

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
---	--	--

CE 604 Structural Dynamics

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 604

2- Units: 3

3- Semester:

4- Prerequisite:

5- Co-requisite:

6- Location (if not on main Campus):

Second: Course Objectives

- 1- To develop understanding of the concepts, theories of structural dynamics
- 2- To understand the principles of dynamic response of structures
- 3- To understand the principles of single and multi-degree-of freedom systems .
- 4- To understand the principles of response spectrum;
- 5- To understand the principles of simple inelastic structural systems .
- 6- To provide an understanding of systems with distributed mass and flexibility.

Third: Course Specifications

1- Topics to be covered		
Subject	No of Weeks	Units
Background	1	3
Single degree of freedom system	2	6
Free vibration, forced vibration	1	3
Structural response	2	6
Multi degree of freedom systems	2	6
Rayleigh method	2	6

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
---	--	--

Modes superposition method	2	6
Basic principles in earthquake engineering	1	3
Detailing in earthquake resistant structures	1	3

2- Course components (Total hrs in the Semester): 42

Lecture	Exercise	Other
42	-	0

3- Intended Learning Outcomes of the Course (ILO's)

a. Knowledge

i) Description of the knowledge to be acquired:

- Define the types of degrees of freedom systems
- Identify the process used in response spectrum analysis.
- Define the process used in analysis of simple inelastic structural systems.
- Define the process used in analysis of systems with distributed mass and flexibility

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Students' presentations.
- Group discussion.

iii) Methods of assessment of knowledge acquired

- Exams.
- Homework assignments.
- Term projects.

b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed

- Identify the number of degrees of freedoms of each system
- Identify the natural frequencies, natural periods and mode shapes of a system
- Identify the dynamic straining actions of a system
- Identify the dynamic deflection of system

ii) Teaching strategies to be used to develop these cognitive skills

- Class lectures.

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة
---	--	--

- Case studies analysis.
- Term projects.-

iii) Methods of assessment of students' cognitive skills

- Students' seminars and presentations.
- Term projects and exams

c. Interpersonal Skills and Responsibility

i) Description of the interpersonal skills and capacity to carry responsibility to be developed

- Decision making based on engineering analysis.
- Communication skills.
- Team work.-

ii) Teaching strategies to be used to develop these skills

- Class lectures.
- Term projects and -Case studies analysis.

iii) Methods of assessment of students' interpersonal skills and capacity to carry responsibility

- Term project.
- Written reports.
- Students' seminars and presentations.

d. Communication, Information Technology and Numerical Skills

i) Description of the skills to be developed in this domain

- Literature research.
- Problems modeling.
- Utilization of computer applications in analysis and design.

ii) Teaching strategies to be used to develop these skills

- Class lectures.
- Case studies analysis.
- Computer lab sessions and-Term projects

iii) Methods of assessment of students numerical and communication skills

- Term projects.
- Written reports.
- Students' seminars and presentations.

e. Psychomotor (if applicable) & Other Non-cognitive Skills

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
---	--	--

i) Description of the psychomotor or other skills to be developed and the level of performance required
- NA

ii) Teaching strategies to be used to develop these skills-
- NA-

iii) Methods of assessment of student's psychomotor skills
- NA

4- Student Assessment Schedule

Serial	Assessment tool (test, group project, examination etc.)	Week due	Weight
1	Term Project – 1	3 rd	15 %
2	Mid Term Exam -1	7 th	15 %
3	Term Project – 2	10 th	15 %
4	Term Project – 3	13 th	15 %
5	Final Exam	16 th	40 %

5- Student Support

- Providing electronic library of textbooks and scientific periodicals.
- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References)
-Donaldson,B. K. " Introduction to Structural Dynamics," Cambridge Univ. Press, 2006.
-Wodek G. "Advanced Structural Dynamics and Active Control of Structures," Springer, 2004.
-

ii) Course Notes
- NA

iii) Recommended Books
-Tedesco, J. W. " Structural Dynamics: Theory and Applications," Prentice Hall, 1998

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة
---	--	--

iv) Electronic Books & Web Sites:

- Scientific journals and forums.
- Instructor's instruction.-

v) Periodicals

- ASCE scientific journals.

7- Course Evaluation and Improvement Processes

i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Students' questioners.
- Students' evaluation of course and instructor.-

ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Public faculty seminars.
- Assessment by external evaluators of students achievements.
- Instructor (Course) Report

iii) Processes for Improvement of Teaching

- Assessment of students' work by external examiners.
- Analysis of students' evaluation of course and instructor.
- Seminars by industry professionals.

iv) Processes for verifying standards of student achievement

- Check marking by an independent faculty member of a sample of student work.
- Periodic exchange and remarking of a sample of assignments/exams with a external evaluator.

v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Assessment and evaluation of the level of achieving the course outcomes through a continuous improvement process (part of a quality assurance system established by the university) .
- Consequently, actions are to be taken to improve the course delivery when necessary.
- Review of the course objectives, outcomes and curriculum every 2 years.

**Kingdom of Saudi
Arabia**
Ministry of Higher
Education
Qassim University
College of Engineering



المملكة العربية السعودية
وزارة التعليم العالي
جامعة القصيم
كلية الهندسه