need to be taught in a classroom equipped with computers and statistical software packages. Political Science currently has access to two classrooms that have the necessary equipment: the computer labs in PH 409 and PH 310, which have been remodeled to serve as teaching labs and are jointly used with the Sociology department. The computers are already equipped with the necessary software for statistical and GIS analysis (including SPSS, Stata, ArcGIS-ArcInfo). Students will also have access to the labs to conduct their work outside of class time. The existing computer labs within the Political Science Department are sufficient for the needs of the Ph.D. program.

There will be a need for additional graduate student offices. The department will gain office space with the planned move of the Lou Frey Institute to the UCF Research Park, which will free up two large offices to be used as shared spaces by graduate students. New faculty hires will move into existing office space that will become vacant in 2011 due to the resignation of a current faculty member. One existing office, designated for the Kurdish Studies Chair (to be hired), will be divided to create one additional office. This will create sufficient space to accommodate the graduate program's need through Year 5 for both faculty and graduate students.

The department support staff has sufficient office space to accommodate the Graduate Program Assistant and the graduate student files.

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2. Do not include costs for new construction because that information should be provided in response to X (J) below.

No space in addition to what is listed in X.C is needed.

E. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

All Political Science faculty members are provided with computer equipment and software to cover their research and teaching needs. Both computers and software are regularly upgraded. No additional specialized equipment is needed.

F. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2.

No additional specialized equipment is needed.

G. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2.

No additional special categories of resources are needed.

H. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2.

Note: As listed in Table 1-B in section II.D, in addition to the full-time students listed above, we also anticipate 2 part-time students enrolling in Year 4 and two part-time students enrolling in Year 5. No funding will be provided for part-time students.

Students will enter the program with a Master's degree in hand and are expected to complete the Ph.D. degree in three years, which includes one year of coursework primarily in general areas of Security Studies, one year of specialized coursework including dissertation research, and one year to complete the dissertation. All full-time students will be funded. We will offer a stipend for Ph.D. students of $17,000 per year (3 semesters – summer, fall, spring), which is competitive with stipends offered by comparable Ph.D. programs at other public institutions. For example, Political Science Ph.D. programs at FSU and UF offer an annual stipend of $17,000 and 11,550, respectively; other Political Science Ph.D. programs with a focus on Security Studies offer $22,000 (George Washington) and $18,580 (Georgetown). Political Science Ph.D. programs at other four-year, public research institutions offer an annual stipend of $18,000 (Minnesota), or $15,000 (Connecticut). Students' tuition will be covered by waivers from the Graduate College and by tuition payments of in-state tuition by the College of Sciences and by the Department of Political Science. Table X.2 details the number of admissions, headcount, and funding source.

Table X.2: Number of Admissions, Headcount, Funding Source, Years 1-5

	Admissions					Completes	Headcount	*HC-Funded*
Year	College Funded	Program Funded	Total FT (Funded)	PT* (No Funding)	Total Admissions			
1	2	3	5		5	.	5	*5*
2	2	3	5		5	.	10	*10*
3	2	3	5		5	.	15	*15*
4	2	3	5	2	7	5	17	*15*
5	3	3	6	2	8	5	20	*16*

Funding is provided for all full-time students by the College of Sciences and the Department of Political Science. Table X.3 shows the total funding as well as funding provided by the College of Sciences and the Department of Political Science.

Table X.3 Total Student Support, COS Student Support, Department Student Support

Total Student Support

	AY 2013-14	AY 2014-15	AY 2015-16	AY 2016-17	AY 2017-18
Tuition	$ -	$ 31,201.80	$ 72,256.80	$ 70,614.60	$ 67,001.76
Stipend	$ 85,000.00	$ 170,000.00	$ 255,000.00	$ 255,000.00	$ 272,000.00
Total	**$ 85,000.00**	**$ 201,201.80**	**$ 327,256.80**	**$ 325,614.60**	**$ 339,001.76**

