Program (Major, Minor, Core): Graduate Certificate in BSDP  
Department: Environmental & Occupational Health  
Person(s) Responsible for Implementing the Plan: Terri Rebmann/Darcy Scharff  
Date Submitted: 12/18/15

<table>
<thead>
<tr>
<th>Program Learning Outcomes</th>
<th>Curriculum Mapping</th>
<th>Assessment Methods</th>
<th>Use of Assessment Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you expect all students who complete the program to know, or be able to do?</td>
<td>Where is the outcome learned/assessed (courses, internships, student teaching, clinical, etc.)?</td>
<td>How do students demonstrate their performance of the program learning outcomes? How does the program measure student performance? Distinguish your direct measures from indirect measures.</td>
<td>How does the program use assessment results to recognize success and &quot;close the loop&quot; to inform additional program improvement? How/when is this data shared, and with whom?</td>
</tr>
</tbody>
</table>
1: Use an evidence-based approach to develop and analyze effective human, animal, and environmental hazard control strategies, programs, and policies, taking into account legal and ethical considerations.

| Courses that cover this learning outcome: See course by learning outcome matrix attached |
| BSDP 5100  
| BSDP 5101  
| BSDP 5103  
| BSDP 5203 |

Courses that will be used in the direct assessment:

| BSDP 5103  
| BSDP 5203 |

**Direct measures:** Student performance is assessed via various assignments in the courses. Performance on these assignments in relation to the competencies will be reviewed annually.

**Indirect Measures:** Annual alumni survey that asks alumni to identify the extent to which they believe they have mastered the program competencies.

Direct: Student performance on the culminating assignments in BSDP 5103 (development of an infectious disease outbreak scenario paper) and BSDP 5203 (assessment of an agency/organization emergency management plan paper) will be reviewed at the annual Fall Institute Strategic Planning Retreat/Meeting. Student assignments will be de-identified before review to maintain confidentiality.

Indirect: An alumni survey is conducted annually in late summer, with results shared at the annual Fall Institute Strategic Planning Retreat/Meeting.

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Indirect: An alumni survey is conducted annually in late summer, with results shared at the annual Fall Institute Strategic Planning Retreat/Meeting.
3: Create and disseminate tailored messages regarding biosecurity hazards and risks to responders, the public, the media, and policy makers.

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<th>Courses that cover this learning outcome: See course by learning outcome matrix attached BSDP 5100 BSDP 5101 BSDP 5203 BSDP 5206 Courses that will be used in the direct assessment: BSDP 5203</th>
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<td>Direct measures: Student performance is assessed via various assignments in the courses. Performance on these assignments in relation to the competencies will be reviewed annually. Indirect Measures: Annual alumni survey that asks alumni to identify the extent to which they believe they have mastered the program competencies.</td>
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<td>Direct: Student performance on the culminating assignment in BSDP 5203 (assessment of an agency/organization emergency management plan paper) will be reviewed at the annual Fall Institute Strategic Planning Retreat/Meeting. Student assignments will be de-identified before review to maintain confidentiality. Indirect: An alumni survey is conducted annually in late summer, with results shared at the annual Fall Institute Strategic Planning Retreat/Meeting.</td>
</tr>
</tbody>
</table>
1. It is not recommended to try and assess (in depth) all of the program learning outcomes every semester. It is best practice to plan out when each outcome will be assessed and focus on 1 or 2 each semester/academic year. Describe the responsibilities, timeline, and the process for implementing this assessment plan.

<table>
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<tr>
<th>Responsibility</th>
<th>Timeline</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Program Director, Dr. Terri Rebmann</td>
<td>The aim was to have an assessment plan developed by December 18, 2015.</td>
<td>The Program Director met with the Associate Dean for Academic Affairs in early December to get information about what was expected in the assessment plan and how to develop it.</td>
</tr>
<tr>
<td>The Program Director, Dr. Terri Rebmann, and Program Manager, Larry Bommarito</td>
<td>The aim was to have an assessment plan developed by December 18, 2015.</td>
<td>The Program Director and Manager met with the Institute faculty in mid-December, 2015 to develop the assessment plan. The plan was drafted, with an implementation date being effective immediately. The first program assessment will take place in Fall, 2016 at the Institute Strategic Planning Retreat/Meeting.</td>
</tr>
<tr>
<td>Program Director, Dr Terri Rebmann</td>
<td>The aim was to have an assessment plan developed by December 18, 2015.</td>
<td>The faculty decided that the culminating assignments in BSDP 5103 &amp; BSDP 5203 will be used as the direct assessment of student performance on learning outcomes. Those assignments will be collated by the instructor and/or Program Director, Dr. Terri Rebmann, and shared with the faculty at the Institute Strategic Planning Retreat/Meeting in Fall, 2016. The assignments will be de-identified to maintain student confidentiality. The alumni survey that was conducted in 2013 will become an annual survey, with results being shared at the Institute Strategic Planning Retreat/Meeting as the indirect measure of student performance on learning outcomes.</td>
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</tbody>
</table>

2. Please explain how these assessment efforts are coordinated with Madrid (courses and/or program)?

There is no connection between the Graduate Certificate in Biosecurity & Disaster Preparedness and the Madrid courses or programs.

