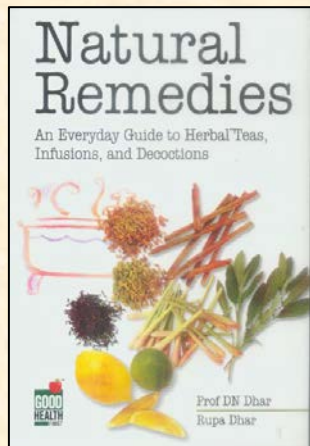
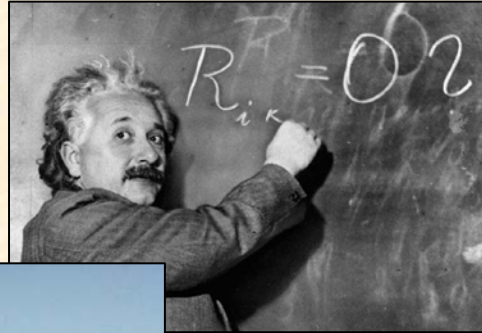


Foundations of Science



Spring Semester 2018

Name: Dr. Tim Tripp -

*** I always try to have an “open-door” policy as regards office hours, so please feel free to call or come by any time that you have a question.**

Course Description/Rationale: The rationale for this course is to enhance your scientific literacy by making science both interesting and relevant. This will be accomplished by helping you understand how science works and how you can apply science in your daily life, especially when evaluating extraordinary/unusual claims in which almost everyone is interested – including UFOs, ESP, and mysterious creatures like Big Foot.

Accordingly, the overarching objectives of this course are to enhance your scientific literacy and critical thinking skills using an integrated, multidisciplinary approach that draws upon key concepts from the natural sciences, psychology, and critical thinking. The three broad goals of this integrated course are:

- 1) to enhance your understanding and appreciation of science as a proven and reliable method of comprehending the natural world, and to help you distinguish scientific from non-scientific and pseudoscientific ways of thinking about the world;
- 2) to provide you with a more well-rounded understanding of science by teaching you the basic principles, facts, laws, and theories from the natural sciences and, when relevant, from psychology;
- 3) to teach you specific rules of critical thinking so that you can use them, and your knowledge of science and the scientific method, to make more informed decisions. All three goals are inseparable and are interwoven throughout the course.

These three goals will be accomplished by using information from the natural sciences, the scientific method, and rules of critical thinking to examine a range of claims that are common in our society. These claims include, but are not limited to, extraordinary claims and pseudoscientific claims such as those pertaining to astrology, UFOs, legendary creatures, the lost continent of Atlantis, alternative medicines, paranormal phenomena, and others. Through an examination of these and other topics, as well as the evidence for key scientific theories, you will learn more about the nature of science and the scientific method, how to more reliably evaluate the veracity of claims, and how to avoid common errors in reasoning that lead to erroneous conclusions. This knowledge will help protect you from fraudulent and misleading claims and will enable you to make more informed decisions regarding issues of significance to our society. Finally, it is my hope that you will gain a greater appreciation of the beauty and wonder of the natural world as revealed by science.

Upon successful completion of the course, you will be able to:

1. Understand and apply scientific terminology pertaining to the nature and conduct of science, such as hypothesis, law, theory, control group, placebo group, confirmation bias, and double-blind study;
2. Apply methods of reasoning used by scientists: i.e., the scientific method based on the requirements of falsifiability/testability, logical consistency, comprehensiveness of evidence, intellectual honesty (objectivity), replication of results, and sufficiency of evidence;
3. Analyze and evaluate common logical fallacies and perceptual biases that interfere with the ability to draw reasonable and/or correct conclusions, as well as the difference between facts, informed opinions, and uninformed opinions;
4. Learn key concepts and theories from a variety of scientific disciplines, especially physics, biology, and geology;
5. Demonstrate how to distinguish science from pseudoscience by scientifically evaluating a wide variety of extraordinary claims that are common in our culture today.

Just as importantly, upon completion of this course, we hope that you will have a greater appreciation of the role of science in all of our lives and the need for scientific literacy and critical thinking to help make informed decisions about issues currently facing our society.

Methods of Instruction: This course is based on a combination of traditional lecture format, coupled with the use of “**case studies**” which involve classroom-based group work, class discussions, homework assignments, and readings. The use of [case studies \(which are stories with an educational purpose\)](#) has been shown to: significantly increase student interest, enjoyment, and involvement with a course; improve grades; and enhance students’ critical thinking ability. **All lectures are available on Power Point and can be accessed through BlackBoard** under the “Course Documents” section.

