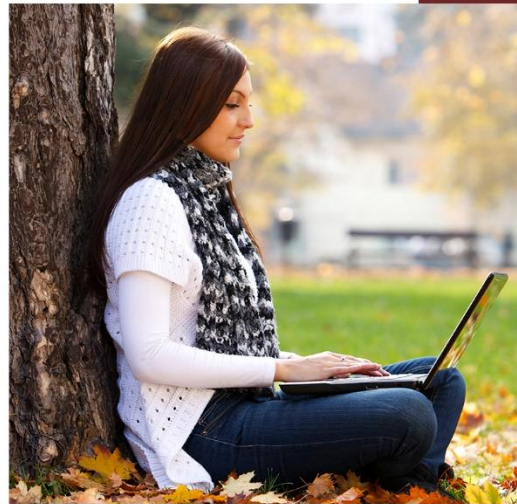
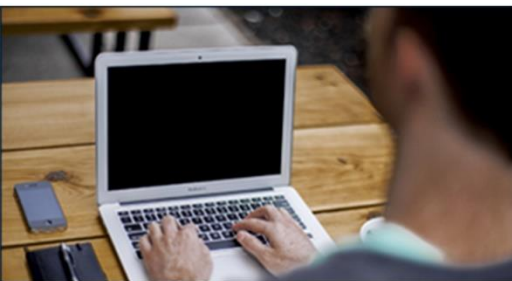


**CONSORTIUM**  
*of Adventist Colleges & Universities*

# SYLLABUS



**PHYS 110 Astronomy**  
**Fall 2020**

# PHYS 110 Astronomy

## Consortium of Adventist Colleges and Universities

### Interactive Online Format

This course follows an interactive online format and has Thursday deadlines. You are expected to login regularly during the course to participate in the online discussions. Please plan accordingly. Please review the Dates & Deadlines widget on the right side of your course in LearningHub for the last day to withdraw for a full refund.

### 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:

Astronomy Lab Kit as listed on the online bookstore – [www.andrews.edu/bookstore](http://www.andrews.edu/bookstore)

Bathroom Scale (purchase on your own)

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 15 hours each week. You'll spend your time in textbook and lesson readings, answer the on-line homework questions, laboratories, journals, reaction paper, and presentation.

A recommended weekly schedule to divide your time is provided:

Readings: 4 hours

Lectures: 2 hour

Assignments 2 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

**Institutional Outcomes:**

- 1.a. Demonstrate competence in intellectual, affective, and practical skills to prepare for careers in the twenty-first century, lifelong learning and service.
- 1.b. Select and apply intellectual, affective, and practical skills from their field of study to solve meaningful problems. The identified transferable skills for undergraduate students are: information literacy, quantitative literacy, engaging diverse perspectives, ethical reasoning, analytical inquiry in the form of problem solving and creative thinking, communication, wellness and transferable life skills.
- 2.b. Pursue enduring questions through study in core fields and explore the connections between those fields.

**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:** This online class is **not** self-paced. You can arrange your schedule flexibly during each week, but you **MUST** participate each week. You are expected to “show up” to class by interacting in the discussion forums a minimum of two times per week. In addition, assignments are due regularly each week. Adequate Internet access during the duration of the course is critical for your participation. To be successful, plan to spend time daily on the course.

### 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.

**Discussion Forum (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 on the things you have learned during the week.

Discussion forums are opportunities for you, the course instructor and your classmates to engage in robust online conversations. In some instances, where one student is enrolled in a course, discussions will be with the instructor. Those conversations are most often based on academic topics and questions. They are integral to the course and provide avenues for enriching knowledge as well as constructing knowledge through thoughtful dialogue with peers and instructors.

Some discussions are formal in nature and call for thorough scholarship. They hold to the same academic standards for originality and honesty as other academic work (e.g. papers, essays, quizzes and exams). Whenever appropriate, any idea or statement in a discussion forum that is not your own original work should be referenced, according to the style guide adopted by your academic discipline (e.g. APA, MLA, Chicago, etc.).

There may also be forums in the course in which the discussions are informal. Such discussions may include personal introductions and opportunities to know more about other participants in the course as well as academic topics. Informal forums are great for sharing interests, observations and encouragements with classmates.

For each forum in this course you will be required, unless otherwise instructed, to create an initial post and, at least, two replies to classmates. Course weeks [after the first week] begin on Friday and end on Thursday. The initial post is due by 11:55 pm on Sunday of the week the discussion is assigned. Replies to classmates are due by 11:55 pm on Thursday of the week the discussion is assigned.

**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, web-sites, 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.

