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PROPOSAL

for a

PROFESSIONAL SCIENCE MASTER'S

DEGREE PROGRAM

UNIVERSITY OF THE DISTRICT OF COLUMBIA

OFFICE OF GRADUATE STUDIES

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF AGRICULTURE, URBAN SUSTAINABILITY & ENVIRONMENTAL SCIENCE

SCHOOL OF ENGINEERING AND APPLIED SCIENCES

SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

DAVID A. CLARKE SCHOOL OF LAW

UNIVERSITY OF THE DISTRICT OF COLUMBIA

UNIVERSITY SENATE

ACADEMIC PROGRAMS

TRANSMITTAL FORM

TYPE OF REVIEW REQUESTED: NEW PROGRAM

SIGNATURE PAGE TO BE PROVIDED IN HARD COPY

I Proposal Summary

The Office of Graduate Studies at the University of the District of Columbia, in collaboration with the College of Arts and Sciences (CAS); the College of the Agriculture, Urban Sustainability, and Environmental Science (CAUSES); the School of Engineering and Applied Sciences (SEAS), the School of Business and Public Administration, and the David A. Clarke School of Law proposes to establish an "umbrella" Professional Science Master's (PSM) degree program, with two initial degree tracks: Applied Statistics and Water Resources Management. The Applied Statistics track is a minor modification of the existing M.S. program in Applied Statistics. The Water Resources Management track is included in the approved new College of Agriculture, Urban Sustainability, and Environmental Sciences. A Forensic Science degree track is proceeding currently through the program development and approval process in CAS, and will be included as soon as it is fully approved.

This "umbrella" proposal describes the proposed "umbrella" program, the criteria and processes for coordinating modifying, adding, terminating, and assuring the quality of degree tracks. The establishment of this "umbrella" PSM program at UDC, with nimble flexibility to add, terminate, or modify degree tracks in response to regional employer needs is consistent with nationwide "best practice" in PSM program administration and aligns with UDC's mission as the nation's only urban land-grant institution and the only public institution of higher education in the nation's capital.

The vision of UDC's proposed PSM program is to prepare students for the rapidly evolving professional, science- and math-based careers in high demand by employers in the National Capital area to manage science, spur innovation, accelerate environmental sustainability, and foster national security.

The PSM program will welcome traditional and non-traditional students and prepare its graduates for careers and rapid advancement in business, industry, non-profit organizations,

and government agencies. The educational experience will emphasize real world applications of STEM knowledge while providing opportunities for students to perform research. The curriculum contains courses common to most or all degree tracks and specialized coursework in each individual track. The curriculum has been designed from a multidisciplinary perspective with input from employer partners, from the relevant departments, and from faculty in a broader group of disciplines at UDC.

This project has three Goals and associated objectives.

Goal 1. Grow a successful PSM program at UDC that is nimble, flexible, and efficient at serving the rapidly evolving graduate-education needs of diverse students and National Capital area employers in government, industry, and the non-profit sector, becoming the clear first choice for students and employers alike.

Goal 2. Prepare cohorts of master's degree graduates with advanced, interdisciplinary science and mathematics knowledge along with research and other skills needed to enter and advance rapidly in important science-based careers.

Objective 2.1. Recruit, retain, support, and graduate at least 90% of the matriculated students, including substantial numbers of underrepresented minorities and women, and transition them smoothly into relevant careers.

Goal 3. Establish, strengthen, and capitalize on numerous employer partnerships to benefit the University and its students broadly into the future and to contribute to local and regional economic development.

II. Background

The PSM degree was initiated in 1997 with the support of both the Keck Foundation on the West Coast and the Alfred P. Sloan Foundation on multiple university campuses. Today about 86 campuses nationwide offer 170 different PSM programs. As of March 2010, none of these campuses is an Historically Black College or University and few have high minority-student enrollments. The purposes of this new type of degree are to meet the needs of government, business, and industrial employers and to provide a professional career path for individuals with bachelor's degrees in science, technology, engineering, or mathematics (STEM).

