MEMORANDUM

TO: Gregory Ball  
Dean, College of Behavioral and Social Sciences  
Jeffrey Franke  
Interim Dean, Graduate School

FROM: Elizabeth Beise  
Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Establish a Master of Professional Studies in Survey and Data Science  
(PCC Log. No. 16005)

On November 1, 2016, Chancellor Caret gave final approval to your proposal to offer a new iteration of the Master of Professional Studies with a focus in Survey and Data Science. A copy of the approved proposal is attached.

This new Professional Studies program is effective Spring 2017. Please ensure that the program is fully described in the Graduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

MDC/  
Enclosure

cc: Andrew Harris, Chair, Senate PCC Committee  
Barbara Gill, Office of Enrollment Management  
Reka Montfort, University Senate  
Chip Denman, Division of Information Technology  
Pam Phillips, Institutional Research, Planning & Assessment  
Anne Turkos, University Archives  
Linda Yokoi, Office of the Registrar  
Alex Chen, Graduate School  
Wayne McIntosh, College of Behavioral and Social Sciences  
Frauke Kreuter, Joint Program in Survey Methodology
November 1, 2016

Dr. Wallace D. Loh
President
University of Maryland, College Park
Main Administration Building
College Park, MD 20742

Dear Wallace,

Thank you for forwarding the request of the University of Maryland to offer a new iteration of the existing Master of Professional Studies with an area of focus in Survey and Data Science.

I am pleased to approve this request. Please share my appreciation with the faculty in working to make this a possibility. I have confidence the programs will be successful.

Sincerely yours,

Robert L. Caret
Chancellor

cc: Mary Ann Rankin, Senior Vice President and Provost
Jeffrey Franke, Interim Dean, Graduate School
Gregory Ball, Dean, College of Behavioral and Social Science
Theresa Hollander, Associate Vice Chancellor for Academic Affairs
THE UNIVERSITY OF MARYLAND, COLLEGE PARK

PROGRAM/CURRICULUM PROPOSAL

- Please submit the signed form to: Office of the Associate Provost for Academic Planning & Programs, 1119 Main Administration Building.
- Please e-mail the rest of the proposal as an MSWord attachment to pcc-submissions@umd.edu.

DATE SUBMITTED: _______________  PCC LOG NO. 16005

COLLEGE/SCHOOL: College/School Unit Code—First 8 digits: 01202800
Unit Codes can be found at https://hypprod.umd.edu/Html_Reports/units.htm

DEPARTMENT/PROGRAM: Department/Program Unit code—Last 7 digits: 1282301

TYPE OF ACTION (choose one):
- Curriculum change (including information specializations)  
- Renaming of program or formal Area of Concentration
- Addition/deletion of formal Area of Concentration
- Suspend/delete program

*Italics indicate that the proposed program action must be presented to the full University Senate for consideration.*

SUMMARY OF PROPOSED ACTION:
The Joint Program in Survey Methodology in the College of Behavioral and Social Sciences submits this proposal to create an online *International Master of Professional Studies in Survey and Data Science.*

APPROVAL SIGNATURES: Please print name, sign, and date

1. Department Committee Chair: Richard Valliant  

2. Department Chair: Frauke Kreuter  
[Signature]

3. College/School PCC Chair: [Name]  [Signature]  5/3/16

4. Dean: [Name]  [Signature]  5/3/16

5. Dean of the Graduate School (if required): [Name]  [Signature]  10/21/15

6. Chair, Senate PCC: [Name]  [Signature]  10/7/16

7. Chair of University Senate (if required):  
[Signature]

Vice President of Academic Affairs & Provost:  
[Signature]  11/9/6

(1) 012028001282301  
BSOS-Joint Program in Survey Methodology  
(Primary)

(2) 012024001240101 GRAD-Graduate School  
Proposal for new instructional program, Master’s of Professional Studies, p. 1
PROPOSAL TO

OFFER A NEW (ONLINE) DEGREE PROGRAM

UNIVERSITY OF MARYLAND AT COLLEGE PARK, MARYLAND

Joint Program in Survey Methodology

International Master of Professional Studies in Survey and Data Science

PROPOSED INITIATION DATE: Spring 2017
I. OVERVIEW and RATIONALE

A. Briefly describe the nature of the proposed program and explain why the institution should offer it.

The Joint Program in Survey Methodology (JPSM) is a consortium undertaking of the University of Maryland (UMD), the University of Michigan, and Westat. The faculty of JPSM and its sister program, the Michigan Program in Survey Methodology (MPSM), includes many of the leading academics in the field of survey methodology. Together, these programs have the highest research and teaching throughout the field. Both programs currently offer the following onsite degree programs: Certificate in Survey Methodology, Certificate in Survey Statistics, Master’s degree in Survey Methodology, and a PhD in Survey Methodology. In addition, since Spring 2015 JPSM has offered an online curriculum allowing students to complete either Certificate degree entirely online.

JPSM and MPSM have seen in the last few years an increasing number of requests for class recordings and remote connections to classes from individual students and an increasing number of inquiries about the possibility of gaining fully online degrees. This and several recent and rapid developments strongly suggest the need to develop an additional program with changes in delivery format.

The proposed online International Master of Professional Studies in Survey and Data Science (denoted by IPSDS below), offered through the JPSM, College of Behavioral and Social Sciences, University of Maryland, will provide post-baccalaureate training for individuals interested in broadening their knowledge and understanding of the emerging field of data sciences, the conduct of sample surveys, practical applications of data analysis and survey methodology, and data management, along with the skills needed to communicate results. The courses offered include some of the same courses that are already part of the online Certificate programs. Through this experience, technical details of conducting online discussions, receiving home works, and providing feedback to students have been worked out. Thus, with all technical problems solved, and we are in position to expand our online offerings to a full master’s professional degree.

Survey methodology is inherently an interdisciplinary field that draws upon statistics, sociology, economics, political science, informatics, public health (with physical measures taken on respondents), and increasingly the geographic sciences (and their geographic information systems). As increasing numbers of public and private organizations produce and use data for decision making, needs for professional development related to survey methodology arise. The growing availability of high-quality software products suitable for online teaching now provide the opportunity to offer such professional development to talented employees who are not willing or able to leave their jobs in order to earn their degree at a traditional university campus.

Through extensive discussions with the U.S. Federal Statistical System as well as private sector firms (such as Facebook, LinkedIn, Amazon, Microsoft, Zillow, MasterCard, J.P. Morgan Chase, P3, Summit) it became evident that the field of survey methodology is changing. Traditional data collectors need employees with deep knowledge about survey data but also skills in data base management and data curation, and likewise companies that excel in collection alternative data, increasingly need employees with a strong survey background so that they can augment their data with specific information. Thus we need to provide a program that allows for cross-disciplinary training in survey methodology, survey statistics, information and computer science, and can be applied to a variety of application areas.

We propose to extend our offerings through an International Master of Professional Studies in Survey and Data Science. This degree program will target highly qualified working professionals and will be administered online. The following considerations drive this proposal:

(1) An online program can reach the large numbers of potentially interested students who need the skills the program offers but for whom a traditional university based program is not a feasible option;
(2) A high quality online program is now more feasible than in the past because of improvements in technology;
JPSM/MPSM are uniquely positioned as the world leaders in the field of survey methodology to develop the gold standard online offering in this integration of survey methodology with data science. Because of its international leadership in this survey methodology, JPSM/MPSM is uniquely qualified to attract partner institutions from other countries. The University of Maryland also has recognized leaders in computer and information science in the College of Information Studies and the Department of Computer Science whose expertise will be tapped in the development of tailored data management and analysis courses. Courses from both departments have already been identified that will be integrated into the program.

