

To:

Marjorie Pryse

Dean of Graduate Studies

From: Edelgard Wulfert

Dean, College of Arts and Sciences C. Wulfert

Date: April 18, 2009

Re:

Certificate in Professional Science Management

With this letter I am expressing my support for a proposal presented by the Department of Biological Sciences/CAS and the Department of Computer Science/CCI to establish a Certificate in Professional Science Management.

As explained in the 3-25-09 letter of Professor Zitomer, Chair of Biological Sciences, there is documented student interest in such a Certificate because it will further these students' professional goals. Also, the proposal is consistent with the department's academic priorities and it will be fully self-supporting and require no new resources.

The Certificate has been enthusiastically endorsed by the Chairs of the Department of Biological Sciences and the Department of Computer Science and the Deans of the School of Business and of the College of Computing and Information. It is my pleasure to join my colleagues in lending my support the establishment of a Certificate in Professional Science Management.



April 30, 2009

Dr. Marjorie Pryse Dean of Graduate Studies University at Albany/SUNY 1400 Washington Ave. Albany, NY 12222

Dear Dean Pryse:

On behalf of the College of Computing & Information, I am pleased to endorse the proposal from the Departments of Computer Science and Biology and the School of Business to introduce an Advanced Graduate Certificate in Professional Science Management. This program will build on and be a good addition to the M.S. program in Computer Science. This proposal is squarely in line with the University's goal of offering advanced degree programs that help create an educated and informed workforce. I expect that the particular combination of computing and management principles in this certificate program will be an especially attractive option for students who wish to apply their technical expertise in a business setting. This combination should enable the university to attract motivated and talented students. Graduates of this program will have a competitive edge as they enter the workforce upon graduation.

This proposal has been reviewed by the other departments in the College of Computing & Information, and they are also enthusiastic supporters. I applaud the initiative that you and the other program designers have taken in developing this proposal. It has my enthusiastic support and backing. I look forward to seeing the program's approval and the first round of students entering the program.

Please contact me if you have any further questions.

Sincerely,

Peter A. Bloniarz

Pele A. Blair

Dean

Cc: Prof. George Berg

Dean Donald Siegel

4/24/09 Approved by CAS Academic Programs Committee, Maria Isabel Ayala, Chair
4/24/09 Approved by CAS Dean's Office, Gregory Stevens, Asst Dean, Edelgard Wulfert, Dean
Department of Biology, College of Arts and Sciences;
Department of Computer Science, College of Computing and
Information; and the School of Business
propose an

Advanced Certificate in Professional Science Management Proposed Starting Date: Fall 2009 or Spring 2010

I. Introduction and Rationale

The Departments of Biology and Computer Science and the School of Business are proposing the introduction of an Advanced Certificate (Graduate Certificate) in Professional Science Management which builds upon registered graduate programs: 1) M.S. in Forensic Molecular Biology; 2) M.S. in Biodiversity, Conservation and Policy; and 3) M.S. in Computer Science. The courses in the Advanced Certificate are applicable to these programs.

The dramatic changes in science and technology in the context of global competition represent one of the major challenges to the growth and viability of the New York State economy. A key element in maintaining a competitive advantage for New York State is the continued development of a workforce that is not only capable of *doing* but likewise able to *manage* science and technology. The Albany Capital District has been a leader in the creation of science and technology jobs for New York State. Accordingly, the purpose of this proposal is to build on the University at Albany's legacy of leadership by establishing an Advanced (Graduate) Certificate in Professional Science Management.

While individual Certificate programs will advise students to make different course selections from an array of offerings as best complements their current M.S. programs, and while the School of Business will also provide supplemental advising concerning business course selections, all students who enter the Certificate program will:

- engage in cross-disciplinary training in science, business, communication, public policy, law, geographic information systems, information management, ethics, and/or other areas of study determined by each graduate program to be of particular benefit to Certificate students;
- share an interest in preparing for a wider variety of career options than provided by current graduate programs in the sciences; and
- demonstrate through an internship their ability to put science preparation to work in business and industry.