Students are required to take the lab concurrently because the lecture and lab constitute a single course. The lab is also based on the use of case studies.

Textbook Information: There are two textbooks for the course and a lab manual. The first book listed is an integrated science text that provides the scientific knowledge for the course. The

second text provides an understanding of how to use critical thinking and scientific reasoning to evaluate extraordinary/weird claims.

- 1) **Foundations of Science** (A custom edition of *Conceptual Integrated Science*), by Hewitt, Lyons, Suchocki, and Yeh, 2012, Pearson/Addison-Wesley, San Francisco. ISBN 9781256559450

If you have the non-custom edition of this textbook from previous semesters, it will be fine to use that text because the custom edition is simply a shortened version of the original; i.e., material that we do not use was removed in order reduce the cost. Just be aware that the page numbers will differ – but the content of the assigned readings will be identical.

- 2) **How to Think About Weird Things: Critical Thinking for a New Age** – 7e, 2011, by Theodore Schick and Lewis Vaughn, McGraw-Hill. ISBN 978-0-07-353577-7 (paperback).

- 3) Lab manual: *Foundations of Science Lab Manual* (paperback)

Grading Criteria

Because the lecture and lab portions of the course are considered to be part of the **same** course, the final course grade is based on a combination of lecture tests, lecture coursework, and lab work. In other words, there is no separate lab grade. **Because of this, students must remain enrolled in both the lecture and lab for the entire semester; they cannot drop either the lecture or the lab and receive a grade for the course. The 4 in the 1436 designation for the course indicates that this is a 4-credit course that has a lab component; it is NOT two separate courses - as is the case with most other introductory science courses at SHSU.**

Grading will be based on five (5) lecture exams (including the final), group case study activity grades in lecture, individual and group lab quiz grades, and peer evaluations by your fellow group members in both lecture and lab (see details below) You will also be given a **critical thinking assessment** at the beginning and end of the semester that serves as **extra credit**. This extra credit can be very important to your overall grade, so PLEASE do your best on both exams! Please note that the number of assignments may be changed *slightly* (e.g., add or drop a homework assignment) if circumstances warrant such a change. If this happens, it will have a slight effect on the percentage points associated with each aspect of the course.

In an integrated course such as this, each topic serves as the foundation for subsequent material; consequently, **students should remember and understand all of the basic principles covered previously in the course** in order to apply them in the case studies and labs, and to do well on exams.

Tests: There are 5 major exams and each will consist of multiple-choice and matching-type questions, and will be worth 500 points. The top 4 grades will count towards your course grade.

Case Studies and Peer Evaluation

In this class, students will be divided into groups by the instructor. Each group will consist of about 5 or 6 students who will work together throughout the semester on case studies. As you will see, **group scores are usually better than individual scores, and so this process normally improves an individual's grade.** In addition, **group effort helps everyone learn the material better because everyone is involved in teaching one another.** So, individuals normally do better on tests as a result of this prior group preparation process – assuming they put in the effort. **So, in total, group scores comprise 21.82% of one's grade in the course (lab and lecture).**

Many students are initially uneasy about the idea of working in groups because it is often the case that, in previous classes, some members of their group did all or most of the work, while others did little or nothing – but everyone received an equivalent grade. This should **not be a problem** in this course because of the importance of group peer evaluation procedures to a student's grade. The procedures for performing peer evaluations are described below.

Peer Evaluation Process

For example, if you are in a group consisting of 5 members (including yourself), you will be allotted 40 points to distribute among the members of your group following each group assignment. *You do not give points to yourself.* (If you are in a group of 6 members, you will be given 50 points, etc...) If you believe that everyone contributed equally to the group work, then you would give everyone 10 points on the assignment. If everyone in the group feels the same way, then everyone receives a total of 40 points from their peers, which results in an average score of 10 points ($40 \text{ points} / 4 = 10 \text{ points}$).

You must be fair in your assessments, but if someone in your group did not contribute adequately, then you should give them fewer points. **If they were not present or did not contribute to an assignment, they should receive a zero.** Of course, if someone worked harder than the rest, then give that person more than 10 points. *(But, if you do this, then someone else will have to receive less than 10 points because there are a limited number of points to award).*

It is critical that you assign these scores PRIVATELY (NOT in front of your team members) AND that you do this on the day the case study was conducted or the assignment turned in! In order to be fair and accurate, **assign the scores immediately after the assignment is completed. You will turn in the peer evaluations, at the beginning of the next class period after the project or activity was performed in class or due in class.**

If you receive an average of 10 points, you will receive 100% of the points earned by your group on that group assignment. **If you receive more than 10 points, you will receive more than 100% - up to a maximum of 105% of the group points.** For example, if your average was 10.2, then you would receive 102% of the group points. If you receive an average of 9.2, then you will receive 92% of the group points, and so on.