College Commitment

	AY 2013-14	AY 2014-15	AY 2015-16	AY 2016-17	AY 2017-18
Tuition* (SU/FA/SP)	$ -	$ 31,201.80	$ 72,256.80	$ 70,614.60	$ 67,001.76
Stipend**	$ 40,000.00	$ 80,000.00	$ 120,000.00	$ 120,000.00	$ 137,000.00
Total	**$ 40,000.00**	**$ 111,201.80**	**$ 192,256.80**	**$ 190,614.60**	**$ 204,001.76**

*5 waivers/year from Graduate College (using 3 existing ones from the MA in Political Science and 2 additional to the Ph.D. program), providing waivers for 5 in 1st year cohort, and 5 in 4th year cohort

**additional COS support to program to raise department stipend to $17K

Department Commitment

	AY 2013-14	AY 2014-15	AY 2015-16	AY 2016-17	AY 2017-18
Stipend @15K	$ 45,000.00	$ 90,000.00	$ 135,000.00	$ 135,000.00	$ 135,000.00

Tuition costs have been calculated at $328.44 per credit hour; Table X.4 lists the number of credit hours by year. Assistantship stipends are set at $17,000 per year per student. Table 2 (identified earlier in this section) establishes the cost of assistantships and fellowships for Year 1 as $85,000 and for Year 5 as $339,002. A detailed description of the composition of these costs follows.

Table X.4. Admissions and Credit Hours Years 1-5

Admissions Hrs/Yr for Tuition (SU/FA/SP)

Admissions	AY 13-14	AY 14-15	AY 15-16	AY 16-17	AY 17-18
5	19	25	18		
5		19	25	18	
5			19	25	18
5				19	25
6					19

For Year 1, five funded, full-time students will be admitted. Of those, three will receive a university tuition waiver that is currently allocated to the Political Science M.A. program and will be shifted to the Ph.D. program. Two students will receive a university tuition waiver provided by the Graduate College to the new program. The department will provide stipends at the rate of $15,000 per student, which will be supplemented by the College of Sciences with an

additional $2,000 to amount to a total of $17,000 per student (for a total of $45,000). The department will use $8,000 per student from the current allocation to M.A. students and use $21,000 from undergraduate enrollment growth money to fund the stipends. The College of Sciences will supply stipends to two students at the rate of $17,000 each, funded from undergraduate student enrollment growth.

For Year 2, five new full-time, funded students will be admitted for a total headcount of 10. COS will provide tuition for the five new admits and stipends ($17,000 per student) for two new admits. The department will again provide stipends at the rate of $15,000 per student for three students, which the College will supplement with $2,000 per student for a total stipend of $17,000 per student. Funds from the College and the department will be produced by undergraduate student enrollment growth. Students admitted in Year 1 will continue to receive university tuition waivers and their stipends will be funded as in Year 1.

For Year 3, five new full-time, funded students will be admitted for a total headcount of 15. As with Year 2, COS will provide tuition for the five new admits and stipends ($17,000 per student) for two new admits. The department will provide stipends at the rate of $15,000 per student for three students, which the College will supplement with $2,000 per student for a total stipend of $17,000 per student. Funds from the College and the department will be produced by undergraduate student enrollment growth. Students admitted in Year 1 and Year 2 will continue to be funded as they were in the previous year.

For Year 4, five new full-time, funded students will be admitted; since students admitted in Year 1 will have completed their degree at that point, the total headcount of funded students will remain at 15. Year 4 admits will be funded the same way as Year 1 admits: three will receive a university tuition waiver that is currently allocated to the Political Science M.A. program and will be shifted to the Ph.D. program. Two students will receive a university tuition waiver provided by the Graduate College to the new program. The department will provide stipends at the rate of $15,000 per student, which will be supplemented by the College of Sciences with an additional $2,000 to amount to a total of $17,000 per student (for a total of $45,000). The department will use $8,000 per student from the current allocation to M.A. students and use $21,000 from undergraduate enrollment growth money to fund the stipends. The College of Sciences will supply stipends to two students at the rate of $17,000 each, funded undergraduate student enrollment growth. In addition, two unfunded, part-time students will be admitted for a total headcount of 17 students in the program. Students admitted in Year 2 and Year 3 will continue to be funded as in the previous year.