According to the official PSM web site (www.sciencemasters.com), the PSM "is an innovative, new graduate degree designed to allow students to pursue advanced training in science or mathematics, while simultaneously developing workplace skills highly valued by employers. PSM programs consist of two years of academic training in an emerging or interdisciplinary area, along with a professional component that may include internships and "cross-training" in workplace skills, such as business, communications, and regulatory affairs. All have been developed in concert with employers and are designed to dovetail into present and future professional career opportunities."

The typical 30 to 36 credit-hour PSM program combines 1) STEM graduate coursework; 2) complementary coursework in business, management, law or other professional subject matter; and 3) an internship or project experience. In a report¹ issued July 11, 2008, the National Research Council strongly endorsed PSMs and recommended that new PSM programs in the natural sciences should be developed speedily, to prepare graduates needed by industry, government and non-profits to "manage science and spur innovation." In the highly competitive,

rapidly evolving global economy with its escalating requirements on the skills and knowledge demanded of employees, these 'new' degrees and the institutions that offer them are successful to the extent that they can be nimble and responsive on the time scale (weeks to months) operative in business, rather than the timescale (semesters to years) typical of academic curricular change.

1 National Research Council, *Science Professionals: Master's Education for a Competitive World* (2008).

With early encouragement from the Academic Affairs Committee of its Board, UDC began in 2008 to explore the potential of PSM degrees. The University currently leads the HBCU Mid-Atlantic Professional Science Master's Alliance (Mid-Atlantic PSM Alliance), which formed with eight member universities in summer 2009. These institutions in the broad National Capital region collaborated to create this new Alliance, which came into being on July 10, 2009. Membership is not limited to HBCUs, and the Alliance includes American University, which has two successful PSM degree tracks in place. The purpose of the Alliance is to develop and coordinate new PSM degree programs and courses at the member HBCUs that serve the needs of diverse Mid-Atlantic regional employers and enroll significant numbers of African American and other underrepresented minority students.

In October 2009 the Alfred P. Sloan Foundation approved a 3-year implementation grant to the University of the District of Columbia Foundation for the Alliance to support an extensive market survey; the development and launch of 16 new PSM degree programs/tracks designed to serve

the needs of government agencies, industry, and non-profit organizations in this region; and evaluation of the programs and the Alliance. The first new PSM programs—including these two at UDC—are expected to admit students for fall 2010.

III Demonstration of Need

In its report, *Science Professionals: Master's Education for a Competitive World*, the National Research Council concluded that "[t]he time is now right to accelerate and spread nationally the development of ...professional science master's education that is interdisciplinary in character, strongly emphasizes effective communication and problem solving, and provides an understanding of entrepreneurial skills and technical innovation." Since the release of this report in July 2008, the global recession and financial crisis has amplified this call and the need by business, government, and non-profit employers for so-called "T-shaped" people: with skills and expertise that are simultaneously deep and broad. This conclusion was based on the collection and evaluation of much data, many reports, testimony of experts, and the perspectives of those with vantage points in industry, government, academia, and graduate education.

Evidence of the strong national need for PSM programs comes also from the Congress, which authorized funding in the America Compete's Act (Sec. 7034) for PSM programs through the National Science Foundation (NSF). Funding of \$15 million was finally appropriated in FY2009 in the American Recovery and Reinvestment Act (ARRA).

The National Capital area hosts an incredibly rich and diverse set of employers—from Federal agencies, to state and District agencies, industry, small business, non-profits, and non-governmental agencies—that require workers, managers, and leaders with STEM expertise.