The underlying concept of the Certificate in Professional Science Management has been influenced by the Council of Graduate Schools (CGS) and the Alfred P. Sloan

Foundation, who have worked with more than 60 institutions nation-wide to help launch "professional science master's" (PSM) programs. With Sloan Foundation support, these programs have emerged both to meet the needs of industry and economic development and also to provide an alternative educational and career path for those students with the B.S. who wish to pursue graduate education and a career in science within business, government, or non-governmental organizations, but do not want a research career.

Neither the Sloan-supported programs nor the proposed Certificate involves licensure, although CGS has identified the elements of such programs that qualify them to use the term "professional science master's" programs. Students at the University at Albany who complete both the M.S. in a science field and the Certificate in Professional Science Management will be considered "professional science master's" graduates; however, the University at Albany is not proposing a new PSM degree—only a Certificate program to enhance our current M.S. degrees for master's students interested in a non-research science career.

Several members of the Albany faculty and staff have participated in meetings concerning the development of the SUNY Certificate as part of an initiative to establish "professional science master's" programs at more than a dozen campuses throughout the SUNY system. These campuses, including all 4 University centers, are cooperating, sharing ideas and materials, and in some cases making their courses available to PSM students on other SUNY campuses. The University at Albany's proposed Certificate in Professional Science Management is modeled in part on an existing Certificate program at the University at Buffalo, the campus that pioneered the concept within the SUNY System and with the New York State Department of Education.

While particular faculty members currently serving as directors of Master's-level programs in Biology and Computer Science have come together to propose the Certificate in Professional Science Management within their Colleges, and their departments and deans have written letters in support of their students enrolling in such a program, these two departments do not claim exclusive ownership of the proposed Certificate. Rather, the Certificate is designed to adapt to other Master's programs in the science, technology, and mathematics fields at the University at Albany that wish to offer an additional professional option to master's-level students. Indeed, faculty from several other master's programs in the sciences have already participated in meetings where they have expressed both interest in and varying degrees of readiness for adapting aspects of their own programs to make a "professional science master's" option available to their students in the future by means of offering the Certificate in addition to their M.S. degree. Internal on-campus Certificate revision legislation would be necessary in order to add additional departments and M.S. programs to the co-ownership of the Certificate.

¹ For more information on the national PSM initiative please visit <u>www.cgsnet.org</u> and <u>www.sciencemasters.com</u>. See

http://www.sciencemasters.com/PSMProgramList/InstitutionsinAlphabeticalOrder/tabid/79/Default.aspx for a list of these institutions.

² See http://www.sciencemasters.com/portals/0/pdfs/Guidelines_for_PSM_Affiliation.pdf for a list of Guidelines for Formal CGS Recognition as a Professional Science Master's Program (PSM).

II. Prospective Students

Students who have been matriculated into Master's programs in the sciences in those programs that have established "professional science master's" programs (M.S. + Certificate) are eligible to apply for the Certificate in Professional Science Management.

In addition, students who already hold the M.S. degree from participating "professional science master's" programs (either as graduates of the University at Albany or other M.S.-granting institutions) may apply for the Certificate program, and individual program admissions committees will decide whether to accept previously-completed Master's-level courses in the sciences in fulfillment of the science requirement in the curriculum (see below). Depending on the student's prior preparation, the length of time that has elapsed since the student completed the M.S. degree, and other criteria, the student may be required to fulfill the science requirement in order to bring their knowledge and/or skills in science up to date.

Currently-enrolled students are likely candidates for the Certificate once the program is approved. It is expected that the first cohort in the Fall of 2009 or the Spring of 2010 will be comprised of 5-10 students across the co-owning departments (Biology and Computer Science).

III. Curriculum

The University at Albany's proposed "professional science master's" programs will add a Certificate in Professional Science Management to existing masters curricula in the designated STEM fields such that the "professional science master's" program = M.S. + Certificate. Consistent with the models that have been developed nationally under the auspices of the Sloan Foundation and the Council of Graduate Schools (CGS), the University at Albany's Certificate will be comprised of the following:

- (1) science requirement: graduate-level courses in science and/or technology as appropriate (6 credit hours);
- (2) "PLUS" courses in various areas of business, communications, law and public administration as appropriate to the program (9-12 credit hours);
- (3) internship (3-6 credit hours);
- (4) and a portfolio of written work.