For Year 5, six new full-time, funded students will be admitted; since students admitted in Year 2 will have completed their degree at that point, the total headcount of funded students will be 16. COS will provide tuition for the six new admits and stipends ($17,000 per student) for three new admits. The department will provide stipends at the rate of $15,000 per student for three students, which the College will supplement with $2,000 per student for a total stipend of $17,000 per student. Funds from the College and the department will be produced by undergraduate student enrollment growth. Students admitted in Year 3 and Year 4 will continue to receive funding as in the previous year. In addition, the program will admit two new, unfunded

part-time students who will be admitted for a total headcount of 20 students in the program.

Thus, funding for all full-time students is provided. It is expected that by the sixth year, the program will be able to support additional admissions and continuation of students from Year 5. This support will come from the continued enrollment growth at the undergraduate level and external funding opportunities. The program will actively pursue these additional funding opportunities for tuition and stipends, many of which may also be applied in Years 1 through 5. These include the following:

- Regional campus support provided for GTA assistantships to support large online sections (currently set at $2,000 for enrollment caps of 75, with an additional $500 for each increase in enrollment cap of 25 students). All of these funds are designated to support GTA assistantships
- External faculty research grants (C&G) that allow for graduate student funding
- University fellowships, such as the Trustees Doctoral Fellowship, the Presidential Doctoral Fellowship, and the Graduate Dean's Fellowship
- External fellowships, such as the McKnight Doctoral Fellowship, or dissertation fellowships from the National Science Foundation, the United States Institute of Peace (which has a special program for Ph.D. students, the Jennings Randolph Peace Scholarship Dissertation Program), the Ford Foundation, the Social Science Research Council, the Rockefeller Foundation, the National Endowment for the Humanities, and the Pew Charitable Trust. Students who need to spend time abroad to complete their studies are encouraged to apply for a Fulbright scholarship
- The Lou Frey Institute, housed in the Department of Political Science, has committed to provide some level of funding for Ph.D. students; however, at this time, the exact amount cannot be specified. Furthermore, Dr. Doug Dobson, the Director of the Lou Frey Institute, has committed to include funding for Ph.D. students in future grant applications to cover tuition and stipend
- Once established, the position of the Kurdish Studies Chair will bring with it funds to support Ph.D. students
- As outlined in Section III.D, the Lou Frey Institute has established initial contact with the Bob Graham Center to explore funding opportunities for Ph.D. students
- Given the applied character of the proposed Ph.D. program, it is likely that some applicants will be externally funded through their current employers

Thus, while full funding for all full-time students is provided for in the proposal, it is likely that additional funding sources will supply additional resources to support the program.

I. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5.

Internships and practicum experiences are not central to the program though it will be possible for students to take up to six hours of elective credit as internship credit. The Political Science

Department has previously placed interns in all these sites listed and has an established internship relationship with these sites.
Potential internship sites in the Orlando area include the following sites:

- International Council of Central Florida (works under the auspices of the State Department on the international visitors program)
- World Trade Center Orlando
- UCF Office of Global Perspectives
- Department of Homeland Security - Immigration and Customs Enforcement Orlando;
- Secret Service Orlando
- Florida Attorney General Orlando office
- Florida State Attorney Orange/Osceola Counties
- Statewide District offices of U.S. Senators Bill Nelson and George LeMieux
- District offices of U.S. Congressional Representatives

Internship sites outside of the Orlando area include:

- United Nations (New York City)
- U.S. State Department (various D.C. agencies and various embassies overseas)
- Central Intelligence Agency
- US Secret Service
- Defense Intelligence Agency
- Environmental Protection Agency
- U.S. Justice Department
- White House
- U.S. House of Representatives (various offices and committees)
- U.S. Senate (various offices and committees)
- Heritage Foundation

J. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 2 includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

No new capital expenditure is required.