Evidence of the specific need for UDC to offer PSM programs that serve this employer base comes from numerous, primarily informal, conversations with potential employers, all of whom have been quite enthusiastic. Strong support for UDC joining the 86 pioneer PSM campuses is

further demonstrated by the Sloan Foundation grant, which provides funding to assist with the development and implementation of 16 new PSM programs or degree tracks over the next 3 years at Mid-Atlantic Alliance member institutions (including at least six to be in place by Fall 2010). Funded by this grant, detailed and systematic employer and student surveys are underway and expected to be completed in Summer 2010.

To quote Joseph E. Parker, Group Vice President for High Performance Technologies, Inc., a major government contractor headquartered in Reston, "it was clear to me that this innovative degree could readily provide its graduates with both the science and the other business skills needed by our company and many similar employers in the DC area."

IV. Congruence with University Mission and Strategic Goals

As the only public institution of higher education in the nation's capital and as an urban land-grant institution, UDC's mission is to serve the people of Washington, DC and the nation by providing comprehensive, affordable higher education that "prepares students for immediate entry into the workforce, for the next level of education, for specialized employment opportunities, and life-long learning." Moreover, this proposal directly advances two of the University's four strategic goals: to "offer exceptional, research-driven graduate and professional programs of importance to the District and the Nation;" and to provide an engine for economic development for the region.

In addition, this program will provide a framework for collaborating with District and regional employers to design and offer timely, high-quality graduate degrees in interdisciplinary, STEM-based specialties that are in high demand. It will provide a mechanism for coordinating courses, schedules, and enrollments across Schools and Colleges. It will foster student internship opportunities and partnerships leading to high-salary positions with significant advancement potential, not just for the graduate students in these programs, but also for undergraduate students in the departments offering the programs. In sum, these new degree tracks will help give UDC students a competitive edge in the global economy, and thus will help attract students to enroll at UDC.

V Relationship with Other Programs and Units

This umbrella program builds on and coordinates with other degree programs, organizational units, and institutions. The curricula for the various degree tracks include existing or updated courses that serve students in other programs. In addition, special courses developed for the PSM degree tracks will be electives available to enrich the preparation of students in related graduate degree programs. The so-called "plus" courses will be offered by the schools/departments with the specific expertise. Already some faculty members from these schools and departments have been involved in PSM program, course, and curriculum planning. The deans of the schools and colleges at the Flagship are uniformly enthusiastic and supportive. They have been included in the conceptualization and review of this proposal, as documented by their signatures on the approval page.

Regionally, we coordinate with other member institutions in the HBCU Mid-Atlantic PSM Alliance to offer complementary degree programs and to take advantage of and not duplicate course offerings and specialties on those campuses. In addition, as a member of the Consortium of Universities of the Washington Metropolitan Area, UDC programs and students have access to courses and specialties at any of the Consortium campuses.

VI Standards of Relevant Accrediting Agencies and Professional Societies

The Professional Science Master's title and logo "PSM" is trademarked by the Alfred P. Sloan Foundation. The Council of Graduate Schools (CGS) administers the criteria, developed by the national PSM Advisory Board, which a program must satisfy to be recognized as a PSM program. Briefly, these criteria are:

- Total credits equivalent to a standard master's degree.
- A majority of the course work in graduate-level mathematics and/or science courses. An interdisciplinary curriculum is highly desirable.
- A professional skills component, consisting of courses and activities developed in consultation with prospective employers, for example business basics, legal/regulatory issues, finance, marketing, communications, teamwork, etc.
- Program quality assurance using the normal faculty-based mechanisms of the institution.

- An active and engaged employer advisory board providing advice on curricula, assisting with internships, assisting with project identification, and interacting individually with students.
- A commitment to report enrollment and degrees annually and attempt to track the employment of every graduate to help assess program outcomes and success.
- Agreement to use the PSM name and logo on websites and brochures and to be listed on the national PSM websites, databases, and promotional activities.

The "umbrella" PSM program and preliminary curricula for the initial three degree tracks have been shared with the CGS PSM team for a preliminary review. The Applied Statistics, Water Resources Management, and the Forensic Science—Weapons of Mass Destruction concentration (still in the process of University review)—were found to have the required elements. The curricula for the approved Applied Statistics and Water Resources Management tracks are undergoing formal CGS review, in parallel with this proposal proceeding through the University's review and approval process.

