



On-Campus Course Syllabus

SCI 205a

Physical Science

Fall 2020

Class Information

Day and Time: Tuesday 8:00am to 10:30am

Room Number: E201

Contact Information

Instructor Name: Kirk Spencer

Instructor Email: kspencer@criswell.edu

Instructor Phone: 469.834.5211 (text first)

Instructor Office Hours: Tuesday 10:30am – 11:00am, 12:00pm – 2:00pm and Thursday 10:30am – 11:00am, 12:00pm – 2:00pm

Course Description and Prerequisites

A survey of the structure and history of the universe focused on inanimate (non-living) forces of the physical world. This includes the principles of chemistry and physics of how these are applied within the sciences of astronomy (space science) and geology (earth science). The philosophy and history of science will be explored, as well as the interface between science and religion.

Course Objectives

Upon completion of this course the student should be able to:

- A. Express and evaluate the major scientific theories and discoveries of modern science, demonstrating a working knowledge of inanimate physical forces and scientific terminology.
- B. Recognize and analyze the natural processes that scientists believe have shaped the heavens and the earth.
- C. Articulate rudimentary facts pertaining to scientific discussions of cosmic, geologic and biologic history as proposed by current accepted theories such as the Big Bang, the Nebular Hypothesis, Plate Tectonics and Evolution.
- D. Evaluate and verbalize the viability of the different ways scientist and theologians have interacted, analyzing the strengths and weaknesses of the solutions they have proposed in the face of difficulties.

Required Textbooks

Spencer, Kirk L., Heaven and Earth; an Orientation in Natural Science. Unpublished, 2004

Spencer, Kirk L., Science and Theology; a compendium. Unpublished, 2004

Course Requirements and Assignments

Attendance and Participation Grade

Attendance and participation are expected from you as a part of the classroom experience. You will begin the semester with a Participation Grade of 100 points. Consistent attendance and participation in class discussion will maintain the perfect score. Each unexcused absence will deduct 4 points from the total. The basic requirement of participation in class is remaining upright (no heads on the desks) and conscious during class time... so you should get a good night's sleep the night before class. I will allow you to check messages on your screens during class, but continuously looking at your screens during lecture will reduce your participation grade. The lectures are designed for visual learners. The images and video shown will reinforce what is being learned at the time. If you are looking at a laptop or a cell phone and not at the images, even if you are listening, you are not participating in the class because you are missing the visual elements. Beyond the basics of class participation, it is expected that you will participate in the discussion by sharing your knowledge and experiences, asking questions and volunteering answers when the professor asked questions in class.

It is also expected that you will be in class on time. Two tardies will equal one absence. If you come to class more than thirty minutes late or if you must leave before the last 30 minutes of class you will be counted absent from that class (unless you provide a good reason). Once again, it is expected that you will not be watching computer and phone screens during class or laying their heads on the desk. These actions will significantly reduce your participation grade.

Your Attendance and Participation Grade will determine **20%** of your course grade.

Reading Grade

Your reading grade will be determined from annotations (mark-up) you make while reading. As you read through and study the textbooks, mark-up the text using your own methods, involving highlighting or underlining or boxes around text. Also write notes, ideas and comments in the margins. This will document that you have done a close reading of all of the material. At the end of the semester I will collect your manuscript to determine how thoroughly you have read the material based upon how it is marked and will assign a letter grade. Please do not forget to mark-up and annotate the manuscript thoroughly as you read and study it. This requirement is designed to be a relatively easy assignment to document a close reading of the text. If you do it, it is a simple way to receive a high score. However, if you do not do it, I am forced to average in a zero as your reading grade. Be sure to write your name in the front page of the manuscript so I will know who to give the grade and can get it back to you. Your reading grade will determine **20%** of your course grade.

Exam Grades

Four exams will be given during the course. One approximately every four weeks. Each will include multiple choice and matching questions. These exams will be taken on Canvas and you will be given two attempts at each exam. All will be timed exams so it is expected that you will not search for answers in the text but will take the exams from beginning to end from memory, without looking at your text or notes. However, if you have time remaining once you have finished, you are allowed to look through your text or notes to find the best answer to the more difficult questions... so it will be good to make a note of which questions you are unsure of, so you can go back to these questions to look up answers. Remember to not leave any questions blank. Once you have taken the exam the first time, you will be allowed to see the exam and your answers. However, it will not show you the correct answers. Use your access to this test to review for the second attempt at the exam. I would spend time looking at your text and notes and decide which answer is best before you take the exam the second time. Your grade for each exam will not be your highest score, rather it will be an average of your two grades. The average of your three highest exam grades will determine **30%** of your course grade.

