NEW COURSE PROPOSAL

College: Engineering and Computer Science
Department: Computer Science

Note: Use this form to request a single course that can be offered independently of any other course, lab or activity.

1. Course information for Catalog Entry
   Subject Abbreviation and Number: CIT 360
   Course Title: CIT System Administration and Management
   Units: 3 units
   Course Prerequisites: CIT 210/L, CIT 270/L (if any)
   Course Corequisites: (if any)
   Recommended Preparatory Courses: (if any)

2. Course Description for Printed Catalog: Notes: If grading is NC/CR only, please state in course description. If a course numbered less than 500 is available for graduate credit, please state “Available for graduate credit in the catalog description.”

   Prequisites: CIT 210/L, CIT 270/L
   Overview of enterprise system architecture, principles and practices of systems administration and system management including firewalls and proxy servers; networked file systems; user account management; resources allocation, installation and configuration of operating systems, startup and shutdown, booting, performance monitoring, storage backup and restore; system administration tools; system maintenance, user support issues, web administration; integration of network, storage, system resources to meet user needs and enterprise goals and objectives, roles and responsibilities of a system administrator.

3. Date of Proposed Implementation: (Semester/Year): Fall / 2010 Comments

4. Course Level
   [ ] Undergraduate Only  [ ] Graduate Only  [ ] Graduate/Undergraduate

5. Course Abbreviation “Short title” (maximum of 17 characters and spaces)
   Short Title: CIT•S•Y•S•A•D•M•I•N

6. Basis of Grading:
   [ ] Credit/No Credit Only  [ ] Letter Grade Only  [ ] CR/NC or Letter Grade

7. Number of times a course may be taken:
   [ ] May be taken for credit for a total of 1 times, or for a maximum of 3 units
   [ ] Multiple enrollments are allowed within a semester

8. C-Classification: (e.g., Lecture-discussion (C-4).)
   [3] units @ [C-4]

9. Replaces Current Experimental Course?
   [ ] YES  [ ] NO
   Replaces Course Number/Suffix:
   Previously offered [ ] times.

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10. Proposed Course Uses: (Check all that apply)
[ ] Own Program:    [ x ] Major    [ ] Minor    [ ] Masters    [ ] Credential    [ ] Other
[ ] Requirement or Elective in another Program
[ ] General Elective
[ ] General Education, Section [ ]
[ ] Meets GE Information Competence (IC) Requirement
[ ] Meets GE Writing Intensive (WI) Requirement
[ ] Community Service Learning (CS)
[ ] Cross-listed with: (List courses) [ ]

11. Justification for Request: Course use in program, level, use in General Education, Credential, or other. Include information on overlap/duplication of courses within and outside of department or program. (Attach)

12. Estimate of Impact on Resources within the Department, for other Departments and the University. (Attach)
(See Resource List)

13. Course Outline and Syllabus (Attach) Include methods of evaluation, suggested texts, and selected bibliography. Describe the difference in expectations of graduates and undergraduates for all 400 level courses that are offered to both.

14. Indicate which of the PROGRAM’S measurable Student Learning Outcomes are addressed in this course. (Attach)

15. Assessment of COURSE objectives (Attach)
A. Identify each of the course objectives and describe how the student performance will be assessed
(For numbers 14 and 15, see Course Alignment Matrix and the Course Objectives Chart)

16. If this is a General Education course, indicate how the General Education Measurable Student Learning Outcomes (from the appropriate section) are addressed in this course. (Attach)

17. Methods of Assessment for Measurable Student Learning Outcomes (Attach)
A. Assessment tools
B. Describe the procedure dept/program will use to ensure the faculty teaching the course will be involved in the assessment process (refer to the university’s policy on assessment.)

18. Record of Consultation: (Normally all consultation should be with a department chair or program coordinator.) If more space is needed attach statement and supporting memoranda.

<table>
<thead>
<tr>
<th>Date</th>
<th>Dept/College</th>
<th>Department Chair/ Program Coordinator</th>
<th>Concur (Y/N)</th>
</tr>
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<tbody>
<tr>
<td>9/19/2008</td>
<td>Computer Science</td>
<td>Dept vote; Steven Stepanek</td>
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<tr>
<td>10/10/2008</td>
<td>Civil Engineering</td>
<td>Steve Gadomski</td>
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<tr>
<td>10/10/08</td>
<td>Manufacturing Systems Engineering &amp; Management</td>
<td>Bahzad Bavarian</td>
<td>Y</td>
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<td>10/10/2008</td>
<td>Mechanical Engineering</td>
<td>Hamid Johari</td>
<td>Y</td>
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<tr>
<td>12/2/2008</td>
<td>Information Systems</td>
<td>Paul Lazarony</td>
<td>Y</td>
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</table>

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Consultation with the Oviatt Library is needed to ensure the availability of appropriate resources to support proposed course curriculum.

