AST80016: Stellar Astrophysics
Study Guide

All assessment submission deadlines are listed in your unit Calendar/Study Guide index link tab.

Week 0:

**MODULE 1 - Introduction**

Course Content
- m01a01: Introduction to Stellar Astrophysics

Textbook Readings
- m01a01: None

Newsgroups
- Test Messages Newsgroup: try sending a posting & a reply
- Introductions Newsgroup: post a personal introduction

Weeks 1 & 2:

**MODULE 2 - Classifying Stars**

Course Content
- m02a01: Colour and Magnitude
- m02a02: Stellar Spectra

Textbook Readings
- m02a01: Sections 3.2, 3.4, 3.5, 3.6, 12.1
- m02a02: Section 8.1

**MODULE 3 - Physical Parameters**

Course Content
- m03a01: How Bright is a Star?
- m03a02: How Big is a Star?

Textbook Readings
- m03a01: Sections 3.2, 3.5, 14.1, 3.1, 3.4
- m03a02: Sections 3.4, 8.2, 7.1, 7.2, 7.3

**MODULE 4 - The HR Diagram**

Course Content
- m04a01: Putting it all Together

Textbook Readings
- m04a01: Sections 8.2, 13.3
Newsgroups:
- Weeks 1&2 Newsgroup: submit at least three relevant posts about Modules 2-4 related to Instructor-led posts.

Weeks 3 & 4:

**MODULE 5 - Stellar Energy**
**Course Content**
- m05a01: What Powers the Stars?
- m05a02: Reaction Rates

**Textbook Readings**
- m05a01: Section 10.3
- m05a02: Sections 5.4, 10.3

**MODULE 6 - Stellar Interiors**
**Course Content**
- m06a01: What Holds a Star Up?
- m06a02: Energy Transport

**Textbook Readings**
- m06a01: Sections 9.2, 10.1, 10.2, 10.4, 10.5 (up to polytropic model)
- m06a02: Sections 9.2, 9.3, 9.4, 9.5

Newsgroups:
- Weeks 3&4 Newsgroup: submit at least three relevant posts about Modules 5-6 related to Instructor-led posts.

Weeks 5 & 6:

**MODULE 7 - Modelling a Star**
**Course Content**
- m07a01: Equations of Stellar Structure

**Textbook Readings**
- m07a01: Sections 10.5 (up to polytropic model), 10.6, 11.1

**MODULE 8 - Stellar Atmospheres**
**Course Content**
- m08a01: The Physics of Atmospheres

**Textbook Readings**
- m08a01: Sections 9.2, 9.3, 9.4, 9.5

**MODULE 9 – Young Stars**
**Course Content**
- m09a01: Star Formation
• m09a02: Disks and T Tauri Stars

Textbook Readings
• m09a01: Sections 12.1, 12.2, 12.3
• m09a02: Sections 12.3

Newsgroups:
• Weeks 5&6 Newsgroup: submit at least three relevant posts about Modules 7-9 related to Instructor-led posts.

Weeks 7 & 8:

MODULE 10 – Low Mass Stellar Evolution
Course Content
• m10a01: Main Sequence Evolution
• m10a02: Moving on to the AGB

Textbook Readings
• m10a01: Section 13.1
• m10a02: Section 13.2

MODULE 11 - High Mass Stellar Evolution
Course Content
• m11a01: The Middle-Aged Spread...
• m11a02: AGB Stars

Textbook Readings
• m11a01: Section 13.2
• m11a02: Review Section 13.2

Newsgroups:
• Weeks 7&8 Newsgroup: submit at least three relevant posts about Modules 10-11 related to Instructor-led posts.

Weeks 9 & 10:

MODULE 12 - Planetary Nebulae & White Dwarfs
Course Content
• m12a01: The Last Gas(p)
• m12a02: The Physics of White Dwarfs

Textbook Readings
• m12a01: Section 13.2
• m12a02: Sections 16.1, 16.2, 16.3, 16.4, 16.5

MODULE 13 - Supernovae
Course Content
• m13a01: The Physics of Supernovae

Textbook Readings
• m13a01: Sections 15.2, 15.3, 18.5
MODULE 14 – Stellar Remnants
Course Content
• m14a01: Pulsars
• m14a02: Black Holes

Textbook Readings
• m14a01: Sections 16.6, 16.7
• m14a02: Section 17.1, 17.2, 17.3

Newsgroups:
• Weeks 9&10 Newsgroup: submit at least three relevant posts about Modules 12-14 related to Instructor-led posts.

Weeks 11 & 12:

MODULE 15 - Pulsating Stars
Course Content
• m15a01: Stars that Breathe
• m15a02: Modelling Stellar Pulsations

Textbook Readings
• m15a01: Sections 14.1, 14.2
• m15a02: Sections 14.3, 14.4, 14.5

MODULE 16 – Stellar Families
Course Content
• m16a01: Binary Stars
• m16a02: Stars Clusters

Textbook Readings
• m16a01 Review sections 12.2 and 12.3, plus Chapter 18
• m16a02: Section 13.3

Newsgroups
• Weeks 11&12 Newsgroup: submit at least three relevant posts about Modules 15-16 related to Instructor-led posts. Archive all newsgroups if you wish to retain a record of the discussions