



**Civil Engineering Department
College of Engineering
First Semester (191)**

CE 201 Course Syllabus

Course code	Title	Credit hrs
CE 201	Statics	3-0-3

Instructor:	Dr. Moruf O. Yusuf
Office Number:	2223, UOHB Main Campus
Office Ext.:	5168
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Office Hours:

Sunday	Monday	Tuesday	Wednesday	Thursday
10:00-11:00 A.M	01:00-02:00 PM	10:00-12:00 PM	01:00-02:00 PM	10:00-11:00 AM

*Or by appointment

Lecture/Lab Information

Lecture	Lab
Location: Room 1311	No Lab
Time: Sunday 12:00 – 1:40 PM Tuesday 10:00 – 10:50 AM	No Lab

Designation: Required

1. Course Description

Statics is the study of methods for quantifying the forces between bodies. Forces are responsible for maintaining balance, causing motion of bodies, or changes in their shape. CE 201 is a 3-unit basic course and will provide necessary knowledge for higher level courses. This course will provide students an opportunity to master problem solving skills and to understand the basic concepts and principles of mechanics; vector algebra; equilibrium of particles in two and three dimensions; definition of moment and couple; reduction of systems forces; equilibrium of rigid bodies; statically determinate structures including beams, trusses, frames, and machines; internal forces; shear force and bending moment diagrams in beams; friction and its applications, centroid and center of gravity of lines, areas, and volumes; moment of inertia and radius of gyration.

2. Textbook

Engineering Mechanics: Statics by R.C. Hibbeler 13th Ed. Pearson.

3. Prerequisites

PHYS-101



4. Course Objectives

The overall learning objective of this course is to provide students with a deeper understanding of applied statics. Specifically, the course will:

- i. Introduce the students to the concept of force and utilization of vector algebra to represent and study the resultant effects of actions (in Cartesian coordinate system) on rigid bodies in 2D and 3D.
- ii. Introduce the concepts of moment of a force and static equilibrium of rigid bodies in 2D and 3D under various support mechanisms.
- iii. Introduce the students to structural analysis of simplified structural systems such as two dimensional trusses, frames and machines.
- iv. Introduce the students to the basic analysis tool to evaluate internal forces, static dry friction, center of gravity and area moments of inertia.

5. Course Outcomes

After the successful completion of the course, the students should be able to meet the following requirements as the proofs of learning outcomes:

- i. Apply knowledge of mathematical tools (including vector algebra), science and engineering to study (analyze) rigid bodies under the action of forces & moments.
- ii. Identify, formulate and solve engineering problems utilizing the principles of static equilibrium with a view to studying rigid bodies under various combinations of external forces and moments.
- iii. Have the analytical ability to use and communicate technical information necessary for the analysis of rigid bodies.
- iv. Have adequate analytical tools, skills and modern engineering tools necessary for the analysis of deformable bodies, and/or other engineering practices.

6. Mapping between Course Outcomes and Student Outcomes

Student outcomes \ Course outcomes	a	b	c	d	e	f	g	h	i	j	k
i	✓										
ii					✓						
iii							✓				
iv											✓

7. Major Topics Covered in the Course

No.	Content	Chapter	Contact Hours
1	General Principles	1	1
2	Vectors, Scalars and System of Coplanar Forces	2	5
3	Equilibrium of Forces	3	4
4	Moments, Resultant of Forces	4	7



5	Equilibrium of a Rigid Body, Free Body Diagrams (FBD)	5	5
6	Structural Analysis: Method of Joints and Sections	6	8
7	Internal Forces: Shear and Moment Diagrams	7	5
8	Friction	8	3
9	Center of Gravity and Centroid	9	2
10	Moments of Inertia	10	4

8. UOHB Rules and Regulations:

A. Attendance in the theory class:

Attendance in the class will be strictly observed starting from first day of classes. Students shall be warned after 2 and 5 inexcusable absences, however after 8 inexcusable or 10 total absences (excusable and inexcusable absences), DN grade shall be awarded. Students shall be solely responsible for his DN grade and its accompanied complexities.

	Number of inexcusable absences			Total absences (excusable* & inexcusable)
	Warning I	Warning II	DN	DN
30 course lectures per semester	2	5	8	10

The followings should be noted

- i) Students must bring book, notebook, calculator and pen to the class
- ii) Attendance in the classes will be taken within five minutes of the beginning of the class.
Any student who arrives class within 5 minutes from the start of class will be marked as late. If the student is marked late 3 times, then this is equivalent to 1 unexcused absence. Student who arrives after 5 minutes is considered absent with no excuse.

*Note:

Officially authorized excuse of absences must be presented to the instructor **no later than two days** following the resumption of class attendance.

B. Waiting Time: If the instructor is late, students are expected to wait for 15 minutes and then are free to go

C. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but not limited to the following practices:

- **Cheating**, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.



- **Plagiarism**, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- **Impersonation** or taking an exam in proxy.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.

D. Penalties for Violations of Academic Integrity

Having witnessed or otherwise identified an apparent violation of the academic integrity policy, the faculty member may either impose or recommend an appropriate penalty, depending upon the seriousness of the offense.

The instructor may impose any one of the following penalties:

- a written notice of warning, with a copy placed in the student's file with the advisor;
- a reduced grade on the assignment;
- a grade of F (zero if graded numerically) for the assignment;
- a reduced grade for the course;
- a grade of F for the course.