There is currently no accreditation of graduate programs in applied statistics or water resources management. The American Academy of Forensic Sciences Forensic Science Education Programs Accreditation Commission (FEPAC) sets accreditation standards for graduate degrees in forensic sciences. The issue of discipline-specific accreditation standards or professional society recognition must be addressed specifically and systematically in each track proposal. The process for assuring appropriate alignment with accreditation standards for future degree tracks is addressed under Program Administration.

The University is a member of the National Professional Science Master's Association (NPSMA), which analyzes and disseminates best practice in PSM program implementation.

VII Number of Students Affected

It is expected that each PSM degree track will enroll a cohort of three to five students during its first year and about ten students per year, once the degree track is well established. In addition, the presence of the PSM degree tracks, their employer relationships, and their interdisciplinarity

will provide an enriched environment for undergraduate education and graduate education in the involved departments. The undergraduates will be exposed to the career pathways PSM's open up and will interact with the PSM graduate students. The intense PSM-based employer relationships and interactions are likely to increase internship and employment opportunities for the undergraduates in related programs. Graduate students in other programs will have timely electives available through the PSM curricula. The number of students peripherally affected in these ways will be quite large (several hundred per year).

VIII Program Administration

The Dean of Graduate Studies will be responsible for overseeing the implementation and administration of the Umbrella PSM degree program, and for the coordination among the various degree tracks. All requirements of the program and its degree tracks will comply with the Academic Policies of the University. The Umbrella PSM Program provides UDC with the flexibility to modify, add, and remove specialized tracks in response to rapidly evolving regional and national priorities, employer needs, and student interests, thereby helping the University to fulfill its land-grant responsibilities to the community and District.

The initial tracks and future tracks will each be housed and administered in a lead academic department in one of the schools or colleges. Each degree track will be directed by a "track director" faculty member in the lead department. The PSM Umbrella Curriculum committee advises the Dean of Graduate Studies. It consists of the track directors and a faculty representative of each participating school/college which offers either a PSM track OR 'plus' courses (all of the Flagship schools/colleges).

Following the University's normal academic course and curriculum development procedure, the development and proposal of new degree tracks will be undertaken by interested faculty in the department(s) leading and participating in the curriculum. The track proposal will be required to address the following:

- The need for the track by providing information from an employer survey, evidence of prospective student interest, and information about the geographic proximity, enrollment, and application pressure of any 'competing' closely related PSM offerings at the University and within the DC Metropolitan Area, among Consortium members, and within the HBCU Mid-Atlantic PSM Alliance.
- The existence and (if it exists) the requirements of discipline/profession-specific accrediting bodies. Any PSM track in a specialty in which professional accreditation is available. The proposal must address how the track plans to meet those requirements and proceed through the professional accreditation process to earn accreditation on the most rapid timescale allowed by that body.
- The specific learning goals for the degree track and how they relate to the overarching learning goals for the PSM Umbrella.
- The incorporation of specific course requirements and electives common to other PSM degree tracks, and adoption of student mentoring and advisement approaches consistent with the other PSM tracks (currently including both an academic and an employer mentor/advisor for each student).
- The inclusion of an employer internship/capstone along with commitments of interest in hosting internships from some local/regional employers.
- A comparison of the curriculum and admissions and graduation requirements with those

of closely related PSM programs nationwide, demonstrating that our proposed track would be of comparable or superior quality and address the expressed needs of regional employers seeking these science professionals.

- The results of a preliminary inquiry of the CGS, ascertaining whether the proposed degree track has the elements needed for affiliation and recognition as a PSM. If CGS feedback notes concerns or deficiencies, the track proposal must describe how the final curriculum addresses those concerns. A proposed track that cannot be recognized as a PSM cannot be included in the UDC Umbrella PSM Program, and must proceed as a separate new degree proposal through the program approval process.
- Designation of a three- to five-member employer advisory group for the track.
- Identification of an initial track director.