The professional offerings in the School for Information Science will likewise benefit from the existence of such program, for courses will be cross listed to allow the expansion of other professional development programs course offerings.

Faculty from both JPSM and MPSM receive many requests to provide training abroad, to accept part-time appointments with other universities or to engage in formal collaborations with existing programs at other universities. The proposed international component of the online program would allow us to respond to this large and growing interest from other institutions and create a formal structure that leverages access to audiences, networks, and competence.

In the longer term, an online program could allow us to draw on distinctive expertise in specific subject areas from across the globe and eventually to offer differentiated curricula that emphasize issues of particular interest to particular groups of students. The additional courses offered by faculty outside of JPSM/MPSM as part of these differentiated curricula would benefit not only the students in the online program but also the students in our existing on-site MS program.

**Effect on Existing Face-to-Face Master’s Program**

We anticipate that the Professional Master’s program will have a limited effect on the enrollment in our onsite MS program but that the net effect will be that JPSM can serve more students. We have received a number of comments from our sponsoring agencies that a curriculum focused on solely survey methodology no longer serves the changing demands on the agencies or the educational needs of many of their employees. Consequently, an innovative program that integrates data science and survey methodology will not detract from our existing onsite survey methodology program.

Another impediment to agency personnel taking our courses is that some of their employees in the Washington DC area will not come to College Park because they reside in Virginia and elsewhere and do not want to add to already long commuting times. The federal agencies also have regional offices outside the Washington area. Employees in those remote offices have no opportunity to attend classes in College Park. Both of these groups can be served by an online program. There are likely to be some government employees who will enroll in the MPS who might otherwise study for an onsite MS degree, thus reducing tuition revenues. However, those requiring a Master’s of Science for advancement or continued study (e.g., a PhD) will still enroll in the onsite degree.

The proposed online Professional Master’s program is structured differently from the onsite Master’s program. In the onsite degree program, students are required to complete 45 credits, as opposed to 30 credits for the online degree (see Format section below). Students in the onsite Master’s specialize in Survey Methodology and must declare a track—Social Science or Statistical Science. Students then complete an extensive list of requirements and have only two or three electives, depending on the track. The online Master’s will not use tracks, although students can specialize in different topics, informally creating their own “tracks”. Online students can also select a number of electives. The onsite Master’s also includes a Practicum course in which students design a survey and analyze the data collected from it, a Design Seminar in which they solve real survey problems presented by outside clients, and a Total Survey Quality course where the equivalent of a Master’s thesis is written. These three courses will not be offered as part of the online degree, either as requirements or electives. Because of the more complete coverage of the onsite program, local employees of federal agencies and private survey organizations should still find the onsite program to be preferable if they want to specialize in survey methodology.
However, the added revenue from the online program will allow us to fund more full-time students in our onsite Master's and PhD programs which we believe will enable us to maintain MS enrollment numbers. Ultimately, we hope that we will also be able to support one or more additional faculty members using the revenue from the online MPS and a Certificate program. On balance, the addition of the online Master's should permit us to expand the department.

**International Extension**

The international component of the proposed program will be a collaborative effort with other Universities worldwide, so that online instruction can be supplemented by periodic in-person interactions and the formation of a network of peers. Further, the practical relevance of the online curricula can be strengthened through embedding of guest lectures from practitioners, which can be seamlessly integrated in the online program without additional travel time and cost. Having international partners will allow discussion sessions to occur more easily in other time zones. The international partners will also give us access to instructional faculty in other continents (e.g., Europe and South America) whose expertise will augment that of the JPSM/MPSM faculty. The financial arrangements with international partners will be worked out with assistance from the Provost, General Counsel, and other appropriate offices at the University of Maryland.

Initial international partners include Mannheim University in Germany, Catholic University of Chile, PKU in Beijing, China, and Australian National University in Canberra, Australia. We are already cooperating on curriculum development with Mannheim, where the program development is funded by a grant from the Federal Ministry of Education and Science. Discussions with the others are ongoing.

A consortium of universities will ultimately be formed for the purposes of sharing online courses. Initially, international students will either (i) enroll and receive credit at their own institutions for any online courses that are part of the online master’s, or (ii) enroll at UMD and receive credit and a degree from UMD. Initially, each institution will offer its own degree to its own enrollees, although we may eventually work toward awarding of dual degrees with the other institutions.

The University of Maryland and Mannheim University will form the core of the consortium of universities that will cooperate on developing and sharing courses. A memorandum of understanding (MOU), approved by the Office of the General Counsel of UMD, will be signed with each university specifying the rights and obligations of each institution. Among the obligations of UMD are:

a) Obtain UMD Graduate School approval of courses that will be taken for credit at UMD;
b) Obtain UMD Graduate School adjunct appointments for all non-UMD faculty that will teach courses;
c) Maintain an archive of video-recorded lectures (see **Format** section below); and
d) Maintain and distribute to Consortium members a list of those courses for which JPSM will provide video recordings and the instructors for weekly classes and a list of those courses for which a Consortium member other than UMD will provide the video recordings and instructors for weekly courses.

Obligations of International partners will include:

a) Obtain approvals at its institution to offer online courses;
b) Obtain appointments of faculty at their institutions when those are required for teaching courses for which students receive credit;
c) Deliver agreed upon partnership fees to UMD.

Obligations of all members in the consortium include:
a) Obtain approvals to grant their students credit for a course even if it is offered by another consortium member;
b) Determine how to title the credential that students earn;
c) Review the applications of students who apply to the program through their institution;
d) Issue acceptance and rejection notices to students who apply to the program through their institution;
e) Enroll students who are accepted through their institution in accordance with the institution’s procedures;
f) Inform their instructors of IPSDS copyright rules and obtain their written acceptance of those rules;
g) Invoice students who are accepted through their institution and collect tuition and fees in accordance with their policies;
h) Maintain all personally identifiable student records in the strictest confidence and only allow access to them those of their employees who have a need for access in order to perform institutional duties;
i) Apply its own academic policies to students who enroll in the program through their institution.

We anticipate that there will be international institutions that will want their students to be able to take JPSM’s online master’s courses without providing any courses of their own. This is acceptable and will be reflected in the MOU and partnership fees. International students that are not part of one of the consortium institutions can also enroll directly in the professional master’s at UMD as long as they satisfy the admissions criteria described in section II.C below. These students will receive the degree from UMD, not an international institution.

Format

The 30 credit international program will offer courses over four 12-week terms per year. Online courses will be offered during the University of Maryland’s established term schedule, which is used for other graduate professional programs:

- Term I: September – November
- Term II: December – February
- Term III: March – May
- Term IV: June–August

To distinguish between the existing onsite program and the proposed online program, students in the online program will be assigned a separate major code and scheduled courses will be assigned separate section numbers.

