General Information

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E6A 336

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Credit points
4

Prerequisites
COMP347

Corequisites

Co-badged status

Unit description
As organisations and users increasingly rely upon networked applications for assessing information and making critical business decisions, securing distributed applications is becoming extremely significant. The unit is concerned with the protection of information in computing systems and networks. It will address concepts and techniques for securing distributed applications.

Important Academic Dates
Information about important academic dates including deadlines for withdrawing from units are available at http://students.mq.edu.au/student_admin/enrolmentguide/academicdates/

Learning Outcomes

1. Analyse key security requirements and trends in a distributed networked computing environment
2. Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
3. Evaluate authentication and access control security functionalities in distributed systems and networks
4. Apply security techniques and mechanisms to develop security protocols
5. Analyse the security threats and develop security architecture and functionalities to counteract the security threats

General Assessment Information

Standards
<table>
<thead>
<tr>
<th>Grade</th>
<th>Learning Outcome 1</th>
<th>Learning Outcome 2</th>
<th>Learning Outcome 3</th>
<th>Learning Outcome 4</th>
<th>Learning Outcome 5</th>
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</thead>
<tbody>
<tr>
<td>HD</td>
<td>Demonstrates deep and critical understanding of key security requirements and shows substantial originality in their analysis and evaluation</td>
<td>A critical understanding of security threats and able to develop threat model. Able to design appropriate security functionalities and develop an overall security architecture</td>
<td>Demonstrates the ability to apply security techniques and mechanisms to identify flaws in security protocols. Demonstrate the ability to design secure protocols and carry out security analysis.</td>
<td>Demonstrates the ability to design security services for distributed systems and networks and carry out their security analysis.</td>
<td>Demonstrates significant originality and insight in critical evaluation of security solutions. Communicates effectively the analysis and the arguments.</td>
</tr>
</tbody>
</table>

- **Fail (F)**: does not provide evidence of attainment of all learning outcomes. There is missing or partial or superficial or faulty understanding and application of the
| D | Demonstrates a clear understanding of the security requirements and shows originality in their analysis. |
| Credit (Cr) | Demonstrates the ability to apply security techniques and mechanisms to describe, identify security flaws in protocols and carry out security analysis. |
| Distinction (D) | Demonstrates the ability to describe, design the security architecture and carry out security analysis. |
| High Distinction (HD) | Provides evidence of a clear understanding of the security concepts and their applications. Clear communication of ideas. |

**Unit guide** ITEC852 Network and Systems Security

http://unitguides.mq.edu.au/unit_offerings/2472/unit_guide/print
## Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Due</th>
<th>Due: November 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exam</strong></td>
<td>60%</td>
<td></td>
<td>November 2014</td>
</tr>
<tr>
<td><strong>Group Project</strong></td>
<td>30%</td>
<td>26/27 Oct</td>
<td>26/27 Oct</td>
</tr>
<tr>
<td><strong>Assignment</strong></td>
<td>10%</td>
<td>14/15 Sept</td>
<td>14/15 Sept</td>
</tr>
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</table>

**Note:** Need to obtain at least 25% out of 60% of the Exam component to pass the Unit.

### This Assessment Task relates to the following Learning Outcomes:
- Analyse the security threats and develop security architecture and functionalities to counteract the security threats.
- Apply security techniques and mechanisms to develop security protocols.
- Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.

### This Assessment Task relates to the following Learning Outcomes:
- Analyse key security requirements and trends in a distributed networked computing environment.
- Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
- Evaluate authentication and access control security functionalities in distributed systems and networks.
- Apply security techniques and mechanisms to develop security protocols.
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats

Group Project
Due: 26/27 Oct
Weighting: 30%

Due: 26th Oct, 11.59pm (electronically) and 27th Oct in Class (hard copy)
Weighting: 30%

Project topics allocated during Lectures
Presentations 27th Oct and 3rd Nov 2014
Content and Understanding: 10% (Individually assessed)
Presentation: 10% (Individually assessed)
Project Report: 10% (Assessed as a Group)

This Assessment Task relates to the following Learning Outcomes:
• Analyse key security requirements and trends in a distributed networked computing environment
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats
• Apply security techniques and mechanisms to develop security protocols
• Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.

