

Course Code and Name	CMPE 230 Systems Programming				
Course Type	Semester	Credits	Lecture (hours/week)	P.S. (hours/week)	Laboratory (hours/week)
Required	Spring 2015	4	3	2	
Instructor	Can Özturan				
Catalog Description	Overview of compilers, interpreters, assemblers, linkers and loaders. Unix environment and system calls. Signals and exceptions. Localization and Unicode. Perl and CGI Programming. Assembly language programming. Introduction to multithreading. Introductory Graphical User Interface (GUI) programming.				
Course Learning Outcomes	CLO1: Explain the idea behind various system software CLO2: Explain and compare functionalities of various system software CLO3: Use the Unix environment, Unix tools and clouds CLO4: Design and develop system software CLO5: Develop Graphical User Interface (GUI) programs CLO6: Do introductory level assembly language programming				
Prerequisite(s)	CMPE 160				
Textbook(s)	Learning Perl, Randal Schwartz and Tom Phoenix				
Other References	1) Blanchette and SummerField, C++ GUI Programming with Qt 2) Ayala, K. J., The 8086 Microprocessor: Programming and Interfacing the PC, West Publishing Company, 1995.				

Grading	Method	Quantity	Percentage
	Midterm Exam(s)	2	34
	Project(s)	3	36
	Final	1	30

Course Content	Percentage	
	Mathematics and Basic Science	0
	Engineering Science	50
	Engineering Design	40
Other (social sciences etc)	10	

Topics	
1.	System Software Overview: assemblers, linkers, loaders, compilers interpreters, script languages.
2.	Unix environment, Cloud Computing, Security
3.	Perl Programming: variables, associative arrays, flow control, I/O, file handling, formats, references, pattern matching, subroutines, packages, modules.
4.	Graphical User Interface Programming with Qt
5.	X86 Assembly language programming: x86 family, addressing modes, types of instructions, segmented memory, 8086 registers, data movement, arithmetic, logical, jump, comparison, stack, dos instructions, A86 and GNU assemblers, memory layout of C programs.