Final Exam

A comprehensive final exam will be given at the end of the course which will be composed solely of questions taken from previous tests with one matching question covering the material in the reading in "Science and Theology." You will only have one attempt at the final exam so be sure and use your access to the earlier exams to prepare well.

Your score on the final exam will determine **20%** of your course grade.

Laboratory Assignments and Lab Notebook

During the term you will be given 6 lab exercises to complete. They are available to you on Canvas. We will go over these labs in class and you will turn in the lab forms for a lab grade.

During the course, you will be required to keep all your lab exercises and assignments in a notebook or portfolio. This notebook should also be used to hold all information you collect during the course including research and any other information gleaned from the readings or lecture or class discussions.

Your Lab Notebooks will be collected at the end of the course and the grade on your labs and lab notebook will determine **10%** of your course grade.

Course/Classroom Policies and Information

ONLINE EXAM PROTOCOL

When taking exams online, you should take the exam as quickly as possible from memory. After the exam is completed, you may use the time remaining to check and change any answers by searching the

manuscript and notes you have taken. While you can use the manuscript and your notes in this search, you cannot use any other sources.

Here is a list of activities which will be considered cheating:

- Talking to someone about the exam to give or get information about the content of the exam.
- Using the course manuscripts or lecture notes to find the answer to a question before you have completed the entire exam. (Although these sources can be used to find answers in an “open-book” format after you have completed the entire exam and still have time remaining.)
- Using any other source material other than the course manuscripts and your notes to look up answers while taking the exam.
- Letting someone else take the exam for you.
- Taking the exam for someone else.

Class Attendance

Students are responsible for enrolling in courses for which they anticipate being able to attend every class session on the day and time appearing on course schedules, and then making every effort to do so. When unavoidable situations result in absence or tardiness, students are responsible for acquiring any information missed. Professors are not obliged to allow students to make up missed work. Per their independent discretion, individual professors may determine how attendance affects students’ ability to meet course learning objectives and whether attendance affects course grades.

Grade Weight

Attendance Participation	(20%)
Reading Grade	(20%)
Exam Grades	(30%)
Astronomy	
Oceans	
Rivers	
Historical Science	
Final Exam	(20%)
<u>Labs and Lab Notebook</u>	<u>(10%)</u>
TOTAL:	100%

Grading Scale

			Grade Definitions (optional)
A	93-100	4.0 grade points per semester hour	Superior Work
A-	90-92	3.7 grade points per semester hour	
B+	87-89	3.3 grade points per semester hour	
B	83-86	3.0 grade points per semester hour	Above Average Work
B-	80-82	2.7 grade points per semester hour	
C+	77-79	2.3 grade points per semester hour	
C	73-76	2.0 grade points per semester hour	Average Work
C-	70-72	1.7 grade points per semester hour	
D+	67-69	1.3 grade points per semester hour	
D	63-66	1.0 grade point per semester hour	Below Average Work
D-	60-62	0.7 grade points per semester hour	
F	0-59	0.0 grade points per semester hour	Unacceptable Work

Incomplete Grades

Students requesting a grade of Incomplete (I) must understand that incomplete grades may be given only upon approval of the faculty member involved. An "I" may be assigned only when a student is currently passing a course and in situations involving extended illness, serious injury, death in the family, or employment or government reassignment, not student neglect.

Students are responsible for contacting their professors prior to the end of the semester, plus filing the appropriate completed and approved academic request form with the Registrar's Office. The "I" must be removed (by completing the remaining course requirements) no later than 60 calendar days after the grade was assigned, or the "I" will become an "F."

Academic Honesty

Absolute truth is an essential belief and basis of behavior for those who believe in a God who cannot lie and forbids falsehood. Academic honesty is the application of the principle of truth in the classroom setting. Academic honesty includes the basic premise that all work submitted by students must be their own and any ideas derived or copied from elsewhere must be carefully documented.

Academic dishonesty includes, but is not limited to:

- cheating of any kind,
- submitting, without proper approval, work originally prepared by the student for another course,
- plagiarism, which is the submitting of work prepared by someone else as if it were his own, and
- failing to credit sources properly in written work.

Institutional Email Policy

All official college email communications to students enrolled in this course will be sent exclusively to students' institutional email accounts. Students are expected to check their student email accounts regularly and to

respond in an appropriate and timely manner to all communications from faculty and administrative departments.

