<table>
<thead>
<tr>
<th>Module Code</th>
<th>CS7NS5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Name</td>
<td>Security and Privacy</td>
</tr>
<tr>
<td>ECTS Weighting</td>
<td>5 ECTS</td>
</tr>
<tr>
<td>Semester taught</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Module Coordinator/s</td>
<td>Dr. Stephen Farrell</td>
</tr>
</tbody>
</table>

**Module Learning Outcomes**

On successful completion of this module, students will be able to:

- **LO1.** Discuss information security and demonstrate an understanding of the context in which information security operates in terms of safety, environmental, social and economic aspects;
- **LO2.** Analyse, assess and choose among techniques for mitigating important privacy threats through appropriate security controls, namely the application of cryptographic primitives;
- **LO3.** Assess both the risks and threats associated with data security, and assess how the relevant legislative and regulatory frameworks apply;
- **LO4.** Reason about issues of privacy with respect to data release.

**Module Content**

The objectives of this module are: to develop an in-depth understanding of risk, data privacy, threats and risks of security breaches, an awareness of computer security (cryptographic) and protocol techniques, and an ability to make appropriate decisions about securing data.

Specific topics covered include:

- Risk analysis, System and Network Security
- Threats: Malware, SQL Injection and Cross-Side Scripting Attacks, Buffer Overflows, Botnets
- Cryptography: Hash Functions, Symmetric and Asymmetric Algorithms, Key Agreement
- Internet Security and security standards: Public Key Infrastructure, Transport Layer Security (TLS), the e-mail ecosystem, the Domain Name System (DNS) and DNSSEC.
- Privacy: Email, Web and DNS privacy mechanisms and their impacts

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[1] TEP Glossary
### Teaching and Learning Methods

#### Lectures

### Assessment Details

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Brief Description</th>
<th>Learning Outcomes Addressed</th>
<th>% of total</th>
<th>Week set</th>
<th>Week due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination</td>
<td>2 hour written examination</td>
<td>e.g. LO1, LO2, LO3, LO4, LO5</td>
<td>80%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Essay</td>
<td>2x Mid-Term Assignment</td>
<td>e.g. LO5, LO6</td>
<td>20%</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

### Reassessment Details

- Examination (2 hours, 100%)

### Contact Hours and Indicative Student Workload

- **Contact Hours (scheduled hours per student over full module), broken down by:**
  - lecture: 33 hours
  - laboratory: 0 hours
  - tutorial or seminar: 0 hours
  - other: 0 hours

- **Independent study (outside scheduled contact hours), broken down by:**
  - preparation for classes and review of material (including preparation for examination, if applicable): 36 hours
  - completion of assessments (including examination, if applicable): 36 hours

- **Total Hours**: 105 hours

### Recommended Reading List

Module materials are all on-line and updated regularly at:
- [https://down.dsg.cs.tcd.ie/cs7053/](https://down.dsg.cs.tcd.ie/cs7053/)
- [https://github.com/sftcd/cs7053](https://github.com/sftcd/cs7053)

### Module Pre-requisites

- **Prerequisite modules**: None
- **Other/alternative non-module prerequisites**: basic knowledge of programming, networking and Internet protocols.

### Module Co-requisites

- None

### Module Website

- [https://down.dsg.cs.tcd.ie/cs7053/](https://down.dsg.cs.tcd.ie/cs7053/)

### Last Update

- 08/04/2019 by Stephen Farrell

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2 [TEP Guidelines on Workload and Assessment](#)