3. The program assessment plan should be developed and approved by all faculty in the department. In addition, the program assessment plan should be developed to include student input and external sources (e.g., national standards, advisory boards,
employers, alumni, etc.). Describe the process through which your academic unit created this assessment plan. Include the following:

a. Timeline regarding when or how often this plan will be reviewed and revised. (This could be aligned with program review.)

The Graduate Certificate in Biosecurity & Disaster Preparedness will be formally assessed annually at the Fall Institute Strategic Planning Retreat/Meeting. The plan and student outcomes will be assessed at this meeting, and revisions will be made to the assessment plan as needed.

b. How students were included in the process and/or how student input was gathered and incorporated into the assessment plan.

A BSDP student representative is invited to the annual Fall Institute Strategic Planning Retreat/Meeting and will participate in the program assessment at that meeting.

c. What external sources were consulted in the development of this assessment plan?

Adjunct faculty, who are external to SLU, were consulted in the development of program competencies and course objectives. Adjunct faculty are also invited to attend and participate in the annual Fall Institute Strategic Planning Retreat/Meeting at which program assessment is conducted. Furthermore, meeting minutes are distributed to all adjunct faculty and their input is sought related to program competencies, course objectives, and program assessment planning.

d. Assessment of the manageability of the plan in relation to departmental resources and personnel

The Institute hosts an annual Fall Institute Strategic Planning Retreat/Meeting, at which strategic planning and program revision occurs. Incorporating program assessment into this meeting is not overly burdensome to the Department.
<table>
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<th>Course Name</th>
<th>BSDP 5100</th>
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<tbody>
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<td></td>
<td>Public</td>
<td>Fundamentals of Disaster Planning</td>
<td>Commun Dis &amp; Infection Control</td>
<td>Planning for Infect Disasters</td>
<td>Disaster Management &amp; Risk Analysis</td>
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**MS Core Competencies**

BSDP 1: Analyze qualitative and quantitative data to accurately identify biological and other health hazards and measure risks, using epidemiological, statistical, and risk assessment methods and tools

BSDP 2: Use an evidence-based approach to develop and analyze effective human, animal, and environmental hazard control strategies, programs, and policies, taking into account legal and ethical considerations

BSDP 3: Explain the scientific characteristics, including transmission routes and control measures, of major biological hazards that result in human and animal health risk

BSDP 4: Create and disseminate tailored messages regarding biosecurity hazards and risks to responders, the public, the media, and policy makers

BSDP 5: Apply management principles in program, organizational, and community initiatives

BSDP 5100: Analyze qualitative and quantitative data to accurately identify biological and other health hazards and measure risks, using epidemiological, statistical, and risk assessment methods and tools

BSDP 5101: Use an evidence-based approach to develop and analyze effective human, animal, and environmental hazard control strategies, programs, and policies, taking into account legal and ethical considerations

BSDP 5103: Explain the scientific characteristics, including transmission routes and control measures, of major biological hazards that result in human and animal health risk

BSDP 5203: Create and disseminate tailored messages regarding biosecurity hazards and risks to responders, the public, the media, and policy makers

BSDP 5206: Apply management principles in program, organizational, and community initiatives
Example of an Assignment from BSDP 5103:
Infectious Disease Outbreak Scenario Assignment

This is the final assignment for the course and serves as a final exam in the form of a paper. The goal of the Infectious Disease Scenario paper is to develop a plausible epidemiological scenario of an outbreak using a CDC Category A bioterrorism agent (anthrax, smallpox, plague, tularemia, botulism, or viral hemorrhagic fever) or emerging infectious disease (MERS Co-V, SARS, avian influenza, monkeypox, etc). This project will require a basic understanding of the pathogen used in the scenario, combined with some insight into the epidemiological trends we could expect to see associated with an outbreak of this pathogen. You will use information from almost every module in class to write the scenario. This assignment tests your ability to apply information you learned in class to a real world example.

The final paper should consist of the following: a) Background, b) Assumptions, c) Scenario, d) Epi Curve, e) Summary/Conclusion, and f) Reference List. You must also include a cover page (using APA format), as you would for any graduate level paper.