A student’s curriculum will be approved by a program committee of faculty to insure that each student proceeds on a reasonable schedule and satisfies all requirements. The program’s requirements can be satisfied with ten 3-credit courses or a combination of 3-, 2-, and 1-credit courses. Students admitted to the program can take two courses a term in order to finish the MPS in five terms. Students will also be allowed to take courses over more than five terms, up to five years, if that would better accommodate their personal situations. The expectation is that students would complete the MPS in three years or less. Students will participate online, providing necessary flexibility for working professionals. The lectures will be recorded and accompanied by real time online discussion sessions via Adobe Connect or similar software.

- Recorded lecture material will be posted online at a pre-specified time each week.
- Students will be required to view the class within a set period (usually one week) and are required to submit regular homework assignments that will be graded by teaching assistants.
- An online discussion forum hosted by the instructor will be used for answering questions and reviewing material presented in lectures.
  - Videos may be recorded by instructors from UMD or from one of the international partners, but for all UMD courses the discussion sessions will be conducted by faculty with UMD appointments.
  - At set intervals, students may meet at local access points for a long weekend of intensive instruction and hands-on project work (the minimum would be once at the beginning and once during the program). These
meetings are designed to foster the creation of a learning community, and further online interactions and collaborations.

In the future, the expansion of the international online program could offer students a variety of emphasis areas, each associated with a particular partner university. Students could, to some extent, choose among the different emphasis areas by deciding where they attend the local access points. Our consortium partners could offer standalone courses in their emphasis area(s), but the emphasis areas also could inform the homework examples used in the versions of the core courses offered at that site or the nature of the projects carried out by students.

B. How big is the program expected to be? From what other programs serving current students, or from what new populations of potential students, onsite or offsite, are you expecting to draw?

JPSM currently has 31 students enrolled in its onsite Master’s program. Based on the experience of other UMD professional master’s programs like the Master of Professional Studies in Clinical Psychological Science, we anticipate that initial enrollment in the online Master’s will be modest but will grow steadily over time as the availability of the program becomes widely known. Our projections of enrollment of master’s-seeking students in Survey Methodology for the first 5 years of the online program are:

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated enrollment</td>
<td>12</td>
<td>15</td>
<td>18</td>
<td>25</td>
<td>33</td>
</tr>
</tbody>
</table>

II. Curriculum
A. Provide a full catalog description of the proposed program, including educational objectives and any areas of concentration.

The International Master of Professional Studies in Survey and Data Science provides advanced training in areas needed to formulate research goals, determine which data are suited to achieving those goals, professionally collect data, curate and manage the data, analyze it, and communicate results from data analyses. Lectures will be delivered across the Internet using advanced audio and video technology. The lectures (slides, instructor presentation, and Q&A interactions) are video-archived for later review. Students use webcams to participate in discussion sessions in real time.

B. List the courses (number, title, semester credit hours) that would constitute the requirements and other components of the proposed program. Provide a catalog description for any courses that will be newly developed or substantially modified for the program.
The online *International Master's in Survey and Data Science* consists of 30 credit hours. Students will take courses from the five areas listed below—Research Questions, Data Generating Processes, Data Curation and Storage, Data Analysis, and Data Output/Analysis. In order that students get a broad overview of surveys and data science, at least 3 credits must be taken from each area for a total of 19 required credits. Students will then choose 11 additional credits of electives to give a total of 30 for the MPS. Students can select electives to emphasize different specializations, like data management, data analysis, or data collection. This will also allow us to better serve the educational needs of today's workforce where having a variety of skills is critical.

<table>
<thead>
<tr>
<th>General Topic</th>
<th>Minimum credits from each area</th>
<th>Course Name</th>
<th>Course Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Questions</td>
<td>3</td>
<td>Fundamentals of Survey and Data Science (SURV 400)</td>
<td>3</td>
</tr>
<tr>
<td>Data Generating Processes</td>
<td>4</td>
<td>Data Collection Methods (SURV 623)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Questionnaire Design(SURV 630)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Record Linkage (SURV 699L, part)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical Tools for Sampling and Weighting (SURV 745) or Applied Sampling (SURV 625)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Experimental Design (SURV 722)</td>
<td>3</td>
</tr>
<tr>
<td>Data Curation and Storage</td>
<td>3</td>
<td>Database Design (INST733)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Big Data Infrastructure (INST 767)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Principles of Data Curation (INST 640)</td>
<td>3</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>6</td>
<td>General Linear Models</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analysis of Complex Sample Data (SURV 701)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advanced Statistical Modeling (SURV 746)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Big Data and Machine Learning (SURV 751)</td>
<td>1 each</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machine Learning II-III</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measurement Error Models (SURV 730)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bayesian Analysis (SURV 798Z) or</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Small Area Estimation (SURV 662)</td>
<td>2</td>
</tr>
<tr>
<td>Data Output/Access</td>
<td>3</td>
<td>Privacy (or Information Ethics (INST 610))</td>
<td>1 (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Confidentiality and Statistical Disclosure Control (SURV 735)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Visualization (INST 760)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Existing courses are numbered SURVnnn. Other courses are electives most of which are already developed.

Some other new courses will be developed, as described in section IX, which can be used as electives. Many of these courses will emphasize the use of software packages and languages, such as R, Python, SAS, Stata, and other
software. International partners can develop courses specific to their own countries, e.g., poverty measurement in Chile, or record linkage and imputation methods in Germany.

C. Describe any selective admissions policy of special criteria for students selecting this field of study.

Admissions criteria at the University of Maryland for the online Master’s in Professional Studies are listed below. International partners will have similar criteria, adapted to be appropriate for their institutions. Applicants must meet the following minimum admission criteria as established by the Graduate School:

- Applicants must have earned a four-year baccalaureate degree from a regionally accredited U.S. institution, or an equivalent degree from a non-U.S. institution.
- Applicants must have earned a 3.0 GPA (on a 4.0 scale), or the equivalent on other scales, in all prior undergraduate and graduate coursework.
- Applicants must provide an official copy of a transcript for all of their post-secondary work.
- International students must fulfill all requirements relating to international academic credentials, evidence of English proficiency, and financial certification. Since the students will not have to enter the U.S., visas will not be required. These requirements are found at the Graduate School’s Web site: http://www.gradschool.umd.edu/prospectivestudents/internationaladmissions.html.

In addition, admission to the online Master’s program will have the following requirements:

- Previous coursework or knowledge in mathematical or applied statistics. This can be demonstrated by:
  
  (a) Completion of 6 credits of applied statistical methods courses on the level of Statistical Methods I & II (SURV 615, SURV 616) offered by JPSM, or
  
  (b) Passage of an entrance examination that tests the applicant’s knowledge of the topics covered in the SURV 615 and 616 courses, or
  
  (c) Completion of 6 credits in theoretical courses on the level of Introduction to Probability Theory (SURV 410) and Introduction to Statistics (SURV 420) offered by JPSM.

- For applicants who have not previously taken courses from JPSM:
  
  - Complete an essay describing the applicant’s experience and interest in survey methodology and/or data science
  - Submit two letters of recommendation
  - Submit results from the Graduate Record Examination General Test (Verbal Reasoning, Quantitative Reasoning, and Analytical Writing)

- For applicants who have previously taken courses from JPSM:
  
  - Received grades of B or better in all JPSM courses
  - Submit letter of recommendation from at least one JPSM faculty member

- At least one year of work experience in a position dealing with survey, census, or other data design, collection, or analysis.

