Course Code and Name	CMPE 230 Systems Programming				
Course Type	**Semester**	**Credits**	**Lecture (hours/week)**	**P.S. (hours/week)**	**Laboratory (hours/week)**
Required	Spring 2019	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 Python, Mark Lutz, O Reilly, 5th Edition.				
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

		Percentage
Course Content	**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, Security, Cloud Computing
3.	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.
4.	Python Programming: types, operations,statements, strings, lists, dictionaries, tuples, files, functions, modules, packages
5.	Graphical User Interface Programming with Qt