Collection Development Coordinator, Mary Woodley
Please send an email to: collection.development@csun.edu

Date: 10/10/08

19. Approvals:

| Department Chair/Program Coordinator: | Date: [9/19/2008] |
| College (Dean or Associate Dean): | Date: |
| Educational Policies Committee: | Date: |
| Graduate Studies Committee: | Date: |
| Provost: | Date: |

11. Justification for Request

CIT 360 covers topics in the core curriculum in the proposed undergraduate program: Bachelor of Science in Computer Information Technology (BS CIT). This course includes knowledge areas specifically listed in the May 2008 IT model curriculum recommended by the ACM and IEEE Joint Task Force on Computing Curricula. These topics are not covered in any single class offered at Cal State Northridge. This course is an organic component of the BS CIT program.

12. Estimate of Impact on Resources within the Department, for other Departments and the University.

Facilities: This is a required class in the BS CIT program, requiring classroom facilities for 3 units of lecture per week. There is no need for a dedicated computing laboratory for this class. Students will use the general computer laboratory facilities available in the Computer Science for doing coursework assignments. At the start of this program, the existing labs within the computer science department will have sufficient capacity to meet the additional demand. We expect upper-division enrollment increases averaging 30-35 per year, and once the BS CIT program is well established there may be a need for an additional common laboratory to be shared by all CIT students from freshman to the graduating seniors. Our estimate is that the need for the additional lab capacity will arise in the 3rd or 4th year after the program start date (in 2012 or 2013). This long time horizon provides the department and the college sufficient time for appropriate resource planning.

Low enrollment: Typical of any start-up program enrollment in the first offerings of this class is expected to be low. However, the BS CIT program has been designed to attract students to the University and the College who would not otherwise be likely to attend Cal State Northridge. As a result, enrollment increases would be expected in courses incorporated in the program. Given the estimated program enrollment, and applying anticipated retention rates, completion rates, and proportions of first-time freshmen and transfer students, we would expect lower-division enrollment increases averaging 25-30 per year. The course would be considered fully-enrolled if enrollment reaches 25 students.

The department has sufficient full-time faculty to provide leadership and instructors to teach this course.

Notices explaining the role of the new course and the new BS CIT program as a whole will be sent to the advisors and counselors at Cal State Northridge, local high schools and community colleges.
13. Course Outline and Syllabus Include method of evaluation, suggested texts, and selected bibliography. Describe the difference in expectations of graduates and undergraduates for all 400 level courses that are offered to both.

CIT 360 (lecture/discussion)

Lecture Objectives
Introduce the student to the following topics
- Enterprise system architecture
- Network and system management
- Account management, user support and training
- Security planning and administration.
- Software installation and management
- System Management
- Roles and responsibilities of a system administrator

Potential Textbooks


Lecture Grading (Plus/Minus letter grading will be used)
- Three Quizzes 30%
- Participation 10%
- Midterm 20%
- Term paper 10%
- Final 30%

Lecture Topics
Enterprise system architecture
- System configuration: processor, storage, networks, web servers, gateways and firewalls
- Network architecture and performance issues

Network and system management
- Network file systems
- TCP/IP basics, network basics
- Setup of NFS and NIS: LDAPs active directory
- Name services
- TCP/IP-based Services (telnet, ftp, SMTP, HTTP, NIS, NFS, remote login, SSH)

Network server planning, configuration and management
- Printer management
- Backup and restore.

