UNIVERSITY OF RUHUNA

Faculty of Engineering

Assignment 1 - Semester 7: February 2026

Module Number: EE7220/EC7208

Module Name: Optimization Techniques for Engineers

Deadline: - 24th February 2026

[This accounts for 20% marks of the module]

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1. You are required to design an original Knapsack problem based on a real-world application, incorporating it into a meaningful story or scenario, and then solve it using the standard Knapsack problem solution method learned in class.

   Note: Marks will be deduced if you choose the standard form of Knapsack problem which is filling a Knapsack/container/tank/bottle..., etc.., with a set of items as the example discussed in the class

2. You are required to craft an original network optimization problem incorporating a real-world scenario and solve it using a Minimum Spanning Tree (MST) algorithm other than Prim's or Kruskal's algorithms. You must first explore and justify the selected MST technique by clearly explaining its formulation and procedural steps, and then apply the algorithm step by step to your proposed problem in order to obtain the solution.

Please submit both a soft and a hard copy of the assignment on or before the deadline.

Note: Please form groups of two students to complete this assignment.