THE OHIO STATE UNIVERSITY

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September 10, 2010

Patricia J. Bishop
Vice Provost and Dean
College of Graduate Studies
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University of Central Florida
P.O. Box 160112
Orlando, Fl. 32816-0112

Dear Dean Bishop,

We visited the UCF campus on August 25-26, 2010 to review the Department of Political Science's request to offer a new Ph.D. program in Security Studies. During our visit we met with the chair of the department, the faculty committee charged with the task of designing the program's curriculum, the director of the Lou Frey Institute of Politics and Government, and Dr. Peter Panousis, Dean of the College of Sciences at UCF. We also had a conversation with you as we learned more about U.C.F. and the Ph.D. program being considered. You asked us to prepare a report outlining our sense of the program's promise and giving to you whatever advice we might have. That report is what follows. It is organized around the eight questions you suggested were most important when analyzing the case for a new degree.

(1) Are the goals of the program aligned with the university's mission and strengths? Yes -- a program in security studies would advance the institution's goals for achieving greater international prominence in graduate study and research. It would also contribute in a very important way to the international focus on the curricula and research programs. The new program would build on the existing strengths of the University. For example, the new program's concentration in political psychology would complement the strong program in modeling and human simulation already underway at U.C.F. It would also enhance global perspectives which we understand is a institutional goal and contribute to partnerships with other institutions studying national security that are in both the military realm and in the private sector. The Department of Political Science has already established initial relationships of this type through its advisory board and many more are possible in both Florida and nationwide. In terms of the larger issue of whether this program might contribute to development in Florida, as we discuss below, the program will not only attract people of great potential to the state, but also could enhance UCF's participation in the growing need for national security professionals in

organizations that are in some instances located in Florida. Increasingly, the organizations and companies that work on national security-related matters have spread out and away from the Washington, DC area.

(2) Does the program's proposal provide evidence that it responds to earlier recommendations? Yes. Although this proposal does not follow an accreditation process, it does reflect more than a decade of planning and previous reports on what sort of program is most needed and best able both to make use of the Department's resources and to contribute to the University's mission. The external review of the Political Science Department in 2003-2004 reported that a Ph.D. program was crucially needed to cement the unit's reputation as a producer of high quality research and scholars. A subsequent White paper submitted in 2008-2009 to the Dean and Provost set the route for the development of the currently proposed PhD program.

(3) Is there an appropriate and sequenced order of study? Yes. The proposed PhD program requires a Master's Degree for admission and two years of additional coursework followed by the production of a doctoral dissertation. The admission standard is higher than many PhD programs in political science require and two years of coursework beyond the Master's degree is in line with very good programs elsewhere. The five core courses required cover the appropriate topics and make good sense. The proposed elective courses also cover the proper subject matter and are sufficiently numerous as to constitute a rigorous program. The range of elective courses proposed reflects the broad nature of the security studies field and gives the student an opportunity to have a comprehensive introduction. At the same time, for most students greater focus may be in order. We would recommend that students be encouraged to identify a topical area of special expertise and take several elective courses relevant to that area. The Department plans to allow students to take up to twelve hours of coursework outside the Department. We think that is a good idea. Security studies is an inherently multidisciplinary field and having a familiarity with a cognate discipline or even several makes sense.

(4) Is there a critical mass of faculty available? Yes. The current faculty plus the new senior hire that is already budgeted should be able to sustain the new program. The new senior hire will provide the capstone to the faculty talent already available and make the program feasible on a continuing basis. The resources committed by the Dean to this new position seem sufficient to hire a tenured colleague who can lead the program and connect it to partners in the academy and national security community. Nonetheless, the new program will tax the time and creative energy of the faculty involved with it, and the University may want to consider a second senior hire at some point early in the program. There are at least six of the nineteen faculty members in the Department that have relevant expertise and several others will be involved teaching methods and elective courses. By hiring a new senior colleague, the Department will secure an intellectual leader to anchor the program and manage the burden of the new PhD students. Teaching

and advising PhD students will elevate the research and national visibility of the faculty but does take time. The program will draw some of their time away from the Master's and Undergraduate program. There are enough faculty members in the Department to manage this additional burden and the new PhD students should be able to teach introductory courses after a year in the program. This is one of the significant benefits of requiring the new PhD candidates to enter with a Master's Degree already in hand.

