<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</td>
</tr>
<tr>
<td>Term</td>
<td>HT</td>
</tr>
<tr>
<td>Contact Hours</td>
<td>2 lecture hours per week</td>
</tr>
<tr>
<td>Module Personnel</td>
<td>Assistant Professor Hitesh Tewari</td>
</tr>
</tbody>
</table>

### Learning Outcomes

On successful completion of this module a student will be able to:

- NS5LO1 discuss information security and demonstrate an understanding of the context in which information security operates in terms of safety, environmental, social and economic aspects;
- NS5LO2 analyse, assess and choose among techniques for mitigating important privacy threats through appropriate security controls, namely the application of cryptographic primitives;
- NS5LO3 assess both the risks and threats associated with data security, and assess how the relevant legislative and regulatory frameworks apply;
- NS5LO4 reason about issues of privacy with respect to data release.

### Module Learning Aims

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

### Module Content

Specific topics addressed in this module include:

- **Cryptography**
  - Symmetric Key Crypto - DES and AES
  - Asymmetric Key Crypto - RSA, DLP, ECC
- **Privacy**
  - Privacy Laws Around the World
  - US and EU Data Protection Laws
  - Machine readable terms and conditions
  - User control over privacy settings
- **Internet Security**
  - Digital Signatures
  - X.509 Certificates and Public Key Infrastructure
  - Secure Sockets Layer (SSL)
- **Authentication**
  - Two-Factor Authentication
  - Biometrics
- **Digital Rights Management (DRM)**
  - Licensing and Enforcement
  - Watermarking
- **Cloud Security**
  - Multi-tenancy Issues
  - Virtualisation System Security Issues, Vulnerabilities and Attacks
  - Legal and Compliance Issues
  - Auditing
- **Social Networks and Privacy**
- **Machine Security**
  - Malware, SQL Injection and Cross-Side Scripting Attacks
  - Buffer Overflows
  - Botnets
- **Electronic Payment Systems**
  - Macro and Micropayments
| Assessment Details | Coursework 20%  
|                   | Examination 80%  
|                   | o E-Cash, Credit and Debit Cards  
|                   | o Bitcoin and Blockchains  
