



## Cybersecurity

Presented by the School of Information Technology, University of Pretoria

3 ECSA CPD Points

The objective of the **Cybersecurity** short course is to give you first-hand exposure to the basics of Cybersecurity. The course will start off by giving the delegates guidance on how to think like a cybersecurity expert, in other words how does one analyse and minimise the risk of security incidents appearing in an organisation. Explaining the fundamental concepts of threats, vulnerabilities, risks and countermeasures will do this. This is then followed up with explaining the different cybersecurity services. These services include identification and authentication, authorisation, confidentiality, integrity and privacy. The mechanisms that are used to implement the different security services, such as encryption and hash-codes, are discussed.

The course includes multiple practical hands-on sessions to demonstrate all concepts discussed in the course. Frameworks and standards such as the NIST Framework and ISO 27 000 are discussed and used in an exercise to analyse a company and make recommendations for security improvements.

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## Course content

- Introduction: Current state of cybersecurity in South Africa and globally
- Thinking like a cybersecurity expert. Understanding the cybersecurity landscape
- Information security service 1: Identification and authentication
- Endpoint protection
- Information security service 2: Authorisation
- Setting up access control lists: Windows/Linux/Mac etc.
- Information security service 3: Confidentiality
- Information security service 4: Integrity
- Information security service 5: Availability
- Information security service 6: Privacy
- NIST Cybersecurity Framework: Putting it all together

## Course fees

### R11 250.00 per delegate (VAT incl.)

Course fees include all course material, refreshments and lunch during contact days.

**Course fees must be paid in full 14 days prior to course start dates. Proof of payment can be submitted to [enrolments@enterprises.up.ac.za](mailto:enrolments@enterprises.up.ac.za).**

## Admission requirements

Prospective delegates should at least have a matric qualification and five years' relevant work experience, or any Bachelor's degree. The course would benefit project managers, staff in network operations, computer technicians, M&V professionals and ICT Professionals.

## Accreditation and certification

Enterprises University of Pretoria (Pty) Ltd is wholly owned by the University of Pretoria. As a public higher education institution, the University of Pretoria functions in accordance to the Higher Education Act 101 of 1997. Enterprises University of Pretoria offers short courses on behalf of the University and these short courses are not credit-bearing, and do not lead to formal qualifications on the National Qualifications Framework (NQF) – unless stated otherwise. Delegates who successfully complete a short course and comply with the related assessment criteria (where applicable) are awarded certificates of successful completion and/or attendance by the University of Pretoria.

## Registration and enquiries

### Client Information Centre

Tel: +27 (0)12 434 2500

Email: [info@enterprises.up.ac.za](mailto:info@enterprises.up.ac.za)

## Course presenters



### Prof Jan Eloff

**Jan Eloff** obtained a PhD (Computer Science) from the University of Johannesburg. He is a NRF-rated researcher who is a leading expert in cybersecurity with more than 32 years industrial, academic, consulting and research experience.

At the University of Pretoria he is currently appointed as a Full Professor in Computer Science, and he is one of the founders of the Information and Computer Security Architectures (ICSA) research laboratory, which is part of the Department of Computer Science.



### Prof Hein Venter

**Hein Venter** received a PhD (Computer Science) from the University of Johannesburg, where he worked as a lecturer from 1998 to 2002. He is the research group leader of the Digital Forensic Science (DigiForS) Research Group

at the University of Pretoria. He is also a founding member of the ISSA Conference in 2001.

His research interests lies in Digital Forensics and Cyber Security.

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## Course outline

DAY 1		
Time	Topic	Presenter
08:45– 09:00	Welcome	Jan Eloff
09:00– 10:00	<b>Lecture 1:</b> Introduction Current state of cybersecurity in South Africa and globally  NIST Cybersecurity Framework <ul style="list-style-type: none"> <li>• <b>Brief overview:</b> Identify/protect/detect/respond/recover</li> </ul>	Jan Eloff
10:00 – 10:45	<b>Lecture 2:</b> Understanding the cybersecurity landscape  The building blocks: <ul style="list-style-type: none"> <li>• CIA – Confidentiality/integrity/availability</li> <li>• Threats</li> <li>• Vulnerabilities</li> <li>• Risks</li> <li>• Countermeasures</li> </ul>	Jan Eloff
10:45 – 11:00	Break	
11:00 – 11:45	<b>Lecture 3:</b> Information security service 1: Identification and authentication <ul style="list-style-type: none"> <li>• Digital identity management/digital certificates</li> <li>• Passwords and password tools</li> <li>• Phishing</li> <li>• Anti-virus</li> <li>• Digital certificates</li> </ul>	Jan Eloff Hein Venter
11:45 – 12:30	<b>Practical Session 1:</b> Endpoint protection <ul style="list-style-type: none"> <li>• Desktop (Firewall)</li> <li>• Operating system (iOS, Android)</li> </ul>	Hein Venter
12:30 – 13:30	Lunch	
13:30 – 14:30	<b>Practical Session 1:</b> Endpoint protection (continued) <ul style="list-style-type: none"> <li>• Browser (Internet Explorer, Firefox)</li> <li>• Network (Intrusion detection)</li> </ul>	Hein Venter