Students are permitted to setup automatic forwarding of emails from their student email accounts to one or more personal email accounts. The student is responsible to setup and maintain email forwarding without assistance from college staff. If a student chooses to use this forwarding option, he/she will continue to be responsible for responding appropriately to all communications from faculty and administrative departments of the college. Criswell College bears no responsibility for the use of emails that have been forwarded from student email accounts to other email accounts.

Disabilities

Criswell College recognizes and supports the standards set forth in Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and similar state laws, which are designed to eliminate discrimination against qualified individuals with disabilities. Criswell College is committed to making reasonable accommodations for qualifying students, faculty, and employees with disabilities as required by applicable laws. For more information, please contact the Student Services Office.

Intellectual Property Rights

Unless otherwise specifically instructed in writing by the professor, students must neither materially nor digitally reproduce materials from any course offered by Criswell College for or with the significant possibility of distribution.

Resources and Support

Canvas and SONIS: Criswell College uses Canvas as its web-based learning tool and SONIS for student data.

Students needing assistance with Canvas should contact the Canvas Help Support line at (844) 358-6140. Tech support is available at this number, twenty-four hours a day. Students needing help with SONIS should contact the Campus Software Manager at studenttechsupport@criswell.edu.

Student Services: The Student Services Office exists to foster and encourage success in all areas of life—physical, intellectual, spiritual, social, and emotional. Students are encouraged to reach out for assistance by contacting the office at 214.818.1332 or studentservices@criswell.edu. Pastoral and certified counseling services are also available to Criswell students. Appointments are scheduled through the Dean of Students, at deanofstudents@criswell.edu.

Wallace Library: Students can access academic resources and obtain research assistance by visiting the Wallace Library, which is located on campus. For more information, go to the library website, or email the Wallace Library at library@criswell.edu.

Writing Center: Students are encouraged to consult with writing tutors to improve and enhance their skills and confidence by practicing techniques of clear and effective writing. To consult with a tutor, students can visit the Writing Center located on the first floor near the Computer Lab, or they can schedule an appointment by emailing writingcenter@criswell.edu or calling 214.818.1373.

Course Outline/Calendar

Introductions

Weekly Session

Assignment

Week 1 (January 20-24)

Introductions and Syllabus
Perspective Earth's Age & Evolution
Importance of Natural Science

For Next Week
Read Heaven & Earth: Scientific Enterprise
Ch. 1
Read Science & Theology
Militarism: Naturalism (pp. 1-46)
Begin Reading Heaven and Earth: Astronomy
Ch. 3

ASTRONOMY

Week 2 (January 27-31)

ASTRONOMY

Constellations/IntergalacticSpace/Electromagnetism/Telescopes/Space

DEEP SPACE

Astrophysics

Quasars/BlackHoles/Galaxies/StarClusters/ReflectionNebulae/EmissionNebulae/NeutronStars

For Next Week
Read Heaven & Earth: History of Science Ch. 2
Study Heaven and Earth: Astronomy Ch. 3

Week 3 (February 3-7)

SOLAR SYSTEM

Planetary Science

Comets/MeteorShowers/Planets/Pluto.Neptune.Uranus/Saturn/Jupiter/MoonsOfJupiter/AsteroidBelt/Mars/Volcanoes&CanyonsOnMars/SandstormsOnMars/Sun/Plasma/Sunspots/SolarFlares/Corona/Event/Corona/Mercury/Venus/TheMoon

For Next Week
Study Heaven & Earth: Astronomy
Ch. 3

Astronomy Lab:
Reading the Night Sky

Week 4 (February 10-14)

ASTRONOMY SUMMARY & REVIEW

Go Over Reading the Night Sky Lab together

For Next Week

Study Heaven & Earth: Astronomy

Ch. 3

Prepare for Astronomy Exam

EARTH SCIENCE

OCEANS

Weekly Session

Assignment

Week 5 (February 17- 21)

ATMOSPHERE (Ocean of Air)

Science of “Meteorology”

Magnetosphere/Ionosphere/Mesosphere/Stratosphere/Troposphere/Barometric Pressure/Thermal Convection/Winds/Low Latitude Deserts/Cold Fronts/Tornadoes/Reading The Clouds

For Next Week

Study Heaven and Earth (Geology: Oceans)

Ch.4 (Stop when you get to the “Rivers” section)

Read Science & Theology

Militarism: Scientific Creationism (pp. 47-68)

ASTRONOMY EXAM

Week 6 (February 24-28)

ATMOSPHERE (Ocean of Air)

Science of “Meteorology”