(5) Are the library holdings sufficient and is there space available? Yes. The library resources seem more than adequate. Just as important as the volumes on hand is the online access to journals and other resources. Increasingly, the electronic and web-based abilities of any university are just as relevant as the physical holdings of the library itself, and U.C.F. is in reasonably good shape on these grounds; faculty and students in the program should have access to what they need. We did not see space that might be allocated to the program but it would seem rather little beyond already existing faculty offices and seminar rooms should be needed.

(6) Is there a need for more people educated in this program? Yes. In Florida, there are several other PhD programs in political science. In the United States there are many others. There are fewer PhD programs in Security Studies, and while many political science programs feature this specialization within their international relations field, many are also focused on the academic field of political science, rather than producing working national security professionals. Therefore, although there is probably not a need for a new PhD program in political science, there is the need for a program that focuses on Security Studies especially one as in this proposal that emphasizes this specific focus and career track by design.

The growth in jobs related to national security since 9/11 has been dramatic. The demand for expertise that the nation is currently in short supply of has become clear as the national security community within the Federal Government struggles to train and educate its work force. The military services and the civilian agencies have turned to the university system in the United States for expertise related to the numerous topics central to security studies. The *Washington Post* reportedly recently that there are now more than 950,000 Americans with top secret clearance to give just one indicator of the size of the potential market in the official government setting. (And again, this economic boom in the field has increasingly been spread across the entire country, including the Southeast, rather than completely concentrated in the DC-MD-VA area.) Of course, in a time of recession defense spending will likely shrink some as will most government programs but with more than $650 billion devoted to this in FY 2010 there is a lot of room for continued employment.

One career route for PhDs is in teaching and research. The job market in the university setting is tight and the competition stiff, but there is a growing interest in

international affairs and security as globalization continues. The UCF faculty will need to work quite hard to place their PhD students in the academy but should be able to succeed over time. More likely in the short run will be jobs in the government and national security community that extend into the private sector all over the country. This is a second career route that is increasingly popular with students and the proposed program can be well positioned to launch students onto it.

In part, this is due to "degree inflation," a phenomenon that is well established and with which today's doctoral students must contend. To lead research teams in the best private sector firms or government agencies a Ph.D. has become necessary. It often is required and even when it is not the competition mandates it. Numerous jobs in the security studies domain that once only required a B.S. or B.A. as the entry level ticket now require a minimum of a Master's Degree, with a Ph.D. now the standard requirement for leadership and the top analytic jobs. The starting salaries for Ph.D.s going into the private sector in this field are higher than those for assistant professors entering the academy. For instance, research and consulting firms like Booz Allan Hamilton or the Institute for Defense Analysis are more likely to start a new Ph.D. close to $100,000 per year where in the academy salaries are likely to be 75% of that or maybe even less. The substantial salaries still available to many just graduated Ph.D.s in this field give another indicator of the continued robust nature of the demand and the still rather scarce supply.

(7) Does the proposal provide a realistic budget? Yes. The Dean of the College of Sciences has agreed to provide the resources needed to hire a new senior leader for this program, although again, it will be very desirable to hire a second senior hire in relatively short order. The necessary funds are also available for the office support that will be required. In addition, the College of Graduate Studies has made a reasonable number of graduate tuition fee waivers in place so that the program can grow over time. While UCF administrators expressed some concern over the trade-off between MA tuition waivers and the new waivers for the PhDs, we believe this is an acceptable and even desirable trade-off to launch the program. The stipend planned for these PhD students also is reasonably competitive and available.

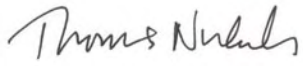
(8) Is the academic unit associated with the new degree productive? Yes. The Political Science department has numerous colleagues with strong CVs that reflect success in publishing and teaching. The faculty most likely to be involved in the Security Studies Ph.D. program has published numerous books and articles on a variety of topics. They are an accomplished faculty who has the national reputation from their publications to sustain this new program. The new Ph.D. program is warranted by the faculty's current status and will elevate it still higher in at least three ways, by pushing them to stay at the cutting edge, by providing talented researchers to work with, and by putting producing students who bring attention to their ideas and scholarship. The Department also has a large number of undergraduate majors and does a great deal of teaching. This is likely to increase overall as more PhD students are available to teach, although we

suspect a portion of the faculty will need to shift more of their attention to M.A. and Ph.D. students.

