

Syllabus

SCI-294: Introduction to Physical Science

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Course Description

This course is designed to be an introduction to physical science principles and concepts. An examination of the following areas will be covered: the scientific method, mathematics in science, Newton's Laws of motion, energy, electromagnetism, heat, atomic structure, nuclear energy, atomic bonding, compounds, and mixtures.

Credit Hours: 2

Prerequisite Courses: None

Prerequisite Skills and Knowledge: None

Course Outcomes

Upon completion of this course, you should be able to:

1. Describe the "scientific method".
2. Articulate, via writing, a conceptualization of the relationship of science to modern society.
3. Describe three key global energy concerns and identify scientific solutions.
4. Demonstrate the use of mathematics in scientific modeling of the world.

Course Outline

Here is a preview of this course. It contains five components which work together to help you learn the earth sciences.

- **READING:** In this course you will do quite a bit of reading to familiarize yourself with the content of the natural sciences.
- **DISCUSSION:** Our class discussion will take place online in "Discussion Forums" and is based on assigned reading, shared results from surfing the net (Internet searches), presentation of papers to the class, and exercises.
- **WRITING:** One of the most helpful ways to communicate knowledge from research is by writing. You will write several short essays on various topics related to the natural sciences.
- **REVIEW QUESTIONS:** Your textbook has review questions at the end of each chapter. You will answer a sampling of these questions as a part of your academic work.
- **PROBLEMS:** Your textbook provides problems at the end of the chapters. You will solve a sampling of these problems as a part of your study of physical science.

Course Overview

This course is intended to motivate you to appreciate the approach of physical science and begin a quest to examine the complexities of the universe. Accordingly it will focus on various topics of physical science: scientific methodology, mathematics in science, Newton's Laws/motion, energy, electricity and magnetism, atomic structure and bonds, compounds/mixtures, chemical reactions.

The purpose of this course is to show the interrelationship of these topics that make up the general body of science known as physical science. This course is also based on the philosophy that students learn best through active research. You will need to use the tools of Internet research, supplemental readings, discussions, and course learning activities to broaden your knowledge base in the earth sciences.

Course Textbook

Hewitt, Paul., Suchocki, John. & Hewitt, Leslie. (2012). *Conceptual Physical Science* (5th Ed.). San Francisco, CA: Pearson Addison-Wesley

Course Technology

None

IWU Diversity Statement

IWU, in covenant with God's reconciling work and in accordance with the Biblical principles of our historic Wesleyan tradition, commits to build a community that reflects kingdom diversity. We will foster an intentional environment for living, teaching and learning, which exhibits honor, respect, and

dignity. Acknowledging visible or invisible differences, our community authentically values each member's earthly and eternal worth. We refute ignorance and isolation and embrace deliberate and courageous engagement that exhibits Christ's commandment to love all humankind.

Grading Scale

Grade	Quality Points Per Credit	Percentage	Score
A	4.0	95%-100%	475-500
A-	3.7	92%-94.9%	460-474
B+	3.3	89%-91.9%	440-459
B	3.0	85%-8.9%	425-439
B-	2.7	82%-84.9%	410-424
C+	2.3	79%-81.9%	390-409
C	2.0	75%-78.9%	375-389
C-	1.7	72%-74.9%	360-374
D+	1.3	69%-71.9%	340-359
D	1.0	65%-68.9%	325-339
F	0.0	0%-64.9%	0-324

Grading Policies

Your grading policy for your course is dependent on your school and program. Your grading policies can be found in the IWU Catalog.