III. STUDENT LEARNING OUTCOMES AND ASSESSMENT

The purpose of this assessment plan is to set clear guidelines, identify articulated outcomes, and ensure avenues for continuous improvement for each graduate program managed by the Program Oversight Committee and housed in the Graduate School. It is our mission to provide programs that meet UMD’s institutional goals and objectives for educational activities.
Learning Outcomes:
Students will be able to:
1. Demonstrate competence in the understanding and application of basic concepts that form the foundation of data collection and analysis methods. This will include mastery of the main aspects of data acquisition and analysis from sampling and questionnaire design, through collection, curation, analysis, and summarization.
2. Analyze solutions to practical, real-world problems.
3. Be able to apply a range of data science techniques to the analysis of datasets of varying sizes (small to large).
4. Critically examine published research to determine its strengths and weaknesses and appreciate the limitations and applicability of published findings.
5. Produce written documents of a professional quality to communicate such analyses and assessments.

Assessment Methods:
1. Mastery of content: Classroom performance as measured by participation in online discussion sessions and presentations, course exams and papers.
2. Professional communication (written and oral): Classroom performance as measured by participation in online discussion sessions and presentations, course exams and papers.
3. Critical and creative thinking: Classroom performance as measured by participation in online discussion sessions and presentations, course exams and papers.

To complete the master’s, students must have an overall GPA of 3.0 and must have no more than one C during the course of study.

IV. FACULTY AND ORGANIZATION
A. Who will provide academic direction and oversight for the program?

Program Oversight
Frauke Kreuter, Professor, JPSM
Joint Program in Survey Methodology
College of Behavioral and Social Sciences

Academic Director
Jennifer Sinibaldi, Assistant Research Professor, JPSM
Joint Program in Survey Methodology
College of Behavioral and Social Sciences

In addition there will be an advisory formed out of representatives from academia, non-profit data collectors, and private sector to provide input on the curriculum and structure for the working professionals.

B. Every instructor of a course that counts for College Park resident credit will be an approved member of the Graduate Faculty. All instructors of record will require approval by the Graduate School as a member of the Graduate Faculty. As required by state regulations at least 50% of the instruction will be delivered by full-time faculty. At least 2/3 of the instruction will be offered by faculty with appointments at the University of Maryland. If the program is not to be housed and administered within a single academic unit, provide details of its administrative structure.

The International Master of Professional Studies in Survey and Data Science will be housed in the Joint Program for Survey Methodology, College of Behavioral and Social Sciences which will be responsible for oversight.

Administrative Coordination

Proposal for new instructional program, International Masters of Professional Studies, p.10
The Joint Program in Survey Methodology will provide its own program development support (including budget development and projections), program management that includes scheduling, marketing research, planning and management, financial management (including faculty contracting and faculty pay processing), and student services management (including support for admissions, registration, payment, financial aid, and other campus services). International partners will provide all support for their local operations.

V. OFF-CAMPUS PROGRAMS (if necessary)

A. If at Shady Grove—indicate how students will access student services.

Not applicable

B. If on-line—describe the concerns in “Principles and Guidelines for Online Programs” are to be addressed.

1. Program Initiation and Choice: The proposal should initiate with an academic unit, and must have the approval of the appropriate Dean (or Deans). It must develop naturally from the institution’s strengths and be consistent with its strategic goals. The proposal should have a clear and well-thought-out financial plan, providing net revenue to the institution over time, and should include a thorough analysis of the potential market.

The program was developed by JPSM which is the nation’s oldest and largest program offering graduate training in the principles and practices of survey research. Its mission is to educate the next generation of survey researchers, survey statisticians, and survey methodologists. Additionally, the program will help the University of Maryland continue to be a competitive university by addressing increasing demand for formal and informal online education and make real and measurable changes at the state, national, and international level through comprehensive, accessible, and credibly education. The Joint Program in Survey Methodology conducted market research in January 2014 to identify target audiences and comparable competitors with distance learning programs. Only two US institutions (University of Illinois and University of Connecticut) offer online programs in Survey Methodology so there is great opportunity for our online programs. Two JPSM/MPSM faculty members have also taught a MOOC through Coursera with four rounds and about 15,000 students registered for each round. The MOOC and the popularity of the Spring 2015, Fall 2015, and Spring 2016 online offerings are other indications that there is a large market for the courses. There are a number of online Data Science programs now available through other universities, but none emphasizes survey methodology and data collection education as the IPSDS will.

The target audiences are adults who have completed a bachelor’s degree and desire advanced knowledge in survey practice and data science to advance their current careers or to expand their career options. This would include individuals who are employed in either the private or public sector and may have other advanced degrees, or individuals who have recently graduated with a Bachelor’s and need to get advanced training to seek employment in a survey-related field. We anticipate that many students in the online master’s programs will be completely or partially funded by their employers.

Having the courses available online should allow some students to accelerate their progress through the programs since they will not have to arrange work schedules to attend classes in person. This flexibility should make the master’s program attractive to more students.

This program will be particularly appealing to employees of the statistical agencies in the federal government (e.g., Census Bureau, Bureau of Labor Statistics (BLS), National Center for Health Statistics, National Agricultural Statistics Service (NASS), National Center for Education Statistics, Bureau of Justice Statistics, and Energy Information Agency) and private survey research companies who are not able to get release time from work to attend regular JPSM classes, who are reluctant to commute to College Park, or who do not work in the Washington DC area. We anticipate that the program will be especially attractive to professionals who seek
continuing education but who live in other areas of the country. Examples of the target audience living outside the Washington DC area include staff members currently employed at:

- Field offices of U.S. government agencies such as BLS, Census and NASS
- International organizations such as the World Bank, United Nations, Inter-American Development Bank, and Organization of American States
- U.S. survey organizations not based in the Washington area
- International survey organizations such as Gallup
- Market research departments at large companies

2. **Program Development, Control, and Implementation by Faculty:** Although professional help may be used in adapting it to the online medium, the academic content of the curriculum must be developed by institutional faculty. The instructional strategy proposed must be appropriate for this content. UMCP faculty must have overall control of the program, and should provide the bulk of the instruction. Appropriate resources, including technical support personnel, must be made available for course development and also for faculty support during the offering of these courses. The business plan for the proposal must spell out the arrangements whereby this will be accomplished.

The program will provide students with training from permanent and adjunct faculty in the University of Maryland’s Joint Program in Survey Methodology. Online lectures will be conducted via JPSM’s video system and Webinar tools. We expect that minimal technological assistance will be required since we have already fully tested the system during Spring 2015, Fall 2015, and Spring 2016. JPSM has an archive of recorded lectures from the classes listed in section II that have been used for online delivery. We will also record new courses as needed.

Instructors of the master’s courses will attend educational seminars offered by JPSM IT staff or DIT to increase competency in the use of these systems. Because of the experience gained in Spring 2015, the JPSM IT staff is well-qualified to handle all questions and technical problems that instructors may encounter. The Training and Consulting Services of DIT is also available to provide consultation on the effective development of online courses, though all content will be developed by the master’s program instructors.

3. **Access to Academic Resources and Student Services:** The proposal must indicate how students will have access to needed resources, such as library materials, other information sources, laboratory facilities, and others as appropriate. The arrangements in place for interaction with instructors, for advising, and for help with technical problems must be described. It must be shown how student services such as admissions, enrollment, financial aid, bursar services, career advisement, bookstore, and similar services available to on-campus students will be provided.