We hope this report helps you in your deliberation about the establishment of this proposed PhD program. We thank you for asking us for our opinion and advice and would be happy to answer other questions if you have them.

Sincerely,

Richard K. Herrmann
Director, The Mershon Center for International Security Studies
The Ohio State University



Thomas M. Nichols
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March 14, 2011

Dr. Tony Waldrop, Provost
University of Central Florida
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Orlando, FL 32816

Dear Tony:

This letter is to support the PhD program in Security Studies that is being proposed by the University of Central Florida. The UCF program focuses primarily on Security Studies. We have reviewed the proposal and find little overlap with our Political Science program at the University of Florida. The Security Studies program is much more narrowly focused on studies of terrorism, security, national interests and while some of these topics overlap with topics that we address in our Political Science program at UF, we do not think that this new program in Security Studies will compete for the same students or have the same mission as our program.

Sincerely,

Joseph Glover

Joseph Glover
Provost and Senior Vice President

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
June 9, 2011

SUBJECT: Public Notice of Intent to Amend Board of Governors Regulation 6.010 Student Affairs Administration

PROPOSED COMMITTEE ACTION

Consider approval of the public notice of intent to amend Board of Governors Regulation 6.010 Student Affairs Administration.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Section 7(d), Art. IX, Florida Constitution

BACKGROUND INFORMATION

An amendment is being proposed to Board of Governors Regulation 6.010 to ensure compliance with a new federal regulation in **§668.43 Institutional Information.** Effective July 1, 2011, institutions of higher education must provide students or prospective students with contact information for filing complaints with the university's accrediting agency and with the Board of Governors. This proposed amendment ensures compliance with this stipulation.

In drafting this regulation, Board staff solicited input from the university general counsels, members of the Council of Academic Vice Presidents, members of the Council of Student Affairs, state university points of contact, and other state university staff. Pursuant to the regulation procedure adopted by the Board at its meeting on March 23, 2006, the Board is required to provide public notice by publication on its Internet Web site at least 30 days before adoption of the proposed regulation.

Supporting Documentation Included: Proposed Regulation 6.010

Facilitators/Presenters: Mr. Richard Stevens

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6.010 Student Affairs Administration.

(1) The university board of trustees shall establish regulations governing student affairs.

(2) Each university shall compile and update annually a student handbook consistent with the mission of the university and the regulations and policies of the Board of Governors and the university board of trustees. At minimum, the handbook must include the following or a URL (weblink) to the following: a comprehensive academic calendar that emphasizes important dates and deadlines; student rights, responsibilities, and sanctions for misconduct; academic and student conduct appeal processes; the statewide articulation agreement and other individual articulation agreements involving transition of Florida public postsecondary students; information related to acquired immune deficiency syndrome (AIDS) education; and contact information for the university ombudsman. The handbook must be available, at minimum, on the university web site.

(3) Contact information for filing complaints with the institution's accrediting agency and the Board of Governors shall be included in the student handbook or the university catalog.

Authority: Section 7(d), Art. IX, Fla. Const., History--Formerly 6C-2.47, 11-18-70, Amended 7-25-73, Amended and Renumbered 12-17-74, Amended 1-10-78, 2-18-80, 8-11-85, Formerly 6C-6.10, 4-9-87, 11-27-95, Amended and Renumbered 1-29-09.

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
June 9, 2011

SUBJECT: Public Notice of Intent to Amend Board of Governors Regulation 6.017 - Criteria for Awarding the Baccalaureate Degree

PROPOSED COMMITTEE ACTION

Consider approval of the public notice of intent to amend Board of Governors Regulation 6.017 - Criteria for Awarding the Baccalaureate Degree

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Section 7(d), Art. IX, Florida Constitution

BACKGROUND INFORMATION

An amendment is being proposed to Board of Governors Regulation 6.017 that will align with action taken by the 2011 Florida Legislature in Section 8 of CS/HB 7151, which deleted the requirement that undergraduate students achieve certain minimum scores on a nationally standardized examination or a grade point average in specified postsecondary coursework prior to graduation.

