UNIVERSITY OF MARYLAND, COLLEGE PARK

Open Source Intelligence (INST616) – 3 credit hours

A. Instructor, Office Hours, & Contact Information
Mary Ann Francis
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Office hours Wednesdays 12:30-2:00 Room#4120J or scheduled on request.

B. Description of Course
The class will provide an introduction to Open Source Intelligence (OSINT) for Information Professionals. For the purposes of this course, OSINT will be defined as the use of free, publicly available online sources that can be used to gather information that may be later used to conduct analysis or reach conclusions about people, organizations or groups, places, businesses, capabilities, and events. Students will learn basic and advanced techniques for using search engines, people directories, social media networks, location-based services, images and videos, public records, communities, and many other sources. The course will also offer students more technical aspects of open-source information, including domains, IP addresses, and the deep web. Throughout the modules, data quality, validation procedures, and privacy will be key topics.

C. Goals and Outcomes of Course
Upon successful completion of this course, students will be able to:

- Discuss the role of OSINT within the larger framework of Information Management and Information Security;
- Examine issues of personal privacy, anonymity, online profiles and ethics;
- Employ a wide range of sources and tools for finding information (public records, people databases, social media, search engines, others);
- Evaluate the quality and appropriate uses of data sources;
- Validate, analyze, and transform data collected; and
- Apply open source information and research skills to business problems.

D. Course Approach and Expectations of Student Participation
The lesson components each week will include

- Lecture; (supplemented by data source/quality discussion and related personal privacy or ethical concepts where appropriate)
- Demonstrations of tools and techniques using a laptop and projector
- home exercise/assignment; report back on prior week techniques and findings
- reading and resources

Each week, reading will be assigned to familiarize the students with as aspect of OSINT and the resources that are available to supplement class instruction. Each week beginning with Week 3 a research topic will be assigned and results will be documented in a report format. The
following week research process and results will be discussed in class to facilitate group learning from the experiences of all.

It is essential for every student to participate in the discussions of reading materials and home exercises. Participation means active involvement in discussions. Students are expected to complete assigned readings and online assignments and documentation in advance of each class. Students will discuss their experience with assignments in order to expand the understanding of all since search techniques and findings will differ and comparison of results enhance class experience and learning. Failure to participate in class will result in zero points for this component. A class project and presentation will also be required of every student (example 1-specific search methodology development and testing; example 2-background check on an assigned person, subject, or group).

E. Classroom Environment
As a graduate seminar, the classroom environment should be professional and respectful. Discussions should be based on course readings and critical thinking. Some of the issues discussed in this course can involve strongly held beliefs and current political controversies. Remember – your classmates may have different perspectives on issues than you, but they still deserve your respect. As another aspect of respect in the classroom environment, turn off or mute all phones and other communication devices during each class session and put them away. Laptops may be used in the classroom for note taking only. Finally, live searching demonstrations will take place in some classes. Be aware that results returned can be unpredictable and the instructor does not have control over search results.

F. Students with Disabilities
Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Disability Support Services office, and (2) discuss any necessary academic accommodation with their teachers. This should be done at the beginning of the semester.

G. Extensions
Timeliness is an essential component of graduate work, and extensions will only be available during personal emergencies. Students who need to request an extension should discuss the matter in advance with the professor. If an extension is granted, the work must be submitted within the extension period to avoid grade penalties. Unexcused delays in submission will receive an automatic 10% deduction for every day late.

H. Academic Honesty
Work submitted in this course will be individual and original, in line with the University’s Academic Honor Code and Honor Pledge. Engaging in any academic dishonesty will result in consequences in line with university policies. Academic dishonesty includes but is not limited to plagiarism, cheating, buying work, multiple submissions of the same paper, forging signatures, submitting fraudulent documents, and facilitating the academic dishonesty of others. When writing papers, be sure to carefully and thoroughly cite all materials you use in writing your paper and make sure all ideas and quotations are properly acknowledged. Please visit http://www.studenthonorcouncil.umd.edu/code.html for more information on the University’s
Code of Academic Integrity. Related Graduate Program policies are available at https://academiccatalog.umd.edu/graduate/policies/academic-record/#text.