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Time	Topic	Presenter
14:30–14:45	Break	
14:45–15:30	<b>Lecture 4:</b> Information security service 2: Authorisation <ul style="list-style-type: none"> <li>• Basic access control models – military vs. commercial models</li> <li>• Concept of “least privilege” and “separation of duties”</li> <li>• Role-based access control</li> </ul>	Jan Eloff
15:30–16:15	<b>Practical Session 2:</b> Setting up access control lists Windows/Linux/Mac etc.	Hein Venter

## DAY 2

Time	Topic	Presenter
09:00–09:15	Welcome/housekeeping	Jan Eloff
09:15–10:45	<b>Lecture 5:</b> Information security service 3: Confidentiality <ul style="list-style-type: none"> <li>• Understanding the basics of cryptosystems               <ul style="list-style-type: none"> <li>• Normal (symmetric crypto)</li> <li>• Private/public key crypto (asymmetric crypto)</li> </ul> </li> <li>• Internet proxy firewalls</li> </ul>	Jan Eloff Hein Venter
10:45–11:00	Break	
11:00–12:30	<b>Practical Session 3</b> <ul style="list-style-type: none"> <li>• Using crypto tools</li> <li>• Setting up a VPN</li> <li>• Penetration testing</li> </ul>	Hein Venter
12:30–13:30	Lunch	
13:30–13:45	<b>Lecture 6:</b> Information security service 4: Integrity <ul style="list-style-type: none"> <li>• Different ways of implementing integrity</li> <li>• Hash codes/SHA etc.</li> <li>• Malware protection</li> </ul>	Jan Eloff Hein Vente
13:45–14:30	<b>Practical Session 4</b> <ul style="list-style-type: none"> <li>• Vulnerability scanning</li> <li>• Using file checkers etc.</li> </ul>	Hein Venter
14:30–14:35	Break	

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Time	Topic	Presenter
14:45–16:15	<b>Lecture 7:</b> Information security service 5: Availability <ul style="list-style-type: none"> <li>• Disaster recovery planning/contingency management</li> <li>• Anonymiser network monitoring</li> <li>• Honeypots</li> <li>• Incident response and event handling</li> </ul>	Hein Venter

## DAY 3

Time	Topic	Presenter
09:00–09:15	Welcome/housekeeping	Jan Eloff
09:15–10:45	<b>Lecture 8:</b> Information security service 6: Privacy <ul style="list-style-type: none"> <li>• Privacy models</li> <li>• Social media platforms and browser privacy settings</li> <li>• Privacy enhancing technologies (PET)</li> <li>• Privacy preservation data mining</li> </ul>	Jan Eloff
10:45–11:00	Break	
11:00–12:30	<b>Practical Session 5</b> <ul style="list-style-type: none"> <li>• Social media platform (Twitter) and browser privacy settings</li> <li>• Anonymisation of data</li> </ul>	Hein Venter
12:30–13:30	Lunch	
13:30–14:45	<b>Lecture 9:</b> NIST Cybersecurity Framework: “Putting it all together” <ul style="list-style-type: none"> <li>• Brief overview: Identify/protect/detect/respond/recover</li> <li>• All work done over the three day course mapped onto the NIST Framework</li> <li>• Show how the following fit into the NIST Framework:               <ul style="list-style-type: none"> <li>• ECT Act in South Africa and EU Data Protection Act</li> <li>• POPI Act</li> <li>• Governance model</li> <li>• ISO27000 family of standards for Cybersecurity/ information security</li> </ul> </li> </ul>	Jan Eloff
14:45–15:00	Break	
15:00–17:00	<b>Practical Session 6</b> Use the NIST Framework – Analyse a company and make improvement recommendations based on NIST/ISO27000/Legal/ etc.	Jan Eloff Hein Venter

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