# Course Change Proposal

**Form A**

<table>
<thead>
<tr>
<th>Academic Group (College):</th>
<th>Academic Organization (Department):</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Computer Science</td>
<td>Computer Science</td>
<td>January 18, 2011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Course Proposal:</th>
<th>Department Chair:</th>
<th>Submitted by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>New __ Change <em>X</em> Deletion __</td>
<td>Cui Zhang</td>
<td>Isaac Ghansah</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Does this course fulfill a requirement for single-subject or multiple subject credential students?</th>
<th>For Catalog Copy:</th>
<th>Semester Effective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes __ No <em>X</em>_</td>
<td>Yes __ No __</td>
<td>Fall <em>X</em> Spring __, 2011</td>
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<tr>
<th>CCE (Extension):</th>
<th></th>
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<tr>
<td>Yes __ No __</td>
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This course replaces experimental course Subject Area *(prefix)* and Catalog Nbr *(course number)*:

If changing an existing course, should new version be considered a repeat of the original version? If so, the same Course ID will be maintained. If not, a new Course ID will be assigned. Note: In PeopleSoft terminology, the Course ID is the unique system identifier, not the Catalog Nbr.

| Yes _X_ | No __ |

### Change from:

<table>
<thead>
<tr>
<th>Subject Area <em>(prefix)</em> &amp; Catalog Nbr *(course no.):</th>
<th>Title:</th>
<th>Units:</th>
</tr>
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<tbody>
<tr>
<td>CSC 116</td>
<td>Cyber Forensics</td>
<td>3</td>
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### Change to:

<table>
<thead>
<tr>
<th>Subject Area <em>(prefix)</em> &amp; Catalog Nbr *(course no.):</th>
<th>Title:</th>
<th>Units:</th>
</tr>
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<tbody>
<tr>
<td>same</td>
<td>same</td>
<td>same</td>
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### JUSTIFICATION:

Change in prerequisite only. Current catalog prerequisite is CSC 114. The new catalog prerequisite is CSC 1 and one of the following: CSC 8 or CSC 8S or CSC 80; or instructor's permission. The current prerequisites are too restrictive. Experience has shown that no material from CSC 114 is needed in CSC 116. This change will allow non-major students more flexibility in taking this service course.

### NEW COURSE DESCRIPTION: *(Not to exceed 80 words, and language should conform to catalog copy. See http://www.csus.edu/ummanual/acad.htm - Guidelines for Catalog Course Description)*

### Note:

**Prerequisite:** CSC 1 and one of the following: CSC 8 or CSC 8S or CSC 80; or instructor's permission

**Enforced at Registration:** Yes _X_ No __

**Corequisite:**

**Enforced at Registration:** Yes __ No __

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<tr>
<th>Graded:</th>
<th>Instructor Approval Required?</th>
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<tbody>
<tr>
<td>Letter</td>
<td>Yes __ No __</td>
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<tr>
<td>Credit/No Credit</td>
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**Course Classification** *(e.g., lecture, lab, seminar, discussion)*:

**Title for CMS** *(not more than 30 characters)*

**Cross Listed?**

| Yes __ No __ |

If yes, do they meet together and fulfill the same requirement, and what is the other course?

**How Many Times Can This Course be Taken for Credit?**

Can the course be taken for Credit more than once during the same term? Yes __ No __
FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at http://www.csus.edu/acaf/example.htm

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

For whom is this course being developed?
- Majors in the Dept __  Majors of other Depts __  Minors in the Dept __  General Education __  Other __
- Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes ___  No ___
  If yes, identify program(s):

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes ___  No ___
  If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any).

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Accessibility: Following course approval, and prior to the start of the semester in which the new or revised course will be taught for the first time, an accessibility checklist [available at http://www.csus.edu/accessibility/checklist.html] shall be completed and submitted to the appropriate Dean's office. An accessible syllabus shall also be made available online, preferably prior to the start of that semester's open registration period.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:

<table>
<thead>
<tr>
<th>Department Chair:</th>
<th>Date:</th>
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<tr>
<td></td>
<td>2/15/2011</td>
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<tr>
<th>College Dean or Associate Dean:</th>
<th>Date:</th>
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<td>2/15/11</td>
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<tr>
<th>CPSP (for school personnel courses ONLY)</th>
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<td>2/15/11</td>
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<tr>
<th>Associate Vice President and Dean for Academic Programs</th>
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Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.

