



# SYLLABUS

**AU PHYS 110 Astronomy**

202041

# AU PHYS 110 Astronomy

## Consortium of Adventist Colleges and Universities

### Self-Paced Open Learning Format

This course follows a self-paced online format. You have 180 days from your selected start date to complete the course. The last day to withdraw with a full refund is 15 days after your start date.

### Instructor Contact

Please refer to course in LearningHub for the teacher contact information.

### Other Assistance

Username and password assistance	<a href="mailto:helpdesk@andrews.edu">helpdesk@andrews.edu</a>	(269) 471-6016
Enrollment and withdrawal questions	<a href="mailto:sderegister@andrews.edu">sderegister@andrews.edu</a>	(269) 471-6323
Technical assistance with online courses	<a href="mailto:dlit@andrews.edu">dlit@andrews.edu</a>	(269) 471-3960
Exam requests and online proctoring	<a href="mailto:sdeexams@andrews.edu">sdeexams@andrews.edu</a>	(269) 471-6566
Distance Student Services - any other questions	<a href="mailto:sdestudents@andrews.edu">sdestudents@andrews.edu</a>	(269) 471-6566

## Part 1: Course Information

### Course Descriptions

Exploring the cosmic environment—the solar system, stars and their development, star clusters, the interstellar medium, galaxies and large-scale features of the Universe. Includes a distance laboratory component and meets the Andrews General Education Physical Science requirement. Does not apply to a major or minor.

### Prerequisite

MPEP2 or MATH145 or 166 or STAT 285 or equivalent

### Required Text/Material

A. Fraknoi, D. Morrison, and S. Wolff, “Astronomy”, OpenStax Free Online Astronomy Textbook  
Download for free at: <https://openstax.org/details/books/astronomy>

Stellarium Software – download for free at: <http://stellarium.org/>

### Lab Materials needed:

Measuring Tape

Cardboard

Thumbtacks

String

Protractor

Nut

Ruler

Lenses (need one of each) <https://www.novatech-usa.com/LCV508> & <https://www.novatech-usa.com/LCV504>

Foam Holder

100 pennies

Bathroom Scale

Stopwatch (purchase on your own or you may use App on your smartphone)

### **Credit Hour and Commitment**

This course is offered for 4 semester credits; therefore it is expected that you will spend 180 total hours on this course. This translates to a steady 12 hours per module. You'll spend your time in textbook and lesson readings, answer the on-line homework questions, laboratories, journals, reaction paper, and presentation.

A recommended schedule to divide your time per module is provided:

Readings: 3 hours

Lectures: 1 hour

Assignments 1 hour

Essays: 2 hours

Journals: 1 hour

Labs: 2 hours

Weekly work on Final paper and presentation: 1 hour

Studying for Midterm and Final Exams: 1 hour

### **Student Learning Outcomes**

1. To effectively communicate key concepts in astronomy.
2. To participate in scientific methodology as applied to astronomical understanding.
3. To engage in the dialogue between astronomy and Christian faith
4. To significantly alter one's life perspective through a study of the universal laws, distance scales and dynamics of the cosmos.

## **Part 2: Course Methods and Delivery**

### **Methods of Instruction**

Methods of instruction include assigned readings from the textbook and the course material, journals, assignments, labs, a reaction paper, a presentation, and two exams. Regular participation in the course is essential to good performance.

### **Technical Requirements**

- Internet connection (DSL, LAN, or cable connection desirable).

## LearningHub Access

This course is delivered online through LearningHub at <http://learninghub.andrews.edu>

Your username and password are your Andrews username and password. You need to activate your username and password to access LearningHub.

Please do this online here:

<https://vault.andrews.edu/vault/pages/activation/information.jsp> if you haven't already. If you need assistance, call or email us: (296) 471-6016 or <mailto:helpdesk@andrews.edu>.

If you need technical assistance at any time during the course, or to report a problem with LearningHub, please email [dlit@andrews.edu](mailto:dlit@andrews.edu) or call (269) 471-3960.

## Part 3: Course Requirements

**Important Note:** Activity and assignment details will be explained in detail within each learning module. If you have any questions, please contact your instructor.

### Your Schedule

In Learning Hub, you will access online lessons, course materials, and resources. This course is self-paced. You must complete the course within 180 days. This is the Consortium policy. You may have a stricter deadline imposed by graduation, financial aid, or other restrictions.