You must use the following additional criteria when assigning points:

- 1) Be fair! If a person made a genuine effort to contribute, then award 10 points. If they did above and beyond what was expected, then give more than 10 points – up to a maximum of 15. But, *do not give points to a student for an assignment if that student was absent the day a group assignment was done in class. And, do not give any points on a group homework assignment if the person did not contribute.*
- 2) You cannot give anyone in your group more than 15 points. (This prevents people from giving their friends an unfairly large amount of points, which would necessarily hurt other members of the group because there would be fewer points to distribute to other group members). ***Understand that, if you give someone more than 10 points, then you must necessarily give someone else less than 10 points*** because you can't award more points than you have available to give (50 points in a 6-person group and 40 points in a 5-person group, etc.)
- 3) You do not have to assign all of your points. (This means that you should not give any remaining points to someone who you feel does not deserve them.) **If someone is absent in your group on the day of the assignment, give them a zero.**

Just as importantly, DO NOT award the absent person's points to other members of the group.

This undermines the system and is not fair because it artificially inflates scores, and the amount of 'inflation' would vary depending upon group size and the number of people that were absent.

The point is, “**Do your best to contribute to the group😊!**”

The fact that the score is an average prevents anyone who might be unfair in the awarding of points from single-handedly undermining the final grade of a group member. And, if one student gives a score that is much less than those of other students (which implies that it is unfair), I have the option of ignoring that score. In fact, I can override a low average score if there is evidence that the grade was unfairly assigned by the group. ***This serves as a safety net.***

This type of peer-evaluation method has been used in many universities and works very well. Students like it because it encourages everyone to pull their own weight and contribute to the group.

How to Earn a Good Peer Evaluation Score

- 1) **Sit with your group every day and learn everyone's names. Get to know them.**
- 2) **Come prepared to contribute** to the case studies and quizzes by attending all classes (so you know what's going on), and reading the assigned material. In other words, make sure you can and do contribute constructively to the discussions.
- 3) **Be positive and friendly and treat the other members of the group the way you want to be treated.** In other words, be courteous and respectful of others' comments and ideas - even if you don't agree with them. Be willing to accept that your initial thoughts might be incorrect,

but also don't be afraid to courteously express your views even if they are different from those of others in the group.

- 4) **Contribute significantly to the group homework assignments.** Do your part and **do it on time** – not at the last minute. Keep a copy of what you have written in case there is a conflict. Remember, I can override the group's evaluation in the unlikely event that it was unfair. *However, this normally requires that you be able to document what you contributed so that I can base my decision on evidence rather than hearsay.*
- 5) **Come to any and all group meetings and, if you absolutely cannot be at a meeting because of work or other legitimate schedule conflicts, make sure you keep in touch** with the group via e-mail, Facebook, or phone and let them know **ahead of time** that you can't come. Most people will understand if they know someone has legitimate reasons for not attending a meeting.

Late Work Policy: 10% of the value of the exercise will be deducted for each day it is late – up through the beginning of the next class period. If, for example, the assignment is due on Tuesday at 11 AM, but is handed in on Tuesday at 1 PM, 10% will be deducted. If the paper is turned in on Wednesday, 20% of the value of the assignment will be subtracted. And if it is submitted at the beginning of the class on the Thursday immediately following the Tuesday due date/time, 30% will be deducted. It must be emphasized that, **after that date, the assignment cannot be turned in and no grade will be received for the assignment.**

Please check BlackBoard as soon as the grades are posted. **Students have a maximum of two weeks to contest a grade.** For example, if the grade is incorrect, or if it was not posted, you need to notify me within two weeks of my posting of the grade. After two weeks, if no errors have been reported to me, the grade stands as is.

What happens if you miss a Case Study? If you miss a case study in lecture because of an excused absence, you can partially make it up by completing it on your own. This will entail writing an essay response to any questions that may have been asked in class regarding the case, as well as taking the quiz over the case study. **The maximum score that a student can achieve is the score earned on the assignment, OR the group's score – whichever is lower.** This policy ensures that your grade is tied to the group grade, but it also provides some grade 'cushion' for those that may be sick or unable to come to class on the day of the case study, while also discouraging students from simply skipping the day of a case study. ***Please remember that your group must (based on the rules for peer evaluations) give you a zero for group participation on the case study if you are absent.***

Lab Grades

Your lab grade is 25% of your course grade. The lab grade will consist of both individual scores and group-derived scores. Most of the labs will be based on case studies that will involve instructor-led discussions in which members of groups work together to develop responses, propose hypotheses and experimental designs, or offer explanations for what has been reported or observed. In short, labs involve a lot of discussion – both within each group and among groups. The lab instructor will facilitate these discussions. The discussions make the labs fun and interesting because they are not based simply on rote memorization and fill-in-the-blank activities; rather, they involve group discussion and exploration of topics.