As officially admitted students to the University of Maryland, students in this program will have access to all University resources that are accessible in the online environment. Students in online programs are assessed an online student services mandatory fee which supports access to these University resources.

4. **Intellectual Property Rights:** The proposal must clearly delineate ownership and usage rights for materials that may be developed for courses in the program.

Intellectual property rights for this online degree and online courses will be addressed in a separate contract executed by the University of Maryland and the developer. Please see Article VIII On-Line Studies and Technology-Mediated (Enhanced) Courses in the UNIVERSITY OF MARYLAND POLICY ON INTELLECTUAL
5. Full Disclosure, Standards, and Evaluation: All published materials describing the program must carefully lay out the instructional methods to be used, the skills and background required for success, and the arrangements in place for access to instructors, to technical help, to academic resources, and to student services. There should be a means available whereby potential students can evaluate their readiness for the special demands of the program. Academic admission standards must be clearly described, and must be consistent with those for the on-campus program. Outcome expectations must also be consistent. The proposal must set out a continuing process of evaluation that will determine if these requirements are being met.

The Oversight Committee, particularly the academic and administrative units, will ensure that all printed and digital materials provide exhaustive information about the program. The Web site will provide complete and transparent policies and procedures regarding admission requirements (in full compliance of the Graduate School), including registration, financials, technical assistance, digital access to university resources, academic and university policies, and all issues relating to the successful completion of the program. Potential students will be able to evaluate their readiness for the program reviewing the goals and nature of the program, which will be thoroughly outlined on the program website, to determine whether the program meets their training needs and career goals. They will also have access to an academic advisor with whom to discuss their readiness and fit for the program. JPSM in the College of Behavioral and Social Sciences provides both incoming and admitted students with all academic advising assistance.

VI. OTHER ISSUES
A. Describe any cooperative arrangements with other institutions or organizations that will be important for the success of this program.

None

B. Will the program require or seek accreditation? Is it intended to provide certification or licensure for its graduates? Are there academic or administrative constraints as a consequence?

No

VII. COMMITMENT TO DIVERSITY

The University of Maryland is an equal opportunity institution with respect to both education and employment. The University does not discriminate on the basis of race, color, national origin, sex, age, or handicap in admission or access to, or treatment or employment in, its programs and activities as required by federal (Title VI, Title IX, Section 504) and state laws and regulations.

Through its actions and statements of policy the University of Maryland has demonstrated a commitment to diversity by creating programs of study which explore the experiences, perspectives, and contributions of a wide variety of cultures, groups, and individuals; and as sought to create a campus environment which encourages tolerance and respect for individuals regardless of differences in age, race, ethnicity, sex, religion, disability, sexual orientation, class, political affiliation, and national origin.

VIII. REQUIRED PHYSICAL RESOURCES
A. Additional library and other information resources required to support the proposed program. You must include a formal evaluation by Library staff.
See attached.

B. Additional facilities, facility modifications, and equipment that will be required. This is to include faculty and staff office space, laboratories, special classrooms, computers, etc.

Students will be instructed that to fully participate, they will need to purchase a webcam with microphone or a headset, and have a reliable computer and Internet access. Recorded lectures will be posted online at announced times and will be available online at any time thereafter. Weekly discussions or help sessions will be held at scheduled, fixed times once per week. Limited technical support for this online instructional delivery may be necessary and will be provided by JPSM IT staff with assistance from DIT.

C. Impact, if any, on the use of existing facilities and equipment. Examples are laboratories, computer labs, specially equipped classrooms, and access to computer servers.

This program does not require additional resources.

IX. RESOURCES NEEDS AND SOURCES
A. List new courses to be taught and needed additional sections of existing courses. Describe the anticipated advising and administrative loads. Indicate the personnel resources (faculty, staff, and teaching assistants) that will be needed to cover all these responsibilities.

The following courses are ones that have been or may at some point be developed for use as electives. At present, JPSM has enough previously taught special topics courses to provide a set of electives sufficiently large to serve students in the online master’s program. All of the following, if developed, will need to be approved by VPAC:

Data Curation and Storage

SURV XXX Data Munging I-III (1 credit each; listed in section II Curriculum)
Data Management and Data Retrieval will cover basic techniques of reading and writing different data formats from different sources into files suited for data analysis. Methods for dealing with different types of numeric and alphanumeric variables will be introduced. General issues of data cleaning, data documentation and the combination of different data sets will be discussed. Real survey data will be used to illustrate the methods and discuss various visualization techniques. Students will learn the use of computer software to perform these tasks and will learn how to program routines.

SURV XXX Editing Survey Data (2 credits; listed in section II Curriculum)
Data editing is the process of reviewing and adjusting collected survey data. The purpose is to control the quality of the collected data. This process is divided into four major sub-process areas: Survey Management, Data Capture, Data Review, and Data Adjustment. Survey management includes quality control of the data collection process. Data capture is the conversion of data to electronic media. Data review consists of both error detection and data analysis. Data Adjustment includes data editing and imputation for missing items or cases. Modern techniques for each of the facets of survey processing will be studied.

Data Generating Processes

SURV XXX Surveying Hard to Reach Populations (2 credits)
Certain segments of the populations are difficulty to survey using standard probability methods. Often no sampling frame exists, members of the population are stigmatized or the population is rare and therefore hard to find. As a consequence surveying such population with regular frames is very expensive. Examples of such populations in a behavioral and social setting include injection drug users, men who have sex with men, and female sex workers. Examples in an economic setting include unregulated workers and the self-employed. This course discusses alternatives to address these methodological difficulties.

SURV XXX Use of Paradata and Process Data in Social Surveys (2 credits)
During the last twenty years survey data have been increasingly collected through computer assisted modes. As a result, a new class of data – called paradata – is now available to survey methodologists. Typical examples are key-stroke files, capturing the navigation through the questionnaire, and time stamps, providing information such as date and time of each call attempt or the length of a question-answer sequence. Other examples are interviewer observations about a sampled household or neighborhood, recordings of vocal properties of the interviewer and respondent, information about interviewers and interviewing strategies. The course will give an introduction and overview of methodological issues involved in the collection and analysis of paradata. We will discuss several research examples including the use of paradata to monitor fieldwork activity, guide intervention decisions during data collection (e.g. through responsive design), and to address various total survey error components (in particular measurement error and nonresponse bias). Case studies will draw attention to the challenges in automated data capturing and modeling of the complex structure of paradata.

SURV XXX Mixed Mode Surveys (3 credits)
Mixed-mode surveys have become increasingly important in surveys. The course studies factors that influence whether the use of multiple modes in a single study will improve data quality. A typology of different mixed-mode survey designs is introduced and used to organize the course. Three major factors that influence responses across modes are discussed in detail, including: 1) different question structures and wording, 2) the presence vs. absence of an interviewer, and 3) the influence of visual design and layout. Implementation strategies are discussed for using multiple modes of data collection. The effect of offering response modes consistent with respondent preferences is examined, along with the question of why offering a choice of response mode tends not to improve response rates. Special attention is focused on addressed-based sampling as a way of using mail to encourage response over the Internet.