Track proposals would be reviewed by the Curriculum Committee(s) in the leading and significantly involved department(s), proceeding then through the College/School Curriculum

Committee(s) to the school/college Dean(s). Next the track proposal would be reviewed by the PSM Curriculum Committee and the Graduate Council, which will forward it through the Graduate Dean to the Academic Senate for its review and recommendation to the Provost. Any track proposal approved through this process and by the Provost would be implemented.

The External Advisory Board (EAB) for the umbrella program has already been established. It will meet at least annually. We are very pleased that the following individuals have agreed to serve on UDC's PSM External Advisory Board:

- Joseph E. Parker, Jr., EAB Chairperson. Group Vice President for Advanced Systems at High Performance Technologies, Inc. (HPTi), a technology services company responsible for several high-profile solutions for the federal government.
- Carol Joyce Blumberg, Ph.D., Mathematical Statistician, Office of Oil and Gas, Energy Information Administration.
- Simeon Hahn, Mid-Atlantic Regional Resource Coordinator, National Oceanic and Atmospheric Administration (NOAA).
- Richard Giani, Water Quality Manager, DC Water and Sewer Authority.
- Gregory Sanders, CPP, Headquarters Security Advisor, United Nations Development Program.
- Curtis J. Shewchuk, Director and Chief Security Officer of Corporate Protective Services for Con-way, Inc.
- Nawar M. Shara, Ph.D., Director of the Department of Biostatistics and Epidemiology at the MedStar Research Institute.

As degree tracks evolve, so will the advisory-board membership, to ensure that for each degree track there is at least one employer representative on the Board. Each degree track will be expected to have its own employer advisory group of three to five members, and it is from these groups that EAB members will be selected. The chair of the EAB will have interests and be able to represent employer needs spanning numerous employment sectors and specialties served by our PSM concentrations.

Regular meetings of track directors, chaired by the Dean of Graduate Studies, will ensure coordination among tracks, including the scheduling of common courses to facilitate degree

progress by students. The PSM Curriculum Committee will formulate program-specific academic policies, guidelines, and requirements, consistent with University policies.

Every five years, a Program Review Self-Study of the PSM Umbrella and all the degree tracks will be conducted and reviewed, in accordance with University Program Review procedures. In addition, each degree track will be included in the Academic Program Review prepared by its lead/host department(s). Program and track improvements, modifications, suspensions, and terminations will be pursued, responsive to the conclusions of the self studies, the advice of external reviewers, the EAB, and the track-specific employer advisory groups. Tracks unable to maintain a cohort size of at least five students or place the majority of graduates in positions that take advantage of the education provided, will be candidates for termination or suspension.

IX Recruiting, Admissions, and Advisement

We plan a multi-pronged recruitment effort, including in-person outreach, Internet, networking, recruiting fairs and open houses. In line with advice provided by Noel-Levitz, Inc., consultants working with UDC to grow graduate and undergraduate enrollment, we are focusing on developing a large number of prospects, convincing them to apply, and, if accepted, to enroll. Several efforts have already been initiated to recruit students to the PSM program, and these will continue and expand, especially after Board approval is obtained.

We are taking every opportunity to bring the PSM option to the attention of undergraduate STEM majors at UDC and elsewhere and to their faculty. We are also networking informally and through conference presentations with faculty and administrators at other colleges and universities, so that they can include the PSM option and UDC's offerings in the career advice they give to students. A student market survey is being administered in many venues, which simultaneously increases awareness and assesses interest. More generally, outreach to the Human Resource offices of identified government agencies or private sector employers who would be interested in having their employees upgrade their knowledge and skills will be undertaken. To reach employees directly, we also plan to communicate with appropriate professional associations so that presentations may be made to their membership or news items could be placed in their newsletters.