Extra Credit

At both the beginning and end of the semester, you will be given the opportunity to earn extra credit worth up to 9% of the total course grade! This opportunity to significantly improve your grade will be in the form of a critical thinking assessment – either the CAT assessment or the FSE assessment. This assessment, which will be given in lab, is required by the University's reaccreditation requirements. It is extremely important that you do your best on both exams because your scores reflect upon the university and indicates how well our students are doing relative to students at other universities in the United States. It's your chance to not only earn a lot of bonus points, but also to make SHSU look good! So, please do your best. * Because this is required for university accreditation purposes, students must take this assessment. It's not an option – but why would anyone want to pass up the chance to earn extra credit even if they could opt out of taking it?

The grading procedure for this assessment consists of simply *adding* the two scores together - unless you score above 144 points, in which case a *multiplier* is used to further increase the number of points you can earn. (It's a bit like the multiplier used on some lotteries.) This means that the procedure for awarding bonus points is very generous.

For example, if you made a combined score of 110 points on the assessments, the 110 points will be added to your grade. **And, if your total on both assessments is greater than 144 points, you will receive even more extra credit points!** The amount you would receive for scoring above 144 points is equal to the number of points you earn above 144, *multiplied by 2* – **with a maximum of 190 extra points possible. (190 points is equal to 4% of the course grade.). So, if you received the maximum number points on these exams, you would receive a grand total of 430 bonus points (9% of the course grade), which is almost an entire letter grade!** This is why it's important to do your best on both assessments.

For example, if you made a 70 the first time you took the assessment and a 95 the second time, you would have earned a total of 165 points. Because the combined score for the two assessments is 21 points more than 144 points, the multiplier is used and you would earn 42 *more* bonus points in addition to the 165 you'd already earned: $165 - 144 = 21$; $21 \times 2 = 42$; **$165 + 42 = 207$ total bonus points**. * Because these are bonus points, they would NOT be adjusted by a peer score. They're all yours!

Because you are being asked to take this critical thinking assessment at the beginning of the semester (the pre-test) before you have been taught the course material, we do not want you to be discouraged if you do not do as well as you might have expected on the pre-test. That is why we give additional bonus points if you achieve a combined score above 144 – which is a mere 60% of the possible points on the assessments! Because the score on the second assessment (the post-test) **SHOULD improve if you learn from the course and you do your best on the assessment**, you can easily make a good overall score and earn a significant number of bonus points.

You should know that a few students have actually earned the maximum number of bonus points possible!

Grade Determination

Your grade is based on the percentage of points earned relative to the maximum number possible for the course. Although group effort is fundamentally important to the design of the course and to the way in which labs and case studies are run, **your grade is determined primarily by your individual scores; i.e., by your individual effort.** In short, you are ultimately responsible for the majority of the grade points you earn in the course. **The group work should help you do better by helping you learn the material more thoroughly.**

All of the tests and assignments for the course, including lab assignments, are listed in the [Grade Form on page 12](#). ***(Please note that Black Board will not calculate your grade; it's simply a place to store the grades for individual assignments.)*** Using the form below, you can estimate your grade at any point in the semester by comparing the total number of points you have earned to-date to the total number of points possible at that point in the course

Abbreviations used in grade form

Lecture component

CS = Case Study

HW = Homework

CT = Critical Thinking Test

Grade Record Form

I. Lecture Grades (75.00% of total)

Individual grades

1. Test grades

Test 1 _____ (500)

Test 2 _____ (500)

Test 3 _____ (500)

Test 4 _____ (500)

A. Total test = _____

II. Lab Scores (25.00% of total)

% of lab grade x 1,000

Example: If you get 84% for your lab grade, you get 840 points towards your course grade

3. Group Grades in Lecture

In Class

Outside Class

Xango CS ____ (200)
Autism CS ____ (200)

AAW CS ____ (300)
FiLCHeRS CS ____ (300)

4. Extra Credit: Critical Thinking Assessment Scores

CT pre-test ____ (120 max)

CT post-test ____ (120 max)

E. Total CT points ____

Point range for final course grade

A = 3600-4000 C = 2800-3199

B = 3200-3599 D = 2400-2799

F = less than 2400

Academic Honesty: All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action that is consistent with university policies.

