

# **Programming Approach in Teaching Operations Research Techniques for Computer Science Students**

**Maslin Masrom and Nurazean Maarop**

Computer Science Unit, Science Department

Diploma Studies Programme, Universiti Teknologi Malaysia *City Campus*

Jalan Semarak, 54100 Kuala Lumpur

e-mail : [maslin@citycampus.utm.my](mailto:maslin@citycampus.utm.my) & [nurazean@citycampus.utm.my](mailto:nurazean@citycampus.utm.my)

## **ABSTRACT**

Computer Science (CS) is an applied and interdisciplinary field, and lies at the intersection of mathematics and engineering. Meanwhile, Operations Research (OR) is the art of mathematical modeling and analysis to design, evaluate, or improve the operations of a real-world systems. It is essentially identical to the systems analysis. OR techniques include among others, linear programming, non-linear programming, integer programming, data analysis including statistics, simulation, and goal programming. From the computer science perspective, OR is very essential in defining technical management information system. Most OR techniques are the core elements to model the programming solution. In the typical phases of software development, understanding OR techniques will help students to determine better requirement and specification of any problem that involves OR solution. Furthermore, in order to perform the analysis of the mathematical model, computer science students need to be introduced with the tools of mathematics, algorithm development, and computer programming approach for solving the problems. Therefore, in this paper, we first present the concepts and methods of OR. Programming approach used in teaching OR techniques are identified and discussed at the end of the paper.

**Key words:** computer science, operations research, programming approach

## **INTRODUCTION**

The term operations research (OR) means different things to different people, and it is therefore difficult to give a concise definition that everyone would applaud. OR has been likened to quantitative method which has been defined as the application of methods of science to complex problems arising in the direction and management of large systems of men, machines, materials and money in industry, business, and government to help management determine its policy and actions scientifically. OR use the interdisciplinary approach to solve organizational problems. The OR research group is drawn from