The elimination of this particular requirement does not remove the statutory expectation that there will be certain "college-level communication and mathematics skills associated with successful student performance through the baccalaureate level" (Section 15 of CS/HB 7151). Additionally, Section 16 requires the State Board of Education, in conjunction with the Board of Governors, to establish an articulation accountability process that will address the "relationship between student attainment of college-level academic skills and articulation to the upper division in public postsecondary institutions." Recommendations regarding these requirements will be provided to the Board at a future meeting.

In drafting amendments to the regulation, Board staff solicited input from the university general counsels, university provosts, members of the Council of Student Affairs, state university points of contact, and other university staff. Pursuant to the regulation procedure adopted by the Board at its meeting on March 23, 2006, the Board is required to provide public notice by publication on its Internet Web site at least 30 days before adoption of the proposed regulation.

Supporting Documentation Included: Proposed Regulation 6.017

Facilitators/Presenters: Mr. Richard Stevens

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6.017 Criteria for Awarding the Baccalaureate Degree

(1) Except as approved by the Board of Governors, all students receiving a baccalaureate degree within the State University System must meet the following graduation requirements:

(a) Completion of thirty-six (36) semester hours of general education courses in the subject areas of communication, mathematics, social sciences, humanities, and natural sciences, including:

1. Six (6) semester hours of English coursework and six semester hours of additional coursework in which the student is required to demonstrate college-level writing skills through multiple assignments. Each institution shall designate the courses that fulfill the writing requirements of this section. Students awarded college credit in English based on their demonstration of writing skills through dual enrollment, advanced placement, or international baccalaureate instruction shall be considered to have satisfied this requirement to the extent of the college credit awarded.
2. Six (6) semester hours of mathematics coursework at the level of college algebra or higher. Applied logic, statistics and other computation-based coursework that may not be offered by a mathematics department may be used to fulfill three (3) of the six (6) hours required by this section. Students awarded college credit based on their demonstration of mathematics skills at the level of college algebra or higher through dual enrollment, advanced placement, or international baccalaureate instruction shall be considered to have satisfied this requirement to the extent of the college credit awarded.

(b) Completion of a minimum of one hundred twenty (120) credit hours through university coursework, acceleration mechanisms, and/or transfer credit.

~~(c) Beginning July 1, 2009, demonstrate college-level proficiency in English Language Skills, Reading, and Essay and computation skills previously tested by the College-Level Academic Skills Test (CLAST) four-part subtests. These proficiencies may be demonstrated as follows:~~

~~1. A student may meet the skills requirement by earning a 2.5 grade point average in two (2) courses as in Table 1. Courses numbered 0XXX or X990 (i.e., remedial, independent study, or special topic) may not be considered.~~

TABLE 1

Skill Area	Required Combination of courses
Reading, English Language, Essay	A combination of at least one (1) course with the ENC prefix and any other course that is designated as Gordon Rule (i.e., class that meets the (1)(a)1. requirement above) writing course, excluding courses with the SPC prefix.
Computation	Any combination of two (2) courses from the list below: • Any MAC course with the last three (3) digits of 102 or higher • MGFX106-Liberal Arts Mathematics I • MGFX107 – Liberal Arts Mathematics II • MGFX113-Topics in College Mathematics I • MGFX114-Topics in College Mathematics II • MGFX118-Mathematics for CLAST Review • Any MGF course with last three (3) digits of 202 or higher • Any Gordon Rule statistics course • Any mathematics course that has College Algebra (MACX105) as a prerequisite

Credits granted in accordance with the *Articulation Coordinating Committee Credit-By-Examination Equivalencies* may be substituted for the courses specified above. If a student earns credit for two courses meeting the above, the requirement will be considered to be met. If a student earns credit for one (1) course within the list above, no grade will be assigned for that course. The 2.5 grade point calculation will be based only on the grade earned in the second course taken in order to meet the requirement (i.e., the grade in this course must equate to a 2.5 or higher).

2. A student may also meet one or more skill area requirements by meeting or exceeding a corresponding examination score found in Table 2.