Letter Grade Equivalencies

Grade	Description of Work
A	Clearly stands out as excellent performance. Has unusually sharp insights into material and initiates thoughtful questions. Sees many sides of an issue. Articulates well and writes logically and clearly. Integrates ideas previously learned from this and other disciplines. Anticipates next steps in progression of ideas. Example "A" work should be of such nature that it could be put on reserve for all cohort members to review and emulate. The "A" cohort member is, in fact, an example for others to follow.
B	Demonstrates a solid comprehension of the subject matter and always accomplishes all course requirements. Serves as an active participant and listener. Communicates orally and in writing at an acceptable level for the degree program. Work shows intuition and creativity. Example "B" work indicates good quality of performance and is given in recognition for solid work; a "B" should be considered a good grade and awarded to those who submit assignments of quality less than the exemplary work described above.
C	Quality and quantity of work in and out of class is average. Has marginal comprehension, communication skills, or initiative. Requirements of the assignments are addressed at least minimally.
D	Quality and quantity of work is below average. Has minimal comprehension, communication skills, or initiative. Requirements of the assignments are addressed at below acceptable levels.
F	Quality and quantity of work is unacceptable and does not qualify the student to progress to a more advanced level of work.

Course Workshop Summary

Workshop	Devotion*	Discussion*	Assignment*	Total Points per Workshop
Workshop One	1/0	2/40	3/100	140

Workshop Two	1/0	1/20	4/120	140
Workshop Three	1/0	2/60	3/90	150
Workshop Four	1/0	2/50	3/120	170
End of Course Survey				0
TOTAL	4/0	7/170	14/430	600

* Number of Activities/Sum Point Totals

Workshop One Outline

Title	Due Dates	Time	Points
1.1 Discussion: Devotional	Complete by the end of the workshop	30 minutes	0
1.2 Discussion: Science and Religion	Initial post due by the end of the second day of the workshop; two responses due by the end of the workshop	2 hours	20
1.3 Assignment: Physical Measurement Exercise	Due by the end of the workshop	2.5 hours	50
1.4 Assignment: Units and Dimensions	Due by the end of the workshop	2.5 hours	30
1.5 Assignment: Graphing Data	Due by the end of the workshop	2 hours	20
1.6 Discussion: Scientific Method	Initial post due by the end of the fourth day of the workshop; two responses due by the end of the workshop	2 hours	20
Totals		11.5 hours*	140

Workshop Two Outline

Title	Due Dates	Time	Points
2.1 Discussion: Devotional	Complete by the end of the workshop	30 minutes	0
2.2 Discussion: Inertia	Initial post due by the end of the second day of the workshop; two responses due by the end of the workshop	2 hours	20
2.3 Assignment: Newton's Laws of Motion	Due by the end of the workshop	2 hours	30
2.4 Assignment: Energy	Due by the end of the workshop	3 hours	20
2.5 Assignment: Gravity	Due by the end of the workshop	3 hours	40
2.6 Assignment: Heat and Temperature	Due by the end of the workshop	3 hours	30
Totals		13.5 hours*	140

Workshop Three Outline

Title	Due Dates	Time	Points

Title	Due Dates	Time	Points
3.1 Discussion: Devotional	Complete by the end of the workshop	30 minutes	0
3.2 Discussion: Heat Transfer	Due by the end of the second day of the workshop; two responses due by the end of the workshop	3 hours	40
3.3 Assignment: Electricity	Due by the end of the workshop	2.5 hours	30
3.4 Assignment: Light	Due by the end of the workshop	4 hours	30
3.5 Discussion: Atomic Model	Due by the end of the fourth day of the workshop; two responses due by the end of the workshop	2 hours	20
3.6 Assignment: Radioactivity	Due by the end of the workshop	3.5 hours	30
Totals		15.5 hours*	150

Workshop Four Outline

Title	Due Dates	Time	Points
4.1 Discussion: Devotional	Complete by the end of the workshop	30 minutes	0
4.2 Assignment: Atomic Bond Exercise	Due by the end of the workshop	3 hours	40
4.3 Discussion: Mixtures and Water Purification	Due by the end of the second day of the workshop	2 hours	30
4.4 Assignment: Chemical Reaction Exercise	Due by the end of the workshop	3 hours	40
4.5 Assignment: Chemical Reactions and Energy	Due by the end of the fourth day of the workshop	2 hours	20
4.6 Assignment: Electricity Generation Exercise	Due by the end of the workshop	3 hours	40
End of Course Survey	Complete by the end of the workshop	-	10 extra credit
Totals		13.5 hours*	170

Course Assignments

COURSE TOTALS	54 hours*	600
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* These timings are based on estimations of average times to complete each assignment. Actual assignment completion times will vary.

