LONG SIGNATURE SHEET

Proposal Number: SIS 2010-09-14

Proposal Title: Usable Security and Privacy (ITIS 6420/8420)

UNC CHARLOTTE

Originating Department: Software and Information Systems

TYPE OF PROPOSAL: UNDERGRADUATE_____   GRADUATE__X__   UNDERGRADUATE & GRADUATE____
(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
11/18/11	11/18/11	11/18/11	Approved	**DEPARTMENT CHAIR** Dr. Bill Chu
11/18/11	11/18/11	11/18/11	Approved	**COLLEGE CURRICULUM COMMITTEE CHAIR** Dr. Anthony Fodor
11/18/11	11/18/11	11/18/11	Approved	**COLLEGE FACULTY CHAIR (if applicable)** Dr. Barry Wilkinson
12/5/11	12/5/11	12/5/11	Approved	**COLLEGE DEAN** Dr. Teresa Dahlberg
			Approved	**GENERAL EDUCATION** (for General Education courses)
			Approved	**UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR** (for undergraduate courses)
12/5/11	2-7-12	2-7-12	Approved	**GRADUATE COUNCIL CHAIR** (for graduate courses)
			Approved	**FACULTY GOVERNANCE ASSISTANT** (Faculty Council approval on Consent Calendar)
				FACULTY EXECUTIVE COMMITTEE (if decision is appealed)

New Graduate Course and Curriculum Proposal from the Department of Software and Information Systems

Title: **Usable Security and Privacy**

1. Proposal Summary and Catalog Copy

1. Summary

   The Department of Software and Information Systems proposes to add a new course to its graduate curriculum.

2. Proposed Catalog Copy

   ITIS 6420 Usable Security and Privacy (3) Prerequisite: ITIS 6200. Much of the work into security and privacy solutions ignore a critical element – the human who must interact with those solutions. In this course, we investigate privacy and security from a user-centered point of view. How do people think about privacy and security? How do they interact with current applications and solutions? What should be considered in designing user-friendly security systems? This course is designed to introduce students to a variety of usability and user interface issues related to privacy and security as well as examine potential designs and solutions. *(On demand)*

   ITIS 8420 Usable Security and Privacy (3) Prerequisite: ITIS 8200. Much of the work into security and privacy solutions ignore a critical element – the human who must interact with those solutions. In this course, we investigate privacy and security from a user-centered point of view. How do people think about privacy and security? How do they interact with current applications and solutions? What should be considered in designing user-friendly security systems? This course is designed to introduce students to a variety of usability and user interface issues related to privacy and security as well as examine potential designs and solutions. *(On demand)*

2. Justification

1. **Needs** There has been growing recognition of the importance of usability and human factors in privacy and security solutions. This course thus serves as a bridge between two important areas in the SIS department -- Information Security and Privacy, and Human Computer Interaction. There are several graduate courses that cover topics of security and privacy in the department, with significant focus on technology and solutions. The course on human computer interaction introduces the general design process and guidelines, but without specific focus on any one domain. Thus, this course presents the intersection of these two areas, where user issues in privacy and security are covered. The course was taught as a topics course in the fall of 2007 with 15

students and spring 2010 with 21 students, and received good feedback from both those in security and those in HCI.

2. **Student preparations.** This course is suitable for either privacy and security students who want to learn more about usability, and for HCI students who wish to study the issues in this specific domain. Thus, the course will not require any pre-requisites as it will benefit from students with both backgrounds and perspectives.

3. **Course level.** The course will cover user studies and design issues related to a number of privacy and security topics. Much of this material comes from recent research and surveys, and is thus appropriate as a graduate level course.

4. **Program Synergy** This course presents information at the intersection of two important areas in the department. Thus, it can serve students in multiple concentrations and research areas in our programs, bringing those students together to share and expand their expertise.

3. Impact

- **Target student population.** This course is primarily designed to serve the needs of the graduate population within the Department of Software and Information Systems, bringing together students with interests in privacy and security and Human Computer Interaction. This course may serve as an elective course for related disciplines, such as computer science and psychology. In addition, this course may serve the educational needs of local and regional professionals who are seeking knowledge on this important subject.

- **Effect on curricula**
  a) The course will be taught on demand.
  b) The addition of this course is not expected to significantly affect the offering of other courses because of increases in faculty size in response to enrollment increases.
  c) The course is not expected to significantly change the enrollment of other courses.
  d) This course will be added to the graduate MSIT concentrations of Information Security and Privacy, and Human Computer Interaction.

4. Resources Required to Support Proposal

1. Personnel

   Faculty qualified to teach this course include Dr. Heather Richter Lipford and Dr. Celine Latulipe.

2. Physical Facility

   No new capabilities are required.

3. Equipment and Supplies

   No new capabilities are required.

