



**Course Outline of BS (CS) Degree Program**  
**Instructor: Muhammad Danish Khan, m.danish@nu.edu.pk**

<b>Course Title</b>		Computer Organization and Assembly Language	<b>Course Code</b>	EE 213
<b>Pre-Requisites</b>		Digital Logic Design	<b>Credit Hours</b>	
<b>Text Book</b>	<b>Title</b>	Assembly Language for Intel-Based Computers (7 <sup>th</sup> Ed)		
	<b>Author</b>	Kip R. Irvine		
	<b>Publisher</b>	Pearson Education Inc. (ISBN 978-0-07-338065-0)		
<b>Reference Book</b>	<b>Title</b>	Assembly Language Programming and Org. of the IBM PC		
	<b>Author</b>	Ytha Yu, Charles Marut		
	<b>Publisher</b>	McGraw Hill		
<b>Softcopies of text books/lecture slides/reference material:</b> <a href="http://www.slate.nu.edu.pk/portal/site/KHIEE213FALL2017CS/page/KHIEE213FALL2017CS-1300">http://www.slate.nu.edu.pk/portal/site/KHIEE213FALL2017CS/page/KHIEE213FALL2017CS-1300</a> (Login Required)				

Week	Course Contents/Topics	Chapter
1.	Class Introduction, Course Introduction, Introduction to Assembly Language and Computer Organization, Computer Architecture vs Computer Organization, Introduction To Basic Concepts	BOOK I CH 1
2.	x86 Processor Architecture: Basic Microcomputer Design, Instruction Execution Cycle, Loading and Executing a Program, x86 Processors, 32-Bit W86 Processor	BOOK I CH 2
3.	Assembly Language Fundamentals: Basic Language Elements, Assembling Linking and Running Programs	BOOK I CH3
4.	Defining Data, Symbolic Constants Data Transfer, Addressing and Arithmetic: Data Transfer Instructions, Addition and Subtraction, Data Related Operators and Directives, Indirect Addressing, JMP and LOOP Instructions	BOOK I CH3, CH4
5.	Procedures: Stack, Stack, PUSH and POP Operations, Defining and Using Procedures, Nested Procedure Calls and their Stack Implementation, CALL and RET Instructions	BOOK I CH5
6.	<b>MID I</b>	
7.	Conditional Processing: Conditional Branching, Conditional Jumps	BOOK I CH6
8.	Conditional Loop Instructions Integer Arithmetic: SHIFT and ROTATE Instructions,	BOOK I CH6, CH7
9.	Multiplication and Division Instructions Advanced Procedures: Introduction, Stack Frames	BOOK I CH7, CH8
10.	Stack Frames, Resursion, INVOKE, ADDR, PROC, PROTO Directives	BOOK I CH8
11.	<b>MID II</b>	

12.	High Level Language Interface: Introduction, .model directive, Inline Assembly Code	BOOK I CH13
13.	Strings and Arrays: String Primitive Instructions, Two Dimensional Arrays	BOOK I CH9
14.	Interrupts and Related Topics, x86 Instruction Encoding	BOOK I CH17 + Reference Material
15.	x86 Instruction Encoding, Instruction Set Architecture, CISC VS RISC	BOOK I CH12 + Reference Material
16.	Introduction to MIPS, Course Review, Projects' Evaluations	Reference Material

### **Pre-Requisites:**

Students enrolled in this course are expected to have completed following courses:

1. Introduction to Computer Science, Digital Logic Design
2. Fundamental programming skills (Computer Programming)

### **Marks Distribution (Theory 75%, Lab 25%):**

Mid Terms (1 & 2) .....	30%	Project .....	10%
3 Quizzes .....	15%	Assignment .....	5%
Final Examination .....	40%		

### **Websites related to this course:**

1. Slate Website: <http://slate.nu.edu.pk/portal/site/KHIEE213FALL2017CS> (Login Required)
2. Course material:  
<http://www.slate.nu.edu.pk/portal/site/KHIEE213FALL2017CS/page/KHIEE213FALL2017CS-1300> (Login Required)

### **Plagiarism:**

Mark will be deducted and the case shall be reported to the HOD and/or DC.

### **Rules & Regulation:**

Rules and regulations related to attendance, all type of exams, class work, homework and others shall be observed as issued by the HOD CS department or in absence of the same as communicated by the course instructor during the semester.