Start by creating a schedule for completion of the course.

- Determine your deadline. Do you need a transcript sent to your home institution?
- Working from your deadline, count backwards. Allow 2 weeks after you take your final exam for your final grade to be calculated. Allow another 2 weeks for the transcript to be processed and sent.
- Now use the suggested schedules to create a schedule for yourself that ensures completion 4 weeks before your deadline.

Submit your course plan to your instructor within Learning Hub AND discipline yourself to make regular progress.

### Assessment Descriptions

**Textbook Readings:** Read the assigned section of the textbook. Though you may feel somewhat overwhelmed by the volume of material from this first pass, the goal of the course is not rote memorization of facts. As you proceed, you will find certain ideas consistently emphasized in the text, the lessons, and the homework. Focus on those key principles.

**Lesson Readings:** Carefully read the lessons, especially any detailed information or calculation hints. I have deliberately included specific exam preparation material in the lessons.

**Assignments/Homework (20% of your grade):** Answer the on-line, multiple-choice homework questions. Answer the essay questions for each lesson graded according to the Essay Rubric. Many of the exam questions are related to questions you will have encountered in your homework and essay assignments.

**Laboratories (20% of your grade):** As with any science, astronomy is based on observations of the universe. Some of these observations are made within a laboratory, but many are carried out on very distant objects using telescopes, etc. Apply your knowledge with the on-line laboratories found each week on the LearningHub content page. Each experiment is assigned in conjunction with the corresponding course reading material.

**Blog (5% of your grade):** Please submit a 3-4 paragraph response to the questions in the Forum (links on the content page). This is a time to reflect and think about the things you have learned during the week.

**Reaction Paper (15 pts; 5% of your grade):** You are required to read one article, book chapter essay, interview an expert or view a video relating faith and astronomy and write a two-page reaction paper based on your reading. First, summarize the material from your reading and then write your response. For full credit, the paper should include references to at least three sources. Submit your paper as a Word document for grading and plagiarism checks. Details on the style of the paper may be found at <http://www.ccc.commnet.edu/mla/index.shtml> and a sample paper may be viewed at <http://www.bedfordstmartins.com/hacker/pdf/chicago.pdf>. A list of potential articles, book chapters, websites, videos and essays are included at the end of this syllabus. You may choose your own topic if you wish, but should check with the instructor first. If you are uncomfortable writing about the relationship between faith and astronomy, you may pursue a topic relating philosophy and astronomy. The rubric for the reaction paper is the same Essay Rubric used for Essay Assignments and Exams.

**Presentation (30 pts; 5% of your grade):** Students will summarize the conclusions of their reaction paper in a brief (approximately 10 minute presentation). Use a **Zoom Videoconference** to make your presentation to your instructor. Take pride in presenting your thoughts. The rubric below will be used to evaluate your presentation.

## Rubrics

### Reaction Essay Paper

	<b>Excellent - 3</b>	<b>Good - 2</b>	<b>Poor - 1</b>	<b>Missing - 0</b>
<b>Introduction</b>	Addresses the topic directly with a clear thesis statement.	Attempts to address the topic and has a fairly clear thesis statement.	Poorly addresses the topic and has an unclear thesis statement.	Introduction is missing.
<b>Body Paragraphs</b>	Contain clear topic sentences, includes specific information to support the thesis and exceptionally well organized.	Have limited information to support thesis and somewhat organized.	Do not sufficiently support thesis and are not organized.	Body paragraphs are missing.
<b>Examples</b>	Examples are specific, sufficient, and significant; they are clearly explained and connected directly to the thesis.	Examples and explanations are fair and/or insufficient; they provide some support to the thesis.	Examples and explanations are unclear and insufficient; they provide little support to the thesis.	Examples are missing.
<b>Conclusions</b>	Conclusion clearly restates the thesis, reinforces the major points and makes a broader statement about the topic.	Conclusion does not fully sum up or reinforce the thesis.	Conclusion sums up the thesis poorly with little reinforcement.	Conclusion is absent.
<b>Spelling, grammar, punctuation and diction</b>	Spelling, grammar, punctuation and diction are accurate and nearly perfect. Language is precise and well-chosen; sentences are rich and varied.	Spelling, grammar, punctuation and diction are fair with some obvious errors. Language is fair; some sentence variety.	Spelling, grammar, and punctuation are poor with frequent errors. Language is poor with little sentence variety.	Little consideration given to spelling, grammar and punctuation with many errors.