Students admitted to the program are expected to bring an undergraduate GPA of at least 3.0, submit GRE scores at the time of application, submit a 500-words personal statement explaining his/her career goals and interest in the particular degree track, and submit two letters of recommendation. The faculty in each degree track will consider each applicant as a whole person, and can recommend to conditionally admit applicants, who do not meet the set thresholds, for example GPA, if they provide other strong evidence from references or employment that they have significant potential to succeed in the program. If performance during the first semester is on a par with the rest of the cohort, full admission would be granted.

In accordance with the University's graduate academic policies, PSM students must maintain at least a GPA of at least 3.0 on a 4.0 scale while matriculating in the program. Full-time students will be expected to complete the program, including the employer internship/capstone within 2 years (24 months).

Advisement begins on the first day of the student's matriculation in the PSM program, and will continue beyond graduation. Upon entering the program, PSM students will be paired with a faculty advisor and a professional advisor (Science Professionals, 2001) who will work with them to draft an individualized mentoring and a development plan. The personal development plan will address: the student's goals, electives, any special experiences or assistance the student may like to have, including to catch up in areas where preparation might be weak, and what the student hopes to accomplish via the internship. Together the student and faculty advisor monitor the plan and progress, and share responsibility for helping the student meet the stated goals. The advisor will meet with the student at the start of every semester, or more often if desired, to review the plan, discuss any issues the student may be having and update the plan as appropriate. The advisor will also assist the student in navigating the internship.

We plan for peer mentoring to occur across the multi-track cohort. Non-traditional students already experienced in the workplace will mentor students coming directly from a baccalaureate, while the diverse expertise base represented among the students in different tracks will allow some to lead and mentor on certain projects and topics, while seeking assistance on others. This combination of team-based and individualized mentoring will not only provide effective mentoring, but is also part of the retention strategy. These relationships are intended to form the basis for an active alumni network, willing to assist both current PSM students and fellow alumni with job opportunities, opportunities to present at conferences, and other queries.

X The Educational Objectives and Learning Goals of the Program

The educational objectives and learning goals are captured in the goals of this Umbrella proposal:

Goal 1. Grow a successful PSM program at UDC that is nimble, flexible, and efficient at serving the rapidly evolving graduate-education needs of diverse students and National Capital area employers in government, industry, and the non-profit sector, becoming the clear first choice for students and employers alike.

Goal 2. Prepare cohorts of master's degree graduates with advanced, interdisciplinary science and mathematics knowledge along with research and other skills needed to enter and advance rapidly in important science-based careers.

Goal 3. Establish, strengthen, and capitalize on numerous employer partnerships to benefit the University and its students broadly into the future and to contribute to local and regional economic development.

Each Track proposal will need to specify the discipline/employment specific learning goals for its students, aligned with the following learning goals common to all tracks under the PSM Umbrella.

- Advanced interdisciplinary science and mathematics knowledge and skills appropriate to the disciplinary and interdisciplinary specialties included in the track's focus (to be specified in the track proposal).
- General knowledge and skills related to current research methods, including, as appropriate, statistics, and data mining.
- Communications and teamwork skills to relate to and work with experts, non-experts, and the public.
- Knowledge and skills associated with the highest standards of professional responsibility

and ethics in the science and mathematics areas, the profession, and the employment sector.

XI Degree Requirements/Curriculum

Degree requirements and curriculum will be specified in the proposal for each track. Commonalities with other tracks and the Umbrella will be required for the track to be added under the PSM Umbrella. Students in all tracks will take a course on research methods, statistics and data mining along with a seminar on ethics, responsible conduct of research, and professional responsibility. For all degree tracks, the capstone will be an internship project, pursued as an individual or in a small team at the site of an employer appropriate to the degree track. In many cases, the internship would be a placement that could lead to a job offer upon graduation. Typical of other PSM programs nationally, we expect a 3-credit internship would involve about 250 hours of work. Finally, the common 1-credit capstone seminar will bring together students in all tracks, who are doing their internships that term.

