Final Test Information:
Exam 2-4 PM, Friday, May 3, Olin 101

The final exam will have 66 questions, multiple choice as always. You will have **120 minutes** to complete the exam.

1. The test is Friday, May 3 at 2 PM. Remember to bring a calculator and a #2 pencil. If you miss it, call me *immediately*.

2. 39 questions will be made up from the final portion of the course. These questions will be comparable to the other tests - think of it as test 4.

3. There will be an additional 27 questions covering the remainder of the course - nine from each of the first three tests. Of these nine, three will be taken word for word from the old tests, and six will be brand new questions. The new questions will usually be more general questions.

4. The test is limited to two hours. If you have special permission to take additional time on the test, you may have up to three hours.

5. The scores are out of 198 points. I should have them graded by some time Saturday.

If you have any questions, problems, or concerns about the final, please feel free to contact me.

Below is a complete list of all the equations provided on the test. Note that the final portion of the course involved only the last two equations (Hubble's Law).

$$F = \frac{GMm}{d^2} \qquad F = ma \qquad P^2 = a^3 \qquad (M + m)\,P^2 = a^3$$

$$c = \lambda f \qquad c = 3\times10^8 \text{ m/sec} \qquad E = hf \qquad P = knT$$

$$\sin\left(\frac{\theta}{2}\right) = \frac{\ell}{2d} \qquad \frac{v_{\text{rad}}}{c} = \frac{\lambda_{\text{shift}} - \lambda_{\text{rest}}}{\lambda_{\text{rest}}} \qquad \lambda_{\text{Peak}} T = 2900 \text{ K}\cdot\mu\text{m}$$

$$d = \frac{3.26 \text{ ly}}{p} \qquad \frac{L}{L_\odot} = \left(\frac{T}{T_\odot}\right)^4 \left(\frac{R}{R_\odot}\right)^2 \qquad L = 4\pi d^2 B$$

$$v = Hd \qquad H = 21 \text{ km/s/Mly}$$