Course Outline

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Course Description and Objectives:
The purpose of this course is to present recent advanced methods to add security and privacy to
electronic services (e-services) (e.g. e-commerce, e-learning) including web-based services. The
course looks at the research literature for new solutions to complement traditional or current
security systems. Traditional security systems will be presented as well since not all students will
be familiar with them. This is NOT a programming course. Nor is it a detailed protocols course.
Protocols will only be examined at a high level. The student who successfully completes this
course will:

- Understand the nature of e-services.
- Understand the security, privacy, and trust requirements of e-services.
- Understand how most of these requirements can be met, using traditional and advanced
  security and privacy methods.
- Understand the research challenges of satisfying the remaining requirements.

Prerequisites:
SYSC 5207 (ELG 6127) or equivalent or permission of the instructor. SYSC 5207 (ELG 6127)
may be taken concurrently if available. In addition, a basic knowledge of methods for electronic
security would be ideal but not necessary.

Students who have not satisfied the prerequisites for this course must either a) withdraw from the
course, or b) obtain a prerequisite waiver from the Registrar's office, or c) will be deregistered
from the course after the last day to register for courses in the Fall term.

Textbook: None (no single textbook covers all the different topics in this course). However,
substantial traditional material will be taken from reference [1] below.

References: (subject to change - most of the papers will be available online) [1] and [2] should
be in the bookstore if you wish to purchase them.

[4] Department of Justice, Privacy provisions highlights,
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[7] http://www.w3c.org/P3P
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Grading Scheme:
- Two assignments (30%):
- Term project (30%): requires oral presentation and final report
- Final exam (40%)

Laboratory Sessions: N/A

Final Exam: 3-hour closed book

Students with Disabilities:
Students with disabilities who require academic accommodations in this course are encouraged to contact the Paul Menton Centre for Students with Disabilities (500 University Centre) to complete the necessary forms. After registering with the Centre, make an appointment to meet with me in order to discuss your needs at least two weeks before the first in-class test or CUTV midterm exam. This will allow for sufficient time to process your request. Please note the following deadlines for submitting completed forms to the PMC for formally scheduled exam accommodations: November 5th, 2004 for fall and fall/winter term courses, and March 11, 2005 for winter term courses.

Plagiarism:
Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.

Week-by-Week Material (subject to change):

1. (Sept 13, 15) Course overview, introduction to e-services

2. (Sept 20, 22) E-service architectures, e-commerce, e-learning, e-government, e-health, web services; the need for security, privacy, and trust

3. (Sept 27, 29) Security and privacy requirements for e-services: e-commerce, e-learning, e-government, e-health, web services; first assignment issued (Sept 29)

4. (Oct 4, 6) Fundamental traditional and advanced security and privacy tools for e-services, including encryption, MACs, hash functions, digital signatures, X.509, IPSec, Kerberos, SSL, VPN, firewalls

5. (Oct 11, 13) Oct 11: no class; Oct 13: Fundamental traditional and advanced security and privacy tools for e-services – cont’d
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6. (Oct 18, 20) Fundamental traditional and advanced security and privacy tools for e-services – cont’d; first assignment due (Oct 18); second assignment issued (Oct 20)

7. (Oct 25, 27) Fundamental traditional and advanced security and privacy tools for e-services – cont’d

8. (Nov 1, 3) Advanced security/privacy techniques for e-services (weaknesses of traditional techniques, onion routing); term project assigned (Nov 1)

9. (Nov 8, 10) Advanced security/privacy techniques for e-services (onion routing, privacy policies and their specification); second assignment due (Nov 8)

10. (Nov 15, 17) Advanced security/privacy techniques for e-services (Nov 15: privacy policy negotiation; Nov 17: security and privacy for Web Services)


12. (Nov 29, Dec 1) term project presentations (attendance mandatory)

13. (Dec 6) Application of security and privacy to e-services: e-learning; Research challenges; term project report due

N.B.: Some adjustment of the Nov and Dec schedule may be necessary depending on the number of students in the course.