**Presentation**

	<b>Outstanding - 5</b>	<b>Commendable - 3</b>	<b>Acceptable - 1</b>	<b>Not Acceptable - 0</b>
<b>Introduction</b>	Powerfully introduces the topic and essential question	Clearly introduces the topic and essential question	Introduces the topic and essential question	Does not introduce the essential question
<b>Appearance Rapport</b>	Confident, engaging, at ease	Some confidence, engagement and ease	Adequate engagement	Appearance or gestures distract
<b>Organization and Focus</b>	Material is clearly focused, logical sequencing, timing between 8 and 10 minutes	Material is focused, logical with timing between 8 and 10 minutes	Clear introduction and conclusion and within 8 to 10 minutes duration	Logical sequence missing or unclear. Presentation less than 8 minutes and greater than 10 minutes
<b>Information Content</b>	Information accurate, concise and interesting. Details and examples are used to make information more meaningful	Information accurate and relevant, details and examples are used	Information covers major issues related to topic	Information is inaccurate with important data missing.
<b>Conclusion</b>	Conclusion answers the essential question and summarizes the presenters informed opinion	Conclusion addresses the essential question	Conclusion summarizes thoughts of presenter	Conclusion does not address the essential question and the presenter expresses no opinion
<b>Question/Answer</b>	Engages questions asked with confidence and appropriate consideration.	Solidly attempts to answer questions to best of ability.	Thoughtless or flippant answers to questions or addresses different questions than asked.	Avoids addressing questions.

**Materials Used in the Labs**

The following items are used in the lab assignments.

**LAB 1: Measurement**

- Measuring Tape
- Microsoft Excel (or Libre Office)

**LAB 2: Celestial Globe**

- Stellarium Software

**LAB 3: Size of Earth**

- Stellarium Software

**LAB 4: Distances and Sizes in Astronomy**

- Microsoft Paint (Or alternative for Mac)

**LAB 5: Drawing Ellipses**

- Paper
- Cardboard
- Thumb Tacks (2)
- String
- Camera/Scanner
- Calculator (recommended)

**LAB 6: Mercury Orbit**

- Stellarium Software
- Protractor
- Graph Paper (Provided if Printed out)
- Printer

**LAB 7: Mass of Jupiter**

- Stellarium Software

**LAB 8: Acceleration Due to Gravity**

- Provided Images
- Microsoft Paint
- Microsoft Excel
- Stop Watch
- Nut/Washer
- String
- Ruler

## LAB 9: Spectra

- Microsoft Excel

## LAB 10: Lenses and Telescopes

- The Lenses (4 cm and 12 cm)

## LAB 11: Radioactivity

- 100 Pennies
- Microsoft Excel (Or a graph with a camera)

## LAB 12: Height of Lunar Mountain

- Microsoft Paint

## LAB 13: Moon

- Stellarium Software

## LAB 14: Solar Rotation

- Microsoft Paint

## LAB 15: Blackbody Radiation

- Microsoft Excel

## LAB 16: Stellar Properties

- Nothing

## LAB 17: HR Diagram

- Stellarium Software
- Microsoft Excel

## LAB 18: Hubble Law

- Microsoft Paint Microsoft

### Exams

There are two exams in this course. The midterm exam covers material from Lessons 1-6, is made up of multiple-choice and essay questions and is worth 60 points. You will be allowed 120 minutes to take this exam. This exam is worth 20% of your grade. The final exam covers material from Lessons 1-13, is made up of multiple-choice and essay questions and is worth 100 points. You will be allowed 120 minutes to take this exam. This exam is worth 25% of your grade. Both exams require proctoring.

Follow prompts in the course space to set up your exam session. In each module that contains an exam, you will find what to review and what materials are allowed (if any) during the exam.

Please read the important information about taking exams and how online proctoring works at [www.andrews.edu/distance/students/exams.html](http://www.andrews.edu/distance/students/exams.html). Then follow the instructions that apply to your situation on the [exam request form](#) to set up your exam session.