This Assessment Task relates to the following Learning Outcomes:
• Analyse key security requirements and trends in a distributed networked computing environment
• Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
• Evaluate authentication and access control security functionalities in distributed systems and networks
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats
Assignment
Due: 14/15 Sept
Weighting: 10%

Due: 14th Sept, 11.59pm (electronically) and 15th Sept in Class (hard copy)
Weighting: 10%

Handed out Week 4 25th August.

Assignment on Security Mechanisms and Protocols

This Assessment Task relates to the following Learning Outcomes:
• Analyse key security requirements and trends in a distributed networked computing environment
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats
• Apply security techniques and mechanisms to develop security protocols

This Assessment Task relates to the following Learning Outcomes:
  • Evaluate authentication and access control security functionalities in distributed systems and networks
  • Apply security techniques and mechanisms to develop security protocols

Delivery and Resources

Technology
• Presentation using Powerpoint and other Computer Related Material

Lecture and Tutorial
• Provided in Unit Schedule

Unit Schedule

Information
• All unit information will be posted on iLearn (https://ilearn.mq.edu.au/login/MQ/). We assume that students will regularly check iLearn for information regarding lecture notes, practical material and other related resources.
• All emails related to ITEC852 should be sent to vijay.varadharajan@mq.edu.au and cc: andrina.brennan@mq.edu.au (Andrina Brennan, Executive Assistant to Prof. Vijay Varadharajan) and must include your full name and your student id number.

Other Material

References


• Dieter Gollman, Computer Security, John Wiley

• Simson Garfinkel and Gene Spafford, Practical Unix Security, O'Reilly & Associates, Inc.


• Ross Anderson, Security Engineering, John Wiley, 1st or 2nd Edition

Tentative Lecture Schedule ITEC 852 S2 2014 (may vary depending upon progress)

• 4 Aug: Lecture 1: Introduction: Cyber Security Trends and Concepts

• 11 Aug: Lecture 2: Security Architecture

• 18 Aug: Lecture 3: Threat Modelling

• 25 Aug: Lecture 4: Cryptography and Key Management

  • Assignment Handed Out

• 1 Sept: Lecture 5: Security Protocols

• 8 Sept : Lecture 6: Access Control

• 14 Sept/15 Sept: ASSIGNMENT SUBMISSION

• 15 Sept: Lecture 7: Operating Systems Security/Distributed Systems Security

  • Assignment Solution Session/ Group Project Allocation

• 6 Oct: Public Holiday

• 13 Oct: Lecture 8: Distributed Systems Security/Network Security

• 20 Oct: Lecture 9: Network Security/Trusted Computing

• 26 Oct/27 Oct : PROJECT REPORT SUBMISSION

• 27 Oct: Lecture 10: Group Project Presentation

• 3 Nov: Lecture 11: Group Project Presentations

• 10 Nov: Lecture 12: Revision
Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:


In addition, a number of other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student_conduct/](https://students.mq.edu.au/support/student_conduct/)

Late Submissions

No extensions will be granted. Students who have not submitted the task prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

Student Support

Macquarie University provides a range of support services for students. For details, visit [http://students.mq.edu.au/support/](http://students.mq.edu.au/support/)

Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser
Graduate Capabilities
PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

**Learning outcomes**

- Analyse key security requirements and trends in a distributed networked computing environment
- Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
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- Analyse the security threats and develop security architecture and functionalities to counteract the security threats

**Assessment tasks**

- Exam
- Group Project
- Assignment
PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Analyse key security requirements and trends in a distributed networked computing environment
- Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
- Evaluate authentication and access control security functionalities in distributed systems and networks
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Assessment tasks

- Exam
- Group Project
- Assignment

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Analyse key security requirements and trends in a distributed networked computing environment
- Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
- Evaluate authentication and access control security functionalities in distributed systems and networks
• Apply security techniques and mechanisms to develop security protocols
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats

Assessment tasks

• Exam
• Group Project
• Assignment

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

• Analyse key security requirements and trends in a distributed networked computing environment
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats

Assessment tasks

• Exam
• Group Project

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues.

This graduate capability is supported by:

Learning outcomes

• Analyse key security requirements and trends in a distributed networked computing environment
• Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
• Analyse the security threats and develop security architecture and functionalities to counteract the security threats

Assessment tasks

• Exam
• Group Project

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

• Analyse key security requirements and trends in a distributed networked computing environment
• Develop and/or advance skills of research and critical analysis in a manner consistent with the completion of a postgraduate degree.
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Assessment tasks

• Exam
• Group Project