1. Will this new course affect a current program?  Yes  No

If "yes", has a Program Revision Form been submitted concurrently?  Yes  No

2. Teaching Department:  Computer Science

3. Administering Faculty/Unit:  Graduate and Postdoctoral Studies

4. Campus (Downtown, Macdonald, Off Campus, Distance Ed, Other – specify)
   - Downtown

5. Effective Term of Implementation (Ex. Sept. 2004 = 200409)
   - Term: 200509

6. Course Title (Limit 30 Characters) - required for all courses:
   - Quantum Cryptography

7. Course Number(s)
   - Subject/course number: COMP 649
   - Course(s) Span:
     - 1 term
     - 2 consecutive terms (D1, D2)
     - 2 non-consecutive terms (N1, N2)
     - 3 terms (J1, J2, J3)

8. Course Title to Appear in the Calendar (optional)
   (Limit 59 characters): Note: This can ONLY be an expansion of word(s) abbreviated in the 30 character course title above.

9. Credit Weight (or CEU's for non-credit CE courses):
   - 4

10. Schedule Type(s):
    (Enter all that apply – see form, STVSCHD in Banner for a complete list.)
    (i.e. Lecture, Labs, Tutorial)
    | Hours per Week | Hours per Week | Hours per Week |
    |----------------|---------------|---------------|
    | Lecture        | 3             |                |
    | Research       | 3             | 6             |
    | Research       |               |               |
    | Research       |               |               |
    | Research       |               |               |
    | Total Hours per Week: | 6 |
    | Total Number of Weeks: | 13 |

This is a high level graduate Course introducing students to research in the area. Its difficulty justifies the 4 credits.

11. Projected Enrolment:
   - 20

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AC-04-69

New Course Proposal Form

(09/2003)
12. Prerequisite(s) (Courses or Tests)
Specify course number(s) or name(s) of test(s):

COMP 547 and permission of instructor

If the student does not have a prerequisite should web registration be blocked?

☐ Yes ☐ No

If “Yes” complete A and B:

A. Indicate minimum grade or test score(s) the student must attain in prerequisite course(s) or test(s):

B. Can the prerequisite course(s) or test(s) be taken in the same term as this course?

☐ Yes ☐ No

13. Corequisite(s) Course Number(s):
Specify course number(s) and title(s):

If the student does not register for the corequisite in the same term should web registration be blocked?

☐ Yes ☐ No

14. Consultation Reports Attached

☐ Yes ☐ N/A

15. Additional Course Charges (must be approved by the Fee Policy Committee)
Description of Fee
(e.g. screening fee) Amount

16. Requires Teaching, Physical, or Financial Resources
Not Currently Available (attach explanation)

☐ Yes ☐ No

17. Other Information (specify):

18. Course Description
(as it will appear in the Calendar [maximum 50 words]):
(N.B. Faculty of Medicine must append complete course outline)

Review of the basic notions of cryptography and quantum information theory. Quantum key distribution and its proof of security. Quantum encryption, error-correcting codes and authentication. Quantum bit commitment, zero-knowledge and oblivious transfer. Multiparty quantum computations.

19. Supplementary information to appear in the Calendar in addition to the course description.
Such as: registration restriction(s), prerequisite(s), corequisite(s), equivalent course(s), contact hours, enrolment limitations, language of instruction etc.
Please enter the information as it should appear in the calendar notes.

An introduction to the notions of Information Theory is required.

20. Rationale

With the new hire of my colleague Patrick Hayden who will be teaching a graduate course on Quantum Information Theory it will now be possible to cover the topic of Quantum Cryptography, the core of my current research. In the past it was nearly impossible to get there because too much background material would have to be covered within the course itself. My graduate teaching will be alternating in the future years between COMP-647 ADVANCED CRYPTOGRAPHY (a classical cryptography advanced course) and this newly created COMP-649.
### INFORMATION FOR ADMISSIONS, RECRUITMENT & REGISTRAR’S OFFICE

To be completed by the Faculty

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For Continuing Education Use

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### 21. Approvals:

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<th>Departmental Chair</th>
<th>Other Faculty</th>
<th>Curric/Academic Committee</th>
<th>Faculty</th>
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**Departmental Contact Person**
(name/phone/email)