**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

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| **Course Title** | | | **COMPUTATIONAL TECHNIQUES** | | | | | | | |
| **Course Code** | | | **PH674** | | | **No. of Credits** | | | | **3** |
| **Department** | | | **Physics** | | | **Faculty** | | | | **Dr. M. Ashok** |
| **Pre-requisites**  **Course Code** | | | **-NIL-** | | | | | | | |
| **Course Coordinator(s)**  **(if, applicable)** | | |  | | | | | | | |
| **Course**  **Teacher(s)/Tutor(s)**  **E-mail** | | | **ashokm@nitt.edu** | | | **Telephone No.** | | | | **04312503610** |
| **Course Type** | | | **Core course ☑ Elective course** | | | | | | | |
| **COURSE OVERVIEW** | | | | | | | | | | |
| **Fundamental of ultrasonic waves and its usage in the NDT. Methods of calibration of instrument and evaluation of signals** | | | | | | | | | | |
| **COURSE OBJECTIVES** | | | | | | | | | | |
| **To introduce Programming tools in C language, MATLAB and LABView which will be useful for further research studies.** | | | | | | | | | | |
| **COURSE OUTCOMES (CO)** | | | | | | | | | | |
| **Course Outcomes** | | | | | | | **Aligned Programme Outcomes (PO)** | | | |
| 1. **Familiarize with the computational tools available in MATLAB, LabVIEW and**   **COMSOL for variety of physical problems.**   1. **Model the structural behavior using various simulation tools.** | | | | | | | **Knowledge on computational tech** | | | |
| **COURSE TEACHING AND LEARNING ACTIVITIES** | | | | | | | | | | |
| **S.No.** | **Week** | **Topic** | | | | | | | **Mode of Delivery** | |
| **1** | **1-3**  **4-6**  **7-9**  **10-12**  **13-15** | **C programming**  **Introduction to MATLAB**  **Applications of MATLAB**  **Introduction to LABVIEW**  **Modeling Approaches** | | | | | | | **Conventional**  **Conventional/PPT**  **Flip class with video**  **Flip class with ppt**  **Flip class with practical** | |
| **COURSE ASSESSMENT METHODS** | | | | | | | | | | |
| **S.No.** | **Mode of Assessment** | | | **Week/Date** | **Duration** | | | **% Weightage** | | |
| **1**  **2**  **3**  **4** | **Cycle Test**  **Practical Test**  **Assignment**  **Final Exam** | | | **6th week**  **9th week**  **4th and 8th week**  **Practical and Theory** | **1 hour**  **3 Hours**  **3+3 Hours** | | | **20%**  **20%**  **10%**  **25%+25%** | | |
| **ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc** | | | | | | | | | | |
| **Text Books & Reference Books::**  **1. S. Chandra, Applications of Numerical Techniques with C, Narosa Publishing House Pvt. Limited, (2006).**  **2. R. Pratap, Getting Started with MATLAB: A Quick Introduction for Scientist and**  **Engineers, Oxford University Press, (2010).**  **3. K. L. Ashley, Analog Electronics with LabVIEW, Prentice Hall Professional, 2003.**  **4. T. R. Chandrupatla and A. D. Belegundu, Introduction to Finite Elements in Engineering, Prentice Hall, 4thedition, (2011).**  **Website addresses :** www.mathworks.com,ni.com, | | | | | | | | | | |
| **COURSE EXIT SURVEY** | | | | | | | | | | |
| **Feedback from the student after 9th week :on knowledge gained, subjects relevant to the course, methodology adopted, aspect of improvement. Whether the topics fulfil the course outcome and program outcome.** | | | | | | | | | | |
| **COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)** | | | | | | | | | | |
| **Attendance : not mandatory ( no attendance register will be maintained since these students are gate students and they get fellowship based on their attendance in department office )**  **Whereas the evaluation pattern will be stringent in all the mode of assessments. Extra chances will be given to the students not appeared ( with medical or official reason) in any mode of assessments 1-3 with little more stringent evaluation.** | | | | | | | | | | |
| **ADDITIONAL COURSE INFORMATION** | | | | | | | | | | |
| The Course Coordinator is available for consultation at times that are displayed on the coordinator’s office notice board. Queries may also be emailed to the Course Coordinator directly at [ashokm@nitt.edu](mailto:ashokm@nitt.edu) | | | | | | | | | | |
| **FOR SENATE’S CONSIDERATION** | | | | | | | | | | |
| **Course Faculty \_\_\_\_\_\_\_\_\_\_ CC-Chairperson \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ HOD \_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | | | | |