



**MCAST**  
Technical College

INSTITUTE OF INFORMATION  
AND COMMUNICATION TECHNOLOGY

# Introduction to Object-Oriented Programming

## INHERITANCE WORKSHEET

The airport transfers company is looking to expand its operations.

### TASK 1 – INHERITANCE

- a) Create a class `MassTransportVehicle`. This class has the same attributes and behavior as `Vehicle` but it adds the attribute (passenger) capacity. Initialize vehicle attributes using the base class constructor.
- b) Create a class `CargoVehicle`. This class has the same attributes and behavior as `Vehicle` but it adds the cargo dimensions (length, width, height) and max kg. Add a method `CanTakeLoad()` in the cargo vehicle which accepts details on several boxes of cargo (length, width, height, weight, together with quantity of boxes). The method should return true if the `CargoVehicle` can take the load (both in volume and weight) and no if it can't.
- c) Create a class `RentalVehicle`. This class has the same attributes and behavior as `Vehicle` but it adds the attributes `Price` and `Class` (e.g., compact, midsize, family size). It also adds methods `Rent()` and `Return()`. Once a car is rented, one should not be allowed to rent it again before it is returned (program this logic in the class).
- d) Create a `GetData()` method in *all* classes. Make sure that each class displays its extra attributes.
- e) Write a test program to call the constructors and methods of the new classes, and ensure that they are working correctly.

### TASK 2 – ADVANCED

- a) Define a class `Box` to be used as an attribute of `CargoVehicle`, and as a datatype for the `CanTakeLoad()` parameter. Consider the attributes and properties to define.