The paper should consist of the following:

a) **Background** [1-2 pages]: In order to develop an outbreak scenario, you need to understand the epidemiological and clinical information about a pathogen/disease. You will learn more about the disease when researching it than can/should be included in the paper; only provide a concise summary of the disease for the paper. You must summarize (briefly) the following:
   - Name of the agent and disease
   - Brief epidemiology of the disease
   - Incubation period
   - Symptoms
   - Disease progression
   - Laboratory testing needed for diagnosis, including the level/type of lab needed
   - Route of transmission
   - Isolation/control measures
   - Treatment
   - Prophylaxis
   - Vaccine [Treatment, prophylaxis, and vaccine can/should be described in broad strokes only; you don’t need to include doses for various groups. For treatment and prophylaxis, simply indicate whether it exists, and include whether it’s an antibiotic, antitoxin, antiviral med, etc. You don’t need to list the actual name of medications or vaccines. *If treatment, prophylaxis, or vaccine do not exist for the disease in your scenario, you must state this in your Background.*]
   - Typical mortality rate
   - Size and characteristics of the community [small rural town with population < 5,000 vs large urban area with population > 1 million] in which the outbreak occurs or where the release takes place if it’s a bioterrorism incident

b) **Assumptions** [1-2 pages] The Assumptions section should describe the assumptions you used when developing the outbreak scenario and the basis/source of the outbreak. Assumptions are statements about the source of the outbreak (natural vs terrorist act) and whether or not you will follow the classic presentation of the disease. In the Assumptions section, you must:
   - State whether your scenario is a natural outbreak vs a bioterrorism attack
   - State whether the victims in your outbreak will have classic disease progression or an unusual progression. If you decide to argue that the disease will progress in an unusual manner, you must have evidence as to how and why this would occur (this evidence should be described in the Background). For instance: If you want to describe an outbreak caused by an aerosolized release of smallpox at a baseball game and want to decrease the standard incubation period or the initial disease presentation because of the large exposure, you must state this in the Assumptions section and describe how it differs from the standard disease progression.
   - State whether the index case (or cases) are diagnosed right away or if it’s delayed
   - State whether the event/outbreak is identified right away or if it’s delayed
   - If you use a bioterrorism scenario, you must state whether the agent has been genetically modified in some way.
• Even if you decide that your outbreak will be a naturally occurring event and the victims will all have normal disease progression and transmission, you must state this in the Assumptions section.

c) **Scenario**: 6 - 9 pages in length, not counting the cover page or reference list. Summarize in bullet points or narrative the “story” of what is taking place. The scenario should start at the beginning of the outbreak when patients appear and no one knows what’s going on or an announcement from a terrorist that a bioterrorism attack has taken place. Your scenario should span the entire time of the outbreak and include details on how the outbreak progresses from the first case to the ending of the outbreak. The scenario must include details on the following:

1) the day and time of the exposure for the index case
2) when the first case(s) arrives,
3) how soon the disease is identified or suspected and by whom,
4) how and how soon disease confirmation is obtained (by which tests or procedures),
5) how soon reporting of the event takes place, who reports it, and to whom is it reported,
6) how soon surveillance is implemented,
7) which disease control measures/interventions are implemented and when this occurs within the scenario (treatment, vaccination, post-exposure prophylaxis, monitoring of exposed individuals, isolation, environmental decontamination, social distancing, closing of public gatherings, quarantine, etc),
8) the total time during which the outbreak occurred (1 week, 1 month, 1 year, etc),
9) the total number of patients exposed/affected by the outbreak,
10) the total number of ill individuals, and
11) the total mortality rate.

d) **Epi Curve** - You must include a table in the paper that consists of the epi curve for your outbreak. You do not need to include a line list of infected individuals; only an epi curve. Your epi curve must be feasible/plausible based on the pathogen you choose. **[Do NOT include a line list for this assignment. It's too time-consuming and unnecessary.]**

e) **Summary/Conclusion** – this assignment is a formal paper and as such should have a summary or conclusion. Summarize the outbreak and/or paper using information from the scenario. **[A paragraph or two.]**

f) **Reference list** – Must consist of at least 5 relevant references and use the APA (6th edition) reference style. **[At least 5 references; no more than 1 page]** References must be used for at least the Background part of this assignment.