E. Class/Lab Rules –

- Use of **mobile phones** is **not allowed** during the class period.
- **Smoking, eating or drinking** is **not permitted** at any time.
- **Excuse** must be requested and granted before **leaving the class** for any reason.
- Lab dress code: boot, trousers and shirt

F. Assignments and Quizzes:

- Problems or questions will be assigned on each chapter of the course. Students will be required to solve these problems and submit the solutions within one week.
- No assignments will be accepted after its due date.
- There will be no makeup quizzes.
- Students should make every effort to meet all announced deadlines. Any constraints to meet the deadline shall be reported to the instructor for him to determine whether an extension is reasonably required.

G. Communication

The students shall be constantly using the blackboard to communicate within themselves and the instructor. Students should check their e-mail daily to check whether there exists any special instructions or other information from the instructor.



9. Schedule of Classes

Week	Date	Topics	Section/Ref.	Assessments
1	02/09/19	General Principles	1.1-1.6	
		Introduction to scalars & vectors, Vector addition of forces	2.1-2.3	
	04/09/19	Addition of coplanar forces	2.4	
2	09/09/19	Cartesian vectors	2.5-2.6	
		Position vectors, force along a line	2.7-2.8	
	11/09/19	Dot product	2.9	Quiz #1
3	16/09/19	Equilibrium of a particle & free-body diagrams	3.1-3.2	
		Coplanar force systems	3.3	
	18/09/19	Three-dimensional force systems Cross product, moment of a force	3.4	HW #1
4	23/09/19	National Holiday	3.4 (cont.)	
		National Holiday	4.1-4.2	
	25/09/18	Moment of a force & principle of moments	4.3-4.4	Quiz #2
5	30/09/18	Moment of a force & principle of moments	4.4 (cont.)	
		Moment about an axis	4.5	
	02/10/19	Moment of a couple	4.6	
6	07/10/19	Force and couple systems	4.7-4.8	
		Distributed loading	4.9	
	09/10/19	Equilibrium of a rigid body	5.1-5.2	Quiz #3, HW #2
		Major 1 Exam (Ch. 1 to Ch.3): (Tuesday: 8th Oct. 2019), 6:00 PM – 8:00 PM		
7	14/10/19	Equilibrium of a rigid body (2-D)	5.3	
		Rigid body equilibrium (2-D); two and three-force members	5.3 (cont.) – 5.4	
	16/10/19	Equilibrium of a rigid body (3-D)	5.5-5.6	
8	21/10/19	Equilibrium of a rigid body (3-D)	5.6 (cont.)	
		Simple trusses	6.1	



	23/10/19	The method of joints	6.2	Quiz #4
9	28/10/19	The method of joints	6.2 (cont.)	
		Zero force members and introduction to method of sections	6.3-6.4	
	30/10/19	The method of sections	6.4 (cont.)	HW # 3
10	04/11/19	The method of sections	6.4 (cont.)	
		Space trusses	6.5	
	06/11/19	Frames and machines	6.6	Quiz #5
11	11/11/19	Internal forces (2-D)	7.1	
		Internal forces (2-D cont'd and 3-D)	7.1 (cont.)	
	13/11/19	Introduction to shear and moment equations & diagrams	7.2	
Major 2 Exam (Ch. 4 to Ch.6.4) (Tuesday: 12th Nov. 2019), 06:00 – 08:00 PM				
12	18/11/19	Shear and moment equations & diagrams	7.2 (cont.)	
		Relations between distributed load, shear & moment	7.3	
	20/11/19	Dry friction & problems involving dry friction	8.1-8.2	Quiz #6, HW # 4
13	25/11/19	Problems involving dry friction 1	8.2 (cont.)	
		Problems involving dry friction 2	8.2 (cont.)	
	27/11/19	Center of gravity & centroid (no applications)	9.1	
14	02/12/19	Center of gravity for composite bodies	9.2	
		Moment of inertia for areas, parallel-axis theorem	10.1-10.2	
	04/12/19	Radius of gyration of an area	10.3	HW # 5
15	09/112/19	Moment of inertia for composite areas	10.4	Quiz #7
		Moment of inertia for composite areas	10.4 (cont.)	
	11/12/19	Review Lecture		
Final Exam (Comprehensive)				



10. Schedule of Exams for CE 201: Statics

Examination	Major 1	Major 2	Final Exam
Week No.	6	11	16-17
Date & Time	Tuesday 8 th October '19 (6:00 – 8:00 PM)	Tuesday 12 th November '19 (6:00 – 8:00 PM)	See final exam schedule

Note:

- Make-up exam will be given only in case the affected student has an approved medical excuse
- Any potential conflicts with other exams must be reported **in advance** for adequate adjustment.

11. Assessment Plan for the Course

Assessment Policy	%	Letter Grading Scales	
		Marks	Letter Grade
Participation in class discussion	5		
Quizzes	10	95-100	A+
Homework	10	90 - less than 95	A
First major exam	20	85 - less than 90	B+
Second major exam	20	80 - less than 85	B
Final exam	35	75 - less than 80	C+
Total	100	70 - less than 75	C
		65 - less than 70	D+
		60 - less than 65	D
		less than 60	F

12. ABET Category Content

Engineering Science	65%	(1.95 credit hours)
Engineering Design	5%	(0.15 credit hours)
Engineering computing	30%	(0.9 credit hours)

Prepared/Modified by: Dr. M. O. Yusuf

Signature:

Date: 25-08-2019