

# ARO2041 STATICS

# SYLLABUS

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Office Hours: 10-Noon MW, or by appointment (2018 F).

Class	Section	Number	Lecture	Location
ARO2041	1	73216	8:30 am – 9:45 am MW	Bldg 13, Room 1229

## CLASS SCHEDULE

Week	Date	Lec	Day	Topics	B&J		HW Due
					10th Ed.	11-12th Ed.	
2	27-Aug	1	M	Fundamental Principles	1.1-1.6	1.1-1.6	
	29-Aug	2	W	Statics of Particles - Basics	2.1-2.6	2.1	1
3	3-Sep	-	M	<b>Holiday - Labor Day</b>	---	---	-
	5-Sep	3	W	Statics of Particles - Planar	2.7-2.11	2.2-2.3	2
4	10-Sep	4	M	Statics of Particles - 3D	2.12-2.15	2.4-2.5	3
	12-Sep	5	W	Statics of Rigid Bodies - Basics	3.1-3.11	3.1-3.2	4
5	17-Sep	-	M	<b>Test #1 (Lectures 1-4)</b>	---	---	-
	19-Sep	6	W	Statics of Rigid Bodies - Couples	3.12-3.16	3.3	5
6	24-Sep	7	M	Statics of Rigid Bodies - Reduction	3.17-3.21	3.4	6
	26-Sep	8	W	Equilibrium of Rigid Bodies - 2D	4.1-4.7	4.1-4.2	7
7	1-Oct	9	M	Equilibrium of Rigid Bodies - 3D	4.8-4.9	4.3	8
	3-Oct	10	W	Centroids & Centers of Gravity	5.1-7, 5.10-12	5.1-2, 5.4	9
8	8-Oct	-	M	<b>Test #2 (Lectures 1-9)</b>	---	---	-
	10-Oct	11	W	Distributed Forces on Beams & Submersibles	5.8-5.9	5.3	10
9	15-Oct	12	M	Trusses	6.1-6.8	6.1-6.2	11
	17-Oct	13	W	Frames & Machines	6.9-6.12	6.3-6.4	12
10	22-Oct	14	M	Internal Forces - Beams	7.1-7.5	7.1-7.2	13
	24-Oct	-	W	<b>Test #3 (Lectures 1-13)</b>	---	---	-
11	29-Oct	15	M	Internal Forces - w-V-M Relations	7.6	7.3	14
	31-Oct	16	W	Internal Forces: Cables w/ Concentrated Loads	7.7	7.4A	15
12	5-Nov	17	M	Friction - Basics	8.1-8.4	8.1	16
	7-Nov	18	W	Friction - Special Applications	8.5-8.10	8.2-8.4	17
13	12-Nov	-	M	<b>Holiday - Veteran's Day</b>	---	---	-
	14-Nov	-	W	<b>Test #4 (Lectures 1-17)</b>	---	---	-
14	19-Nov	19	M	Moment of Inertia - Areas	9.1-9.10	9.1-9.4	18
	21-Nov	20	W	Moment of Inertia - Masses	9.11-9.18	9.5-9.6	19
15	26-Nov	21	M	Mass Properties of Aero Vehicles	---	---	20
	28-Nov	22	W	Load Distributions for Aero Vehicles	---	---	21
16	3-Dec	-	M	<b>Test #5 (Lectures 1-22)</b>	---	---	22
	5-Dec	-	W	Summary	---	---	-
17	10-Dec	-	M	<b>Final Exam (Lec 1-22) 7:00 AM - 9:00 AM</b>	---	---	-

Note: This syllabus plan is subject to change. Keep your eyes peeled for updates & have the latest on hand.

## GRADING SCALE & WEIGHTS

**Course Grading** -----

Homework	15%
Quizzes	10%
Test #1	15%
Test #2	15%
Test #3	15%
Test #4	15%
Test #5	15%
Final Exam	+2%

----- Grading Scale -----					
	A	100 % - 93 %	A-	92 % - 90 %	
B+	89 % - 87%	B	86 % - 83%	B-	82 % - 80%
C+	79 % - 77%	C	76 % - 73%	C-	72 % - 70%
D+	69 % - 66%	D	65 % - 61%	D-	60 % - 56%
	F	55 % - 0%			

The final exam is optional & provides opportunity to better grade.

**Required (Hardcopy or Bound Paperback) Text & Tools:**

- Beer, Johnston & Mazurek, Vector Mechanics for Engineers – Statics. 12<sup>th</sup> Edition preferred, any edition acceptable (Warning: Other editions may not have same problems or data needed).
- Pencil, Paper (Quad or Quint Pad Recommended), Engineering or Scientific Calculator

**Prerequisites:**

- C- or better in MAT 1150 or MAT 115, PHY 1510 or PHY 131, and PHY 1510L or PHY 131L.

**Course Description:**

Two & three-dimensional equilibrium of particles & rigid bodies. Principles of friction. Properties of areas including centroids, centers of gravity, & moments of inertia. Distributed loads. Analysis of 2D & 3D trusses, frames & machines. Static equilibrium & statically indeterminate systems. Theory and application of principles on aircraft and rocket structures and subcomponents.