Total minimum credits required for the Certificate: 18

If the internship is already required by the M.S. program, it may also be used to satisfy the credit requirements of the Certificate program. Similarly, graduate-level courses in science and/or technology already required by the M.S. program may also be used to satisfy the credit requirements of the Certificate program. In all cases, the Certificate will require at least 9 credits of "PLUS" courses that exceed the requirements of the existing M.S. program.

Students may currently select from the following PLUS courses, as advised by their particular PSM program and the advisor from the School of Business (the list is subject to revision depending on the interests of particular students in consultation with departmental and School of Business advisors):

BACC 518 Accounting for Managers (3) (typically offered in the fall semester and summer session)

Focuses on the financial statements of business organizations, the information they contain, and how this information is useful to management. Emphasis is placed on the meaning and the value of accounting information to a manager, not on the recording and processing of that information. The course also focuses on the use of accounting information by managers, concerning economic resources. Managers must understand cost concepts and how they relate to a variety of environmental and operational variables. Such understanding leads to the ability to analyze profitability and interpret the information supplied by various performance measurement systems.

BMGT 513 Organizational Behavior and Managerial Skills (3) (typically offered in the fall semester)

This course provides a basic understanding of individual, group, and organizational processes and their effectiveness. Key processes include motivation, communication, managerial functions, organizational politics and management of organizational change. The emphasis is on building diagnostic skills needed to understand organizational processes and the administrative and interpersonal skills needed to carry out key responsibilities in any type of management position.

BMGT 514 Human Resources Management (3) (typically offered in summer session)

Overview of human resources management in organizations. Topics include personnel recruitment, selection, assessment, performance appraisal, training, safety, compensation, employee benefits, personnel planning, career counseling, affirmative action, labor relations, and collective bargaining.

BBUS 523 Presentation Skills (1) (typically offered in spring semester, summer session, and on occasion, in wintersession)

Skills-oriented course seeks to develop effective individual presentation skills through instruction and practice. Students will be video-taped and given detailed feedback about their skills and needs for improvement. Attention will also be given to working as part of a group in making business presentations.

BITM 510 Advanced Excel with Visual Basic for Applications (1) (typically offered in spring semester and summer session)

Excel is the most used software in any organization. This course, includes advanced Excel including the use of Excel objects, Macros, Functions, Goal Seek, Solver, Visual Basic for Applications (VBA), regression analysis, charts, pivot tables, etc. Problems will focus on business decision support, scenario analysis and statistical

techniques. The student will learn how to improve productivity using spreadsheet software and VBA for problem solving in a business environment. S/U graded.

(Please see Appendix for a letter from the Dean of the School of Business agreeing to provide access to courses and seat capacity for students enrolled in the Certificate in Professional Science Management, subject to early advising and careful planning and communication across units.)

In addition to these courses from the University at Albany School of Business, UAlbany PSM students will have available to them similar courses at other SUNY institutions also working System-wide to develop the Certificate model. Although University policy does not limit the number of courses that may be accepted for credit for graduate certificates, students interested in transferring a course or courses from another SUNY institution for completion of Certificate requirements will need to secure appropriate advisement from their M.S. program director.

In addition to these courses, cross-disciplinary courses already part of the Master's programs in Forensic Molecular Biology and Biology, Conservation, and Policy will enhance the preparation of students enrolled in both the M.S. and the Certificate programs. Other departments interested in adding the Certificate in Professional Science Management to their own offerings may wish to begin by considering some of the courses below, in addition to the business courses above, as possible electives for their own Certificate students. Currently, only the Department of Biology master's students have been approved to take these courses. Certificate revision legislation adding additional M.S. programs to the co-ownership of the Certificate in Professional Science Management would need to include letters of approval from any program offering courses from the list below allowing students other than Biology Masters students to enroll in these courses.

RCRJ 626 Law and Science in Criminal Justice (3)

The different methods and objectives of legal and scientific inquiry are explored. Different uses of the social and natural sciences in law are considered, focusing on the introduction of scientific evidence to prove disputed facts in trial courts and appellate courts' consideration of scientific research evidence in announcing and applying rules of law. Illustrative topics include the admissibility of scientific evidence (e.g., DNA analysis) in criminal trials, and the uses and potential uses of social science research to help inform judicial decision making in areas such as the reliability of eyewitness identification, jury decision making, and the law of capital punishment.

