

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the program specification.

1. Teaching Institution	College of Science/ Al-Nahrain University
2. University Department/Centre	Mathematics and Computer Applications
3. Course title/code	Optimization/math319
4. Modes of Attendance offered	Presence of theories and lab
5. Semester/Year	First/ Third
6. Number of hours tuition (total)	4 hours per week (theory) and application
7. Date of production/revision of this specification	2022/10/10
8. Aims of the Course	
1. Study of no linear programming systems and their solutions.	
2. Study classical optimization and solve systems using many methods.	
3. numerical optimization and its applications	

9. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals.

- A1. Enable students to obtain knowledge and understanding of the basic principles of nonlinear programming systems.
- A2. . Enable students to obtain knowledge and understanding of the laws and properties of objective functions
- A3. . Enable students to gain knowledge and understanding of how laws are linked
- A4. Enable students to obtain knowledge of methods for deriving basic equations of nonlinear programming systems.
- A5. Enable students to identify the most important applications of no linear programming such as classical optimizations and numerical optimization

B. The skills goals special to the course.

- B1. The student will be able to use matrices to solve no linear programming systems.
- B2. Using mathematical methods to understand the behavior of no linear programming systems

Teaching and Learning Methods

- 1. Giving theoretical lectures.
- 2. Giving descriptive homework.
- 3. Direct questions to students to test their understanding of the topic.
- 4. Assigning students homework.

Assessment methods

- 1. Monthly and daily exams
- 2. Programmed mid-term exams.
- 3. Homeworks.
- 4. direct oral questions

C. Affective and value goals

- 1. Enabling students to solve problems related to matrices.
- 2. Enabling students to solve problems related to the derivations of laws and their equations
- 3. Enabling students to solve mathematical problems using the simplest means

Teaching and Learning Methods

Presenting on the wight board

Assessment methods

Final exam 60%
Total 100%

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1. Providing the students with mathematical skills about differentiation to solve some real life problems

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
2-1		4	Definition and classification of nonlinear programming		
6-3		8	Solution of single variable optimization		
9-7		8	Multi variable optimization with no constraints		
11-10		10	Multi variable optimization with constraints		
13-12		14	Solve numerical optimization by unrestricted search and exhaustive		
15-14		16	Solve numerical optimization by dichotomous , Fibonacci and golden section		

11. Infrastructure

1. Books Required reading:	Optimization theory and applications by S.S. RAO
2. Main references (sources)	Operation research by HAMDY A. TAHA

A- Recommended books and references (scientific journals, reports...).	Any website related to our study
B-Electronic references, Internet sites...	Google.com
12. The development of the curriculum plan	
Including more real life applications	