

# RUTGERS

## *Public Health Infrastructures & National Security*

### *COURSE Description: 790:587:01*

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**Meetings**    Saturday 10:00 a.m. – 12:40 p.m., **Rooms**: HCK 612 & MMC N462

**Textbooks**    Multiple resources will be available on our Online Learning System (SAKAI)

#### **I. Course Description:**

Critical infrastructure is a collection of systems and assets tangible and non-tangible that provides critical services to the nation and its protection must be addressed to ensure reliability and continuity to vital services in the health, energy, transportation and other sectors. Therefore, proper security measures would be an essential way to promote safety, protection and data privacy.

Public health infrastructure includes many systems and components integrated to allow proper operation and function to various public health agencies and elements including human, organizational, informational, legal, policy, and many other resources. Security in Critical Infrastructure is about making data available to only authorized and authenticated users and ensuring reliability of system's operation with confidentiality and integrity. It is a balance between having the right mix of policies, strategies and tools to secure the environment. In this course we will address public health as part of the critical infrastructure of the health sector and we will assess various vulnerabilities and provide better understanding to threats associated with them. Defense-in-depth security model will be highly required for Critical Infrastructure Protection (CIP) and we need to ensure protection is enforced in all layers.

#### **II. Course Objectives:**

1. Introduction to Critical Infrastructures Protection (CIP)
2. Understanding Public Health Infrastructures (PHI) and its relation to our National Security
3. Internet of Things (IoT) role in shaping the public health infrastructures
4. Cyber threats and vulnerabilities in the Public Health

5. Characteristics of Cyber Attacks on Public Health Infrastructures
6. Security Policies and Strategies in PHI
7. Protection strategies to the public health environment
8. Security models - Defense-in-depth
9. Risk Management and Mitigation strategies
10. Case studies – Attack Scenarios to the Public Health Infrastructures

### III. Grading Criteria

15 % - Articles – CRN

10% - On-site class participation

10 % - Forum Discussions Activities

20 % - Mid-Term – Key Concepts

45 % - Course Project Research Paper and Presentations

### IV. Course Structure – Requirements Details

The important structure of the course will be according to the following points.

- Links to three articles will be posted on SAKAI each week and the students are requested to choose only one article out of three and to prepare at least one full paragraph addressing some of questions presented and it does not have to be a full essay. This will be treated as a short form of CRN representing 15% of the grade.
- On-site class participation and debate to specific subject will make another 10% of the grade. This could be an open discussion or debate during the first half an hour of class time.
- **Reading assignments** on the other hand are different than the articles and they are more related to Public Health Infrastructures & National Security concepts. Students are supposed to use the resources for each week to participate in the **forum discussion** according to the main post that I will be initiating. Students are expected to visit the forum at least once in order to perform one main post (usually it should be kept very concise). This item will be 10% of the grade. You are encouraged to participate more in the forum.
- There will be an online midterm covering the Public Health Infrastructures & National Security from technical prospective and this item will represent 20% of the grade.
- A research project paper and presentations will be our final part. Each student will propose one or more topics and I will establish a pool of selected topics. One topic will be assigned

to each student to work on and the student is expected to prepare a paper and a PowerPoint presentation to be presented in the class. This item will be 45% of the grade.

## **V. Academic Integrity**

The consequences of scholastic dishonesty are very serious. Please review the Rutgers' academic integrity policy.

Academic integrity means, among other things:

- Develop and write all of your own assignments.
- Show in detail where the materials you use in your papers come from. Create citations whether you are paraphrasing authors or quoting them directly. Be sure always to show source and page number within the assignment and include a bibliography in the back.
- Do not fabricate information or citations in your work.
- Do not facilitate academic dishonesty for another student by allowing your own work to be submitted by others.

If you are in doubt about any issue related to plagiarism or scholastic dishonesty, please discuss it with your instructor.

Other sources of information to which you can refer include:

- Rutgers' Academic Integrity website <http://academicintegrity.rutgers.edu/>
- Code of Student Conduct
- Eight Cardinal Rules of Academic Integrity

## **VI. Cheating and Plagiarism**

Short version: Don't cheat. Don't plagiarize.

Longer version: Cheating on tests or plagiarizing materials in your papers deprives you of the educational benefits of preparing these materials appropriately. It is personally dishonest to cheat on a test or to hand in a paper based on unacknowledged words or ideas that someone else originated. It is also unfair, since it gives you an undeserved advantage over your fellow students who are graded on the basis of their own work. In this class we will take cheating very seriously. All suspected cases of cheating and plagiarism will be automatically referred to the Office of Judicial Affairs, and we will recommend penalties appropriate to the gravity of the infraction. The university's policy on Academic Integrity is available at:

[http://academicintegrity.rutgers.edu/files/documents/AI\\_Policy\\_9\\_01\\_2011.pdf](http://academicintegrity.rutgers.edu/files/documents/AI_Policy_9_01_2011.pdf) <sup>11</sup>

I strongly advise you to familiarize yourself with this document, both for this class and for your other classes and future work. To help protect you, and future students, from plagiarism, we require all papers to be submitted through Turnitin.com.

Since what counts as plagiarism is not always clear, I quote the definition given in Rutgers' policy:

**Plagiarism: Plagiarism is the use of another person's words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course. Some common examples of plagiarism are:**

- **Copying word for word (i.e. quoting directly) from an oral, printed, or electronic source without proper attribution.**
- **Paraphrasing without proper attribution, i.e., presenting in one's own words another person's written words or ideas as if they were one's own.**
- **Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement.**
- **Incorporating into one's work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other nontextual material from other sources without proper attribution.<sup>[2]</sup>**

A SPECIAL NOTE: Students often assume that because information is available on the Web it is public information, does not need to be formally referenced, and can be used without attribution. This is a mistake. *All* information and ideas that you derive from other sources, whether written, spoken, or electronic, must be attributed to their original source. Such sources include not just written or electronic materials, but people with whom you may discuss your ideas, such as your roommate, friends, or family members. They deserve credit for their contributions too!

Judgments about plagiarism can be subtle. If you have any questions, please feel free to ask for guidance.

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[1] This web link was corrected on July 13, 2012. S. Lawrence

[2] [http://academicintegrity.rutgers.edu/files/documents/AI\\_Policy\\_9\\_01\\_2011.pdf](http://academicintegrity.rutgers.edu/files/documents/AI_Policy_9_01_2011.pdf) Updated with the University's current language on July 13, 2012. S. Lawrence