MASTER OF APPLIED SCIENCE IN SPATIAL ANALYSIS FOR PUBLIC HEALTH, MAS

Program Overview
The Master of Applied Science (MAS) is a fully online, part-time degree designed for working professionals, delivered through the Online Programs for Applied Learning (OPAL). Programs focus on emergent industry sectors in public health and health care that have a need for highly skilled professionals. By building on the strengths of the School, they provide unmatched opportunities for advanced training and focus on both local and global health issues. Students are prepared to create innovative solutions through multidisciplinary approaches that apply the latest scientific knowledge. All MAS programs will culminate in a final Integrative Activity. The goal of this activity is for students to synthesize knowledge and skills obtained through coursework in a final project that demonstrates mastery of program competencies, as applied to real-world public health and health care questions. Students can complete their degree program in as little as two years, but are allowed up to four years.

The MAS program in Spatial Analysis for Public Health is an interdisciplinary online degree. Faculty at the Johns Hopkins Bloomberg School of Public Health contribute to the program via course development, teaching, and advising students. The topics and concepts allow graduates to effectively design and conduct public health-related spatial analysis by applying knowledge and tools learned in the program.

Students are equipped with the skills to understand, map, analyze and interpret spatial data as they relate to public health. The program will provide learners with skill-oriented training in spatial analysis taught through a comprehensive spatial science paradigm to include courses in spatial data, geographic information systems and spatial statistics. The program also offers training in epidemiology and biostatistics, courses that reflect the breadth and depth of public health and practical skills derived from workshops in professional development.

LinkedIn Group
We have established a LinkedIn group for each of the OPAL program areas in order to strengthen connections between current students, faculty, and alumni of OPAL programs, as well as to facilitate student-to-student peer networking.

Participation is voluntary, but we encourage you to join this professional networking community.

JHSPH OPAL Spatial Analysis for Public Health (https://www.linkedin.com/groups/8676099/)

JHU OpenCourseWare
JHSPH OpenCourseWare makes JHSPH course materials used in the teaching of actual courses freely and openly available on the Web. OCW can be used to supplement learning on a particular topic, or provide background material. You are free to review the information on an OpenCourseWare Website (https://ocw.jhsph.edu/) at your own pace, free of charge.

For a brush up on statistical skills:

- Introduction to Biostatistics (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/introbiostats/coursePage/index/)
- Statistical Reasoning I (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/StatisticalReasoning1/coursePage/index/)
- Methods in Biostatistics I (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/MethodsInBiostatistics1/coursePage/index/)

For a general introduction to the field of health policy and public health:

- Introduction to Health Policy (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/IntroHealthPolicy/coursePage/index/)
- Introduction to Methods for Health Services Research and Evaluation (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/HSRE/coursePage/index/)
- JHSPH Faculty Interviews (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/facultyinterviews/coursePage/index/)
- Ethical Issues in Public Health (http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/EthicalIssuesPublicHealth/coursePage/index/)

Additional options are available through the Open Education (https://www.oecconsortium.org/courses/category/) Global (https://www.oeglobal.org/), including courses on

- Democracy in America,
- Introduction to American Politics, and
- Introduction to the American Political Process.

MAS in Spatial Analysis Contact Information
MAS Program Advisers
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For Program-wide Issues
Elizabeth Topper Golub, PhD, MEd, MPH
Director, Online Programs for Applied Learning (OPAL)
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Program Requirements
Course location and modality is found on the JHSPH website (https://www.jhsphs.edu/courses/).

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Students will complete 50.5 credits to graduate. The program is designed to be completed in 8 academic terms - two academic years (Sept-May). In addition to the coursework, students must complete an Integrative Activity, where newly acquired knowledge and skills are used to create an applicable activity (e.g., design a study, plot the map and analyze the data) – with a final paper that describes the methodology used and the
final assessment. Students can complete their degree program in as little as two years, but are allowed up to four years.

Satisfactory Academic Progress (SAP)
The OPAL Office expects students to maintain satisfactory academic progress for the duration of the degree program. For the MAS program, satisfactory academic progress is defined as follows:

Maintaining a minimum cumulative grade point average of 2.75 and grades of C or better in all required courses. Grades of P are sufficient in courses that are graded as Pass/Fail. Students falling below this minimum should consult with the OPAL Program Office and their Academic Adviser in order to develop a course plan to allow them to raise the GPA above 2.75 as soon as possible, in order to return to good academic standing.

Failure to maintain satisfactory academic progress as defined by any of the criteria above may be grounds for dismissal from the program, and financial aid status will be affected. Full details of the School’s Satisfactory Academic Policy can be found here.

