**George Mason University**  
**CFRS 762 – Mobile Device Forensics**  
**CRN 16900, Sec 001**  
**Spring 2013, January 25-Mary 10, F 6:00-8:45PM**  
**ENGR 4457**

**Instructor**

Michael Robinson  
[mrobinsv@gmu.edu](mailto:mrobinsv@gmu.edu)  
Office Hours: Available upon request

**Description**

This course will familiarize students with mobile devices and technology used by carriers. Students will identify data that can be retrieved from mobile devices, such as cell phones, smart phones, and GPS devices. Recovered and analyzed data will include address books, call logs, text messages, video files, audio files, and Internet history. Students will correlate data with records from Network Service Providers, e.g., call phone service carriers. Students will apply industry best practices to evidence collection and analysis with hands-on exercises using current tools.

**Learning Objectives**

Upon completing the course, students will be able to:

- Produce a forensic report that includes the steps in the collection, handling, and preservation of digital evidence from mobile devices, such as cell phones.
- Construct a forensic acquisition plan for mobile devices that will account for various scenarios and the limitations of cell phone technology.
- Validate data obtained from the forensic acquisition of mobile devices with current tools.
- Analyze data retrieved from mobile devices with current tools.
- Assess the differences between cellular network architectures and identify their impact on forensic data.
- Analyze data provided from network service providers and cross-reference the results with data obtained from mobile devices.

**Required Materials**

Students are to bring the following materials to class:

- At least one USB flash drive
- Laptops with VMware, VM Fusion, or VMplayer

The following texts will be used for the class.

Burlington, MA.
Graded Material

Each assignment, quiz, project, and exam will be graded on a 0-100 point scale.

The final average is calculated by the following weights.

- Assignments ................................................................. 20%
- Quizzes ................................................................. 20%
- Midterm ................................................................. 25%
- Hands-on Exercises ................................................ 15%
- Final Exam ................................................................. 20%
- Total ........................................................................ 100%

The following criteria will be used for the assignment of letter grades

- A .......................... 92-100
- A- .......................... 90-91
- B+ .......................... 87-89
- B .......................... 83-86
- B- .......................... 80-82
- C .......................... 70-79
- F .......................... 0-69

The course will adhere to the university’s policies on grading.

Assignment Due Dates

All assignments are to be submitted by the due dates listed in the syllabus. Work will not be accepted late. Assignments are to be submitted via Blackboard.
Class Attendance

Attendance is mandatory. A number of classes will involve the hands-on use of forensics tools, which will be used in the classroom. In the event that a student cannot attend class due to an emergency or crisis, the student is to contact the instructor as soon as possible.

Responsible Use of Computing Policy

Use of computer equipment, including Internet connections within the classroom will be conducted in accordance with the University’s Responsible Use of Computing (RUC) Policy. This applies to all academic and operational departments and offices at all university locations owned or leased. The policies and procedures provided herein apply to all Mason faculty, staff, students, visitors, and contractors.

The university provides and maintains general computing services, including web and Internet resources, and telecommunication technology to support the education, research, and work of its faculty, staff, and students. At the same time, Mason wishes to protect all users’ rights to an open exchange of ideas and information. This policy sets forth the responsibilities of each member of the Mason community in preserving the security, confidentiality, availability, and integrity of Mason computing resources. To accomplish these ends, this policy supports investigations of complaints involving Mason computing abuse, including sexual harassment, honor code, federal, state, applicable industry, and local law violations.

University faculty and staff members, as state employees, are subject to the Freedom of Information Act, §2.2-3700, et seq., of the Code of Virginia, and all applicable state and federal rules and regulations. While this policy endeavors to maintain user confidentiality, it cannot create, nor should faculty or staff members presume, any expectation of privacy.

Violations of this policy may result in revocation of access, suspension of accounts, disciplinary action, or prosecution. Evidence of illegal activity will be turned over to the appropriate authorities. It is the responsibility of all users of Mason computing resources to read and follow this policy and all applicable laws and procedures (user sign-on agreement).

For more information regarding the RUC Policy, consult the student handbook.

Important Dates

- Last day to drop with no tuition penalty: January 29
- Last day to drop with a 33% tuition penalty: February 12
- Last day to drop with a 67% tuition penalty: February 22
- Thanksgiving Break: March 11-17
- Final Exams: May 8-14
Course Outline

The following is the course outline. It is subject to revision.

Week 1  Introduction to Cell phone forensics
1/25


Classroom material  Introduction.pptx

“The Growth of Mobile: Stats and figures that will shock you!”
http://www.youtube.com/watch?v=0aUQlIPdtg8

Week 2  Mobile Device Usage and Data Artifacts
2/1

Appendix C. pp. 82-92.