4. Computer

   No new capabilities are required.

5. Audio-Visual

   Current facilities are adequate to support this course.

6. Other Resources

   None identified.

5. Consultation with the Library and Other Departments or Units

1. Library Consultation

   Consultation was initiated on December 8, 2010 and completed on December 10, 2010.

2. Consultation with Other Departments or Units

   This course is not expected to overlap with other graduate courses on campus. Consultation with the following Departments was initiated on October 29, 2010:

   Department of Computer Science
   Department of Bioinformatics and Genomics

6. Initiation and Consideration of the Proposal

1. Originating Unit

   Approved by the Department of Software and Information Systems on November 23, 2010. Approved by the College of Computing and Informatics faculty on March 15, 2011.

2. Other Considering Units

   Consultation with the Departments of Computer Science and Bioinformatics and Genomics was initiated and completed on October 29, 2010.

3. Counsel on General Education (COGE)

   This proposal was not submitted to the COGE.

7. Attachments

1. **Course Number and Title:** ITIS 6420/8420 Usable Security and Privacy

2. **Catalog Description:** Much of the work into security and privacy solutions ignore a critical element – the human who must interact with those solutions. In this course, we investigate privacy and security from a user-centered point of view. How do people think about privacy and security? How do they interact with current applications and solutions? What should be considered in designing user-friendly security systems? This course is designed to introduce students to a variety of usability and user interface issues related to privacy and security as well as examine potential designs and solutions.

3. **Prerequisites:** ITIS 6200/8200

4. **Course objectives**
   - To bridge the areas of privacy, security, and usability.
   - To introduce usability issues in security and privacy technologies and solutions
   - To familiarize students with methods for designing and evaluating privacy and security technologies from a user centered point of view

5. **Instruction Method**
   - Lectures / guest lectures
   - In-class activities and discussions
   - Group project
   - Student demonstrations and presentations
   - Students in the 8420 version of the course will be required to perform additional readings and a presentation on an in-depth topic.

6. **Means of student evaluation** Student evaluation will be based upon the following:
   - Course midterm and final examinations
   - Group project
   - Participation in class discussions and activities

7. **University Policy:**
   - The course upholds all university academic integrity policies. Under no circumstances should a student present other people's work as his/her own.
   - Class attendance is mandatory, unless a student obtains written permission from the instructor.
   - Students will be assigned grades of A, B, C, or U

8. Suggested Text(s)

Security and Usability. Cranor & Garfinkel, eds. O'Reilly, 2005.

Iachello, G. and J. Hong. *End-User Privacy in Human-Computer Interaction.* Foundataions and Trends in Human-Computer Interaction 1 :1, Now Publishers, 2007.

Recent research papers from conferences in this area, such as from the Symposium on Usable Privacy and Security, or the Usable Security Workshop. Example papers include :

Garfinkel, S. and R. Miller. Johnny 2 : A User Test of Key Continuity Management with S/MIME and Outlook Express. In Proceedings of SOUPS 2005.

Camp, L. Jean, Mental Models of Privacy and Security. IEEE Technology & Society, 2006.

Edwards, W. K., Poole, E. S., and Stoll, J. 2008. Security automation considered harmful?. In *Proceedings of the 2007 Workshop on New Security Paradigms*(New Hampshire, September 18 - 21, 2007). NSPW '07. ACM, New York, NY, 33-42.

Kelley, P.G., Bresee, J., Cranor, L.F., Reeder, R.W. A "Nutrition Label" for Privacy. In Proceedings of Symposium on Usable Privacy and Security (SOUPS), 2009.

Cranor, L.F. A Framework for Reasoning About the Human in the Loop. In Proceedings of the Workshop on Usability, Psychology, and Security, 2008.

Wu, M., R. Miller, and S. Garfinkel. Do Security Toolbars Actually Prevent Phishing Attacks? In Proceedings of ACM Conference on Human Factors in Computing (CHI), April 2006.

Acquisti, A., and J. Grossklags. Privacy and Rationality in Individual Decision Making. IEEE Security & Privacy, 2005.

Palen, L., and P. Dourish. Unpacking Privacy for a Networked World. In Proceedings of Conference on Human Factors in Computing (CHI), April 2003.

Jensen, C., C. Potts, and C. Jensen. Privacy practices of Internet users : Self-reports versus observed behavior. International Journal of Human-Computer Studies 63, 2005.

Dourish, P., R. Grinter, J.D. de la Flor, M. Joseph. Security in the wild : user strategies for managing security as an everyday, practical problem. Pervasive and Ubiquitous Computing 8, 2004.

Stajano, F. Security for Whom ? The Shifting Security Assumptions of Pervasive Computing.

