Physics

Linear Kinematics Unit Syllabus

Text: *Holt Physics* – by Serway and Faughn.

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| Block[[1]](#footnote-1) | Class | Due on this class[[2]](#footnote-2) |
| 1  **Sept**  **7/8** | -Hand out Course Policy  -Fill out information sheet  -Speed Trap/Uncertainty  -Tour of the Website assignment  -Data collection assignment for No reason to Speed | **Bring:** Your smiling face  **Bring:** Paper and pencil  **Turn in:** Completed information sheet  **Turn in:** Speed trap (In class) (indiv) |
| 2  **Sept**  **9/12** | -Speed  -Speed Whiteboard  -Review Dimensional analysis  -Tour o' th' Room  -Hand out *Speed* and *Acceleration* practice | **Video (all):** Tour of the Website  **Bring:** A calculator (every day hereafter :-)  **Read:** 2-1[[3]](#footnote-3), 1-2 to 1-3  **Read:** This syllabus! |
| 3  **Sept 13/14** | -Explain/assign No reason to Speed Lab  In class time for:  -Speed Worksheet  -Work on No reason to Speed | **Bring:** Your data for No reason to Speed |
| 4  **Sept 15/16** | -*No Reason to Speed* recap/Collect  -Quiz on Course Policy  -Grade quiz in class  -Vector nature of acceleration and velocity  -Acceleration | **Video:** Vector Velocity (B)  **Video:** Acceleration (C)  **Practice:** Speed: 1-8  **Turn in:** No reason to Speed lab (indiv)  **Read:** Course Policy |
| 5 Sept 19/20 | -More acceleration vf = vi + at  -Assign Lateral accelerometer take home lab.  -Graphs of position | **Video:** Acceleration with vf = vi + at (D)  **Practice:** Speed: 9-16  **Read:** 2-2, pp 48-51 |
| 6  **Sept 21/22** | -Velocity v. time graphs  -Cha cha cha lab intro  -Hand out Formative Assessments on:  -FA 2.1 Speed  -FA 2.2 Acceleration  -Demo the Moving Plots equipment (**Video Flip**)  -In class time for Labs and FAs | **Practice:** Acceleration: 1-15  **Turn in:** Cha Cha Cha Lab note (group) |
| 7  **Sept 23/27** | -Moving Plots equipment demo  -In class time for:  -Moving Plots Lab | **Video Flip:** Moving Plots Lab Graphs  **Practice:** Acceleration: 16-25  **Read:** 2-2, pp51-58 |
| 8  **Sept**  **28/29** | -Finish up Moving Plots Lab graphs  -Finish FA 2.1, 2.2  -Questions from Speed and Acceleration FAs?? | **Video Flip:** Moving Plots Lab Lines  **Practice:** P2A:1,3,5, P2B:1,3,5[[4]](#footnote-4) |
| 9  **Sept 30/**  **Oct 3** | -Tangent Lines for Moving Plots lab  **-Summative Assessments on:**  **-SA 2.1 Speed**  **-SA 2.2 Acceleration** | **Turn in:** Moving plots lab (Pairs)  **Turn In:** FA 2.1 Speed  **Turn In:** FA 2.2 Acceleration |
| 10  **Oct**  **4/5** | -Figuring out how far L/D + WB/gravity = 9.8 m/s/s  -Hand out *How Far* worksheet  -Work on How Far 1-10 | **Video:** How Far (E) (all 3 videos) |
| 11  **Oct 6/7** | -Reaction time lab  -Hand out How Far II worksheet.  Class time to work on  -Reaction time lab  -How Far I and II worksheet | **Video:** Reaction Time Lab  **Practice:** How Far: 1-10  **Check:[[5]](#footnote-5)** Practice 2.3 #1-5, 21, 22  **Read:** 2-3 |
| 12  **Oct 10/11** | -Measuring the Initial Velocity of an Air Rocket lab  Class time to work on  -Air Rocket Lab Calculations  -How Far I and II worksheet | **Video:** Air Rocket Calculations  **Check:** Practice 2.3 #6-10, 23, 24  **Practice:** How Far II: 5, 6, 7, 8, 10  **Turn in:** Air Rocket Lab (indiv)  **Turn in:** Reaction time lab (indiv) |
| 13  **Oct 12/13** | -Free Fall and Terminal velocity  -Advanced Free Fall Problems  -Hand out How Far III | **Video:** How Far Part II – Free Fall (F)  **Practice:** How Far II: 1, 2, 3, 4, 9  **Turn in:** Practice 2.3 #1-10, 21-24[[6]](#footnote-6) |
| 14  **Oct 17/18** | -More Advanced Free Fall Problems  -Prep for air rocket comp.: The Range Equation (magic!) | **Practice:** How Far III: 1,3  **Check:** Practice 2.4 #1, 2, 3 |
| 15  **Oct 19/24** | -Warmup – calculate angle  -Reminder about lateral Accelerometer assignment…  -Air Rocket Competition: Hitting a target | **Video (all):** Range Equation  **Practice:** How Far III: 4, 7, 8  **Check:** Practice 2.4 #4, 5, 6 |
| 16  **Oct 25/26** | -Formative Assessments on:  -FA 2.3 Basic Kinematics  -FA 2.4 Free Fall kinematics | **Practice:** P2F:1,2(22.1 m/s, 2.3 s),3,4(3.7 m, 0.77 s),5  **Turn In:** Practice 2.4 #1-6 |
| 17  **Oct 27/28** | -Accelerometers judged  **-Summative Assessments on:**  **-SA 2.3 Basic Kinematics**  **-SA 2.4 Free Fall Kinematics**  -Finish your lateral accelerometer lab writeup? | **Turn In:** FA 2.3 Basic Kinematics  **Turn In:** FA 2.4 Free Fall Kinematics  **Bring:** Your lateral accelerometer  **Turn in:** Your completed Lateral Accelerometer lab write-up signed by your parents. (indiv) |