BITM 520 Database Management (1)

This is an introductory course in database modeling, design and implementation for business applications. The role of database systems in the management of information and the procedures for modeling the data resource to support managerial/executive needs are presented. It includes principles of database theory, query languages, and

forms of data organization. Students gain hands-on experience through developing one or more database applications using one of the standard database packages.

RPUB 513 Field Seminar in Public Policy (4)

A survey of the substantive, methodological, and normative concerns found in the study of public policy. Offered jointly by the faculty in public policy.

RPUB 514 Economics for Public Affairs (4)

Further development and application of microeconomic concepts and tools to issues in public policy analysis. Particular attention is paid to the use of the norms of equity and efficiency in the evaluation of government policies, and the practical concerns of performing policy analysis. Students gain an appreciation for the strengths and weaknesses of the economic perspective in performing analysis. Prerequisite: Public Economics and Finance I and completion or concurrent enrollment in Data, Models, and Decisions II.

RPUB 522 Politics and Policy (4)

Examination of the influence of political factors on the initiation, formulation and implementation of public policy. Considers the role of political institutions and forces in defining and shaping policy options and choices. Seeks to equip the student with the background necessary to operate effectively within the political environment of policy-making.

RPUB/RPAD 666 International Environmental Policy (4)

Evaluation of environmental regulation in the United States and considers the response of political and administrative institutions to complex problems such as toxic wastes. Comparative perspectives on Western and Eastern Europe and Japan.

AGOG 584 Introduction to Remote Sensing Environment (3)

Introduction to the concepts and interdisciplinary applications of remote sensing. The basic principles of theory and practice are presented for earth resource management. Photographic and non-photographic sensors are examined. Visual and digital image analysis techniques are introduced. Students will interpret color infrared, multispectral, and other sensor imagery for a variety of purposes.

AGOG 596 Geographic Information Systems (3)

This course will explore the structure, design, and application of geographic information systems. The student will learn how to store efficiently, retrieve, manipulate, analyze, and display large volumes of spatial data derived from various sources. Students will learn information management techniques for a variety of purposes including planning and simulation modeling.

IV. Interface with Existing Master's Programs

Three University at Albany master's programs have asked to add the Certificate in Professional Science Management to their existing curricula in order to create "professional science master's" programs that may be affiliated with the Council of Graduate Schools. The directors of these master's programs have supplied the following information concerning how they would add the Certificate to their existing curricula.

- A. Forensic Molecular Biology. The "professional science master's" program initiative is a golden opportunity for the criminal justice community to once again partner with the University at Albany on developing a Certificate that adds business and leadership coursework to the 40 credit Masters Program in Forensic Biology. This initiative would benefit law enforcement by offering managerial coursework tailored for current or future forensic supervisors, directors, technical leaders and administrators. Graduate credit coursework offered in the University at Albany's Forensic "professional science master's" program (M.S. in Forensic Molecular Biology plus the Certificate in Professional Science Management) would include business fundamentals, regulatory affairs, business communication, management, accounting, business law, human resource management, quality assurance, and/or ethics.
- B. <u>Biodiversity</u>, <u>Conservation and Policy</u>. The "professional science master's" program in Biodiversity, Conservation and Policy (BCP) would add the Certificate in Professional Science Management to the existing M.S. BCP program. Students who add the Certificate program to the M.S. will fill a need within the existing program for a non-research track focused on the business, finance and management sides of conservation. The work of non-governmental organizations (NGOs) and environmental/wildlife management agencies is influenced by markets and dependent on the development of policies, practices and techniques embedded in business and economics. To accommodate the portfolio requirement of the Certificate program, we anticipate linking the required internship experience for the Certificate to the thesis requirement for the MS degree.
- C. <u>Computer Science</u>. The M.S. program in computer science develops a solid foundation that can lead the student to continue on to doctoral studies or to take a position in industry. The "professional science masters (PSM)" in computer science will allow students to take a wider variety of courses to complete the core, but demand a greater emphasis on specific topics and on applications rather than theory. "PSM" students are also required to have an internship and to take at least three additional courses that will provide exposure to business, ethics, policy, and other issues outside the traditional scientific realm. The "PSM" track—the M.S. in Computer Science plus the Certificate in Professional Science Management—will serve the majority of Master's students who neither go into research nor spend a large part of their careers working in the technical end of the field.