Magnetosphere/Ionosphere/Mesosphere/Stratosphere/Troposphere/Meteors/UFOs/Thermal Convection/Winds/Low Latitude Deserts/Cold Fronts/Tornadoes/Reading The Clouds

For Next Week

Study Heaven and Earth (Geology: Oceans)

Ch.4 (Stop when you get to the “Rivers” section)

Atmosphere Lab
Reading the Clouds

Week 7 (March 2-6)

HYDROSPHERE (Ocean of Water)

Science of “Oceanography”

Tides/Hydrostatic Pressure/Ocean Temperature/Ocean Currents/Gulf Stream

LITHOSPHERE (Ocean of Rock)

Science of “Geology”
Earthquakes/Pwaves,Swaves,SurfaceWaves/RichterMagnitude/EarthquakeDamage/Tsunamis/EarthquakePrediction/Earth’sInterior/LithostaticPressure/PlateTectonics

For Next Week
Study Heaven and Earth (Geology: Oceans)
Ch.4 (Stop when you get to the “Rivers” section)

Week 8 (March 9-13)

VOLCANIC MOUNTAINS (River of Rock from the Ocean of Rock)
Science of “Volcanology”

For Next Week
Study Heaven and Earth (Geology: Oceans)
Ch.4 (Stop when you get to the “Rivers” section)

Prepare for Oceans Exam

**Earthquake Lab
Epicenter & Richter Magnitude**

SPRING BREAK (March 16-20)

**EARTH SCIENCE (Geology)
RIVERS**

Weekly Session

Assignment

Week 9 (March 23-27)

RIVERS OF WATER (Streams)

Science of “Hydrology”

Discharge/SedimentTransport/Deltas/Meandering/RiverFlooding/CycleOfErosion/UndergroundRivers/WaterTable/Springs/CavesCavernsSinkholes

RIVERS OF ICE (Glaciers)

Science of “Glaciology”

ZoneOfFlow/ZoneOfFracture/Ablation/ValleyGlaciers/ContinentalGlaciers/IceAges

For Next Week
Study Heaven and Earth (Geology: Rivers)
Ch. 4 (From Rivers Section to Chapter 5)

Read Science & Theology
Concordism: Progressive Creationism
(pp. 70-95)

OCEANS EXAM

Week 10 (March 30 - April 3)

RIVERS OF SAND (Shorelines and Dunes)

Science of “Sedimentology”

WaveBase/BreakingWaves/LongshoreCurrent/BeachDrift/HighEnergyBeach/SeaCaveSeaArchSeaStack/AbandonedBeaches/LowEnergyBeaches/Dunes&SandSeas

For Next Week

Study Heaven and Earth (Geology: Rivers)

Ch. 4 (From Rivers Section to Chapter 5)

Wave Lab

Week 11 (April 6-10)

RIVERS OF ROCK (Landslides)

For Next Week

Study Heaven and Earth (Geology: Rivers)

Ch. 4 (From Rivers Section to Chapter 5)

Prepare for Rivers Test

Week 12 (April 13-17)

Read Heaven & Earth (Life Science: Biology) Ch. 5

RIVERS EXAM

HISTORICAL SCIENCE

Week 13 (April 20-24)

Questions About Historical Science

READING THE ROCKS

Rock Identification Lab

For Next Week

Read Heaven and Earth (Historical Science) Ch. 6

Week 14 (April 27-May 1)

Questions About Historical Science

READING THE ROCKS

Rock Identification Lab

For Next Week

Read Heaven and Earth (Historical Science) Ch. 6

Prepare for Historical Science Exam

Week 15 (May 4-8)

TELLING TIME LAB

Interpreting a Geologic Section

For Next Week

Read Science & Theology
Separatism: Prochronic View, Gap Theory, Local
Creation View and Religious Only View
(pp. 96-to the end)

Prepare for Final Exam

HISTORICAL SCIENCE EXAM

Week 16 (May 11-15)

Complete all Labs from Memory

Reading the Night Sky

Reading the Clouds

Rock Identification Lab

Telling Time Lab

FINAL EXAM

Turn in manuscript and lab notebook for grading

Extra Credit Projects

(Points added to total)

DALLAS

Perot Museum of Natural History 5pts

Dallas World Aquarium 5pts

Dallas Arboretum 5pts

The Rock Barrel Rock Shop 5pts

FORT WORTH ARTS DISTRICT

Japanese Garden 5pts

Museum of History and Science 5pts

Dallas Zoo or Ft. Worth Zoo 5pts

Caldwell Zoo (Tyler) 10pts