Classroom material  Usage_and_Data.pptx

Assignments  Assignment #1 – Current Events
Due on February 1 by 5:45PM

Assignment #2 – Current Mobile Device Forensics
Due on February 1 by 5:45PM
<table>
<thead>
<tr>
<th>Week 3</th>
<th>Carrier Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/8</td>
<td>Reading assignment</td>
</tr>
<tr>
<td></td>
<td>ETSI. “Mobile technologies GSM.” <a href="http://www.webcitation.org/5yRQiyd8W">http://www.webcitation.org/5yRQiyd8W</a></td>
</tr>
<tr>
<td></td>
<td>Classroom material</td>
</tr>
<tr>
<td></td>
<td>Carriers.pptx</td>
</tr>
<tr>
<td>Assignment</td>
<td>Assignment #3 – Data Contained on Mobile Devices</td>
</tr>
<tr>
<td></td>
<td>Due on February 8 by 5:45PM</td>
</tr>
<tr>
<td>Quiz</td>
<td>Quiz 1 (Material from weeks 1 and 2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 4</th>
<th>Network Service Provider Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/15</td>
<td>Reading assignment</td>
</tr>
<tr>
<td></td>
<td>Classroom material</td>
</tr>
<tr>
<td></td>
<td>Infrastructure.pptx</td>
</tr>
<tr>
<td>Assignment</td>
<td>Assignment #4 – Carrier Technology</td>
</tr>
<tr>
<td></td>
<td>Due on February 15 by 5:45PM</td>
</tr>
</tbody>
</table>
### Week 5  
**2/22**

**Reading assignment**  


**Classroom material**  
Procedures.pptx

- Cellebrite Demonstration  
  [http://www.youtube.com/watch?v=kET-F_3xuD8](http://www.youtube.com/watch?v=kET-F_3xuD8)

- SIM Card Seizure Demonstration  
  [http://www.youtube.com/watch?v=fFMPUCrvuo](http://www.youtube.com/watch?v=fFMPUCrvuo)

- Hands-on demonstrations with phones and tools

**Assignment**  
Assignment #5 – Infrastructure  
Due on February 22 by 5:45PM

**Quiz**  
Quiz 2 (Material from weeks 3 and 4)

### Week 6  
**3/1**

**Reading assignment**  

**Classroom material**  
Impediments.pptx

**Assignment**  
Assignment #6 – Procedures  
Due on March 1 by 5:45PM

### Week 7  
**3/8**

**Mid-term**

**Spring Break**  
**3/15**
Week 8  Comparison and Contrast of Current Industry Toolsets
3/22


Classroom material  Forensic_Tools.pptx

Chip-off_Forensics.pptx

Hands-on Exercises/Acquisitions to be conducted

Assignment  Assignment #7 – Recommendations
Due on March 22 by 5:45PM

Week 9  Acquisition I
3/29

Reading assignment

Classroom material  UFED_Acquisition.pptx

DS_Acquisition.pptx

BitPim_Acquisition.pptx

Hands-on Exercises/Acquisitions to be conducted

Assignment  Assignment # 8 – Forensic Tools Recommendations
Due on March 29 by 5:45PM
<table>
<thead>
<tr>
<th>Week 10</th>
<th>Acquisition II</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/5</td>
<td></td>
</tr>
<tr>
<td>Classroom material</td>
<td>Kindle.pptx</td>
</tr>
<tr>
<td></td>
<td>SIM Acquisition.pptx</td>
</tr>
<tr>
<td></td>
<td>TomTom-GPS.pptx</td>
</tr>
</tbody>
</table>
| | “Bourne SIM clone”  
  [http://www.youtube.com/watch?v=3_eYMfggkq0](http://www.youtube.com/watch?v=3_eYMfggkq0) |
| | “Paraben’s SIM Card Seizure software demo”  
  [http://www.youtube.com/watch?v=fFMPUCPrvuo](http://www.youtube.com/watch?v=fFMPUCPrvuo) |
| Quiz | Quiz 3 (Material from weeks 8 and 9) |

<table>
<thead>
<tr>
<th>Week 11</th>
<th>Legal Interception of Data</th>
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</thead>
<tbody>
<tr>
<td>4/12</td>
<td></td>
</tr>
<tr>
<td>Classroom material</td>
<td>Legal_Interception.pptx</td>
</tr>
<tr>
<td>Hands-on Exercises/Acquisitions to be conducted</td>
<td></td>
</tr>
</tbody>
</table>
**Week 12  
4/19**

**Call Detail Records (CDRs) and other Data from Network Service Providers**

**Reading assignment**  


**Classroom material**  
NSP-data.pptx

Tower_Info.pptx

Geolocating.pptx

EXIF_Data.pptx

**Other Fun Stuff – Analyzing EXIF Data**

**Assignment**  
Assignment #9 – FISA  
Due April 19 by 5:45PM

**Quiz**  
Quiz 4 (Material from weeks 10 and 11)

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**Week 13  
4/26**

**Interpreting Recovered Data**

**Reading assignment**  

**Classroom material**  
Mapped_CDR.pptx

Cell_Site_Analysis.pptx

**Hands-on Exercises/Acquisitions to be conducted**

**Assignment**  
Assignment #10 – Cell Tower Assignment (.pptx)  
Due on April 26 by 5:45PM
Week 14  Mobile Malware

5/3


http://www.pcworld.com/businesscenter/article/216842/coming_soon_a_new_way_to_hack_into_your_smartphone.html


http://developers.sun.com/mobility/midp/articles/permissions/

Classroom material  Malware on Exploits.pptx

Malware on Mobile Platforms.pptx

Assignment  Assignment #11
Due on May 3 by 5:45PM

Quiz  Quiz 5 (Material from weeks 12 and 13)

Week 15  Final Exam

5/10