Expectations, Policies, and Important Student Information

Expectations

Instructor Expectations of Students

- Submit assignments on time. If there are circumstances beyond your control, discuss possible options for completion with your instructor.

- Accomplish work on your own unless otherwise instructed (i.e., do not cheat or plagiarize).
- Contribute substantively to discussions according to assignment guidelines provided.
- Contribute to discussions throughout each workshop rather than waiting until the end of the workshop.
- Contribute substantively to group assignments (if required in course).
- After spending a reasonable amount of time on it, ask your instructor if you do not understand content or instructions. Ask for help early while there is time to fix problems.
- Treat other students courteously and respectfully.
- Every time you enter your course, read and abide by postings made in the Announcements and Faculty Forum. These postings are critical.

Students' Expectations of Instructor

- Set a friendly, open, and encouraging learning environment.
- Guide discussions as needed.
- Set clear rules, standards, and expectations.
- Provide workshop grades and feedback within seven days of assignment due date.
- Provide final grades and feedback within seven days after the last day of class.
- Ensure students treat each other respectfully.
- Respond to student inquiries within 48 hours.

Policies

Late Policy

- No credit is available for postings of any kind made in the discussion forums after a given workshop ends.
- If your instructor approves your submission of late assignments, each assignment score will be penalized 10% per day up to five days late. After the end of the fifth day, late assignments will not be accepted. An assignment is a paper, a project, a team presentation, etc., but not a discussion or quiz/test.
- No late assignments will be accepted after the close of the final workshop.
- **Unless otherwise stated by the course instructor, all assignments are due by 11:59pm EST.**

Attendance Policy

Onsite:

Students are expected to be present when class begins, and remain the entire workshop. To be counted present, a student must attend a total of three hours or more of a class that is four hours in length, or four and one-half hours or more of classes that are six hours in length.

Online:

Attendance is determined by activity during a workshop, either through discussions or submission of assignments. A student is reported absent for a workshop if there is not at least one submission (or posting) of an assignment or in a discussion forum assigned during that workshop.

Withdrawal Policy

Students needing to withdraw while in a course may do so by arrangement with the Office of Student Services prior to the end of the course, but the regular refund and academic withdrawal policies apply.

University Policies

- CAPS Catalog - <https://www.indwes.edu/catalog>
- College of Adult and Professional Studies Policies - <http://indwes.smartcatalogiq.com/en/2016-2017/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Policies-and-General-Information-CAPS>

DeVoe School of Business

- [College of Adult and Professional Studies Policies and General Information](#) (*Attendance Policy; Computer Requirements; Honesty, Cheating, Plagiarism, and Forgery Policy; and Student Address/Email Information are found here.*)
- [Undergraduate Business Programs](#)
- [Graduate Business Programs](#)
- [DeVoe School of Business Website](#)
- [The DeVoe Report Digest](#) (*The DeVoe Report Digest provides applicable insight into best business practice with credible commentary on current marketplace events.*)

School of Service and Leadership

- School of Service and Leadership Policies - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Copy-of-School-of-Service-and-Leadership>
- Graduate Studies in Leadership Division Policies - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Copy-of-School-of-Service-and-Leadership/Graduate-Studies-in-Leadership-Division>
- Attendance Policy - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Policies-and-General-Information-CAPS/Academic-Information-CAPS/Attendance-Policy-CAPS>
- Computer Requirements - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Policies-and-General-Information-CAPS/Academic-Information-CAPS/Computer-Requirements-CAPS>
- Honesty, Cheating, Plagiarism, and Forgery Policy - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Indiana-Wesleyan-University-at-a-Glance/Honesty-Cheating-Plagiarism-and-Forgery>
- Student Address/Email Information - <http://indwes.smartcatalogiq.com/en/2014->