Account management, user support and training.
- User and group management
Security policy administration
  Resource planning, allocation, quota enforcement

Security planning and administration
  Security policies
  Creating and enforcing security policies
  Operating system and network configurations
  Firewalls and proxy server configurations
  Network security

Software installation and management
  Operating system and system level utilities, application software
  System installation and testing
  Kernels and device drivers
  Deployment planning: Training, testing, migration
  Troubleshooting: patch installations: avoiding the "temporary fix" trap
  System performance optimization
  Planning for and performing flawless scheduled maintenance

System Management
  Startup, shutdown
  Booting procedures
  System services, daemons and services
  Process management,
  Backup and restore
  Media management
  Logging, log file analysis
  System maintenance and upgrading issues.
  Capacity and needs assessment; planning for growth
  Planning for technology obsolescence and replacement
  System management tools: COTS tools, Shell scripting

Roles and responsibilities of a system administrator
  Historical overviews
  Managing user helpdesks
  Technical management: programmers, operators, support staff
  Organization building, coaching, and maintaining positive visibility
  People skills, scheduling support activities, time management, resolving ethical dilemmas
  Meeting business goals

14. Indicate which of the Program’s measurable Student Learning Outcomes are addressed in this course

STUDENT LEARNING OUTCOMES FOR BS CIT PROGRAM

Students in the Bachelor of Science in Information Technology will attain:

(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal

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(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(f) An ability to communicate effectively with a range of audiences
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
(h) Recognition of the need for and an ability to engage in continuing professional development
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
(l) An ability to effectively integrate IT-based solutions into the user environment.
(m) An understanding of best practices and standards and their application.
(n) An ability to assist in the creation of an effective project plan.

Student learning outcomes correlated to IT360

<table>
<thead>
<tr>
<th>Class no</th>
<th>Name</th>
<th>Learning Outcomes</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>CIT System Administration and Management</td>
<td>P P P E I P I P P P l m n</td>
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</tbody>
</table>

**Key for Learning Outcomes:**

- **I** Introduced (basic level of proficiency is expected)
- **P** Practiced (proficient/intermediate level of proficiency is expected)
- **D** Demonstrated (highest level/most advanced level of proficiency is expected)

15. Assessment of course objectives

A. Identify each of the course objectives and describe how the student performance will be addressed.

<table>
<thead>
<tr>
<th>Course Objective Topics</th>
<th>Method for assessing student performance</th>
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<tbody>
<tr>
<td>Enterprise system architecture</td>
<td>Q,E,HW,CP,CS</td>
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<tr>
<td>Network and system management</td>
<td>Q,E,HW,CP,CS</td>
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<tr>
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<td>Q,E,HW,CP,CS</td>
</tr>
<tr>
<td>Security planning and administration.</td>
<td>Q,E,HW,CP,CS,TS</td>
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<tr>
<td>Software installation and management</td>
<td>Q,E,HW,CP,CS,TS</td>
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<td>System Management</td>
<td>Q,E,HW,CP,CS</td>
</tr>
<tr>
<td>Roles and responsibilities of a system administrator</td>
<td>Q,E,HW,CP,CS,TP</td>
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</tbody>
</table>

**Key for assessment methods:**

- **Q** Quizzes
- **E** Exams
- **LB** Lab Work
- **TS** Trade study report
- **H** Homework
- **CP** Class participation
- **PR** Presentations
- **DM** Demonstration
- **TP** Term paper
- **CS** Case study report
- **Q,E** Quizzes and Exams

16. If this is a General Education course, indicate how the General Education Measurable Student Learning Outcomes (from the appropriate section) are addressed in this course

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17. Methods of Assessment for Measurable Student Learning Outcomes.

A. Assessment tools.

The assessment tools for the student learning outcomes have been selected consistent with existing assessment tools for the undergraduate programs in the computer science department and in compliance with the proposed ABET accreditation requirements for the BS CIT programs.

1. For student learning outcomes:
   a. Exit survey
   b. Exit interviews
   c. Outcomes assessment based on portfolios, specially designed assessment tests, embedded questions in course exams, independent evaluation of student projects, assignments, papers, and presentations. This assessment is performed by a team of faculty not directly involved in teaching the class but with collaboration and support from those who do.

B. Describe the procedure dept/program will use to ensure the faculty teaching the course will be involved in the assessment process (refer to the university’s policy on assessment)

In conjunction with the department’s existing accredited undergraduate program, a comprehensive approved process for assessing educational objectives and student learning outcomes is already in place. Department faculty are already responsible for the implementation of the required assessment tools, the consideration of results for purposes of program improvement, and the determination and implementation of corrective actions as may be required. Evidence must be routinely compiled and retained in conjunction with maintaining accreditation.

The proposed BS CIT program will be integrated into the existing structure. In practical operational terms, this requires the assessment of the additional new courses. Program accreditation criteria require the meaningful engagement of all faculty in each segment of the process.