Please note that an exam code is never released to the student. All students must present photo identification before each exam session. Exams can only be proctored after a deadline with approval directly from the instructor to the Testing Center ([sdeexams@andrews.edu](mailto:sdeexams@andrews.edu) or 269-471-6566). No exam is returned to the student for review. The instructor, to aid studying for future exams can provide feedback on exams.

**Suggested schedule for completion in 8 weeks:**

Module	Lessons	Readings	Assignments	Outcomes Met
Intro	These items will need to be completed before you will have access to the rest of the course	Orientation Course Overview Introductions Academic Integrity	Student Introductions Academic Integrity Quiz Academic Integrity Statement	
1	Science & the Universe	Read Openstax Ch. 1 Read Lesson 1 View Lecture 1	Lab 1 Lesson 1 Blog Lesson 1 Essay	
	History of Astronomy	Read Openstax Ch. 2 Read Lessons 2(a) & (b) View Lectures 2(a) & (b)	Lab 2, 3, & 4 Lesson 2 Blog Lesson 2 Essay Chpts. 1 & 2 Knowledge Check	
2	Newton's Laws & Gravity	Read Chpts. 3 & 4 Read Lesson 3 View Lecture 3	Lab 5 & 6 Lesson 3 Blog Lesson 3 Essays Chpts. 3 & 4 Knowledge Check	
	Light, Atoms, and Telescopes	Read Chpts. 5 & 6 Read Lesson 4 View Lectures 4(a) - (c)	Lab 7 & 8 Lesson 4 Blog Lesson 4 Essays Chpts. 5 & 6 Knowledge Check	
3	Earth & Solar System	Read Chpts. 7 & 8 Read Lessons 5(a) & (b) View Lectures 5(a) - (d)	Lab 9 & 10 Lesson 5 Blog Lesson 5 Essays 1 & 2 Chpts. 7 & 8 Knowledge Check	
	Solar System Details	Read Chpts. 9-11 View Lectures 6(a) & (b)	Lab 11 & 12 Lesson 6 Essays Chpts. 9-11 Knowledge Check	
4	Solar System Details Cont.	Read Chpts. 12-14 View Lectures 6(c) & (d)	Lab 13 Lesson 7 Blog Lesson 7 Essays Chpts. 12-14 Knowledge Check	
	<b>PROCTORED MIDTERM EXAM</b>			
5	The Sun	Read Chpts. 15 & 16 Read Lesson 9 View Lecture 9	Lab 14 Lesson 9 Blog Lesson 9 Essays Chpts. 15 & 16 Knowledge Check	
	Stars	Read Chpts. 17-20 Read Lesson 10 View Lecture 10	Lab 15, 16 & 17 Lesson 10 Blog Lesson 10 Essay Chpts. 17-20 Knowledge Check	
6	Stellar Evolution	Read Chpts. 21 & 22 Read Lesson 11 View Lecture 11	Lesson 11 Blog Lesson 11 Essays Chpts. 21 & 22 Knowledge Check	
	Stellar Death	Read Chpts. 23 & 24 Read Lesson 12 View Lecture 12	Lesson 12 Blog Lesson 12 Essays Chpts. 23 & 24 Knowledge Check	
7	Galaxies	Read Chpts. 25 & 26 Read Lessons 13(a) & (b) View Lectures 13(a) & (b)	Lesson 13 Blog Lesson 13 Essays Chpts. 25 & 26 Knowledge Check	
	Cosmology	Read Chpts. 27-29 Read Lesson 14 View Lecture 14	Lab 18 Lesson 14 Blog Lesson 14 Essays Chpts. 27-29 Knowledge Check	
8	Final Presentation & Review for Final Exam		Reaction Paper Final Presentation Survey of Teaching	
	<b>PROCTORED FINAL EXAM</b>			