5/20/2010
COURSE DESCRIPTION

Dept., Number  CSC 116  Course Title  Cyber Forensics
Semester hours  3  Course Coordinator  Isaac Ghansah
URL (if any):  http://gaia.ecs.csus.edu/~ghansah/

Catalog Description

Fundamentals of computer forensics and cyber-crime scene analysis including laws, regulations, and international standards; formal methodology for conducting security incident investigations; categories of electronic evidence. The course includes projects involving digital forensic tools. Prerequisite: CSC 1 and CSC 8 or CSC 8S or CSC 80 or Instructor’s permission.

Textbook


References


Harlan Carvey, Windows Forensics and Incident Recovery, Addison-Wesley, 2005.


Course Goals

1. Enhance understanding of the concepts of computer system security models.
2. Study detection and prevention of intrusion and attacks.
4. Understand the legal issues involved in computer forensic analysis.
5. Use commercial and open-source computer forensics tools.
Prerequisites by Topic

Basic understanding of:
- Information Assurance and Security best practices.
- Threats, risks, and vulnerabilities to information systems; countermeasures available to address these threats.
- Web design and tools.
- Internet security.
- Host security.
- Tools for information security.
- Web client and server software.

Exposure to:
- TCP/IP protocol suite.
- Career paths in information security.
- Ethical issues related to information security.
- Web programming (e.g., Javascript, XML, etc).
- Web protocols (e.g., HTTP, TCP/IP).

Major Topics Covered in the Course

1. Introduction to forensics, overview of computer security law enforcement and cyber security (3 hours).
2. Computer security policies and guidelines (3 hours).
3. Cyber law and cyber crime (3 hours).
4. Storage device structure and organization (1 hour).
5. Intrusion detection investigation and incident response (5 hours).
6. Detection of covert channels and concealed data (2 hours).
7. Forensic duplication and analysis (3 hours).
8. Auditing and evidence handling (3 hours).
9. Network surveillance (3 hours).
10. Email forensics (3 hours).
11. Toolkits to collect forensic information from Windows/Linux/Unix environments (5 hours).
12. Case studies in Windows/Linux/Unix environments (5 hours).
13. Investigating Router attacks (3 hours).
Outcomes

*Thorough understanding of:*
- Structured security incident investigation.
- Preparation of electronic evidence.

*Basic understanding of:*
- Preservation of computer evidence and chain of custody.
- Commercial and open source forensics toolkits.
- Cyber law and policy.
- Six A’s of computer forensics: Assess, Acquire, Authenticate, Analyze, Articulate, and Archive.

*Exposure to:*
- How data are concealed and how to find such data.
- Presentation of electronic evidence in court.
- Expert witness testimony.

Laboratory Projects

1. Examine logs of: httpd, logon, failed logon, SMTP, system and tcpd (2 weeks).
2. Find hidden data in a binary file (image, audio or video) (1 week).
3. Duplicate storage media contents on disk, tape, CD, etc. (2 weeks).
4. Analyze storage media for evidence including erased and/or encrypted files (3 weeks).
5. Use commercial and open source forensics tools (3 weeks).

Estimated Curriculum Category Content (Semester hours)

<table>
<thead>
<tr>
<th>Area</th>
<th>Core</th>
<th>Advanced</th>
<th>Area</th>
<th>Core</th>
<th>Advanced</th>
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</thead>
<tbody>
<tr>
<td>Algorithms</td>
<td></td>
<td></td>
<td>Data Structures</td>
<td></td>
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<tr>
<td>Software Design</td>
<td></td>
<td></td>
<td>Prog. Languages</td>
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<tr>
<td>Comp. Arch.</td>
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Oral and Written Communications

Students will be required to research actual cases where computer forensics was used and give oral presentations and/or written reports.

Social and Ethical Issues

Class discussions on the information warfare arsenal and tactics of terrorists, criminals and foreign governments such as the “Code Red” worm; possible tactics of private companies to gain access to competitors’ systems to gain a technological advantage.
Theoretical Content

No significant component.

Problem Analysis

Each security incident will be analyzed in a methodical manner with the collection, preservation, and effective use of evidence ensured by addressing the three A’s of computer forensics: (a) Acquire the evidence without altering or damaging the original data; (b) Authenticate that the recorded evidence is the same as the original seized data; and (c) Analyze the data without modifying the recovered data.

Solution Design

Students will learn how to compose a computer security incident investigation report that can be used to document the analysis of security incidents.

/aa