	<u> PHYS 1303 - 002 SYLL</u>	ABUS	Course Objectives: Students will be able to:		
	Introductory Mecha	<u>nics</u>	1) demonstrate basic facility with the methods of scientific inquiry		
Text:	Fundamentals Of Physics		and problem-solving 2) explain how the concepts and findings of physics shape our world		
by Halliday, Resnick, Walker,			S. Dalley		3) develop quantitative models as related to the course subject matter
10th edition			Fall 2016		4) apply symbolic systems of representation
Date	Class	Pre-class	Survey	Suggested	5) formulate structured and logical arguments Objectives
Date		Prep	9:00am	Problems	
Mo 8/22	Introduction				
We 8/24	Measurement	1.1 - 1.3	1	1.3, 1.9, 1.12, 1.27	Understand and use dimensions, units, and significant figures
Fri 8/ 26	Straight Line Motion	2.1 - 2.3	2	2.2, 2.15, 2.18, 2.19	Understand and use displacement, velocity, acceleration in one dimension
Mo 8/29	Straight Line Motion	2.4	3	2.25,2.37	Apply kinematics to constant acceleration
We 8/31	Straight Line Motion	2.5- 2.6	4	2.44,2.53	Interpret kinematics graphically and apply to free fall
Fr 9/2	Vectors	3.1	5	3.12	Understand vectors conceptually in terms of components
We 9/ 7	CHAPT 1&2 TEST				
Fr 9/9	Vector addition	3.2	6	3.16	Use vector addition
Mo 9/12	Motion in 2D & 3D	4.1 - 4.3	7	4.3, 4.11,	Understand and use vector kinematics in two and three dimensions
We 9/14	Motion in 2D & 3D	4.4	8	4.22,4.27	Apply vector kinematics to projectiles in free fall
Fr 9/16	Motion in 2D & 3D	4.6 - 4.7	9	4.70,4.72	Apply vector kinematics to relative motion
Mo 9/19	Force and Motion	5.1 (5.3)	10	5.7	Understand Newton's 3 laws of motion conceptually
We 9/21	CHAPT 4 TEST				
Fr 9/23	Force and Motion	5.2	11		Apply Newton's laws to examples with gravity, tension & normal forces in 1D
Mo 9/26	Force and Motion	5.3	12	5.34, 5.42, 5.57	Apply Newton's laws with more than one dimension and/or body
We 9/28	Force and Motion	6.1 - 6.2	13	6.13, 6.36	Apply Newton's laws to examples with resistive force
Fi 9/30	Force and Motion	4.5, 6.3	14	6.43, 6.49, 6.51	Apply Newton's laws to examples with circular motion
Mo 10/3	Kinetic Energy & Work	3.3, 7.1 - 7.3	15	7.11, 7.20	Apply kinetic energy and work to constant forces
We 10/5	CHAPT 5&6 TEST				
Fr 10/7	Kinetic Energy & Work	7.4-7.6	16	7.39, 7.46	Apply kinetic energy and work to non-constant forces, and power
We 10/12	Potential and Conserved Energy	8.1 - 8.3	17	8.03,8.13	Understand potential energy and apply conservation of mechanical energy
Fr 10/14	Potential and Conserved Energy	8.4-8.5	18	8.42, 8.47	Analyze systems subject to external and non-conservative forces
Mo 10/17	Center of Mass of systems	9.1 - 9.2	19	9.2,9.6,9.9	Understand CoM and Newton's 2nd law for systems

We 10/19	CHAPT 7&8 TEST				
Fr 10/21	Linear Momentum	9.3 - 9.4	20	9.31	Understand linear momentum and impulse, apply to motion of systems
Mo 10/24	Linear Momentum	9.5 - 9.7	21	9.40, 9.49,9.60	Apply conservation of linear momentum to collisions in one dimension
We 10/26	Linear Momentum	9.8	22	9.100	Apply conservation of linear momentum to collisions in two dimensions
Fr 10/28	Rotational Motion	10.1 -10.3	23	10.13, 10.22	Understand angular displacement, velocity, acceleration about a fixed axis
Mo 10/31	CHAPT 9 TEST				
We 11/2	Rotational Motion	10.4- 10.7	24	10.41	Understand and apply laws of mechanics to rotation of point masses
Fri 11/4	Rotational Motion	10.4- 10.7	25	10.53	Understand and apply laws of mechanics to rotation of rigid bodies
Mo 11/7	Rolling & Angular Momentum	3.3, 11.1,2,4	26	11.3, 11.11	Analyze rolling motion
We 11/9	Rolling & Angular Momentum	11.5-11.8	27	11.26,11.54	Understand and apply angular momentum to rotation
Fr 11/11	Equilibrium	12.1-12.2	28	12.7, 12.14	Apply mechanics to systems in equilibrium
Mo 11/14	CHAPT 10&11 TEST				
We 11/16	Gravitation	13.1 - 13.4	29	13.21,13.8	Apply mechanics to variable gravity force
Fri 11/18	Gravitation	13.5	30	13.36	Apply mechanics to potential energy of variable gravity force
Mo 11/21	Gravitation	13.6 - 13.7	31	13.54	Apply mechanics of gravity to space science
Mo 11/28	Oscillations	15.1- 15.2	32	15.11, 15.33	Apply mechanics to SHM
We 11/30	CHAPT 13 TEST				
Fr 12/2	Oscillations	15.4-15.6	33	15.42,15.58	Understand concepts of circular SHM, damped, and forced oscillations
Mo 12/5	Relativity	37	N/A	see website	Understand and use Special Relativity of time dilation and energy
We 12/14	FINAL EX	AM 8 am	- 11 am		

Answers to odd-numbered problems are in the textbook. Answers to even numbered problems (SI units unless stated otherwise): **1.12** 3.1, **2.2** (a) 1.74 (b) 2.14, **2.18** (a) 54 (b) 18 (c) -12 (d) 64 (e) 4 (f) 24 (g) 2 (h) -24 (i) 18, **2.44** (a) 3.70 (b) 1.74 (c) 0.154, **3.12** (a) 81 km (b) 40° North of East, **3.16** (a) (8 i + 2 j) (b) 8.2 (c) 14° (d) (2 i - 6 j) (e) 6.3 (f) -72°, **4.22** (a) 0.495 (b) 3.07, **4.70** (a) 5 (b) +x (c) 1 (d) -x, **4.72** 130 deg, **5.34** (a) 566 (b) 1.13 x 10³, **5.42** (a) 6.8 x 10^3 (b) 201 deg, **6.36** 3.75, **7.20** 45, **7.46** 2.7 x 10⁵, **8.42** (a) 5.6 x 10^2 (b) same **9.2** (a) 1.1 (b) 1.3, **9.6** (20,20,16), **9.40** 4.4 x 10³ km/h, **9.60** (a) 1.9 (b) right (c) elastic, **9.100** (a) 41.0 (b) 4.75 (c) explain! **10.22** (a) 3.0 (b) 30 (c) 6.0 (d) 90, **11.26** (a) 12 (b) +z (c) 3 (d) +z, **11.54** 39.1, **12.14** 0.702, **13.8** (a) 2.13 x 10^{-8} (b) 60.6 deg, **13.36** (2) 2.2 x 10⁷ (b) 6.9 x 10⁷, **13.54** 9.3 *M*_s, **15.42** (a) 0.499 (b) 9.40 x 10⁻⁴, **15.58** 0.39.