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| Assignments   * 7 Labs:   + Speed Trap Lab – Timing cars, No handout /20 pts (indiv)   + No Reason to Speed Lab – Spreadsheet and questions /40 pts (indiv)   + Air Rocket Lab – Initial velocity outdoors, No handout /30 pts (indiv)   + Reaction Time Lab – Dropping meter stick /20 pts (indiv)   + Moving Plots Lab – tape timer and cart /40 pts (pairs)   + Plot Matching Lab – matching the plots on the computer/written note saying you did it. No handout /20 pts (group)   + Rocket Competition – No write-up required   + Lateral Accelerometer Lab – Do at home, bring the jar+writeup on the day after the test/20 (indiv) * 2 Formative Homework Assignments:   + Practice 2.3 #1-10, 21-24/28 pts   + Practice 2.4 #1-6/30 pts * 4 Formative/Summative Assessments: (10 pts ea)   + 2.1 Speed   + 2.2 Acceleration   + 2.3 Basic Kinematics   + 2.4 Free Fall Kinematics | Handouts  Syllabus-LinearKinematics  Lab-MovingPlotsLab  Lab-NoReasonToSpeed  Lab-ReactionTime  Lab-LateralAccelerometer  Misc-CoursePolicy  Noteguide-HowFar  Worksheet-Acceleration  Worksheet-HowFar  Worksheet-HowFarII  Worksheet-HowFarIII  Worksheet-Speed |

1. This is the block of the syllabus, and the numbers that follow are the dates that they will happen, the first is for A day classes, the second for B. [↑](#footnote-ref-1)
2. Note that this column is for things to be brought to class turned in, or done before the beginning of class. [↑](#footnote-ref-2)
3. This is section 2-1. It starts on page 40 of your textbook. [↑](#footnote-ref-3)
4. These are practice problems from the book. P2A is Practice 2A on page 44. [↑](#footnote-ref-4)
5. These practice problems will be stamped at the beginning of class, and they will be turned in as formative work. Do them on a separate piece of paper. This is your homework!!! If you want an extra stamp, put the problem on the board, and be able to explain it. [↑](#footnote-ref-5)
6. Turn this in all stapled together if you used different sheets. Label it "Practice 2.3" :-) [↑](#footnote-ref-6)