

**CS F342 TENTATIVE LAB PLAN: 1st SEM 2019-20**

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| **Lab No.** | **Learning Objectives** | **Topics to be covered** |
| 1-2 | Introduction to MIPS; Understanding System calls and arithmetic operations | Installing and launching SPIM (QTSPIM); System Calls and User Input + Add/Sub; manual Disassembly - reversing given MIPS byte code (binary) to assembly; Understanding Pseudo instructions |
| 3 | Understanding mul/div operations and FP instructions | FP operations; multiply/divide using HI/LO registers; conversion across numeric datatypes; representing characters |
| 4 | Understanding control instructions; loop constructs in MIPS | Code Labels and Jump instructions; Logical operations; shift operations; loops: sentinel control loop & counter control loop; R-I-J type instructions |
| 5 | Exploring arrays and strings with MIPS | array and string manipulation in MIPS; load/store instructions (for integers as well as floating point numbers); |
| 6 | Understanding function calls and exception handling | basics on function calls; advanced function calls and exception handling in MIPS assembly; recursive function calls |
| 7 | Representing structures | Dynamic memory allocation using sbrk syscall; structure representation in MIPS |
| 8 | Exploring sorting techniques using MIPS | Various sorting techniques: bubble sort, merge sort etc. |
| 9 | To get hands-on exposure to pipelined execution | Multi-cycle datapath and control path implementation |

**TENTATIVE LAB EVALUATION SCHEDULE:**

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| **SNo.** | **LAB TEST No.** | **PS1** | **PS2** | **PS3** | **PS4** |
| **1** | **Lab Test 1** | **Sept 12th, 2019** | **Sept 9th, 2019** | **Sept 11th, 2019** | **Sept 13th, 2019** |
| **2** | **Lab Test 2** | **Oct 17th, 2019** | **Oct 14th, 2019** | **Oct 16th, 2019** | **Oct 18th, 2019** |
| **3** | **Lab Test 3** | **Nov 7th, 2019** | **Nov 4th, 2019** | **Nov 6th, 2019** | **Nov 8th, 2019** |
| **4** | **Lab Test 4** | **Nov 21st, 2019** | **Nov 18th, 2019** | **Nov 20th, 2019** | **Nov 22nd, 2019** |