



IC3 - Network Security

M.Sc. in Information Security
Royal Holloway, University of London
2007-2008

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IC3 - Network Security

Introduction and
Administrative Matters

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Contact Information / Administrative



- IC3 module leaders:
 - Stephen Wolthusen (McCrea 353)
 - stephen.wolthusen@rhul.ac.uk
 - Allan Tomlinson (McCrea 350)
 - Allan.Tomlinson@rhul.ac.uk
 - <http://personal.rhul.ac.uk/umai/274/>
- Handouts
 - Usually at the beginning of the lecture
 - Owing to my being overseas last week, there will be a double helping next week – see the course web page in the meantime

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IC3 Web Page



- Course web page:
 - <http://www.isg.rhul.ac.uk/msc/teaching/iy5511>
(additional module details at <http://www.isg.rhul.ac.uk/node/186>)
 - just navigate from www.isg.rhul.ac.uk
- This should be your first port of call for all course-related information:
 - electronic copies of slides and lecture notes.
 - additional resources.
 - recommended and further reading – whitepapers, textbooks, primary literature.
 - details of tutorials, compulsory coursework, etc.

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IC3 Tutorials



- IC3 tutorials will take place as follows:
 - Full-time students: Tuesdays
 - 30th October (tentative), 20th November, 11th December.
 - Part-time students: Monday lunchtimes:
 - 29th October, 19th November, 10th December.
- Tutorials groups for full-time students will be arranged and announced shortly.
- Part-time students will have tutorials as one group.

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Office Hours



- Office hours:
 - opportunity for students to have 1-1 time or meetings in small groups with IC3 module leaders.
 - Stephen:
 - Tuesday afternoons (except during weeks when tutorials are in session).
 - otherwise by mutual arrangement (especially for part-time students).
 - Use email to arrange meetings: My door is generally open, but I need to schedule carefully
 - Allan:
 - Thursdays 10-12.

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Additional Support (1)



- Weekly exercise sheets:
 - Optional (except for compulsory coursework), but highly recommended.
 - Will be posted on IC3/IY5511 web site.
 - Three types of questions:
 - Basic: Intended to test your knowledge;
 - Intermediate: To extend your knowledge beyond the lecture notes;
 - Advanced: to lead you towards research issues and potential dissertation topics.
 - Exercises can be discussed in tutorials and during office hours.

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Additional Support (2)



- Thursday afternoon industrial lectures.
 - see ISG website for details of schedule.
- Library contains many useful textbooks, journals, standards, etc:
 - get yourself a library card.
 - learn how to use search and booking facilities.
 - <http://www.rhul.ac.uk/information-services/library>
- Option: Basic Networking Tutorial
 - No dates scheduled yet: Interest/need?
 - Two sessions (approx. 4-5h total)
 - Timeframe: Late Oct./early Nov.

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Additional Support (3)



- Practical sessions (labs)
 - Will be aimed at beginner level
 - Led by Allan Tomlinson
 - Provisional dates:
 - Thursday, October 18: 0900-1200: Basic network security, fingerprinting
 - Thursday, November 1: 0900-1200: Introduction to penetration testing and the virtual penetration testing lab
 - Thursday, November 15: 0900-1200 (TENTATIVE): Host enumeration and vulnerability analysis
- This would be broken into 2 1.5h sessions per day (40 students per session) in the Tolansky lab.

Course Textbook(s)



This year, we are recommending:

William Stallings, *Network security essentials (International edition)*, Prentice-Hall, 2002. ISBN: 0131202715

Also of interest:

Rolf Oppliger, *Internet and Intranet Security (2nd edition)*, Artech House, 2002. ISBN: 0890068291

D. Comer, *Internetworking with TCP/IP Vol. 1 (4th edition)*, Prentice-Hall, 2000. ISBN 0130183806

W. R. Stevens, *TCP/IP Illustrated, Vol. 1: The Protocols* Addison-Wesley, 1993. ISBN 0201633469

See the IC3 website for more suggestions.

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Assessment



- Assessment will be in two forms.
- Compulsory coursework.
 - Exam-style questions will be set in weeks 4 and 9.
 - Your attempts will be collected in weeks 5 and 10.
 - They will be marked and returned to you in weeks 6 and 11.
 - Important means for you to gauge your progress.
 - We will discuss solutions in tutorials and office hours.
- Examination in May
 - 2 hour exam, 5 questions of equal weight, attempt 3 from 5.
 - If you're worrying about this already, you're worrying about the wrong thing!
- Coursework does **not** contribute to your final module mark.

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Overview of IC3



Main themes:

- Introduction to Networking and Network Security
 - Secure Protocols
 - Security for Wireless Networks – GSM/3G and Wireless LANs
 - Firewalls, Intrusion Detection Systems and beyond.
 - Biometrics and e-mail security.
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- **Not** a course on hacking, though hacking will be mentioned; **not just** a course on Internet Security, though that will be a strong theme.

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Schedule of Lectures I (tentative)



- Lectures 1&2 (1/10, 8/10): *Introduction to Networking and Network Security*
- Lecture 3 (15/10): *Biometrics*
- Lecture 4 (22/10): *Introduction to Secure Protocols and Kerberos*
- Lecture 5 (29/10): E-mail security
- Lecture 6 (5/11): Wireless LAN security (Matthew Joyce)
- Lecture 7 (12/11): GSM/3G Security

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Schedule of Lectures II (tentative)



- Lecture 8 (19/11): Network security protocols using IPSec as an exemplar
- Lecture 9 (26/11): Network security protocols (continued) and routing security
- Lecture 10 (3/12): Firewalls
- Lecture 11 (10/12): Intrusion Detection and Prevention Systems

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Expectations – Part I



We will endeavor to:

- arrive on time for lectures
- produce sufficient lecture notes (and **usually** provide handouts)
- keep the course website up-to-date and equipped with interesting links (but make sure to check attachments – that is an artefact of the CMS)
- arrange tutorials, office hours and any additional support as necessary
- make a best effort to answer relevant questions in lectures
- set a fair exam

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Expectations – Part II



Basic etiquette:

- arrive on time for lectures
- return on time from coffee breaks at the stipulated time
- refrain from using cell phones and other types of electronic gadgets – including laptops
- take just one set of printed lecture notes each week
- use the web site and other electronic resources as your first port of call
- ask questions – that's what we're here for!

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Expectations – Part III



- The lecture notes are meant to be a starting point, not your sole reference for this course
- This is a M.Sc. level course – you are not being spoon-fed everything you need to know and must fill in the gaps independently
- Exam questions will include questions where you will be expected to **think**, rather than just regurgitate