I. Syllabus Change Policy
This syllabus is a guide for the course and is subject to change with advance notice. Research projects and reading material will be assigned weekly in order to keep them timely and relevant.

J. CourseEvalUM
Participation in the evaluation of courses through CourseEvalUM is a responsibility that students hold as members of our academic community. Student feedback is confidential and important to the improvement of teaching and learning at the University. Please use http://www.courseevalum.umd.edu to complete course evaluations at the end of the semester.

K. Course Materials
There is no required text for the course. All readings will be available to students online or in another accessible format. If journal article readings are assigned, they may be accessible through the University’s library e-journal/database holdings accessible at http://www.lib.umd.edu.

L. Assignments and Grading

Weekly submission of home exercise documentation and processes; 33% (120 points)
From week 2 though week 13, exercises will be assigned to be documented and delivered by beginning of the next class. There will be ten assignments with a possible score of ten points each. Late submissions will not be accepted and will result in a loss of all points for that assignment.

Assessment: Each assignment will target key findings and open source tools and techniques. The techniques will have been discussed in class, but students will have to properly select and apply them in the assignment. Results will be delivered in a professional report format including screen shot documentation and analysis of findings. The work product will be assessed on

- Finding the target information/intelligence
- Using the relevant tools or techniques in a logical process
- Quality of the analysis (for example what is known, level of certainty, conclusions, recommended next steps)
- Completeness and quality of documentation (all sections of the report, completeness of the screen shots, grammar and clarity of diction)

Class attendance and participation 33% (120 points)
Attendance and class participation is mandatory. From week 2 through week 14 each class session will include discussion of the previous week’s reading and assignment. Grading will accrue beginning with week 3 and ten points will be awarded for each class in which the student is present and contributes. Absence will result in lost class participation points for that session.
Assessment: Class participation is relevant to the topic at hand and demonstrates knowledge of the reading material and assignment being discussed. The grading will be binary, either 10 points per class or zero.

**Class Project and Presentation 33% (120 points)**

Completion of a class project and in-class presentation will be required of each student. Students will be asked to select a business application for an OSINT process, develop a methodology to support it, complete and document an example research process, and present the approach and example to the class in a brief presentation. Students may select a subtopic from a list of applications or identify another with approval from the instructor. Note that genealogy, dark web, covert techniques, and other areas that have not been covered in class will not be approved. Sample applications include:

- Business Risk Management
- Law Enforcement
- Human Resources
- Opposition Research
- Personal Protection
- Children
- Ethical Hacking
- Reputation Management
- Private Investigation
- Legal Case Research
- Competitive Intelligence
- Intelligence Analyst
- Family Matters
- Journalism
- Sales and Marketing

Assessment: Students will be awarded up to 35 points for the completeness and logic of the methodology; up to 35 points for the thoroughness of the research example of the methodology; up to 35 points for the quality and completeness of the documentation of the methodology and research; and up to 15 points for content, organization, subject matter knowledge, and materials in a class presentation of the process and example findings. Further guidance will be provided when the project is assigned.

Complete project documentation will be due from all students regardless of presentation date at 11:59 pm on Sunday May 19.

**M. Letter Grades**

Letter grades will be mapped to accumulation of a maximum 360 points per ISchool policy.

- A+ 97-100
- A 93-96
- A- 90-92
- B+ 87-89
- B 83-86
- B- 80-82
- C+ 77-79
- C 73-76
- C- 70-72
- D+ 67-69
- D 63-66
- D- 60-62
- F 0-59
N. Course Schedule and Assignments

Content: (NOTE: This field evolves daily—tools appear and disappear without notice and data sources and features change often. Detailed course content can be developed, but it will be tested prior to each class session.)

1. Introduction, Syllabus, Concepts, Applications, Ethics
Objectives: provide an overview of the class content and approach. Explain why it is important, how the techniques to be taught can be used professionally and personally. Invite discussions of how students are currently conducting internet-based research and using social media. Gain an understanding of student background and goals. Discuss responsible use of tools and techniques. Introduce Web, Deep Web, Dark Web for context.

