Course Number: MSSE 642
Course Title: Software Assurance

Course Description:
This course provides a detailed explanation of software assurance practices, methods, and tools required throughout the software development life-cycle. Students will apply life-cycle knowledge in exploring common programming errors and evaluate common software testing tools.

Prerequisite Courses:
Students need some basic understanding of programming languages.

Course Outcomes:
Upon completion of this course, learners should be able to:
- Evaluate software design practices for creating secure software
- Select appropriate software processes for managing secure software
- Demonstrate how software assurance tools are used to manage secure software
- Detect and remediate common programming errors affecting security in developed software
- Resolve an ethical dilemma through the appraisal of alternatives.

Course Materials:

Required Texts:

Required Resources:
- “From the Expert” presentations * provided in Course Resources folder.
- Network access to Regis Virtual Lab or computer capable of running 2 virtual machines (8GB RAM and dual core Intel processor with hyperthreading or equivalent)
## Course Assignments and Activities:

| 1 | Secure Software Development Lifecycle | • Chess - Chapter 1;  
• Merkow et al - Chapter 2 & 3;  
• Building Security In Maturity Model from http://bsimm.com/  
• Microsoft Security Development Lifecycle from https://www.microsoft.com/security/sdl  
• From the Expert Presentation | Annotated Bibliography (not graded, submitted for comment)  
Weekly Submissions:  
Critical Process Analysis: Quality Assurance Processes and Software Security  
Course Project: Use Case and Requirements Description |
|---|---|---|---|
| 2 | Secure Software Requirement and Design | • Merkow et al - Chapter 4 & 5  
• NIST 800-53  
• From the Expert Presentation | Annotated Bibliography (not submitted)  
Weekly Submissions:  
Critical Process Analysis: Controls  
Course Project: Threat Model, Security Requirements |
| 3 | Secure Software Implementation and Coding | • Chess – Chapter 2 through 8;  
• OWASP Top 10  
• From the Expert Presentation | Annotated Bibliography (not submitted)  
Weekly Submissions:  
Critical Process Analysis: Static Analysis and Code Review  
Course Project: Code Review Process |
| 4 | Implementing and Interpreting Static Analysis Tools | • Chess – Chapter 13 & 14  
• NIST SAMATE IV workshop results | Annotated Bibliography (not submitted)  
Weekly Submissions:  
Critical Process Analysis: Factors in Static Analysis Tool Selection  
Course Project: Code Review Using Static Code Analysis Lab |
| 5 | Quality Assurance Testing for Security | • Chess chapter 9 through 12  
• Merkow et al – Chapter 7 & 8  
• From the Expert Presentation | Annotated Bibliography (not submitted)  
Weekly Submissions:  
Critical Process Analysis: Web Applications and Services, Data Sensitivity, Privileged Access  
Course Project: Security Testing SOP |
|   | Quality Assurance Testing Using Dynamic Testing Tools | • Broad & Binder - Chapter 1 & 2, 5 & 6, and 9  
• Offensive Security Metasploit Unleashed  
• From the Expert Presentation | Annotated Bibliography (not submitted)  
Weekly Submissions:  
Critical Process Analysis: Why Use Multiple Testing Tools and Methods  
Security Testing using Metasploit Lab |
|---|---|---|
| 6 | Quality Assurance Testing Using Dynamic Testing Tools Contd. | • Arstechnica article (see pdf)  
• Metasploitable 2 Exploitability Guide  
• Getting Started with Burp Suite  
• Brute Force Authentication Using Burp Intruder (Video)  
• How To Exploit Local File Inclusion Vulnerability Using Burp Suite (Video)  
• From the Expert Presentation | Annotated Bibliography (not submitted)  
Weekly Submissions:  
Critical Process Analysis: Quality Assurance Required Skills and Ethical Hacking  
Web Application Dynamic Testing Lab |
| 7 | Closing and Monitoring the Secure Development Lifecycle | • Merkow et al – Chapter 10 & 11  
• From the Expert Presentation | Final Submissions:  
Completed Annotated Bibliography  
Red Team Exercise Presentation  
Course Project: Implementation Guide |
Summary of Assignments and Percentage Weight:

<table>
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<th>Assignment</th>
<th>Weight</th>
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<tr>
<td>Labs (3 lab assessments x 5% each)</td>
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<tr>
<td>Discussion Questions (2% weekly)</td>
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<tr>
<td>Course Project (6 weekly components x 10% each)</td>
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<tr>
<td>Final Annotated Bibliography</td>
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<tr>
<td>Team Project &amp; Presentation</td>
<td>4%</td>
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<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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CC&IS Grading Scale

<table>
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<tr>
<th>Letter Grade</th>
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<th>Grade Point</th>
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<tbody>
<tr>
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<td>93 to 100</td>
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<tr>
<td>A–</td>
<td>90 to less than 93</td>
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<tr>
<td>B+</td>
<td>87 to less than 90</td>
<td>3.33</td>
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<tr>
<td>B</td>
<td>83 to less than 87</td>
<td>3.00</td>
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<tr>
<td>B–</td>
<td>80 to less than 83</td>
<td>2.67</td>
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<tr>
<td>C+</td>
<td>77 to less than 80</td>
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<tr>
<td>C</td>
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<tr>
<td>C–</td>
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<tr>
<td>D+</td>
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Additional information about grading can be found in the latest edition of the University Catalog, available at [http://www.regis.edu/Academics/Course%20Catalog.aspx](http://www.regis.edu/Academics/Course%20Catalog.aspx).

CC&IS Policies and Procedures

Each of the following CC&IS Policies & Procedures is incorporated here by reference. Students are expected to review this information each term, and agree to the policies and procedures as identified here and specified in the latest edition of the University Catalog, available at [http://www.regis.edu/Academics/Course%20Catalog.aspx](http://www.regis.edu/Academics/Course%20Catalog.aspx) or at the link provided.

- The CC&IS Academic Integrity Policy.
- The Student Honor Code and Student Standards of Conduct.
- Incomplete Grade Policy, Pass / No Pass Grades, Grade Reports.
- The Information Privacy policy and FERPA. For more information regarding FERPA, visit the [U.S. Department of Education](http://www.ed.gov/about/offices/list/ope/policy/ferpa.html).
• The HIPPA policies for protected health information. The complete Regis University HIPAA Privacy & Security policy can be found here: http://www.regis.edu/About-Regis-University/University-Offices-and-Services/Auxiliary-Business/HIPAA.aspx.


The CC&IS Policies & Procedures Syllabus Addendum summarizes additional important policies including, Diversity, Equal Access, Disability Services, and Attendance & Participation that apply to every course offered by the College of Computer & Information Sciences at Regis University. A copy of the CC&IS Policies & Procedures Syllabus Addendum can be found here: https://in2.regis.edu/sites/ccis/policies/Repository/CCIS%20Syllabus%20Addendum.docx.