SURV XXX Web Survey Design (2 credits)
The course will focus on the design of Web survey instruments and procedures, based on theories of human-computer interaction, interface design, and empirical research on Web survey design and implementation. The course will begin with a review of Web or Internet surveys in the general context of sources of survey error (sampling, coverage, nonresponse, measurement error, and costs). The course will then discuss different approaches to Web survey design (e.g., scrolling versus paging) and discuss various design approaches for developing effective Web surveys. The course will draw on empirical results from experiments on alternative design approaches as well as practical experience in the design and implementation of Web surveys. The course will not focus on the technical aspects of Web survey implementation, such as hardware, software or programming.

SURV XXX Qualitative Methods: Semi-Structured Interviewing
This course will focus on semi-structured, or in-depth, interviewing. This methodology is often most helpful in understanding complex social processes. The course will examine the goals, assumptions, process, and uses of interviewing and compare these methods to other related qualitative and quantitative methods in order to develop research designs appropriate to research goals. The course
will cover all aspects of interviewing, including how to decide who to interview, how to ask good interview questions, and how to conduct successful interviews. Students will conduct interviews, and discuss the process and outcome of those interviews. Strengths and weaknesses of this methodology will be examined, particularly through discussion of some of the critiques of these methods.

SURV XXX Telephone and Address-based Sampling (2 credits)
Telephone sampling has been a staple of survey research for several decades. However, conducting telephone surveys with acceptable quality has become more difficult in the last few years. The shift from landline to cell phones has complicated the procedures needed for both sample selection and inference. A new development is the use of address-based sampling. Address lists procured from commercial vendors are a starting point for sample selection. Options are studied for using address and telephone lists for sampling, along with methods of contacting households based on information on the lists. Dual frame and calibration estimation techniques for making inferences to populations are covered.

Data Analysis

SURV XXX Fitting Regression Models with Survey Data (3 credits)
This course examines a range of statistical regression analysis techniques for modeling survey data, and presents methods to compensate for design features for complex sample survey data. Course topics include likelihood estimation and testing; application of likelihood methods to linear and generalized linear models, including logistic, probit, generalized (multinomial) logit, Poisson, and negative binomial models; time-to-event (survival analysis) models; regression models for longitudinal data; accounting for item-level missing data via imputation; and causal models (propensity score and marginal structural models). In general the course will proceed by considering the particular regression model in the simple random sample setting, and then considering the effect of accounting for the complex sample survey design (stratification, clustering, and weighting) on the inference. Issues such as model misspecification and ignorable vs. non-ignorable sampling in the context of regression modeling will be addressed.

SURV XXX Sampling and Estimation for Establishment Surveys (2 credits; could also be counted as a Data Generating Process elective)
Economic surveys have a different set of problems than many social surveys. Business sizes tend to have a skewed distribution with many small units and few large ones. The populations are also dynamic with births and deaths being commonplace. These features require sampling and estimation methods that are adapted to the special problems associated with sampling establishments. We will examine the types of frames used, population parameters that are estimated, and methods of estimation. One common advantage of establishment surveys is the existence of continuous auxiliary data on the frame. We will give an overview of methods of stratification, allocation, sample size determination, uses of auxiliary data, variance estimation, and imputation for missing data.

SURV XXX Inference from Non-probability Samples (1 credit)
Non-probability samples, like volunteer web panels of persons, are becoming more prevalent as a way of collecting large amounts of data. These panels are popular in market research because their low cost and quick turnaround. When samples are not randomly selected, design-based inference cannot be used. This course will cover statistical estimation techniques that have been developed for inference from such non-random samples. One option is a quasi-randomization approach in which the probability of participating in the survey is estimated using a reference, probability survey in conjunction with the non-probability sample. Prediction theory is another approach in which a model is used to predict values for nonsample cases. The predictions are then combined with the
sample values to create population estimates. Estimation of descriptive statistics, model parameters, and variances of estimators will be covered.

The Joint Program in Survey Methodology will hire for the following position(s) to ensure that this self-supporting program has no impact on advising and administrative resources for the unit’s traditional programs: Online Manager (1) and Post-doc (1). Tuition revenue will be used to support all salaries and benefits.

Tuition will be charged at the regular in-state or out-of-state rates which are used for onsite graduate-level courses. An increase of 5% per year is budgeted. All students will pay all associated student mandatory fees and the graduate application fee.

B. List new faculty, staff, and teaching assistants needed for the responsibilities in A, and indicate the source of the resources for hiring them.

A post-doctoral faculty member will be hired to manage the online master’s programs and two online certificate programs. This person may also teach one course per term. We currently have a post-doc who is on a two-year contract through AY 2015-16. When her contract is up, we will hire a new post-doc who will have the same duties. The postdoc is given 50% time to conduct his/her own research. This position is initially being paid for by accumulated JPSM funds. The JPSM Program Coordinator is also managing enrollment, marketing, and serving as advisor to students. By the third year of the online MPS program, these personnel will be covered by current revenue from the master’s program and the online certificates. Adjunct faculty will also be hired to teach specific courses.

C. Some of these teaching, advising, and administrative duties may be covered by existing faculty and staff. Describe your expectations for this, and indicate how the current duties of these individuals will be covered, and the source of any needed resources.

Approval of all faculty overloads for teaching and advising will be in accordance with University of Maryland policy and procedures. The Oversight Committee is responsible for the overall administrative management of the program.

D. Identify the source to pay for the required physical resources identified in Section VIII above.

Initial startup cost will be covered by accumulated JPSM DRIF funds. Tuition revenue will be used to cover the ongoing program expenses (see separate budget page).

E. List any other required resources and the anticipated source for them.

None.

F. Complete the additional proposal and financial tables as required by MHEC.

See Appendix I.

New Courses that may be developed that will require VPAC Approval

Data Curation and Storage
SURV XXX Data Munging I-III (1 credit each; listed in section II Curriculum)
Data Management and Data Retrieval will cover basic techniques of reading and writing different
data formats from different sources into files suited for data analysis. Methods for dealing with
different types of numeric and alphanumeric variables will be introduced. General issues of data
cleaning, data documentation and the combination of different data sets will be discussed. Real
survey data will be used to illustrate the methods and discuss various visualization techniques.
Students will learn the use of computer software to perform these tasks and will learn how to
program routines.

SURV XXX Editing Survey Data (2 credits; listed in section II Curriculum)
Data editing is the process of reviewing and adjusting collected survey data. The purpose is to
control the quality of the collected data. This process is divided into four major sub-process areas:
Survey Management, Data Capture, Data Review, and Data Adjustment. Survey management
includes quality control of the data collection process. Data capture is the conversion of data to
electronic media. Data review consists of both error detection and data analysis. Data Adjustment
includes data editing and imputation for missing items or cases. Modern techniques for each of the
facets of survey processing will be studied.

Data Generating Processes

SURV XXX Surveying Hard to Reach Populations (2 credits)
Certain segments of the populations are difficulty to survey using standard probability methods.
Often no sampling frame exists, members of the population are stigmatized or the population is rare
and therefore hard to find. As a consequence surveying such population with regular frames is very
expensive. Examples of such populations in a behavioral and social setting include injection drug
users, men who have sex with men, and female sex workers. Examples in an economic setting
include unregulated workers and the self-employed. This course discusses alternatives to address
these methodological difficulties.