2. Professional Considerations: Data Quality framework; data sources; evaluating results sets; data validation; intelligence failures; collection gaps; bias confirmation; documenting your research
Objectives: Provide the Information Professional perspective on Open Source Intelligence. Introduce Data Quality characteristics (e.g. timeliness, currency, completeness, consistency). Introduce sources of open source data. Discuss how sources and data quality characteristics intersect and the implications for assessing content of results. Discuss collecting results and how to document using tools like screen print and snipping tools.

3. General Searching I: Personal Privacy while searching; Search Engines and Browsers; Advanced Search Operators
Objectives: Discuss pros and cons of in private browser mode and VPNs. Discuss options for search engines and browsers. Provide examples of differing results. Basic search features of different search engines. Google and other search engine advanced operators and features. Discuss Assignment and reading from class 2.

4. General Searching II: User IDs and Email addresses; Following a trail
Objectives: Search techniques using information other than simple name combinations—IDs, email, other information that may be available on a job application or resume. Applied search engine advanced operators and features. Discuss Assignment and reading from class 3.

5. People Searches and Documents
Objectives: Review data aggregators and sources of online information. Use people directories to research names, phone numbers, email addresses, user names; finding documents; creative researching businesses; advanced/meta tools. Opting out of people directories. Discuss Assignment and reading from class 4.

6. Businesses and Pastebins
Objective: Creative business research using specific tools and integrating prior research techniques; understand role and use of Pastebins. Discuss assignment and reading from class 5.
7. **Search Engine Caches and Archives**
Objectives: Develop awareness of the long memory of online information and learn how to access information that may not be available in a current version. Use internet archives to research history of a business or website and to validate information. Discuss assignment and reading from class 6.

8. **Images and Video**
Objectives: Gain an understanding of the power of image searches as a critical source of information. Sources and use of video and images using multiple search engines and browsers; using photo and other image metadata; conducting reverse photo searches. Discuss assignment and reading from class 7.

9. **Maps (e.g. Google, Bing, crowd-sourced maps, satellite imagery, geolocation)**
Objectives: Why use maps? Identify sources of location-based information (e.g. mobile location services). Identify and apply information available through mapping tools. Cross reference information from mapping and location-based tools with other sources. Discuss assignment and reading from class 8.

10. **Social Media**
Objectives: Understand the universe of social networks and the social graph. Discuss Facebook, Twitter, Instagram, LinkedIn, Google+ as sources of information for research. Privacy settings and personal privacy when using social media. Discuss advanced tools available to search Facebook, Twitter, Instagram, LinkedIn, and Google+. Cross platform search tools. Discuss assignment and reading from class 9.

11. **Public Records**
Objectives: Discuss the universe of public records. Focus on online sources of public records of all types and especially civil, criminal, and property records at the national, state, and local levels. Discuss assignment and reading from class 10.

12. **Communities, Forums, and Shopping**
Objectives: Techniques and tools for searching for/in blogs and the information available in sites like Tumblr and Reddit. Community sites like Fairfax Underground. Special interest forums and communities. Introduce the use of sites like Craig’s List and Amazon wish lists for finding information. Auction sites with a focus on ebay. Classified search engines. Privacy considerations on classifieds sites Available privacy settings in these resources. Discuss assignment and reading from class 11.

13. **Tech tools/Domains/IP addresses**
Objectives: Introduce the role of researching IP addresses, domain names, urls, email headers, and other more technical aspects of open source research. Research tools and techniques. Discuss assignment and reading from class 12.
14. Class Wrap Up
Objectives: Review the scope of material covered in class, resources, and key takeaways. Discuss assignment from class 13. Conduct informal and ungraded presentations/discussions of DRAFT/conceptual class project assignment topics and methodologies.

15. Project Presentations
Class 15 is scheduled during study week and is open for students to work on the class project. There will be no class session held. All projects submitted by 11:59 pm Sunday May 19.

16. Project Presentations
The applications/examples of methodologies developed in the class projects will be presented during Exam week at the time provided/scheduled for INST616 Final Exam. The date and time will be announced when the time slot is provided by the ISchool.

Example Applications of Research Methods:

- Private Investigation
- Law Enforcement
- Legal Case Research
- Human Resources
- Competitive Intelligence
- Journalism
- Opposition Research
- Intelligence Analyst
- Personal Protection
- Family Matters
- Children
- Sales and Marketing
- Ethical Hacking
- Reputation Management