**Important Notes, Expectations & Comments:**

- Attendance is required. Every class has deliverables which will result in loss of points if missed.
- Be on time to class. Late arrival will result in loss of homework, project & quiz points.
- Student who are late or who have unexcused absences will be dropped from the class.
- Cell phones & laptops may not be used in class. Use will result in loss of class credit.
- Eating, drinking & sleeping are not allowed in the classroom.
- Cheating is unacceptable and will result in immediate failure of the class.
- Participation in class is desired, recommended, and rewarded.

**Homework Expectations & Guidelines:**

- Homework due-dates are shown in the Syllabus.
- Homework is due at the start of class. Half credit will be lost if turned in after class starts.
- Homework will not be accepted or scored after class ends on the day it is due.
- Collaboration on homework is recommended. Copying is considered cheating.
- Homework must be graded by student per grading procedure shown below prior to submittal.
- There may be Bb HW sets as well. These will be graded by me.
- Ungraded & misgraded homework submittals will receive zero points. Plan accordingly.
- Missing HW assignments will score -5 points.

**Quiz & Test Expectations & Guidelines:**

- Quizzes will be given nearly every class. Expect them & be prepared.
- Quizzes will usually be given at the start of class. Late arrival will likely miss the quiz.
- No make-up quizzes or exams will be administered.
- Students missing quizzes without prior notification to instructor will be scored -5 points.
- Most quizzes & exams will be open book (hardcopy or Paperbound only) & closed notes. No self-bound texts are allowed during exams.
- Students missing exams without prior notification to instructor will be scored -50 points.
- No electronic devices (including electronic texts) except calculators will be allowed during exams or quizzes.
- Bb & online homework & quizzes may also be used, and must be taken within the allotted time.
- Bb & online quizzes must be taken individually without collaboration or help from others.
- Seating will probably be rearranged during tests. Plan to sit alone and to do your own work.
- During quizzes & tests, talking, communicating, sharing with other students, and getting out of seat without permission are not allowed and will be considered cheating. Raise your hand to be recognized if you need something during a quiz or test and do not get out of your seat without permission except to turn in your completed work. Violations will result in zero points for subject work, and may result in failure of class.

**Syllabus Updates:**

- The syllabus is your roadmap to the course.
- Updates to the content & order of topics may be made and will be posted as needed.
- Changes to the Syllabus will be announced in class and/or thru Bb.
- Each student is responsible to have the latest copy, to be aware of the content, and to be prepared for each class, assignment, quiz and test.

**HOMEWORK GRADING PROCEDURE**

Each student must grade their own homework prior to submittal using a colored pen or marker that stands out from your work. Any ungraded or unidentified work will not be scored, & will show a zero in my gradebook. Detailed grading procedure as follows.

**Homework Grading Procedure:**

- Score each problem as follows:
  - SETUP: Score 1 point if all the following is present in your solution:
    - Problem Number - Identified (1, 2, 3, etc) & circled
    - Given, Find, & Solution - Clearly marked & appropriate pertinent data recorded.
    - Sketch – Pertinent sketch of problem shown.
    - Neatness – Setup is legible & clear.
    - *This point is only available if you also attempt to solve the problem. There are no points offered for simply setting up the problem without also attempting to solve it.*
  - WORK: Score 2 additional points if all the following is present in your solution:
    - Equations – All pertinent equations needed and/or used are shown
    - Sketches & FBDs – Includes sketch of problem or idealization & FBDs showing applied loads and reactions wherever possible.
    - Neatness – All work is legible and clear.
    - Complete - Problem is worked to completion & all answers are boxed.
  - ACCURACY: Score 0, 1, or 2 additional points, as follows.
    - If all answers of a problem are boxed & match the answer provided, score 2 points.
    - In only some of the answers provided match the solution, score 1 point.
    - If no answer is provided, score 0 points (as if you got it right).
- This means each problem score will range from 1 to 5 based on the above.
- Sum your scores to the top of the first page with the total points earned over the total possible (5 times the number of problems), and circle the total score conspicuously.
- If you want me to see or score something, write "See XYZ" & I will take a look & evaluate.
- I will make any modifications to the grades as needed, and may score punitive point reductions if I feel the scoring is intentionally misleading.
- Any ungraded homework or homework without a name will not be scored, and will show a zero in my gradebook.
- Mis-graded homework will receive zero points, or will be heavily penalized.
- Take your time and grade your own work accurately.
- Some homework problems will be designed to measure student performance. These will initially be graded by student per normal procedure, but will be re-scored by professor and may even be worth more points.
- Some homework problems will be designed to measure student performance. These will initially be graded by student per normal procedure, but will be re-scored by professor and may even be worth more points.
- I may deduct points on any HW that is not neat and clear and that does not follow a reasonable solution approach. Make your work neat, clear, logical, and correct.

If there are questions, see me.