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|  | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | **CURRICULUM** | | |
| Programme | | | **Master of Technology (Structural Engineering)** | | | | | Year of Regulation | | | | | **2018** | | |
| Department | | | **Civil Engineering** | | | | | Semester | | | | | **I** | | |
| Course Code | | Course Name | | Pre-requisite | | Credit Structure | | | | Marks Distribution | | | | | |
| L | T | P | C | INT | | MID | END | | Total |
| **CE 521** | | **Computational Lab** | | **NIL** | | **0** | **0** | **2** | **1** |  | | | **100** | | **100** |
| Course Objectives | | To develop the student’s knowledge on soling many problems in different mathematical subjects, especially in numerical analysis and other subjects which connected to computer oriented mathematics. | | | Course Outcomes | | CO1 | Able to use Matrix methods for interactive computations. | | | | | | | |
| CO2 | Familiar with memory and file management | | | | | | | |
| CO3 | Able to generate plots and export this for use in reports and presentations. | | | | | | | |
| CO4 | Able to program scripts and functions using | | | | | | | |
| CO5 | Able to use basic flow controls (if-else, for, while). | | | | | | | |
| CO6 | Familiar with strings and matrices and their use. | | | | | | | |
| SYLLABUS | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | Hours | | | COs | |
| I | Compute the flexibility and stiffness matrix for continuous beams, and pinned/rigidjointed structures | | | | | | | | | | 2 | | | CO1 | |
| II | Analysis of structures by direct and generalized flexibility method | | | | | | | | | | 2 | | | CO2 | |
| III | Analysis of structures by direct and generalized stiffness method | | | | | | | | | | 2 | | | CO3 | |
| IV | Write general computer programs for the analysis of  • Plane pin-jointed structures  • Continuous beams  • Plane right-jointed frames  Also, validate the results using any standard Structural Analysis software. | | | | | | | | | | 2 | | | CO4 | |
| V | Write general computer programs for the analysis of  • Space pin-jointed structures  • Space right-jointed frames  Also, validate the results using any standard Structural Analysis software. | | | | | | | | | | 2 | | | CO5 | |
| VI | Analyze pin-jointed frame using stiffness method if there is a rise of temperature in all members | | | | | | | | | | 1 | | | CO6 | |
| VII | Analyze rigid-jointed frame using stiffness method by both ignoring and considering the axial deformation. | | | | | | | | | | 1 | | | CO1 | |
| Total Hours | | | | | | | | | | | 12 | | |  | |
| **Essential Readings** | | | | | | | | | | | | | | | |
| 1. Weaver, W. and Gere, J. M., “Matrix Analysis of Framed Structures”, Springer, 2nd edition 2004 | | | | | | | | | | | | | | | |
| 2. Ghali, A., Neville, A. M., and Brown, T. G., “Structural Analysis – A Unified Classical and Matrix Approach”, CRCPress, 6th edition 2009. | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | |
| 1. Kassimali, A., Matrix Analysis of Structures, Cengage Learning, 2nd edition 2011. | | | | | | | | | | | | | | | |
| 2. Menon, D., Advanced Structural Analysis, Alpha Science International, 2009. | | | | | | | | | | | | | | | |