Botta, D., R. Werlinger, A. Gagne, K. Beznosov, L. Iverson, S. Fels, B. Fisher. Towards Understanding IT Security Professionals and Their Tools. In Proceedings of SOUPS 2007.

9. **Topical Outline:**

I. Overview of HCI and Methods
   A. Conducting usability studies in privacy and security
   B. Case studies

II. Usable Privacy and Security
   A. Human needs in privacy and security
   B. Mental models of privacy and security
   C. Psychological definitions and related work
   D. Privacy definitions and behaviors

III. Issues with Authentication
   A. Usability of various password schemes, memory and other human capabilities
   B. Usability of various biometrics, user impressions
   C. Usability of physical devices

IV. Trust and semantic attacks
   A. Online trust models
   B. Reasons why Phishing works, challenges in preventing
   C. Anti-phishing toolbars

V. Secure communications
   A. Usability of encrypted email schemes

VI. Privacy Policies
   A. Representing policies and P3P
   B. Usability of Web certificates
   C. Usability and interfaces for Website policies

VII. Designing for privacy and security
   A. Designing for different user roles within security and privacy
   B. User-centered design frameworks for security and privacy technologies
   C. Meeting the needs of security administrators

VIII. Usable privacy and security issues in mobile and ubiquitous computing

Long, Bruce

From: Ribarsky, William

Sent: Friday, October 29, 2010 1:19 PM

To: Mays, Larry; Long, Bruce

Cc: Chu, Bei-Tseng

Subject: RE: Consultation on SIS graduate course

Bruce,
CS also provides full support. Carry on!
Bill

Dr. William Ribarsky
Bank of America Endowed Chair in Information Technology
Chair, Computer Science Department
Director, Charlotte Visualization Center
College of Computing and Informatics
University of North Carolina at Charlotte
www.viscenter.uncc.edu

From: Mays, Larry
Sent: Fri 10/29/2010 11:53 AM
To: Long, Bruce; Ribarsky, William
Cc: Chu, Bei-Tseng
Subject: Re: Consultation on SIS graduate course

Dear Bruce,
Thank you for the opportunity to be consulted on your two new proposed courses, ITIS6420/ITIS8420. I agree that these are much needed and important courses for the SIS department and College. I enthusiastically support this proposal.
Lawrence Mays
Chair, Bioinformatics & Genomics

On 10/29/10 8:59 AM, "Long, Bruce" <nblong@uncc.edu> wrote:

Dr. Mays and Dr. Ribarsky,

SIS is proposing a new course on the aspects of usability and privacy (attached). We would appreciate your input.

Bruce Long
Assistant Chair & Director of Undergraduate Programs
Software and Information Systems Department
College of Computing and Informatics
University of North Carolina at Charlotte
9201 University City Blvd.
Charlotte, NC 28223
704-687-8441

Consultation on Library Holdings

To: Bruce Long
Assistant Chair & Director of Undergraduate Programs
Software and Information Systems Department
College of Computing and Informatics

From: Reese Manceaux

Date: December 9, 2010

Subject: **ITIS 6420/8420 --- Usable Security and Privacy**

Summary of Librarian's Evaluation of Holdings:

Evaluator: Reese A. Manceaux

Check One: Holdings are superior
☑   **Holdings are adequate (Please see comments)   YES**
Holdings are adequate only if Dept. purchases additional items.
Holdings are inadequate

Comments:

This is a proposal for an new graduate course. This course serves as a bridge between Information Security and human computer interaction. It deals with how people interact with applications and what should be considered in designing user-friendly security systems.

A small sampling of subject searching in the Atkins Library online catalog reveals the following holdings in support of these courses. (See the table that follows). A search of the related subjects retrieved over 9,000 pertinent items.

The Library has electronic access to periodicals and other electronic resources (e-books from Skillport/Books 24x7) that support these courses. Skillport, in particular, has an enormous catalog of computer related literature; especially up-to-date programming language books. In addition, the library has many electronic databases such as EBSCO databases (Cinahl), Springer Link, ACM Digital Library, IEEE Explore, ScienceDirect and Compendex (many with links to full text articles) supporting the overall Computing and Informatics program. The collection, especially if supported by ongoing purchases, is quite adequate to support this program.

Atkins Library Holdings in Areas Related to

Usable Security and Privacy

Library of Congress Subject Headings	Books	After Year 2001	Journals	Skillport /Books 24x7
Human-machine systems	99	12	11	
Human computer interaction	211	77	23	1552
Computer Networks – Security Measures	355	259	7	291
Data Protection	317	188	5	286
Computer Security	862	550	24	943
Internet – Security Measures	83	44		105
Privacy	778	366		2582
Privacy, Right of	705	331	3	
TOTAL	**3410**	**1827**	**73**	**5759**

Reese A. Manceaux
Evaluator's Signature

December 9, 2010