Program Plan of Study
Students should follow the plan outlined below if they wish to complete the MAS program in two years. This plan will also allow students to maintain minimum credits needed for financial aid eligibility each term, and to follow any prerequisite sequencing. Courses can be taken at a slower pace if needed, so long as course prerequisites are met.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>First Year</td>
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<tr>
<td>First Term</td>
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<tr>
<td>PH.550.860</td>
<td>Academic &amp; Research Ethics at JHSPH</td>
<td>2</td>
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<td>PH.600.601</td>
<td>Seminars in Public Health</td>
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<tr>
<td>PH.601.731</td>
<td>Spatial Analysis for Public Health</td>
<td>4</td>
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<tr>
<td>PH.552.603</td>
<td>The Role of Qualitative Methods and Science in Describing and Assessing a Population's Health</td>
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<td></td>
<td><strong>Total Credits</strong></td>
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<tr>
<td>Second Term</td>
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<td>PH.600.702</td>
<td>Intermediate Epidemiology</td>
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<td>PH.601.932</td>
<td>Spatial Analysis Lab</td>
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<td>Third Term</td>
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<td>PH.601.733</td>
<td>Applied Spatial Statistics</td>
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<td>PH.601.805</td>
<td>Spatial Analysis Journal Club</td>
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<tr>
<td>Fourth Term</td>
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<tr>
<td>PH.601.734</td>
<td>Spatial Applications</td>
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<td>PH.601.880</td>
<td>Spatial Analysis integrative Activity</td>
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<td><strong>Total Credits</strong></td>
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Integrative Activity
Online Programs for Applied Learning (OPAL) Integrative Activity: Human Subjects Research and Other Activities
This culminating experience will provide Master of Applied Science students with the opportunity to synthesize lessons learned via the application of concepts and techniques. Please note that individual degree programs may have specific guidelines related to their particular Integrative Activity course including, but not limited to the format, presentation, and composition of final course deliverable.

As you begin planning the research for your Integrative Activity within the MAS program, please review the information below and proceed accordingly. Regardless of whether IRB review is required, all OPAL students should apply ethical principles in their interactions with humans and/or their data. Please follow the JHSPH Ethical Code for Student Activities that Involve Human Interactions.

1. As long as the project is limited to the context of the course, or courses if components of the Integrative Activity is spread among more than one course, there is no need for IRB approval, even if the project involves human subjects research. These types of student projects are considered learning exercises when there is no plan to disseminate beyond the class, School, or affiliated agency.

2. If you do wish to publish your project while you are a student, you will need to test to see if you are conducting Human Subjects Research (HSR) which would necessitate IRB approval. You can test your project for HSR by using the IRB worksheet or consulting the IRB guidance flowchart. You will need to go to IRB for official/final determination before beginning your research in order to be approved for publication. All student-initiated research projects which you intend to publish must have a preliminary review by the IRB Office to determine whether they are human subjects research requiring IRB oversight, unless: (1) the student is working with a Principal Investigator (PI) from another institution, or (2) the PI is adding you as a student investigator to an existing, IRB-approved study. If you are using human subjects data, you must obtain a determination from the JHSPH IRB. If you are collecting primary new data, complete the IRB Office Determination Request Form for Primary Data Collection, or if you are using existing data, complete the IRB Office Determination Request Form for Secondary Data Analysis in collaboration with your adviser and submit it to the JHSPH IRB Office e-mail address.
jhsph.irboffice@jhu.edu. Be sure to include your adviser in your e-mail submission.

3. If you do not intend to publish the project while you are a student, IRB approval will not be required. However, if you would be interested in publishing it after graduating from JHU, you should note that the project must meet the ethical standards of your institution and that many institutions will not allow you to present/publish human subjects research without having prior IRB approval. For this reason, we strongly recommend that you consult your organization now if you think that you may wish to publish in the future.

PROGRAM COMPETENCIES
The Master of Applied Science in Spatial Analysis for Public Health is an interdisciplinary online degree. The goal of the MAS in Spatial Analysis for Public Health program is to prepare students from diverse individual and professional backgrounds for positions that utilize spatial data to address public health problems.

By the end of the program, students should be able to:

1. Interpret and critique epidemiologic studies addressing public health problems
2. Apply measures of morbidity and mortality to the evaluation and comparison of the health of populations
3. Synthesize how geography affects public health
4. Obtain and transfer information from spatial data technologies into a database appropriate for mapping
5. Utilize a geographic information system to map and spatially integrate public health related databases
6. Analyze and interpret maps using tools from the field of spatial statistics to describe and interpret distributions of health outcomes in a population
7. Design and implement a spatial analysis protocol for addressing a public health problem