Two PSM degree tracks are approved by the Board, one is in CAS (Applied Statistics), the second one is in CAUSES (Water Resources Management), making it timely to establish the Umbrella. Two additional degree tracks are proceeding through the University's program development process (Forensic Science-Weapons of Mass Destruction) or under

consideration (Biotechnology). The table shows notionally the relationships and commonalities among the approved tracks, which are typical of the expectations for future tracks.

UDC Initial Approved PSM Degree Tracks

PSM track in Applied Statistics

PSM track in Water Resources Management

Term 1

- RESEARCH METHODS, STATISTICS AND DATA MINING, 3 credits
- Probability Theory, 3 credits
- Regression Analysis and Analysis of Variance, 3 credits

Term 1

- RESEARCH METHODS, STATISTICS AND DATA MINING, 3 credits
- Surface and Ground Water Hydrology, 3 credits
- Water Quality Assessment, Monitoring and Treatment, 3 credits

Term 2

- PUBLIC COMMUNICATION FOR STEM PROFESSIONALS, 3 credits
- ETHICS, RESPONSIBLE CONDUCT OF RESEARCH AND PROFESSIONAL RESPONSIBILITY, 1 credit
- Data Analysis with SAS, 3 credits
- Mathematical Statistics I, 3 credits

Term 2

- PUBLIC COMMUNICATION FOR STEM PROFESSIONALS, 3 credits
- ETHICS, RESPONSIBLE CONDUCT OF RESEARCH AND PROFESSIONAL RESPONSIBILITY, 1 credit
- Environmental Impact Assessment, 3 credits
- GIS and Remote Sensing, 3 credits

Term 3

- The System Approach and Project Management, 3 credits
- Mathematical Statistics II, 3 credits
- Statistical Modeling, 3 credits

Term 3

- The System Approach and Project Management, 3 credits
- Stream Restoration, 3 credits
- Water Quality Modeling, 3 credits

Term 4

- Management Theory and Practice, 3 credits
- INTERNSHIP, 3 credits,
- CAPSTONE SEMINAR, 1 credit

Term 4

- Advanced Public Human Resource Management, 3 credits
- INTERNSHIP, 3 credits,
- CAPSTONE SEMINAR, 1 credit

Underline denotes professionally oriented, non-science "Plus" Courses.

BLUE CAPITAL LETTERS indicate courses common to two or more tracks. It is not expected that all tracks will share these identical courses, but that there will be similar overlaps between and among approved degree tracks.

XII Adequacy of Faculty, Staff, Facilities, Supplies, Equipment, Space, and Library Resources

Faculty, staff, facilities, supplies, space and library resources are adequate to launch the Umbrella program, which places limited additional requirements on the University. Faculty and staff are already in place, teaching and serving various related programs and research in the

schools, colleges, and departments that are involved. In addition, The University has acquired some dedicated funding to launch the Umbrella program and its initial tracks. UDC leads the HBCU Mid-Atlantic PSM Alliance which has received a Sloan Foundation Grant (through the UDC Foundation) with funds to assist with 'out-of-pocket' expenses associated with the development and implementation of new degree tracks, on-line course offerings, program coordination, employer survey, and evaluation. These resources are available now and over the next 2.5 years, and the establishment of this Umbrella program will facilitate their allocation and use.

It is expected, typical of PSM programs nationwide, that some instruction will be provided by adjuncts, working as professionals in the employment sectors that our students would be preparing to enter. These experts would bring their expertise and experience in practice to enhance student learning. Regular faculty teaching in the PSM tracks would have appointments in home academic departments, and they would typically teach in other programs as well. New faculty would be warranted and recruited when enrollments justify, and similarly would bring expertise of value to other undergraduate and graduate programs, not just the PSM tracks.

