Title (Units):   **COMP 7110 Analytic Methods for Computer Science Research (3, 3, 0)**

Course Aims: To learn the various analytic methods and gain the mathematical knowledge and skills necessary for computer science students to approach the study of advanced topics in the discipline of computer science at the graduate level.

Prerequisite: Research Postgraduate Student Standing

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Explain various analytic methods in the area of computer science and their applications
2	Explain various solutions for solving the selected problems in computer science
3	Describe the approaches and techniques used to solve the selected problems in computer science
	Professional Skill
4	Apply problem solving skills relevant to selected problems

Calendar Description: This course studies the various analytic methods and provides the mathematical knowledge and skills necessary for computer science students to approach the study of advanced topics in the discipline of computer science at the graduate level.

Teaching and Learning Activities (TLAs):

CILOs	TLAs
1-3	Students will learn the principles and algorithms of analytic methods through lectures.
4	Students will have hands-on experience to in-depth understanding of the principles and algorithms through assignment(s) and quiz(zes).

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Remarks
1	Continuous assessment	50%	1-4	Assignments and quizzes will be used to evaluate how well students have learned the principles and algorithms, and assess their ability of solving the problems in computer science.
2	Examination	50%	1-4	Examination will be used to evaluate students' overall understanding of various analytic methods in computer science, and assess their ability of solving problems.

Rubrics:

Excellent (A)	• Achieve the four CILOs, demonstrating a good mastery of both the theoretical and practical aspects of the knowledge and skills in the selected topics; • Demonstrate a thorough understanding and solid knowledge of the selected topics; • Able to apply a variety of analytic methods to problems in computer science.
Good (B)	• Achieve most of the four CILOs, demonstrating a good understanding of the knowledge and skills in the selected topics; • Demonstrate a competent level of knowledge of the selected topics; • Able to make use of appropriate analytic methods and apply them to familiar problems in computer science.
Satisfactory (C)	• Achieve some of the four CILOs, demonstrating a basic level of understanding of the knowledge and skills in the selected topics; • Demonstrate an adequate level of knowledge of the selected topics; • Able to make use of some analytic methods and apply them to familiar problems in computer science.
Fail (F)	• Achieve none of the four CILOs, with little understanding of the knowledge and skills in the selected topics; • Knowledge of selected topics falling below the basic minimum level; • Unable to apply analytic methods to problems in computer science.

Course Intended Learning Outcomes and Weighting:

Content	CILO No.
I. Linear Algebra II. Graph Theory III. Optimization IV. Number Theory V. Learning Theory VI. Probabilistic Theory	1-4

References:

Research notes and readings, survey and background papers, case studies, specialized papers, and manuscripts on the topics of study.

Course Content in Outline:

Topic

The topics of analytic methods in computer science will be selected for in-depth discussion, which may be selected from, but are not limited to, the following list:

I.   Linear Algebra
II.   Graph Theory
III.   Optimization
IV.   Number Theory
V.   Learning Theory
VI.   Probabilistic Theory