**19EC22P3 – DIGITAL SYSTEM DESIGN LAB USING VHDL**

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| **Course Category:** | | Program Core | | **Credits:** | 2 |
| **Course Type:** | | Practical | | **Lecture-Tutorial- Practice:** | 0 - 0 – 3 |
| **Prerequisite:** | | Switching theory & logic design, Digital design and digital IC’s | | **Sessional Evaluation:**  **External Evaluation :**  **Total Marks:** | 40  60  100 |
| **Course**  **Objectives** | Students undergoing this course are expected to understand: | | | | |
| 1. How to write VHDL programs of different digital circuits.  2. How to simulate the VHDL programs of different digital circuits. | | | | |
| **Course Outcomes** | Upon successful completion of the course , the students will be able to: | | | | |
| CO1 | | Write and simulate the various logic gates by using VHDL. | | |
| CO2 | | Write and simulate the adders and subtractors by using VHDL. | | |
| CO3 | | Verify the truth table of various digital circuits and IC’s. | | |
| CO4 | | Design the various digital circuits. | | |
| CO5 | | Write and simulate the various counters by using VHDL. | | |
| CO6 | | Write and simulate the various registers by using VHDL. | | |
| **Course**  **Content** | Minimum of **TEN** experiments to be completed out of the following:  **LIST OF EXPERIMENTS**   1. Logic Gates 2. Full Adder & Full Subtractor 3. 3 to 8 Decoder 4. 8 to 3 Encoder 5. 4 bit Comparator 6. 8x1 Multiplexer 7. 1x4 Demultiplexer 8. D Flip-Flop 9. Decade Counter 10. Shift Register 11. BCD to 7-segment display code converter 12. 3 bit up/down Ripple counter 13. 2 bit synchronous counter 14. Bi-directional shift register | | | | |

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| Contribution of Course Outcomes towards achievement of Program Outcomes | | | | | | | | | | | | | | |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | 3 | 3 | 2 | - | 1 | - | - | - | - | - | 2 | 2 | 3 | 3 |
| CO2 | 3 | 3 | 2 | - | 1 | 1 | - | - | - | - | 2 | - | 3 | 3 |
| CO3 | 3 | 3 | 3 | - | 1 | - | - | - | - | - | 2 | 2 | 3 | 3 |
| CO4 | 3 | 3 | 2 | - | 1 | 1 | - | - | - | - | - | - | 3 | 3 |
| CO5 | 3 | 3 | 2 | - | 1 | - | - | - | - | - | - | 2 | 3 | 3 |
| CO\6 | 3 | 3 | 2 | - | 1 | - | - | - | - | - | 2 | 2 | 3 | 3 |