Pacing by Week Guide: Unit 8 – Thermal Energy & Laws of Thermodynamics

(Estimated 4.5 weeks of instruction)

The table below provides pacing guidance for Unit 8 by week. Use this pacing guide, the dynamic pacing calendar, and the lesson plans to maintain pacing in the course that promotes students' successful completion. Please reach out to the Physics team through OnRamps Support if you need support or have any questions.

Key:
(C) = Lecture College Assignment – Mandatory, calculated in final college grade
(L) = Lab College Assignment – Mandatory, calculated in final college grade
(PI) = Peer Instruction activity or contains PI components; contributes to college participation grade, completed in **Learning Catalytics**.
(F) = Flex Activity – Time may be used for recommended activity or reprioritized
(HS) = High School Activity – Not part of the college grade, may be omitted or modified as needed

Week 1 Readings: 13.1, 13.2, 13.3, 13.4		
Lesson Topic	Lesson	Learning Activity
Temperature and Thermal Expansion	8.1.1	• Begin Quest HW 11 **(C)** • 8.1.1.1 Temperature Inquiry Activities **(HS, 50 min)** • 8.1.1.2 Thermal Equilibrium and Expansion **(HS, PI, 50 min)**
Ideal Gases and Kinetic Theory	8.1.2	• 8.1.2.1 Gas Properties PhET Simulation **(HS, PI , 90 min)**
		• Exam 7 Retest **(C, 45 – 50 min plus upload time – can be completed during lunch/tutorial period as needed)**
Week 2 Readings: 14.1, 14.2, Lab Experiment Handout		
Lesson Topic	Lesson	Learning Activity
Ideal Gases and Kinetic Theory	8.1.2	• 8.1.2.2 Kinetic Theory Peer Instruction **(HS, PI, 50 min)**
Heat and Specific Heat	8.2.1	• Begin Quest HW 12 **(C)** • 8.2.1.1 Quantitative and Conceptual Heat Practice **(HS, PI, 75 min)** • Pre-Lab 8 **(L, PI, 30 min)** • Lab 8: Specific Heat Capacity in class Experimental Inquiry **(L, 60 – 90 min)** • Post-Lab 8 **(L, outside of class)** • Quest HW 11 Due **(C)**

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Week 3 Readings: 14.3, 14.4, 15.1, 15.2		
Lesson Topic	Lesson	Learning Activity
Phase Changes and Energy Transfer	8.2.2	• 8.2.2.1 Phase Changes **(HS, 50 min)** • 8.2.2.2 Latent Heat Peer Instruction **(PI, 30 min)** • 8.2.2.3 Energy Transfer Peer Instruction **(PI, 50 min)** • 8.2.2.4 Latent Heat Practice **(F, 50 min)** • Begin Quest HW 13 **(C)**
Week 4 Readings: 15.3, 15.4, 15.5		
Lesson Topic	Lesson	Learning Activity
First Law of Thermodynamics and Thermal Processes	8.3.1	• Quest HW 12 Due **(C)** • 8.3.1.1 First Law of Thermodynamics Peer Instruction **(PI, 50 min)** • 8.3.1.2 Thermal Processes **(HS, 50 min)**
Second Law of Thermodynamics and Engines	8.3.2	• 8.3.2.1 Second Law of Thermodynamics **(HS, 50 min)** • 8.3.2.2 Thermal Processes Peer Instruction **(PI, 50 min)** • Review for Final Exam **(F)**
Week 5 Readings:		
Lesson Topic	Lesson	Learning Activity
		• Quest HW 13 Due **(C)** • Spring Final Exam **(C, 1 part 90-100 min or 2 parts 45-50 min each, plus upload time)**