CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

NEW COURSE PROPOSAL

PROGRAM AREA COMPUTER SCIENCE

1. Catalog Description of the Course. *[Follow accepted catalog format.]*

Prefix COMP **Course#** 421 **Title** UNIX FOR PROGRAMMERS **Units** (3)
3 **hours** Lecture **per week**
☒ **Prerequisites** COMP151, COMP362
☐ **Corequisites** none
Description In this course students will become proficient in the use of Unix operating environment including command line Unix utilities, vi and emacs editors, regular expressions, text processors and Unix shells. Discover fundamental Perl and its application in programming CGI. Learn how to write in C utilities that control the operating environment through the use of system calls. Find out how to develop programs using Unix facilities.

☐ **Gen Ed Categories**	**Graded** ☐ **CR/NC**	☐ **Repeatable for up to units**
☐ **Lab Fee Required**	☒ **A - F** ☐ **Optional (Student's choice)**	**Total Completions Allowed** ☐ **Multiple Enrollment in same semester**

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS # (filled in by Dean)
Lecture	3	1	24	☐	
Seminar				☐	
Laboratory				☐	
Activity				☐	

3. Justification and Learning Objectives for the Course.

(Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*
Justification: In the age of Graphical User Interfaces one may ask a question why should we bother with studying Unix with its enigmatic command line interface and hacker culture. Shouldn't we do everything using windows, menus, mice and clicking? In spite of prevalence of these high level paradigms, a lot of computer science work is done at a low, grass root level. Very often computer scientists - especially those working in the Information Technology industry - end up with nothing else but a terminal to work with. No menus, no mouse control, no graphics. In this course, the students will learn how to deal with such and many other problems. Many backend systems use Unix or Linux as the operating system for their servers. Many embedded systems are also build around derivatives of Linux. While there are more or less sophisticated and comprehensive tools to develop and operate these systems, the most secure jobs are reserved for those, who understand how the heart of the system beats. That does not come through a Windows GUI or Web browser application. When it comes to solving many problems, the only way is to pull up the sleeves and get hands dirty using a command line, text-based interface and a multitude of available tools.

This course is an elective for Computer Science majors.

Learning Objectives:
Upon completion of this course students will be able to:
(Press enter for the next bulleted item)

- Discuss the philosophy of Unix Operating System
- Control Unix using command line interface
- Use regular expressions
- Edit streams with sed and awk
- Edit files with vi and emacs
- Program scripts in Bourne Shell
- Program in Perl

- Develop applications using Unix development tools
- Develop applications in C that control Unix-based systems through the use of system calls.

4. Is this a General Education Course **YES** ☐ **NO** ☒
If Yes, indicate GE category and attach GE Criteria Form:

A (English Language, Communication, Critical Thinking)
A-1 Oral Communication ☐
A-2 English Writing ☐
A-3 Critical Thinking ☐
B (Mathematics, Sciences & Technology)
B-1 Physical Sciences ☐
B-2 Life Sciences – Biology ☐
B-3 Mathematics – Mathematics and Applications ☐
B-4 Computers and Information Technology ☐
C (Fine Arts, Literature, Languages & Cultures)
C-1 Art ☐
C-2 Literature Courses ☐
C-3a Language ☐
C-3b Multicultural ☐
D (Social Perspectives) ☐
E (Human Psychological and Physiological Perspectives) ☐
UD Interdisciplinary ☐

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary] (Press enter for the next bulleted item)*

- What is Unix?
- Unix utilities for non-programmers
- Editing files with emacs and vi
- Unix utilities for power users
- regex: regular expressions
- awk
- sed
- perl
- Introduction to Unix Shells
- bash: The Bourne Again Shell
- C Programming Tools
- make: Unix file dependency system
- ANT: Java file dependency system
- Command line clients for CVS, Subversion
- ar: Unix archiver
- gdb: GNU debugger
- jdb: Java command line debugger
- System Programming

Does this course overlap a course offered in your academic program? YES ☐ NO ☒
If YES, what course(s) and provide a justification of the overlap?

Does this course overlap a course offered in another academic area? YES ☐ NO ☒
If YES, what course(s) and provide a justification of the overlap?
Signature of Academic Chair of the other academic area is required on the consultation sheet below.

6. Cross-listed Courses (Please fill out separate form for each PREFIX)
List Cross-listed Courses

Signature of Academic Chair(s) of the other academic area(s) is required on the consultation sheet below

Department responsible for staffing:

7. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*
(Press enter for the next number)

1. UNIX for Programmers and Users, 3/E, Graham Glass, King Ables, Pearson Prentice-Hall, 2003.

2. UNIX in a Nutshell, Arnold Robbins, 3/E, O'Reilly, 1999.

2. Programming Perl, Larry Wall, Tom Christiansen, Randal L. Schwartz, 3/E, O'Reilly, 2000.

4. sed & awk, Dale Dougherty, Arnold Robbins, 2/E, O'Reilly, 1997.

5. Learning the bash Shell, Cameron Newham, 3/E, O'Reilly, 2005.

6. Mastering Regular Expressions, Jeffrey E. F. Friedl, 2/E, O'Reilly, 2002.

8. List Faculty Qualified to Teach This Course.

Computer Science Faculty

9. Frequency.

a. Projected semesters to be offered: Fall ☒ Spring ☒ Summer ☐

10. New Resources Required. YES ☐ NO ☒

If YES, list the resources needed and obtain signatures from the appropriate programs/units on the consultation sheet below.

a. Computer (data processing), audio visual, broadcasting needs, other equipment)

b. Library needs

c. Facility/space needs

11. Will this new course alter any degree, credential, certificate, or minor in your program? YES ☐ NO ☒

If, YES attach a program modification form for all programs affected.

AJ Bieszczad	9/12/2005
Proposer of Course	Date

Approvals

_____

Program Chair Date

_____

General Education Committee Chair Date

_____

Curriculum Committee Chair Date

_____

Dean Date

California State University Channel Islands
New Course Proposal Consultation Sheet

1. Course Title: COMP421 UNIX FOR PROGRAMMERS

2. Program Area: Computer Science

Recommend Approval

Program Area/Unit	**Program/Unit Chair**	**YES**	**NO** (attach objections)	**Date**
Art				
Biology				
Business & Economics				
Education				
English				
History				
Liberal Studies				
Mathematics & CS				
Multiple Programs				
Psychology				
Library				
Information Technology				