

# Astronomy 102 - "Exploring the Cosmos"

Mon Thu 13:00-14:20 EII 167



Professor: Office hours:	<b>Chris Pritchett (Elliott 215)</b> - <a href="mailto:pritchett@uvic.ca">pritchett@uvic.ca</a> Mon Thu 14:30-15:30 – or email for an appointment															
Textbooks:	<ol style="list-style-type: none"><li>1. Chaisson/McMillan: “<b>Astronomy Today</b>”, 8<sup>th</sup> ed, <b>with Mastering Astronomy</b></li><li>2. Lab Manual</li><li>3. i&gt;clicker</li></ol>															
Web site:	<a href="http://www.astro.uvic.ca/~pritchett/Astr102"><b>http://www.astro.uvic.ca/~pritchett/Astr102</b></a>															
Lecture Notes:	On the above web site															
Marks:	<table><tr><td>Assignments<sup>a</sup></td><td>13%</td><td>(Mastering Astronomy website)</td></tr><tr><td>Midterm Exam(s)<sup>b</sup></td><td>20%</td><td>(Feb 23<sup>rd</sup> and possibly one other date)</td></tr><tr><td>Lab<sup>c</sup></td><td>20%</td><td>(start Jan 20<sup>th</sup>)</td></tr><tr><td>i&gt;clicker<sup>d</sup></td><td>7%</td><td></td></tr><tr><td>Final</td><td>40%</td><td></td></tr></table> <p><sup>a</sup> There will “normally” be one assignment per week, normally due on <b>Mondays at 11:59pm</b>. Late assignments are not accepted.</p> <p><sup>b</sup> The Midterm exams will be held on <b>Feb 23 and possibly one other date</b>, in class time.</p> <p><sup>c</sup> <b>You cannot pass the course without also passing the lab (department regulation; cannot be waived)</b>. Labs start on Jan 20<sup>th</sup>. Make sure you have a lab section.</p> <p><sup>d</sup> The i&gt;clicker mark is for participation only.</p>	Assignments <sup>a</sup>	13%	(Mastering Astronomy website)	Midterm Exam(s) <sup>b</sup>	20%	(Feb 23 <sup>rd</sup> and possibly one other date)	Lab <sup>c</sup>	20%	(start Jan 20 <sup>th</sup> )	i>clicker <sup>d</sup>	7%		Final	40%	
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Grade Conversion:	A+ (90-100%), A (85-89), A- (80-84), B+ (77-79), B (73-76), B- (70-72), C+ (65-69), C (60-64), D (50-59), F (0-49).															
Reference Materials:	A number of reference books will eventually be held in the Reserve Reading Room (1st floor of the Main Library) for reference, including the text (7 <sup>th</sup> ed.).															
Calculators:	On all examinations the only acceptable calculator is the Sharp EL-510R (~\$10 at the Bookstore). DO NOT bring any other calculator to examinations.															
Course Level:	For non-scientists; hardly any math; no science prereq’ s															
Course Content:	Chaisson Ch 28-16 – Stars, Galaxies, the Universe (but backwards)															
Assignment	<b>See “Getting Started” on class web site. First assignment due Mon Jan 19. Read Ch. 3. Connect to Facebook group. Register clicker. Go to lab.</b>															

## **Introduction**

- Light and Distance [AT 3.1-3.3]
- Temperature [AT 3.4]
- Doppler Effect [AT 3.5]
- Angular Measure [AT 1.3, box p 11]

## **Galaxies and Cosmology Introduction**

- The Milky Way [AT 23 - just a summary - use notes]
- Historical Intro [best to use notes for this]
- Star counts [AT 23.2]
- Parallax [AT 17.1]
- Pulsating Variables [AT 23.2]
- Shapley and the size of the Milky Way [AT 23.2]
- Dust, Trumpler, star counts [-]
- Galaxy Velocities [AT 24.3]
- Nature of Nebulae and the Great Debate [AT 23.2]
- Hubble's resolution of the problem [a few sentences at the end of 23.2]
- Expansion of the Universe [AT 24.3]
- Dark Matter [AT 23.6, 25.1]

## **Galaxies and Cosmology - the Big Bang**

- The Hubble expansion, misconceptions, age etc [AT 26.2]
- Temperature of Universe [AT 27.2 part]
- Evidence for a Hot Big Bang ...
- Big Bang Nucleosynthesis [AT 27.3]
- Structure of Atoms
- Fusion [AT 16.6]
- Cosmic Background Radiation [AT 26.7, 27.6]
- Blackbody Radiation [AT 3.4]
- Inflation and the Horizon Problem [AT 27.4]

## **Cosmology - After the Big Bang**

- Cosmological Principle [AT 26.1]
- Fate of the Universe [AT 26.3-26.5]
- Supernova Cosmology and Dark Energy [AT 26.5-26.6]
- Flatness Problem - Inflation revisited [AT 27.4]

## **Galaxies**

- Milky Way [AT 23 - parts only]
- Galaxy Classification [AT 24.1]
- Hydrostatic equilibrium [AT 16.2]
- Black Holes [AT 22.5-22.8]
- Supermassive black holes [AT 23.7, 25.4]
- Radio Galaxies and AGN's [AT 24.5, 25.4]
- Distribution of Galaxies in Space [AT 24.2, 25.5, 26.1]
- Galaxy and Structure Formation [AT 27.5, 25.3]

## **Stars**

- Physical Properties of Sun [AT 16.1]
- Solar Neighbourhood [AT 17.1]
- Stellar Temperatures and Spectra [AT 17.3]
- Stellar Sizes [AT 17.4]
- Hertzsprung-Russell Diagram [AT 17.5]
- Stellar Masses [AT 17.7]
- Other Stellar Properties [AT 17.8]
- Evolution - Leaving the Main Sequence [AT 20.1]
- Evolution of a Solar Star [AT 20.2]
- Death of Low Mass Stars [AT 20.3]
- Evolution of Massive Stars [20.4]