**Suggested schedule for completion in 16 weeks:**

Module	Lessons	Readings	Assignments	Outcomes Met
Intro	These items will need to be completed before you will have access to the rest of the course	Orientation Course Overview Introductions Academic Integrity	Student Introductions Academic Integrity Quiz Academic Integrity Statement	
1	Science & the Universe	Read Openstax Ch. 1 Read Lesson 1 View Lecture 1	Lab 1 Lesson 1 Blog Lesson 1 Essay	
2	History of Astronomy	Read Openstax Ch. 2 Read Lessons 2(a) & (b) View Lectures 2(a) & (b)	Lab 2, 3, & 4 Lesson 2 Blog Lesson 2 Essay Chpts. 1 & 2 Knowledge Check	
3	Newton's Laws & Gravity	Read Chpts. 3 & 4 Read Lesson 3 View Lecture 3	Lab 5 & 6 Lesson 3 Blog Lesson 3 Essays Chpts. 3 & 4 Knowledge Check	
4	Light, Atoms, and Telescopes	Read Chpts. 5 & 6 Read Lesson 4 View Lectures 4(a) - (c)	Lab 7 & 8 Lesson 4 Blog Lesson 4 Essays Chpts. 5 & 6 Knowledge Check	
5	Earth & Solar System	Read Chpts. 7 & 8 Read Lessons 5(a) & (b) View Lectures 5(a) - (d)	Lab 9 & 10 Lesson 5 Blog Lesson 5 Essays 1 & 2 Chpts. 7 & 8 Knowledge Check	
6	Solar System Details	Read Chpts. 9-11 View Lectures 6(a) & (b)	Lab 11 & 12 Lesson 6 Essays Chpts. 9-11 Knowledge Check	
7	Solar System Details Cont.	Read Chpts. 12-14 View Lectures 6(c) & (d)	Lab 13 Lesson 7 Blog Lesson 7 Essays Chpts. 12-14 Knowledge Check	
8	<b>PROCTORED MIDTERM EXAM</b>			
9	The Sun	Read Chpts. 15 & 16 Read Lesson 9 View Lecture 9	Lab 14 Lesson 9 Blog Lesson 9 Essays Chpts. 15 & 16 Knowledge Check	
10	Stars	Read Chpts. 17-20 Read Lesson 10 View Lecture 10	Lab 15, 16 & 17 Lesson 10 Blog Lesson 10 Essay Chpts. 17-20 Knowledge Check	
11	Stellar Evolution	Read Chpts. 21 & 22 Read Lesson 11 View Lecture 11	Lesson 11 Blog Lesson 11 Essays Chpts. 21 & 22 Knowledge Check	
12	Stellar Death	Read Chpts. 23 & 24 Read Lesson 12 View Lecture 12	Lesson 12 Blog Lesson 12 Essays Chpts. 23 & 24 Knowledge Check	
13	Galaxies	Read Chpts. 25 & 26 Read Lessons 13(a) & (b) View Lectures 13(a) & (b)	Lesson 13 Blog Lesson 13 Essays Chpts. 25 & 26 Knowledge Check	
14	Cosmology	Read Chpts. 27-29 Read Lesson 14 View Lecture 14	Lab 18 Lesson 14 Blog Lesson 14 Essays Chpts. 27-29 Knowledge Check	
15	Final Presentation & Review for Final Exam		Reaction Paper Final Presentation Survey of Teaching	
16	<b>PROCTORED FINAL EXAM</b>			

## Completing Assignments

All assignments for this course will be submitted electronically through Learning Hub unless otherwise instructed. Assignments and exams must be completed **within 180 days** of course registration date. This timeframe is subject to change depending on deadlines set by your home institution.

## Part 4: Grading Policy

### Graded Course Activities

Percent %	Description
5	Blogs
10	Knowledge Checks
20	Labs
20	Midterm Exam
25	Final Exam
5	Reaction Paper
5	Presentation
10	Essays
<b>100</b>	<b>Total Percent Possible</b>

### Viewing Grades in Moodle

- Click into the course.
- Click on the **Grades** link in Administration Block to the left of the main course page.

### Letter Grade Assignment

Letter Grade	Percentage
A	93-100%
A-	90-92%
B+	88-89%
B	83-87%
B-	80-82%
C+	78-79%
C	73-77%
C-	70-72%
D	60-69%
F	0-59%

## Part 5: Course Policies

### Withdrawal and Incomplete Policies

The current withdrawal policy can be found online at <https://www.andrews.edu/distance/students/gradplus/withdrawal.html>. The incomplete policy is found online at <http://www.andrews.edu/weblmsc/moodle/public/incompletes.html>.

### Maintain Professional Conduct Both in the Classroom and Online

The classroom is a professional environment where academic debate and learning take place. Your instructor will make every effort to make this environment safe for you to share your opinions, ideas, and beliefs. In return, you are expected to respect the opinions, ideas, and beliefs of other students—both in the face-to-face classroom and online communication.

Students have the right and privilege to learn in the class, free from harassment and disruption.

