

University of Technology
Computer Engineering Department
Academic Year 2023 - 2024

Second Year – First Semester – Computer Networks Branch



U221	Engineering Mathematics III	2 Hours/Week	2 Units
-------------	------------------------------------	---------------------	----------------

Contents of Syllabus	Hours
Matrices	
• Matrices & determinants.	1
• Matrix addition and multiplication	1
• Linearly Dependent and Linearly Independent	1
• Solving a system of linear equations - Cramer's rule - The Gaussian Elimination method	2
• Matrix Inverse - By Gauss elimination method - By Cofactor Method	2
• Rank of a matrix.	1
• Eigen value & Eigen vector.	4
Vectors	
• Vectors in space.	
• Product of two vectors: - Scalar product. - Vector product.	2
• Equations of lines & planes in space.	4
• Angles between planes	2
• Triple products.	1
Ordinary Differential Equations	1
• 1st order D. Eqs. - Variable separable. - Homogenous. - Linear. - Exact.	4
• Second order D. Eqs. - Homogenous. - Non homogenous. ✚ <i>Undeterminant coefficient.</i> ✚ <i>Variation of parameters.</i>	4

References

1. **Thomas Calculus**, 12thED, George B. Thomas Jr., Maurice D. Weir, Joel R. Hass, 2009 Differential Equations (Schaum's Outlin Series).
2. Calculus (Haward Anton).
3. Advanced Engineering Mathematics (Erwin Kreyszig).