V. Faculty Leaders

Three current faculty members from existing master's programs have championed the Certificate in Professional Science Management and plan to make the Certificate available to their students as part of "professional science master's" programs.

Gary Kleppel is Professor of Biology and Director of the Biodiversity, Conservation and Policy Program.

Donald Orokos is Professor of Biology and Director of the Forensic Biology Program.

Neil Murray is Professor and Graduate Director of the Computer Science Department.

In addition, Dean Donald Siegel of the School of Business has expressed his support for the Certificate program.

VI. Advisement and Support for Students Enrolled in the Certificate in Professional Science Management

Students enrolled in the Certificate program will receive advisement and career placement assistance from their M.S. "professional science master's" program director. In addition, the School of Business will provide specific advisement concerning appropriate business course selection choices for PSM students. The Office of the Dean of Graduate Studies has agreed to facilitate the cross-college discussions concerning enrollment capacity, at least until the program and its lines of communication are well established. It will be important that the M.S. program directors advise their PSM students early in the process, that these students meet with the School of Business advisor to confirm their interest, and that when the School of Business saves a seat for a PSM student that the student will actually enroll.

We anticipate that Certificate students may form interest groups that cross M.S. programs and departments. The Office of Graduate Studies has agreed to dedicate brown bag discussions to the "professional science master's" program students to encourage the cross-college communication among students.

VI. Resources

The Certificate program will be implemented by utilizing the existing programs in the biology and computer science departments in conjunction with the "plus" courses that will be provided by the School of Business. (Courses from the Schools of Public Health and Criminal Justice, and the College of Arts and Sciences and Rockefeller College have already been approved for Master's students in Biology.) Because the capacity for admission to the Certificate program is limited by the existing capacity for M.S. programs in Biodiversity, Conservation, and Policy, Forensic Biology, and Computer Science, we expect the Certificate program enrollment to remain small. In addition, the University at Albany has received a small amount of grant funding (\$15,000) to be used

for web-site and/or materials development, in-state travel for program directors to attend SUNY-wide PSM program meetings, small stipends for the program directors in recognition of their efforts to provide initial "launch," and a stipend for the "set up" efforts required in the School of Business advisement office. In addition, the National Science Foundation has announced that it is considering a "professional science master's" grant initiative. Faculty involved in the Certificate program will be encouraged to apply for this or any other additional funding that might allow the campus to further develop the program and/or to provide opportunities for additional departments to become involved.

VII. Business Advisory Board

The group of science master's programs that choose to offer the Certificate in Professional Science Management have created a Business Advisory Board that will function to assist in further development of the curriculum. This board is comprised of representatives of leading science and technology firms and organizations in the Albany Capital District. Many of the prospective companies, organizations and/or business leaders have already been identified, and many have already met with University at Albany faculty and staff to discuss the prospective Certificate. Several are already active consultants with existing M.S. programs. The following business/industry leaders and/or companies have expressed interest in the advisory board, and several provided letters of support that allowed us to secure the Sloan planning grant for the Certificate program:

Mark Dale, Director of the Northeast Regional Forensic Institute, UAlbany

David Haight, American Farmland Trust, 112 Spring St., Saratoga Springs, NY 12866

William F. Johnson, Assistant Deputy Director, NYS Office of Cyber Security & Critical Infrastructure Coordination, 30 S. Pearl St., Albany, NY 12207.

Jeff Lawrence, Executive V.P. for Technology Center for Economic Growth, 255 Fuller Rd., Albany, NY 12203

Susan Lawrence, The Sierra Club, 353 Hamilton St., Albany, NY 12210

Larry Spraker, Vice President, Fountain Spatial, Inc., 1535 Western Ave., Albany, NY 12203

David Van Luven, Director, Hudson River Estuary Landscape Program, 21 S. Putt Corners Rd., New Paltz, NY 12561

Jeff Zapierri, Chief of Regulatory Affairs, NY Coastal Management Program, 99 Washington Ave. Suite, Albany, NY 12231

Gerald Zoesky, NYS Police, Forensic Investigation Center, 1220 Washington Ave., Albany, NY 12226



Professor Richard S. Zitomer Chair, Department of Biological Sciences

To: Marjorie Pryse, Dean of Graduate Studies

From: Richard S. Zitomer, Chair of Biological Sciences

Date: March 25, 2009

Subject: Certificate in Professional Science Management Proposal

This letter is to express my support for the Certificate in Professional Science Management PSM). You may use this letter in your efforts to coordinate the approval of the proposal.