Information in the scenario must be specific in regards to the timeline. Do not say that something occurred “quickly” or “slowly”. List a day and time that events occur. Do not put a heading of “Day 1” and then a list of everything that happens on that day. Details are required so that the feasibility of the scenario can be assessed. State exactly when the index case presents for medical care (i.e., in the ER at 9 am on a Monday, which is X days after the exposure), exactly when the physician suspects a communicable disease (immediately after patient assessment, 1 hr later, etc), exactly when lab tests are ordered and results received, exactly when isolation is implemented, etc.

All information must be feasible/plausible based on your pathogen and knowledge of human behavior. If the incubation period for the disease you choose is 3 days, make sure that cases do not show up before the 3rd day. Be sure that patients develop disease in a logical pattern and timeline. You must include a table in the paper that consists of the epi curve for your outbreak. Your epi curve must be feasible/plausible based on the pathogen you choose. Do not have all of the patients become ill on the first day or seek medical care the first day they are ill; incorporate what you learned in class about outbreaks and disease progression to the scenario. Base your morbidity, transmission, and mortality rate on published information. Make sure that the outbreak progresses in a logical manner using information from class. Incorporate information on how soon the disease would likely be identified and use accurate estimates of how soon confirmation could be obtained. **[For example, if your scenario uses smallpox, make sure that you address how lab confirmation would occur and include accurate estimates of the time and procedures needed to do this. Another example: Do not assume that a reference laboratory can process thousands of patient specimens in a short period of time.]** If you create a foodborne illness scenario that is spread via a restaurant food bar, make sure that you incorporate information about how the food is stored (thrown out each night or refrigerated and put back on the food bar the next day); this information would change how many cases you would have and how soon they would become ill and present to the medical system. You may be as creative as you like within reason, but the scenario must be feasible/possible based on sound science and the pathogen you choose. Any deviations from textbook presentation or disease progression must be justified in the Assumptions section and
have scientifically sound reasons for the variation.

The paper and reference citations must be in the American Psychological Association (APA) 6th Edition style, including the incorporation of the table (i.e., the epi curve). You do not need to include an abstract. Do not use quotations in your paper unless absolutely necessary. If you must include a quote, you are limited to one for the paper. See the Student Orientation and Reference webpage within Blackboard for a learning tutorial on APA.

Grading criteria for Scenario Development:
- plausibility (25 points)
- correct response/disease progression assumptions (25 points)
- thoroughness and accuracy (35 points)
- logical flow and organization (10 points)
- adequacy of references/use of APA (5 points)

You must submit the assignment via the Blackboard Assignment tool (there is an icon for it on the homepage).

Grading Rubric:

Plausibility (25 points possible)
- 25 All aspects of the scenario are plausible and reflect accurate application of infectious disease principles to an outbreak
- 23 Most aspects of the scenario are plausible, with only one or two events that are implausible and do not reflect accurate application of infectious disease principles to an outbreak
- 20 Many aspects of the scenario are plausible, with three or four events that are implausible and do not reflect accurate application of infectious disease principles to an outbreak
- 18 Some aspects of the scenario are plausible, though there are many events that are implausible and do not reflect accurate application of infectious disease principles to an outbreak
- 15 Almost all aspects of the scenario are implausible and do not reflect accurate application of infectious disease principles to an outbreak

Correct response/disease progression assumptions (25 points possible)
- 25 All descriptions of disease development and progression are accurate, reflect the stated Assumptions, and demonstrate correct synthesis of published literature on the agent involved in the outbreak scenario
- 23 Most descriptions of disease development and progression are accurate, though there are one or two errors in terms of when symptoms or events occurred that do not reflect the stated Assumptions of clinical information from published literature on the agent involved in the outbreak scenario
- 20 Many descriptions of disease development and progression are accurate, though there are three or four errors in terms of when symptoms or events occurred that do not reflect the stated Assumptions of clinical information from published literature on the agent involved in the outbreak scenario
- 18 Some descriptions of disease development and progression are accurate, though there are multiple errors in terms of when symptoms or events occurred that do not reflect the stated Assumptions of clinical information from published literature on the agent involved in the outbreak scenario
- 15 Almost no descriptions of disease development and progression are accurate, and there are many errors in terms of when symptoms or events occurred that do not reflect the stated Assumptions of clinical information from published literature on the agent involved in the outbreak scenario

Thoroughness and accuracy (35 points possible)
35 All assignment criteria has been included/addressed in the paper and all aspects of the outbreak scenario are accurate in terms of being evidence-based, reflect clinical information from published literature, and follow appropriate outbreak investigation processes.

33 One assignment criterion has been omitted and/or there is one or two errors in the outbreak scenario in terms of not being evidence-based, does not reflect clinical information from published literature, and/or does not follow appropriate outbreak investigation processes.