Division of Liberal Arts

- School of Service and Leadership Policies - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Division-of-Liberal-Arts>
- Attendance Policy - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Policies-and-General-Information-CAPS/Academic-Information-CAPS/Attendance-Policy-CAPS>
- Computer Requirements - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Policies-and-General-Information-CAPS/Academic-Information-CAPS/Computer-Requirements-CAPS>
- Honesty, Cheating, Plagiarism, and Forgery Policy - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Indiana-Wesleyan-University-at-a-Glance/Honesty-Cheating-Plagiarism-and-Forgery>
- Student Address/Email Information - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/College-of-Adult-and-Professional-Studies-CAPS/Policies-and-General-Information-CAPS/General-Information-CAPS/Student-AddressEmail-Information>

Important Student Information

Off Campus Library Services

As an IWU student, you have library privileges through Off Campus Library Services. Go to <http://www.indwes.edu/ocls/> to learn more about the library. These are your privileges. Services provided include:

- Access to books (print and e-books), article databases, services and web resources.
- Access to many full text articles.
- Document delivery, which includes mailing print books, scanning PDF articles (that are only available in paper in the IWU library), providing a service of interlibrary loan whereby items not owned by IWU are obtained on your behalf from other libraries that own the item.
- Consultation with APA writing style. The librarians are not editors, but they are extremely knowledgeable about APA and are glad to answer your specific questions regarding correct ways to use APA.
- Provision of customized research guides for your particular topic that will walk you through the steps to locate appropriate articles/books on your topic.
- A general go-to source for helping you find information for your research projects.

In order to use many of the library databases, you either need your MyIWU credentials OR the Library Access Number sent to you via email from OCLS. It will be needed to get into the proprietary subscription-based databases; to check out print books and for some classes you will be asked to access specific articles as additional reading. Links directly to these articles will be provided.

If you need help, contact OCLS; 800-521-1848 or <http://www2.indwes.edu/forms/request.aspx>.

APA Writing Style

APA (American Psychological Association) writing style, based on the *Publication Manual of the American Psychological Association*, 6th ed., is the foundation for all academic writing in for non-residential students. All students will be required to adhere to the formatting, citing and documentation of all sources used in a research paper per the guidelines of APA. Resources for learning APA and resources for using APA are provided as follows:

- Some programs purchase the *Publication Manual of the American Psychological Association*, 6th ed.
- *APA 6e Guide*, available at <http://www2.indwes.edu/APA/APA6eGuide.pdf>. This resource also includes some specific references entries for IWU specific resources, e.g. catalog, IWU library databases, etc.
- OCLS APA Resource page, that includes a Word template; APA checklist; APA focused videos, etc., at: http://www2.indwes.edu/style_guide.html
- APA Style CENTRAL, includes a personalized learning system for APA and an interactive APA template for writing and saving papers.
- Off Campus Library Services librarians, <http://www2.indwes.edu/forms/request.aspx> or 800.521.1848.

Special Needs

If you need accommodations for your course, you can email ADARRequest@indwes.edu with your request, and you will be forwarded forms to fill out and return. Once all forms are received and reviewed, a determination is made on reasonable accommodations and you will receive an Academics Adjustment Notification. You will be required to give this notification to your instructor before the beginning of each of your courses.

Smarterthinking

Access to both live and online tutoring can be found through your course under *Content>>Course Dashboard>>IWU Resources*.

Netiquette

In the online classroom, people cannot see your face, they cannot hear the tone or inflection of your voice, and they cannot observe your body language to determine your intention. Therefore, when responding to another student's post, or even in creating your own, it is very important to write your thoughts out and take a few minutes away from them. Then reread what you wrote and make sure it answers the question(s) and is worded in a way that is not likely to offend others.

- It is okay to disagree, but do so in a manner that is constructive rather than destructive, encouraging rather than denigrating.
- It is very easy to say the right words but for them to be "heard" incorrectly. Take the time to review what you type. This is one of the benefits of online education; you have the ability to wait and rethink what you will say before you say it.
- USING ALL CAPITAL LETTERS IS THE SAME AS SHOUTING!!!! Use capitals only to emphasize a point; do not type full posts in capital letters.
- Respect others' opinions as you would have yours respected.
- This is a Christian school; please respect the religious beliefs of those around you.