Table 2

Skill Area	**Required Score on Examination**
Reading	• **500** or above on the SAT Reasoning Test Critical Reading portion taken after February 2005 • **500** (*recentered score)* or **421** (*non-recentered score)* or above on the Verbal section of the SAT I taken prior to March 2005 • **22** or above on the ACT program in Reading • **20** or above on the Composite of the ACT taken prior to October 1989 • **93** or above on the ACCUPLACER Reading Comprehension Examination
English Language and Essay	• **500** or above on the SAT Reasoning Test Writing portion taken after February 2005 • **500** (*recentered score)* or **421** (*non-recentered score)* or above on the Verbal section of the SAT I taken prior to March 2005 • **21** or above on the ACT program in English • **21** or above on the ACT program in English/Writing (English with Essay Component) • **20** or above on the Composite of the ACT taken prior to October 1989 • **105** or above on the ACCUPLACER Sentence Skills Examination
Computation	• **500** or above on the SAT Reasoning Test Mathematics portion taken after February 2005 • **500** (*recentered score)* or **473**(*non-recentered score)* or above on the Mathematics section of the SAT I taken prior to March 2005 • **21** or above on the Enhanced ACT program in mathematics • **21** or above on the ACT taken prior to October 1989 • **91** or above on the ACCUPLACER

3. A student who is unable to meet the requirements in subsections(s) 1. and/or 2. may apply for and receive a waiver. The committee reviewing the request shall review the student's academic records and such other information as appropriate. If a waiver is approved, the student's transcript shall include a statement that the student did not meet the requirements of this subsection and that a college academic skills waiver was granted. The student must have achieved a 2.0 grade point average in the coursework and demonstrated the specific skills in the subject area(s) for which the waiver is sought.

   If the student has completed instructional programs for English as a second language or English as a foreign language with a minimum grade point average of 2.0 in all college credit courses in the skill area for which a waiver is being considered, and has met the requirements of Board of Governors Resolution adopting 6A-10.030 (Gordon Rule) for that area, then a waiver may be considered.
   a. Any student with a documented specific learning disability (SLD) by the student disability office may apply for a waiver through the appropriate dean to a committee appointed by the president or chief academic office for special consideration. The student shall have the right to appeal the findings of the committee directly to the president of the university or his or her designee.
   b. Any other student, including those students with other documented disabilities, may apply for a waiver through a process determined by the university. The committee hearing these requests shall be chaired by the Provost or his or her designee and include four president-appointed members including a university test administrator and three faculty members (one from an English Department, one from a Mathematics Department, and the third from a department other than English or Mathematics). Students with disabilities other than SLD should seek appropriate test and classroom accommodations prior to requesting waiver consideration. If the committee described above recommends by majority vote that a waiver be given for a specified skill area, such recommendation shall be accompanied by documentation that the student has acquired the skills to the level required and statements of explanation or justification to be considered by the president or his or her designee who then may approve or disapprove the recommendation.
4. A student who is exempt from any of the CLAST subtests, has passed any of the CLAST subtests, or has had one or more of the CLAST subtests waived prior to July 1, 2009, will be deemed to have met the requirements of this subsection in those designated areas. A

~~student transferring to a university whose transcripts reflect that he/she has met, or have received a waiver of, any of the requirements in this subsection will be deemed to have satisfied the requirements in those designated areas.~~

(2) In addition to meeting system-wide graduation requirements, students must meet university and programmatic graduation requirements.

(3) At New College of Florida contracts and independent study projects take the place of credit hours and grades. Working with professors, students design a course of study that parallels their interests and establish contracts each semester that specify academic activities and how student achievement will be evaluated. Students also complete three month-long independent study projects and a senior thesis or senior project. The requirements for earning a Bachelor's degree at New College of Florida are satisfactory completion of the following: seven contracts, three independent study projects, the liberal arts curriculum requirements, a senior thesis or project, and a baccalaureate exam.

Authority: Section 7(d), Art. IX, Fla. Const., History -- Formerly 6C-6.17, 8-9-83, 8-11-85, 9-28-86, 10-19-88, 11-27-95, Amended and Renumbered 1-29-09, Amended 8-6-09, Amended 12-10-09