SURV XXX Use of Paradata and Process Data in Social Surveys (2 credits)
During the last twenty years survey data have been increasingly collected through computer assisted
modes. As a result, a new class of data – called paradata – is now available to survey methodologists.
Typical examples are key-stroke files, capturing the navigation through the questionnaire, and time
stamps, providing information such as date and time of each call attempt or the length of a question-
answer sequence. Other examples are interviewer observations about a sampled household or
neighborhood, recordings of vocal properties of the interviewer and respondent, information about
interviewers and interviewing strategies. The course will give an introduction and overview of
methodological issues involved in the collection and analysis of paradata. We will discuss several
research examples including the use of paradata to monitor fieldwork activity, guide intervention
decisions during data collection (e.g. through responsive design), and to address various total survey
error components (in particular measurement error and nonresponse bias). Case studies will draw
attention to the challenges in automated data capturing and modeling of the complex structure of
paradata.

SURV XXX Mixed Mode Surveys (3 credits)
Mixed-mode surveys have become increasingly important in surveys. The course studies factors that
influence whether the use of multiple modes in a single study will improve data quality. A typology
of different mixed-mode survey designs is introduced and used to organize the course. Three major
factors that influence responses across modes are discussed in detail, including: 1) different question
structures and wording, 2) the presence vs. absence of an interviewer, and 3) the influence of visual
design and layout. Implementation strategies are discussed for using multiple modes of data collection. The effect of offering response modes consistent with respondent preferences is examined, along with the question of why offering a choice of response mode tends not to improve response rates. Special attention is focused on addressed-based sampling as a way of using mail to encourage response over the Internet.

SURV XXX Web Survey Design (2 credits)
The course will focus on the design of Web survey instruments and procedures, based on theories of human-computer interaction, interface design, and empirical research on Web survey design and implementation. The course will begin with a review of Web or Internet surveys in the general context of sources of survey error (sampling, coverage, nonresponse, measurement error, and costs). The course will then discuss different approaches to Web survey design (e.g., scrolling versus paging) and discuss various design approaches for developing effective Web surveys. The course will draw on empirical results from experiments on alternative design approaches as well as practical experience in the design and implementation of Web surveys. The course will not focus on the technical aspects of Web survey implementation, such as hardware, software or programming.

SURV XXX Qualitative Methods: Semi-Structured Interviewing
This course will focus on semi-structured, or in-depth, interviewing. This methodology is often most helpful in understanding complex social processes. The course will examine the goals, assumptions, process, and uses of interview methods and compare these methods to other related qualitative and quantitative methods in order to develop research designs appropriate to research goals. The course will cover all aspects of interviewing, including how to decide who to interview, how to ask good interview questions, and how to conduct successful interviews. Students will conduct interviews, and discuss the process and outcome of those interviews. Strengths and weaknesses of this methodology will be examined, particularly through discussion of some of the critiques of these methods.

SURV XXX Telephone and Address-based Sampling (2 credits)
Telephone sampling has been a staple of survey research for several decades. However, conducting telephone surveys with acceptable quality has become more difficult in the last few years. The shift from landline to cell phones has complicated the procedures needed for both sample selection and inference. A new development is the use of address-based sampling. Address lists procured from commercial vendors are a starting point for sample selection. Options are studied for using address and telephone lists for sampling, along with methods of contacting households based on information on the lists. Dual frame and calibration estimation techniques for making inferences to populations are covered.

Data Analysis

SURV XXX Fitting Regression Models with Survey Data (3 credits)
This course examines a range of statistical regression analysis techniques for modeling survey data, and presents methods to compensate for design features for complex sample survey data. Course topics include likelihood estimation and testing; application of likelihood methods to linear and generalized linear models, including logistic, probit, generalized (multinomial) logit, Poisson, and negative binomial models; time-to-event (survival analysis) models; regression models for longitudinal data; accounting for item-level missing data via imputation; and causal models (propensity score and marginal structural models). In general the course will proceed by considering the particular regression model in the simple random sample setting, and then considering the effect of accounting for the complex sample survey design (stratification, clustering, and weighting) on the inference. Issues such as model misspecification and ignorable vs. non-ignorable sampling in the context of regression modeling will be addressed.
SURV XXX Sampling and Estimation for Establishment Surveys (2 credits; could also be counted as a Data Generating Process elective)
Economic surveys have a different set of problems than many social surveys. Business sizes tend to have a skewed distribution with many small units and few large ones. The populations are also dynamic with births and deaths being commonplace. These features require sampling and estimation methods that are adapted to the special problems associated with sampling establishments. We will examine the types of frames used, population parameters that are estimated, and methods of estimation. One common advantage of establishment surveys is the existence of continuous auxiliary data on the frame. We will give an overview of methods of stratification, allocation, sample size determination, uses of auxiliary data, variance estimation, and imputation for missing data.

SURV XXX Inference from Non-probability Samples (1 credit)
Non-probability samples, like volunteer web panels of persons, are becoming more prevalent as a way of collecting large amounts of data. These panels are popular in market research because their low cost and quick turnaround. When samples are not randomly selected, design-based inference cannot be used. This course will cover statistical estimation techniques that have been developed for inference from such non-random samples. One option is a quasi-randomization approach in which the probability of participating in the survey is estimated using a reference, probability survey in conjunction with the non-probability sample. Prediction theory is another approach in which a model is used to predict values for nonsample cases. The predictions are then combined with the sample values to create population estimates. Estimation of descriptive statistics, model parameters, and variances of estimators will be covered.
### Appendix I: Budget

#### Budget: Master of Professional Studies in Survey Practice and Data Science

<table>
<thead>
<tr>
<th>Estimated Program Revenue &amp; Support</th>
<th>Development</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Total Tuition Revenue</strong></td>
<td></td>
<td>$102,000</td>
<td>$235,620</td>
<td>$269,892</td>
<td>$307,002</td>
<td>$347,149</td>
</tr>
<tr>
<td>A. Total Students (annually)</td>
<td></td>
<td>10</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>B. Avg credits taken per student per year</td>
<td></td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>C. Per credit rate; Assumes 5% increase; in-state rate used</td>
<td></td>
<td>$680</td>
<td>$714</td>
<td>$750</td>
<td>$787</td>
<td>$827</td>
</tr>
<tr>
<td><strong>II. Student Fee: Online Mandatory Fee</strong></td>
<td></td>
<td>$900</td>
<td>$2,039</td>
<td>$2,292</td>
<td>$2,557</td>
<td>$2,836</td>
</tr>
<tr>
<td>A. Rate per student per year (4 Terms); assumes 3% increase</td>
<td></td>
<td>90</td>
<td>93</td>
<td>95</td>
<td>98</td>
<td>101</td>
</tr>
<tr>
<td>B. Total number of students (per year)</td>
<td></td>
<td>10</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td><strong>III. Student Fee: Graduate School Application Fee</strong></td>
<td></td>
<td>$750</td>
<td>$900</td>
<td>$900</td>
<td>$1,050</td>
<td>$1,050</td>
</tr>
<tr>
<td>A. Fee (one-time)</td>
<td></td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>B. Total students applying</td>
<td></td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td><strong>IV. Development Support (Courses, Marketing, etc.)</strong></td>
<td>$63,400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. JPSM accumulated funds</td>
<td>63,400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Estimated Program Revenue &amp; Support</strong></td>
<td>$63,400</td>
<td>$103,650</td>
<td>$238,559</td>
<td>$273,084</td>
<td>$310,609</td>
<td>$351,035</td>
</tr>
</tbody>
</table>
## Estimated Expenses

