



# On-Campus Course Syllabus

## SCI 205a

### Physical Science

### Spring 2023

#### Class Information

**Day and Time:** Mon – Wed: 8:00am to 9:15am

**Room Number:** E201

#### Contact Information

**Instructor Name:** Kirk Spencer

**Instructor Email:** [kspencer@criswell.edu](mailto:kspencer@criswell.edu)

**Instructor Phone:** 469.834.5211 (text first)

**Instructor Office Hours:** Monday: 9:30am to 11:30am &  
Tuesday 2:00pm to 4:00pm



#### 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 and 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 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**

(Purchase Copies of the Manuscript from Professor Spencer)

Spencer, Kirk L., Heaven and Earth; an Orientation in Natural Science. Unpublished, 2016

Spencer, Kirk L., Science and Theology; a compendium. Unpublished, 2014

## **Course Requirements and Assignments**

### **Attendance and Participation Grade**

Attendance and participation are expected as 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 5 points from the total. 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. 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. 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, underlining and/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 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 will not be your highest score, rather it will be an average of your two grades. The average of your exam grades will determine **40%** of your course grade.

### **Final Exam**

A comprehensive final exam will be given at the end of the course which will be composed primarily (80%) from questions taken from previous tests. At the end of the final will be several questions taken from the first two chapters of the manuscript and one matching question which will require a very basic understanding of the different views covered in your 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.

## **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 or 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. Instructors are not obliged to allow students to make up missed work. Per their independent discretion, individual instructors may determine how attendance affects students' ability to meet course learning objectives and whether attendance affects course grades.

## **Campus Closure**

To ensure the health and safety of students and employees, college administrators may decide it is necessary on rare occasions to close the campus. Once this decision is announced, instructors will contact students to provide further details regarding the campus closure's impact on those courses. Students are responsible to watch for communication from their instructors and respond appropriately. (Unless otherwise specified by the instructor in this syllabus, this communication will be sent to the student's Criswell College e-mail account.)

In order to make progress toward the courses' objectives, instructors have the freedom during most campus closures to require students to participate in activities as alternatives to meeting on campus. An instructor may, for example, hold class remotely (through Zoom) at the scheduled time, provide a recording of a class or presentation for students to watch independently, or assign other activities that students are to accomplish before returning to campus. Students are responsible for accomplishing these alternative activities as well as any course requirements listed in this syllabus during the period of the campus closure. If, during the period of the campus closure, personal circumstances prohibit a student from accomplishing these alternative activities or course requirements and assignment listed in the syllabus during the campus closure, the student is responsible for communicating with the instructor as soon as possible. Instructors will not penalize students who do not have the means to accomplish the alternative activities during the period of the campus's closure and will work with students whose circumstances during the campus closure prohibited their timely completion of course requirements and assignments in the syllabus.

## **Grade Weight**

Attendance Participation	(20%)
Reading Grade	(20%)
Exam Grades	(40%)
Astronomy	
Oceans	
Rivers	
Historical Science	
<u>Final Exam</u>	<u>(20%)</u>
TOTAL:	100%

## Grading Scale

A	93-100	4.0 grade points per semester hour	
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	
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	
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	
D-	60-62	0.7 grade points per semester hour	
F	0-59	0.0 grade points per semester hour	

## 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 instructors 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 close of the term or semester in which the grade was awarded, 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 Assessment

Material submitted by students in this course may be used for assessment of the college's academic programs. Since programmatic and institutional assessment is done without reference to specific students, the results of these assessments have no effect on a student's course grade or academic standing at the college. Before

submitting a student's work for this type of assessment, the course instructor redacts the work to remove anything that identifies the student.

## **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 instructor, 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 Supports**

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](mailto: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](mailto:studentservices@criswell.edu). The Student Services Office also works with local counseling centers to ensure that every student has access to helpful mental health resources. More information is located on the college website at [Criswell College Mental Health Resources](#), and students may contact the Director of Student Services if they have any questions.

Wallace Library: Students can access academic resources and obtain research assistance by contacting or visiting the Wallace Library, which is located on campus. For more information, email the Wallace Library at

[library@criswell.edu](mailto:library@criswell.edu). Offsite login information is available in Canvas in the “Criswell Student Training Course” under “Library Information.”

Tutoring Center: Students are encouraged to consult with tutors to improve and enhance their skills and confidence in any subject matter taught at the college. Tutors have been recommended by the faculty to ensure that the tutor(s) are qualified to serve the student body. Every tutor brings experience and expertise in an effort to provide the proper resources for the subject matter at hand. To consult with a tutor, students can visit the Tutoring Center located on the second floor in room E203, or schedule an appointment by emailing [tutoringcenter@criswell.edu](mailto:tutoringcenter@criswell.edu) or by calling 214.818.1373.

## Course Outline/Calendar

### Weekly Session

### Assignment

#### **Week 1** (January 16-20)

**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

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## ASTRONOMY

#### **Week 2** (January 23-27)

**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** (January 30-February 3)

**SOLAR SYSTEM**  
Planetary Science  
Comets/MeteorShowers/Planets/Pluto.Neptune.Uranus/Saturn/Jupiter/MoonsOfJupiter/AsteroidBelt/Mars/Volcanoes&CanyonsOnMars/SandstormsOnMars/Sun/Plasma/Sunspots/SolarFlares/CarringtonEvent/Corona/Mercury/Venus/TheMoon

For Next Week

Study Heaven & Earth: Astronomy  
Ch. 3

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**Week 4** (February 6-10)

**ASTRONOMY SUMMARY & REVIEW**

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

Prepare for Astronomy Exam

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**EARTH SCIENCE  
OCEANS**

**Weekly Session**

**Assignment**

**Week 5** (February 13 - 17)

**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**

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**Week 6** (February 20-24)

**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)

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**Week 7** (February 27 - March 3)

**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, Surface Waves/Richter Magnitude/Earthquake Damage/Tsunamis/Earthquake Prediction/Earth’s Interior/Lithostatic Pressure/Plate Tectonics



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

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**Week 8** (March 6-10)

**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

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**SPRING BREAK** (March 13-17)

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**EARTH SCIENCE (Geology)**  
**RIVERS**

**Weekly Session**

**Assignment**

**Week 9** (March 20-24)

**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**

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**Week 10** (March 27 - 31)

**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)

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**Week 11** (April 3-7)  
**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

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**Week 12** (April 10-14)  
**Questions About Historical Science**  
**READING THE ROCKS**  
**Mineral Identification Lab**

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

**RIVERS EXAM**

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**HISTORICAL SCIENCE**

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**Week 13** (April 17-21)  
**Questions About Historical Science**  
**READING THE ROCKS**  
**Rock Identification Lab**

For Next Week  
Read Heaven and Earth (Historical Science) Ch. 6

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**Week 14** (April 24-28)  
**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

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**Week 15** (May 1-5)  
**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

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**Week 16** (May 8-12)

### FINAL EXAM

Turn in manuscript and Extra Credit Projects  
Complete all remaining assignments

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### Extra Credit Projects

(Points added to total points not to final average)

#### 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