### Academic Accommodations

Students who require accommodations may request an academic adjustment as follows:

1. Read the Andrews University Disability Accommodation information at <https://www.andrews.edu/services/sscenter/disability/>
2. Download and fill in the disability form at <http://www.andrews.edu/services/sscenter/disability/accommodationsreqform.pdf>. Preferably type answers. To save a digital copy, 1) print to file and save or 2) print and scan. Email the completed form and disability documentation (if any) to [success@andrews.edu](mailto:success@andrews.edu) or fax it to (269) 471-8407.
3. Email [sdestudents@andrews.edu](mailto:sdestudents@andrews.edu) to inform the School of Distance Education that a disability has been reported to Student Success.

### Commitment to Integrity

As a student in this course, and at the university, you are expected to maintain high degrees of professionalism, commitment to active learning, participation in this course, and integrity in your behavior in and out of this online classroom.

### Commitment to Excellence

You deserve a standing ovation based on your decision to enroll in, and effectively complete this course. Along with your pledge of “commitment to Integrity” you are expected to adhere to a “commitment to excellence.” Andrews University has established high academic standards that will truly enhance your writing and communication skills across the disciplines and in diverse milieu with many discourse communities in the workplace.

### Honesty

Using the work of another student or allowing work to be used by another student jeopardizes not only the teacher-student relationship but also the student’s academic standing. Lessons may be discussed with other students, tutors may help to guide a student’s work, and textbooks, encyclopedias and other resource materials may be used for additional assistance, but the actual response must be the student’s own work. A student who gives information to another student to be used in a dishonest way is equally guilty of dishonesty.

Any violation of this policy will be taken before the Higher Education Academic and Curriculum Committee for appropriate punitive action.

## Part 6: Resources for Paper and Presentation

The following resources deal with topics suitable for your paper and presentation. Choose a topic from one source listed below. Your reaction paper and presentation will be based on information and ideas gleaned from the source. If you wish to pursue a topic not covered by any of the sources listed below, please contact the professor and discuss your plans in advance.

### Videos

1. Galileo's Battle for the Heavens - Biography of Galileo
2. A Private Universe:
  - a. Preconceived notions interfere with learning
  - b. The Domsday Asteroid
  - c. Asteroids that could demolish the earth
  - d. Show Me God - Modern Cosmology provides evidence for God
3. Atheism vs. Christianity: Where does the evidence point? Brief History of Time: Stephen Hawking's Bio
4. Science and Religion: An overview (are religion and science at war?)
5. Science and Religion: Let there be light and the big bang
6. Science and Religion: Creation and evolution
7. Beyond the Postmodern Mind: Do materialistic values of science lead to loss of meaning?
8. Faith and Reason: Interviews with scientists for views on science and philosophy
9. Science and the Spirit:
10. Soul:
  - a. Part I: Challenges to Big Bang and the creation of life
  - b. Part II: Knowledge of the Natural World has failed to answer life's important questions.
  - c. Part III: Science cannot decipher all aspects of the human mind
11. Facts of Faith: experiments that teach about God (Elementary School Level)

### Books

"Seventh-day Adventists Believe: A Biblical Exposition of the 27 fundamental Doctrines", General Conference of Seventh-day Adventists, Ministerial Department, 1988. You must interview a local pastor about how flexible (or inflexible) these beliefs are. You may chose to focus on belief #6, Creation.

"Testimonies", E. G. White, vol. 8, God in Nature, pp. 255 - 261, Pacific Press, 1948.

"Show Me God", Fred Heeren, Day Star Publications, 1997.

Ch. 1: Martian Rocks

Ch. 7: The Bible and the Big Bang

Ch. 8: Evidences for Design

Ch. 9: Alternative Explanations for Design

Ch. 11: Is the Gospel Logical?

"The Goldilocks Enigma: Why is the Universe Just Right for Life?" Paul Davies, Allen Lane Press (2006).

"Miracles", C. S. Lewis, Chapter 2 (The Naturalist and the Supernaturalist), Macmillan Press, 1947.

“Miracles”, Chapter 3 (The Self-Contradiction of the Naturalist)

“Miracles, Chapter 8 (Miracles and the Laws of Nature)

“Faith, Reason, and Earth History”, Leonard Brand, Chapters 9 and 10 (The Case for Megaevolution, The Case for Informed Intervention), AU Press, 1997.

