

# **HOMEWORK #1** (due start of class Jan. 17)    My Star Name is: \_\_\_\_\_ (copyright D. McCarthy)

## **LEARNING GOALS for this assignment:**

1. Understand the requirements and opportunities of our course.
  2. Become familiar with our Web site, email, and textbook.
  3. Begin communicating with your Professor and Teaching Assistant.
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### **1. Login to our Web site below and use it as follows.**

<http://lavinia.as.arizona.edu/~dmccarthy/ASTR250/index.html>

a. Skim our course syllabus (print or online) to understand the primary logistics and opportunities of our course. Be prepared for a quiz about the major requirements to earn your “A”.

b. Email a brief personal introduction to Dr. McCarthy and Mr. Hammer. Describe your home state and hobbies. Be sure to identify yourself and to use an appropriate subject line with the term “ASTR 250.”

### **2. Complete and return both sides of the handout from our first class.**

- a. “*Acknowledgement and Receipt of Syllabus*”
- b. The “*Astronomy Questionnaire*”

### **3. Check out the free, online textbook: <https://openstax.org/details/astronomy>**

- a. Click “View online” on the left-hand side.
- b. Click on “Contents” in the upper left corner to navigate the various chapters and sections.

### **4. Submit for Friday’s class: Answer the following two questions.**

a. Use calculus to show that the free-fall differential equation  $d^2y/dt^2 = -g$ , with initial conditions  $y(0) = h$  and  $dy/dt = 0$  at  $t = 0$ , has the following solutions:

$$dy/dt = -gt \text{ and } y = -\frac{1}{2}gt^2 + h.$$

Using these solutions, what is the impact speed?

b. In Ryden and Peterson’s book, study the first two sections: 1.1 and 1.2. In Figure 1.2 (p. 4), if the local time is noon in Greenwich, what is the approximate local time (two significant figures) in Columbus?