**20EC22S1 – SIGNALS & SYSTEMS SIMULATION USING MATLAB**

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| **Course Category:** | Program Core | **Credits:** | 2 |
| **Course Type:** | Practical | **Lecture-Tutorial- Practice:** | 0 - 0 - 4 |
| **Prerequisite:** | Signals and Systems | **Sessional Evaluation:**  **External Evaluation :**  **Total Marks:** | 40  60  100 |

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| **Course**  **Objectives** | Students undergoing this course are expected to understand: | |
| 1. Basic operations of matrices and varies signals.  2. Verification of various systems and sampling theorem. | |
| **Course Outcomes** | Upon successful completion of the course , the students will be able to: | |
| CO1 | Perform the Operations on Matrices |
| CO2 | Generate various signals using MAT lab. |
| CO3 | Find the Even and Odd parts of Signal/Sequence and Real and Imaginary part of Signal. |
| CO4 | Verify the linearity and time invariance properties of a given continuous /discrete system. |
| CO5 | Find LT for some signals and system |
| CO6 | Compute the unit sample, unit step and sinusoidal response of the given LTI system |
| **Course**  **Content** | Minimum of 10 experiments to be completed out of the following:  **LIST OF EXPERIMENTS**   1. Basic Operations on Matrices 2. Generation on various Signals and Sequences (periodic and aperiodic) 3. Operations on Signals and Sequences 4. Finding the Even and Odd parts of Signal/Sequence and Real and Imaginary part of Signal. 5. Convolution between Signals and Sequences 6. Auto Correlation and Cross Correlation between Signals and Sequences. 7. Verification of linearity and time invariance properties of a given continuous /discrete system. 8. Computation of unit sample, unit step and sinusoidal response of the given LTI system and verifying its physical reliability and stability properties. 9. Finding the Fourier transform of a given signal and plotting its magnitude and phase spectrum. 10. Waveform synthesis using Laplace Transform. 11. Locating the zeros, poles and plotting the pole zero maps in s-plane and z-plane for the given transfer function. 12. Sampling theorem verification | |

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