Name of Course	Structural Analysis 1
Course Code	**MSB404AN**
Allotment of Hours per Week	**3 (Avg)**
Number of Credits	**4**
Program	**Civil Engineering Bsc**
Evaluation	**Mid & final exam grade**
Semester	**2**
Prerequisites	**Mechanics 1 & 2**
Department	**Department of Civil Engineering**
Instructor	**Mohammad Kherais**

INTRODUCTION, GENERAL COURSE DESCRIPTION

This course is aimed to provide basic and advanced knowledge on the principles of the calculations of statically indeterminate plane structures.

Topics covered by the course include:

- Computation of displacements of statically determinate structures using principle of virtual work.
- The manual solution of statically indeterminate plane structures by the force method for frames, trusses and continuous beams.

- The manual solution of statically indeterminate plane structures by the displacement method for frames, trusses and continuous beams.
- The manual solution of moment distribution method (Cross-Method) for frames and continuous beams

Two textbooks are provided to help students to follow the teaching materials and understand the presented computational examples (see: at the end of the syllabus). These textbooks give an introduction to all three classes of geometry optimization problems of engineering structures: sizing, shape and topology optimization.

Upon successful completion of this course, the student will be able to:

1. Principle of Virtual Works; Virtual Force Method

2. Computation of displacements of statically determinate structures using the Virtual Force Method;

3. Statically Determinate and Indeterminate Structures. Degree of Indeterminacy.

4. Force Method for Statically Indeterminate Structures;

5. Computation of Statically Indeterminate Beams using Force Method

6. Computation of Continuously Multiplle Supported Structures using Force Method;

7. Beams with Varying Cross-Sections using Force Method

8. Computation Beams with Sinking of Supports using Force Method

9. Displacement Method for Statically Indeterminate Structures

10. Computation of Beams using Cross-Method

11. Computation of No Side-sway Frames using Cross Method

12. Computation of Side-sway Frames using Cross Method

1.   Requirements for Completion: This course contains 12 units of selected topics of numerical methods listed above. In order to complete this course, you will need to work through each selected unit and all of its assigned materials in the book Kassimali, A. "Structural Analysis" International Edition (5th ed.), Published by Cengage Learning or Rumman, Wadi S. "Statically Indeterminate Structures" A Wiley-Interscience Publication (1st ed.), (July 3, 1991)

Please give time to these; they are the best way to test your knowledge and learn.

In order to take this course, you must: Have access to a computer, frequent broadband Internet access, and ability to download and save files and documents to a computer. Using your personal code, all of the computer skills are available in the course room: PTE MIK, A-116.

You will also need to complete two graded Midterm Test Examples and the Final Exam (with grade).

LEARNING OBJECTIVES

OUTCOMES:
Students will be able to
- Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
- Analyse the continuous beams and rigid frames by slope defection method.
- Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
- Analyse the indeterminate pin jointed plane frames continuous beams

Methodology:

Both manual calculation and software calculation will be used in this course.

Schedule:

As Shown in the time table and for the exams it will be decided according to my discussion with students.

ATTENDANCE AND GRADING

Attendance:

Attending is required all classes, and will impact the grade (max. 10%). Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lesson will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

Grading:

Offered exam grade:

Evaluation in percents	Numeric grade
89%-100%	5
77%-88%	4
66%-76%	3
55%-65%	2
0-54%	1

READINGS AND REFERENCE MATERIALS

1. R.C. Hibbeler Structural Analysis 8th Eddition.
2.
3. Structural Analysis Aslam Kassimali 4th edition.

SCHEDULE

2019/2020. 2. FÉLÉV		SZORGALMI IDŐSZAK, OKTATÁSI HETEK														VIZSGAIDŐSZAK				
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	1.	2.	3.	4.	5.
Előadás tematika sorszáma																					
Gyakorlat/Labor sorszáma																					
Zárthelyi dolgozat							1st Med								2nd Med					
Otthoni munka	kiadása																				
	beadási határidők																				
Jegyző-könyvek	beadási határidők																				
Egyebek	pl. beszámolók,																				
	stb.																				
Aláírás / Félévközi jegy megadása																					
Vizsgák tervezett időpontjai																					