<table>
<thead>
<tr>
<th></th>
<th>Development</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Total Instructional and Administration</strong></td>
<td></td>
<td>$75,173</td>
<td>$90,777</td>
<td>$93,501</td>
<td>$103,387</td>
<td>$106,488</td>
</tr>
<tr>
<td>A. Instructional Totals (Salaries &amp; FICA)</td>
<td></td>
<td>$51,840</td>
<td>$66,744</td>
<td>$68,746</td>
<td>$77,890</td>
<td>$80,226</td>
</tr>
<tr>
<td>1. Total Instructional Salaries</td>
<td></td>
<td>$48,000</td>
<td>$61,800</td>
<td>$63,654</td>
<td>$72,120</td>
<td>$74,284</td>
</tr>
<tr>
<td>a. Total # of courses that need instructors per year</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Post-Doc: # of courses teaching per year (part of salary)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>UMD Faculty: # paid as overload</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>UMD Faculty teaching as part of regular teaching load</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Per course salary: assumes 3% annual increase</td>
<td>6,000</td>
<td>6,180</td>
<td>6,365</td>
<td>6,556</td>
<td>6,753</td>
<td></td>
</tr>
<tr>
<td>UMD faculty salary (overload)</td>
<td>12,000</td>
<td>12,360</td>
<td>12,731</td>
<td>13,113</td>
<td>13,506</td>
<td></td>
</tr>
<tr>
<td>Adjuncts (Michigan, Westat, UMD): #</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Adjuncts Salary: assumes a 3% annual increase</td>
<td>36,000</td>
<td>49,440</td>
<td>50,923</td>
<td>59,007</td>
<td>60,777</td>
<td></td>
</tr>
<tr>
<td>2. Total FICA (8%)</td>
<td>3,840</td>
<td>4,944</td>
<td>5,092</td>
<td>5,770</td>
<td>5,943</td>
<td></td>
</tr>
</tbody>
</table>

| **B. Academic Administration (See Note 1 below)** |             | $23,333 | $24,033 | $24,754 | $25,497 | $26,262 |
| 1. Total Salary (assumes 3% increase) |             | $23,333 | $24,033 | $24,754 | $25,497 | $26,262 |
| a. Post-Doc | $2,000       | $2,060  | $2,122  | $2,185  | $2,251  |         |
| **II. Equipment** | $1,000      | $1,030  | $1,061  | $1,093  | $1,126  | $1,159  |
| Equipment Needs (est.) |            |         |         |         |         |         |
| **III. Materials & Supplies** |             | $7,500  | $7,500  | $7,500  | $7,500  | $7,500  |
| Materials & Supplies (est.) | 1,000       | 1,030   | 1,044   | 1,126   | 1,195   |         |
| **II. Marketing (See Note 2 below)** |             | $10,000 | $10,000 | $17,000 | $17,000 | $17,000 |
| Ongoing Marketing | 7,500        | 7,500   | 7,500   | 7,500   | 7,500   |         |
| **III. Course Development (See Note 3 below)** |             | $62,400 | $10,000 | $10,000 | $17,000 | $17,000 |
| a. Development of New Courses: UMD Faculty |             | 30,000  | 10,000  | 17,000  | 17,000  | 17,000  |
| b. FICA (8%) | $2,400       |         |         |         |         |         |
| c. Development of New Courses: Adjuncts |             | 30,000  |         |         |         |         |

**SUBTOTAL: DIRECT PROGRAM EXPENSES** | 63,400       | 95,703  | 111,398 | 121,215 | 131,198 | 134,398 |

| **IV. Student Fees (100% returned to campus)** |             | $1,650  | $2,939  | $3,192  | $3,607  | $3,886  |
| A. Campus Mandatory Fee | 900          | 2,039   | 2,292   | 2,557   | 2,836   |         |
| B. Graduate School Application Fee | 750          | 900     | 900     | 1,050   | 1,050   |         |
| **V. Graduate School Assessment** |             | $10,200 | $23,562 | $26,989 | $30,700 | $34,715 |
| A. 10% of tuition revenue | 10,200       | 23,562  | 26,989  | 30,700  | 34,715  |         |
| **VI. Graduate School Administrative Fee** |             | $2,400  | $5,280  | $5,760  | $6,240  | $6,720  |
| a. Fee assessed per each academic semester/term | 60          | 60      | 60      | 60      | 60      |         |
| b. Total number of semesters/terms per year | 4           | 4       | 4       | 4       | 4       |         |
| c. Total # of Professional Students | 10          | 22      | 24      | 26      | 28      |         |

**Total Estimated Expenses** | $63,400 | $109,953 | $143,180 | $157,156 | $171,745 | $179,720 |

**Total Estimated Program Revenue & Support** | $63,400 | $103,650 | $238,559 | $273,084 | $310,609 | $351,035 |

**Net** | $0 | ($6,303) | $95,380 | $115,928 | $138,864 | $171,315 |

Proposal for new instructional program, International Masters of Professional Studies, p.22
<table>
<thead>
<tr>
<th>MPS Program Completion Assumptions</th>
<th>5-year Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td># of terms per year</td>
<td>4</td>
</tr>
<tr>
<td># of courses per term taken by student</td>
<td>1 or 2</td>
</tr>
<tr>
<td># of courses per year taken by student</td>
<td>6</td>
</tr>
<tr>
<td>Students complete the 30-credit, 10 course program in 2 years</td>
<td></td>
</tr>
<tr>
<td>Total Estimated Expenses</td>
<td>$825,153</td>
</tr>
<tr>
<td>Total Estimated Program Revenue &amp; Support</td>
<td>$1,340,337</td>
</tr>
<tr>
<td>Net</td>
<td>$515,184</td>
</tr>
</tbody>
</table>

Notes:

1. Cost of postdoc is split evenly among two certificate programs and MPS.

2. Marketing costs will be shared between the online certificates and online MPS. These costs were already included in the separate certificate proposals.

3. Additional development costs were included in separate proposals for online certificates. Courses that can be taken for the certificate completely overlap with ones that can be taken for the online MPS.
Dr. Frauke Kreuter  
Joint Program in Survey Methodology  
1218Q LeFrak Hall  
University of Maryland  
College Park, MD 20742

Dr. Kreuter:

We have reviewed the proposal for the online International Masters of Professional Studies in Survey and Data Science in the College of Behavioral and Social Science and the College of Information Studies (UMD’s iSchool) is excited to be a partner in this new program. The program’s international scope and unique focus on the intersection of survey and institutional data are great complements to the existing iSchool Masters programs in Information Management and Library and Information Science.

The iSchool courses referenced in the proposal (designated by the INST course code) are all existing, approved graduate courses that have previously been offered by iSchool faculty. Each of these courses has either been offered online or is scheduled to be offered online within the next 2 years. Consequently, this proposal is a useful strategic addition that builds directly on the iSchool’s faculty strengths and course capabilities to allow the University to provide a unique new program.

With this in mind, the College of Information Studies fully supports the proposed online International Masters of Professional Studies in Survey and Data Science.

Sincerely,

Brian S. Butler, Ph.D.  
Professor & Senior Associate Dean