The Department of Biological Sciences has two terminal Master's programs, the Forensic and Biodiversity and Conservation programs, whose students would like to take a certificate in PSM. In the case of the Forensic program, a student survey indicated a number who would take the certificate if it were offered. These students aspire to the directorship of the operations of a forensic laboratory during their career which will include management of personnel and resources. The coursework will provide them with the necessary skills and the certificate with the credentials that will help them achieve this goal. The Biodiversity and Conservation students similarly aspire to manage environmental operations of companies or conservation organizations where the skills and certification of this program would be beneficial. Thus, the Department supports the implementation of this program, and Dr. Donald Orokos (of the Forensic Program) and Dr. Gary Kleppel (of the Biodiversity and Conservation Program) have both worked hard to bring it this far.

The PSM program will be limited to the students already enrolled in the two programs which admit about 15 students per year combined. Only a subset will take the certificate; we estimate less than a half dozen in each class. Thus, we will not require any additional resources or full or part-time faculty lines to implement this program. Certificate students will be self-supporting.

UNIVERSITYAT ALBANY
State University of New York

College of Computing and Information Computer Science Department

March 30, 2009

Dr. Marjorie Pryce
Dean of Graduate Studies
University at Albany

Dear Doctor Pryce:

On behalf of the Department of Computer Science at the University at Albany, I am proud to convey our strong and enthusiastic support of the proposal for the Advanced Certificate in Professional Science Management. The certificate program is a good idea in general at the university, and in particular complements the direction the Computer Science Department is taking in its own M.S. program. Together, the CS M.S. and the advanced certificate will open many doors for our graduates, allowing them to combine technical, business and other related skills into careers that would not otherwise be available to them.

The department appreciates that the nature of the proposed certificate also fits well the current environment at the university. In its present form, it will require no new faculty or other significant expansion of resources. And, the students in this program are expected to be self-supporting. These are consistent with our expectations for the program and for students who will pursue the certificate while in our M.S. program.

The depth of the department's support for this proposal is perhaps best indicated by the fact the two of our faculty, Professor Neil Murray and Associate Professor Mei-Hwa Chen have been involved in the development of the proposal for the certificate program. And, representing the department as chair, I fully support the program and the active role my colleagues have taken in its development. We also appreciate the active role you are taking in coordinating the preparation of the proposal and related materials.

Sincerely,

George Berg

Associate Professor and Chair

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Office of the Dean School of Business

March 23, 2009

Dr. Marjorie Pryse
Professor, Departments of English and Women's Studies
Dean of Graduate Studies
University at Albany
Albany, NY 12222

Dear Professor Pryse:

The School of Business at the University at Albany strongly supports the proposal from the Departments of Biology and Computer Science for a Certificate in Professional Science Management. We believe that this initiative is important and especially timely, in light of the recent economic downturn. It is important to note that the economic downturn has significantly lowered the opportunity cost of graduate professional education, which will increase the demand for such a certificate program.

The School of Business pledges to provide two types of support for this project. First, we will offer seats (capacity) to students (we talked about 6 students, initially) enrolled in the certificate program from the departments of Biology and Computer Science, without requiring compensation from the College of Arts and Sciences or the College of Computing and Information. We have also identified a staff member who will assist certificate program students in selecting business courses, in conjunction with their formal advisement in their home departments.

In sum, the School of Business at the University at Albany is deeply committed to this project and we are willing to allocate resources to this effort. We enthusiastically support this timely and critical initiative. Please feel free to contact me if you require any additional information.

Sincerely yours,

Dr. Donald S. Siegel

Donald Liegel

Dean and Professor

School of Business

University at Albany, SUNY

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