“Patriarchs and Prophets”, E. G. White, Chapter 9 (The Literal Week), Review and Herald Publishing, 1958.

“Readings in Christian Thought”, ed. Hugh T. Kerr, pp. 64, 65 (Augustine on Space and Time), Abingdon Press, Nashville, 1978.

“The Case for a Creator”, Lee Strobel, Chapter 5 (Evidence of Cosmology: Beginning with a Bang), Zondervan, 2004.

“The Case for a Creator”, Lee Strobel, Chapter 6 (Evidence of Physics: The Cosmos on a Razor’s Edge), Zondervan, 2004.

“The Science of God”, Alistair McGrath, Chapter 2 (Nature), Eerdmans, 2004.

“Glimpsing the Face of God: the Search for Meaning in the Universe”, Alistair McGrath, Chapter 2 (Trying to Make Sense of Things), Lion Publishing, 2002.

“The Sacred Cosmos”, Terence Nichols, Chapter 9 (Christianity and Science: Conflict or Complementarity?), Brazos Press, 2003.

“Theism, Atheism and Big Bang Cosmology”, William Craig and Quentin Smith, Chapters I and II, The Finitude of the Past and the Existence of God; Infinity and the Past), Clarendon Press, Oxford, 2003.

“Rare Earth”, Peter Ward and Donald Brownlee, Chapter 12 (Assessing the Odds), Copernicus Books, 2004.

“A Brief History of Time”, Stephen Hawking, Chapter 8 (The Origin and Fate of the Universe), Bantam, 1988.

“Belief in God in an Age of Science”, J. Polkinghorne, Chapter 2 (Finding Truth: Science and Religion Compared), Yale Press, 1998.

### **Web Sites**

<http://www.reasons.org/articles/design-and-the-anthropic-principle>

Hugh Ross, Design and the Anthropic Principle

[http://en.wikipedia.org/wiki/Anthropic\\_principle](http://en.wikipedia.org/wiki/Anthropic_principle)

Anthropic Principle

<http://www.leaderu.com/truth/1truth15.html>

Allan Sandage, A Scientist Reflects on Religious Belief. A cosmologist discussing “Proofs” of God.

**People**

Interview a theologian about how modern astronomy informs his faith or interview an astronomer or physicist about the appropriateness of a relationship between faith and science. You may use the phone or email to conduct interviews.

**Articles**

“Grappling with Mystery”, M. Kutzner, *Adventist Review*, vol. 176, Aug. 26, 1999, p. 24. Big Bang and evidence for God.

“The Search for a Plausible Cosmology”, Mart de Groot, *Ministry*, vol. 72, Nov. 1999, p. 20.

“Cosmology and Genesis the road to harmony and the need for cosmological alternatives”, Mart de Groot, *Origins*, vol. 19, n1, 1992.

“Genesis and the Cosmos: a Unified Picture?”, Mart de Groot, *College and University Dialogue*, vol. 17, n1, 2005, p. 15.

“God and the Big Bang”, Mart de Groot, *Adventist Review*, vol. 169, Aug. 13, 1992, p. 12.

“By the Campfire: Red Giants, White Dwarfs, Black Holes and God”, Delmer Johnson, *Spectrum*, vol. 20, n1, 1989, p. 29.

“Cradled Science: examining the cosmos in the context of faith”, Del Ratzsch, *Journal of Adventist Education*, vol. 64, Summer 2002, p. 9.

“Messages in the Stars”, Raphael Warnick, *Message*, vol. 48, Oct. 1, 1982, p. 10. (Warning: an example of perhaps trying to read too much into the sky, without applying the scientific method)

“Orion Revisited: Part I”, Merton Sprengel and Dowell Martz, *Advent Review and Sabbath Herald*, vol. 153, March 25, 1976, p. 4.

“How Open is Orion’s Open Space?: Part II”, Sprengel and Martz, *Advent Review and Sabbath Herald*, vol. 153, April 1, p. 9.

“Does the Open Space [in Orion] Exist Today?: Part III”, Sprengel and Martz, *Advent Review and Sabbath Herald*, vol. 153, April 8, 1976, p. 6.

“Will the Stars Fall Again?”, M. Kutzner, *Adventist Review*, vol. 174, Sept. 25, 1997, p. 8