Tentative Course Schedule - CSCI 241 Computer Organization and Assembly Language Programming

Week	Lesson	Chapter	Topics
1	**1**	1	Welcome, Virtual Machine Concept, Data Representation, Convert decimal to binary, two's complement, Boolean Operations
1	**2**	2	IA-32 Processor General Concepts, Multitasking, Architecture, Memory Management: Real-address mode, Protected mode, Microcomputer
2	**1**	3	Basic Elements, Example: Adding and Subtracting Integers, Flags Register, Assemble-Link-Execute Cycle
2	**2**	4	Data Transfers, Addressing, and Arithmetic; MOV, Zero & Sign Extension, XCHG; INC, DEC, ADD, SUB, NEG
3	**1**	4	Flags Affected: Zero, Sign, Carry, Overflow; Data-Related Operators/Directives: OFFSET, ALIGN, PTR, TYPE, LENGTHOF, SIZEOF, LABEL
3	**2**	4	Indirect Addressing: Indirect Operands, Indexed Operands, Pointers; JMP and LOOP; SumArray.asm, CopyStr.asm
4	**1**	5	Calling procedures in Irvine32.Lib; Runtime Stack, PUSH,POP, PUSHFD,POPFD,PUSHAD,POPAD
4	**2**	5	Using Procedures, Example: SumOf, CALL,RET, USES, Example: Summation, Random Integer, Performance Timing
5	**1**	1 - 5	Chapter Review and Homework analysis
5	**2**	6	AND,OR,XOR,NOT instructions, Parity flag, TEST,CMP Instructions, Conditional Jumps; Sequential Search
6	**1**	1 - 5	**Mid Term 1**
6	**2**	6	String Encryption, Bit Test, LOOPZ/LOOPNZ; Ex:Loopnz.asm; Conditional Structures, short-circuit, WHILE Loops; Table-Driven Selection
7	**1**	6, 7	Finite-State Machines; Decision Directives; Shift and Rotate: SHL/SHR, SAL/SAR, ROL/ROR, RCL/RCR, SHLD/SHRD
7	**2**	7	Applications: Multiple Shifting, Binary Multiplication, Displaying Binary, DOS File Date; MUL/IMUL, Mulplication benchmarking DIV, CBW, CWD, CDQ, IDIV, Arithmetic Expressions
8	**1**	7	Extended: ADC, SBB, ExtAdd.asm; Unpacked BCD: AAA, ASCII_add.asm, AAS, AAM, AAD; Packed BCD: DAA, AddPacked.asm, DAS
8	**2**	8	Stack Frames: Parameters, Passing by Value/Reference, RET, C/Std Call, Local Variables, ENTER/LEAVE; Recursion: Csum.asm

9	**1**	8	Factorial; Memory Models; INVOKE, ADDR, PROC, PROTO, Swap.asm; Multi-modules; Java/JVM and .Net/CLR
9	**2**	9	String Primitive: MOVSB/W/D, CMPSB/W/D, SCASB/W/D, STOSB/W/D, LODSB/W/D; Str_compare, Str_length, Str_copy, Str_trim, Str_ucase
10	**1**	9	Two-Dimensional Arrays, RowSum; Bubble Sort, Binary Search
10	**2**	6 - 9	Chapter Review and Homework analysis
11	**1**	6 - 9	**Mid Term 2**
11	**2**	10	Structures: Definition/Variables, Windows structures, structure array, Alignment, Nested, Union; Macros: Defining/Invoking, Additional Features; Examples, Wrappers; Conditional-Assembly Directives;
12	**1**	10	Checking Missing Arguments, Default initialization; IF, ELSE, and ENDIF; Special Operators, Multiple data/code segments, Local symbols in Macros, Macro Functions
12	**2**	10, 11	Macro repetition: WHILE, REPEAT, FOR, FORC, Linked List. Win32 Console Programming: API and SDK, Windows Data Types
13	**1**	11	Standard Console Handles Console Input, ReadKey; File I/O, AppendFile.asm, Demo: ErrorHandler; Console window and screen buffer, Control Cursor, Text Color and attribute
13	**2**	11	Time and Date Functions; File time; GUI Widows App, MessageBox, WinMian, message loop;
14	**1**	11, 12	Dynamic Memory Allocation, Heap, Heaptest1/2.asm; x86 Memory Management. Floating-Point Binary Representation and conversion, IEEE Encodings
14	**2**	12	Floating-Point Unit, FPU Register Stack, Rounding, Exceptions; Arithmetic and Comparing, Intel Instruction Encoding
15	**1**	13	Link ASM and HLL Programs, Calling Convention, Memory MODEL, Inline Assembly usage, Encode/ Encode inline, Call assembly procedures form C++
15	**2**	13	AsmFindArray, Call C++ Functions from Assembly; Multiplication Table, Calling C Library Functions, Loop Optimization
16	**15**	10 - 13	Chapter Review and Homework analysis
16	**2**	10 - 13	**Final**
Lectures would be changed or adjusted based on the current semester conditions			