# University of Sri Jayewardenepura
## Department of Mathematics
## Semester 2 - 2018
## MAT 331 1.0 Algorithms and Complexity

| Lecturer | Email | L/R | Time |
|---|---|---|---|
| Dr. G.H.J. Lanel | ghjlanel@sjp.ac.lk | M2 | Fr:2-3p.m. |

## Objectives

The objectives of this course are to

- learn how to analyze algorithm correctness and efficiency,

- understand various design strategies for an algorithm,

- be familiarized to a variety of algorithms in different settings.

## Course Syllabus

1. Algorithm Analysis

    1.1. Computational Complexity Theory

    1.2. Factors Influencing Program Efficiency

    1.3. Mathematical Induction

2. Growth of Functions (Big-O, Little-o, Big-Omega, and Bib-Theta notations)

3. Divide and Conquer Techniques

4. Dynamic Programming

6. Greedy Algorithms

## Learning Outcomes

By the end of this class, students will be

- able to develop and improve algorithms to meet requirements,

- able to develop arguments for the validity of the algorithm,

- familiar with classical strategies in algorithmic design and know how to apply them,

- able to compute the time complexity of algorithms.

## References

- Thomas H. Cormen, Charles E. Leiserson, and Ronald L. Rivest, *Introduction to Algorithms*, Second Edition, MIT Press/McGraw-Hill, 1990.

- Jerrold W. Grossman, *Discrete Mathematics (An Introduction to Concepts, Methods, and Applications)*, First Edition, Macmillan Publishing Company, 1990.

## Assessment Criterion

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| Assignments and Quizzes | 40% |
| End of Semester Examination | 60% |

## Method of Continuous Assessment

1. Assignments will be assigned frequently and will always be evaluated.

2. Unannounced quizzes will be given at the end of randomly selected lectures. The quizzes are open-ended, and all will be done individually or as group activities.

$$*****End*****$$