30 Two assignment criteria have been omitted and/or there are three errors in the outbreak scenario in terms of not being evidence-based, does not reflect clinical information from published literature, and/or does not follow appropriate outbreak investigation processes.

25 Three assignment criteria have been omitted and/or there are four errors in the outbreak scenario in terms of not being evidence-based, does not reflect clinical information from published literature, and/or does not follow appropriate outbreak investigation processes.

20 Multiple assignment criteria have been omitted and/or there are multiple errors in the outbreak scenario in terms of not being evidence-based, does not reflect clinical information from published literature, and/or does not follow appropriate outbreak investigation processes.

15 Many assignment criteria have been omitted and/or there are many errors in the outbreak scenario in terms of not being evidence-based, does not reflect clinical information from published literature, and/or does not follow appropriate outbreak investigation processes.

**Logical flow and organization (10 points possible)**
10 All aspects of the paper flow logically and the paper is well organized and easy to follow

8 Many aspects of the paper flow logically and the paper is generally well organized, though there are some areas in which the writing is jumpy or lacking good transitions

7 Some aspects of the paper flow logically, but the paper lacks strong organization, the writing is disjointed and/or lacks transitions

5 The paper lacks any logical flow or organization and is very difficult to read/follow

**Adequacy of references/use of APA (5 points possible)**
5 Correct use of APA citation style and appropriate number and types of references are used

3 Citation style is usually correct with very few minor errors; fair number of appropriate references are used

1 Citation style is rarely used correctly and has multiple errors and/or too few appropriate references are used

**Linking assignment grading to the course competencies:**

MPH 2: Recognize the ecological nature of determinants of health that include biological, behavioral, social, environmental, economic, and political factors

MPH 3: Describe the approaches to disease prevention and control using tools from the five core areas of public health: behavioral science, biostatistics, environmental health, epidemiology, and health management and policy

BSDP 2: Use an evidence-based approach to develop and analyze effective human, animal, and environmental hazard control strategies, programs, and policies, taking into account legal and ethical considerations

BSDP 3: Explain the scientific characteristics, including transmission routes and control measures, of major biological hazards that result in human and animal health risk
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<thead>
<tr>
<th>Competencies</th>
<th>Associated learning objective</th>
<th>Assessment of Learning Objectives from Grading Rubric</th>
</tr>
</thead>
</table>
| MPH 2: Recognize the ecological nature of determinants of health that include biological, behavioral, social, environmental, economic, and political factors | 1. Identify infection prevention and control strategies to limit the secondary spread of infections, including assessment of strategies implemented during past outbreaks and disasters  
2. Describe pharmacological interventions for preventing, treating, and controlling infectious diseases  
3. Differentiate between infection and colonization  
4. Apply the chain of infection to an infectious disease | Plausibility; correct response assumptions; thoroughness & accuracy                                                                                                               |
| MPH 3: Describe the approaches to disease prevention and control using tools from the five core areas of public health: behavioral science, biostatistics, environmental health, epidemiology, and health management and policy | 1. Define infectious diseases and differentiate them from other types of disease processes  
2. Summarize methods of disease transmission and apply principles of infection control in describing measures to prevent transmission from occurring  
3. Identify vaccine preventable diseases and obstacles to compliance with recommended immunization schedules  
4. Describe appropriate laboratory tests for identifying infectious diseases/conditions, characterizing outbreaks, and recognizing a man-made biological event | Plausibility; correct response assumptions; thoroughness & accuracy                                                                                                               |
| BSDP 2: Use an evidence-based approach to develop and analyze effective human, animal, and environmental hazard control strategies, programs, and policies, taking into account legal and ethical considerations | 1. Identify vaccine preventable diseases and obstacles to compliance with recommended immunization schedules  
2. Describe pharmacological interventions for preventing, treating, and controlling infectious diseases  
3. List the steps in outbreak investigation  
4. Describe the impact and appropriate control measures of antimicrobial organisms during naturally occurring and man-made biological events | Plausibility; correct response assumptions; thoroughness & accuracy                                                                                                               |
| BSDP 3: Explain the scientific characteristics, including transmission routes and control measures, of major biological hazards that result in human and animal health risk | 1. Define infectious diseases and differentiate them from other types of disease processes  
2. Describe normal immune functioning, compare it with immunosuppressed states, and identify how immune status affects the development of infectious diseases in normal and vulnerable populations  
3. Summarize methods of disease transmission and apply principles of infection control in describing measures to prevent transmission from occurring  
4. Apply the chain of infection to an infectious disease  
5. Describe the impact and appropriate control measures of antimicrobial organisms during naturally occurring and man-made biological events | Plausibility; correct response assumptions; thoroughness & accuracy                                                                                                               |