## Schedule:

**All times in the schedule are for the U.S. Eastern Time Zone. All assignments are due Thursdays in the week assigned unless otherwise noted.**

Week	Lessons	Readings	Assignments
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 Aug 24-27	Science & the Universe	Read Openstax Ch. 1 Read Lesson 1 View Lecture 1	Lab 1 Lesson 1 Discussion Lesson 1 Essay Due Thursday, Sept 3, 11:55 pm
2 Aug 28 – Sept 3	History of Astronomy	Read Openstax Ch. 2 Read Lessons 2(a) & (b) View Lectures 2(a) & (b)	Lab 2, 3, & 4 Lesson 2 Discussion Lesson 2 Essay Chpts. 1 & 2 Knowledge Check
3 Sept 4-10	Newton's Laws & Gravity	Read Chpts. 3 & 4 Read Lesson 3 View Lecture 3	Lab 5 & 6 Lesson 3 Discussion Lesson 3 Essays Chpts. 3 & 4 Knowledge Check
4 Sept 11-17	Light, Atoms, and Telescopes	Read Chpts. 5 & 6 Read Lesson 4 View Lectures 4(a) - (c)	Lab 7 & 8 Lesson 4 Discussion Lesson 4 Essays Chpts. 5 & 6 Knowledge Check



Week	Lessons	Readings	Assignments
5 Sept 18-24	Earth & Solar System	Read Chpts. 7 & 8 Read Lessons 5(a) & (b) View Lectures 5(a) - (d)	Lab 9 & 10 Lesson 5 Discussion Lesson 5 Essays 1 & 2 Chpts. 7 & 8 Knowledge Check
6 Sept 24 – Oct 1	Solar System Details	Read Chpts. 9-11 View Lectures 6(a) & (b)	Lab 11 & 12 Lesson 6 Essays Chpts. 9-11 Knowledge Check
7 Oct 2-8	Solar System Details Cont.	Read Chpts. 12-14 View Lectures 6(c) & (d)	Lab 13 Lesson 7 Discussion Lesson 7 Essays Chpts. 12-14 Knowledge Check
8 Oct 9-15	<b>PROCTORED MIDTERM EXAM</b>		
9 Oct 16-22	The Sun	Read Chpts. 15 & 16 Read Lesson 9 View Lecture 9	Lab 14 Lesson 9 Discussion Lesson 9 Essays Chpts. 15 & 16 Knowledge Check
10 Oct 23-29	Stars	Read Chpts. 17-20 Read Lesson 10 View Lecture 10	Lab 15, 16 & 17 Lesson 10 Discussion Lesson 10 Essay Chpts. 17-20 Knowledge Check
11 Oct 30 – Nov 5	Stellar Evolution	Read Chpts. 21 & 22 Read Lesson 11 View Lecture 11	Lesson 11 Discussion Lesson 11 Essays Chpts. 21 & 22 Knowledge Check
12 Nov 6-12	Stellar Death	Read Chpts. 23 & 24 Read Lesson 12 View Lecture 12	Lesson 12 Discussion Lesson 12 Essays Chpts. 23 & 24 Knowledge Check
13 Nov 13-19	Galaxies	Read Chpts. 25 & 26 Read Lessons 13(a) & (b) View Lectures 13(a) & (b)	Lesson 13 Discussion Lesson 13 Essays Chpts. 25 & 26 Knowledge Check
14 Nov 20-26 (Thanksgiving Break)	Cosmology	Read Chpts. 27-29 Read Lesson 14 View Lecture 14	Lab 18 Lesson 14 Discussion Lesson 14 Essays Chpts. 27-29 Knowledge Check <b>Due Friday, November 27 at 5pm</b>
15 Nov 27 – Dec 3	Final Presentation & Review for Final Exam		Reaction Paper Final Presentation Survey of Teaching
16 Dec 4-10	<b>PROCTORED MIDTERM EXAM</b> <b>(needs to be completed by Wednesday, December 9, 11:59 PM)</b>		

### Completing Assignments

All assignments for this course will be submitted electronically through LearningHub unless otherwise instructed.

## Part 4: Grading Policy

### Graded Course Activities

Percent %	Description
5	Discussion Forums
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/web/llmsc/moodle/public/incompletes.html>.

### Late Work

Due dates are listed both in the LearningHub course space and in the syllabus. Late work will have 10% of the earned points deducted.

## **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.

## **Netiquette**

In this course you will communicate with your classmates and instructor primarily in writing through the discussion forum and e-mail.

"Online manners" are generally known as "netiquette." As a general rule, you should adhere to the same classroom conduct that you would "off-line" in a face-to-face course. Some examples of proper netiquette are:

1. Avoid writing messages in all capital letters. THIS IS GENERALLY UNDERSTOOD AS SHOUTING.
  2. Be careful what you put in writing. Even if you are writing an e-mail message to one person, assume that anyone could read it. Though you may send an e-mail to a single person, it is very easy to forward your message to hundreds or thousands of people.
  3. Grammar and spelling matter. Online courses demand the same standard of academic communication and use of grammar as face-to-face courses.
  4. Never use profanity in any area of an online course. The transcripts of online course discussion forums, e-mail, and chat sessions are savable.
  5. When responding to messages, only use "Reply to All" when you really intend to reply to all.
  6. Avoid unkindly public criticism of others. Publicly criticizing others in an inappropriate way is known as "flaming." Consider this course a practice forum for selecting your verbiage thoughtfully and professionally.
  7. Use sarcasm cautiously. In the absence of nonverbal cues such as facial expressions and voice inflections, the context for your sarcasm may be lost, and your message may thus be misinterpreted.
  8. In a face-to-face setting, our tone of voice and facial expressions may convey as much of our meaning as the words we use. In a written message, the subtext of your meaning may be confused or misinterpreted. Write clearly. Use active verbs.
- [Source: University of Maryland, Communications Department]

## **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 Doomsday 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

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