Proper Course Behavior: All of these rules are standard and are based on common courtesy, respect, and honesty – all of which are necessary to ensure a positive learning environment.

- 1) Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cellular telephones, pagers and ALL other electronic communication devices must be turned off before class begins.

Students are prohibited from eating or drinking in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom will result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

- 2) ***Please do not use laptop computers, cell phones, I-Pads, or any other type of electronic device, with the exception of a recording device, in class at any time because it distracts not only you, but the instructor and other students.***

If you have an emergency-type situation that requires that you be in cell phone contact with someone (e.g., relative in hospital; spouse overseas in the military), then please tell me before class begins and put the phone in the vibrate mode.

- 3) **Please come to class on time**—there is no reason to be late to class on a frequent basis.
- 4) **Please remain in class until it is finished** because **leaving early disrupts the class and will count as an absence unless you have cleared it with me, or unless it is an emergency.** If you have a job that overlaps with class time, then you need to drop the course or change your work schedule.
- 5) Please remove hats during exams.
- 6) **For obvious reasons, students CANNOT LEAVE THE ROOM DURING AN EXAM and then return.** If this happens, the test will be taken up and your grade will be based on the portion of the test that you completed. **If you have a cold or allergy, please bring tissues to class so that you won't want to leave to get tissues during the test.**

Study Tips: Please read and follow these tips to enhance your grade in the course. I want you to do well!

1. **This course deals with arguments and evidence for or against certain claims. So, in order to study, you should imagine that you have been asked to write an essay in which you must present evidence and arguments to either support or refute a claim. This helps you learn and retain the material – and it makes the learning process more fun and interesting. This approach amounts to pretending that you are teaching the material to someone else.** You cannot simply memorize your notes and definitions and expect to do well on the tests. You must truly understand the material in order to obtain a good grade.
2. **Take notes.** Although significant amount of the information covered in class is presented in abbreviated form on the Power Point lectures, you will almost certainly need to write additional notes in order to recall, integrate, and understand the information. In addition, note taking requires active listening; i.e., a conscious attempt to determine what is important and to look for connections between ideas. Lectures aren't simply a bunch of facts and definitions thrown together. In the class, the lectures are arguments either for or against certain claims and you'll need to understand the arguments.
3. **Review your notes before the next class.** Constant reviewing will help you learn the material in smaller 'bites' of information – which makes it much easier to learn. Just as importantly, reviewing your notes before the next lecture will help you see how the previous material connects with the material to be covered in the upcoming class.
4. This course requires that students learn a significant amount of material on their own, independent from the lecture material. **So, reading the textbooks and reader for this course really, truly is a necessity. The ability to learn on your own is one of the most important skills you will learn in college, and it is one of the most important skills that employers look for in job candidates.**

5. When it comes time to **review for an exam**, first read the highlighted portions of the text, then concentrate on your notes. You might also want to follow the procedures below:
- As you review your notes, first concentrate on absorbing the key ideas and understanding the organization of the material - why certain ideas followed others in the class and how they are related.
 - Once this is done, begin to focus on the details - the “whys.” As stated above, **tests in this course are absolutely not based on the mere memorization of definitions, or on the recognition of verbatim statements from lecture**; rather, the test questions assume you already know the definitions and that you understand the concepts discussed in lecture. **So, you will not be asked definitions; rather you will be asked to apply facts and principles, i.e., to think with the information you have learned.**

Visitors in the Classroom: Unannounced visitors to the classroom must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom. This policy is not intended to discourage occasional visiting of classes by responsible persons.

Americans with Disabilities Act: Any student seeking accommodations should go to the **Counseling Center and Services for Students with Disabilities** at the very beginning of the semester and complete a form that will grant permission to receive special accommodations. Please do not wait until test day to do this – the request for accommodations must be done at the beginning of the semester and students that have permission to use the services at the Counseling Center must make appointments several days ahead of scheduled tests. Walk-ins aren't permitted. Also, please be sure to send me an e-mail two days before an exam to remind me to take the test to the Counseling Center.

Religious Holy Days: If a student desires to be excused from class, assignment, or a test on a religious holiday, then the student must notify the instructor of each scheduled class that he/she will be absent for religious reasons. In such cases, the student will be required to take the test or submit the assignment early—unless there are good reasons for not being able to do so and the instructor has agreed to those reasons.

Special Circumstances: If unusual circumstances arise during the semester, such as a medical problem, death in the family, etc., which adversely affects your attendance **PLEASE discuss this with me immediately and provide documentation. Don't wait until the end of the semester to discuss the problem with me.** If you keep me informed, I will gladly do my best to accommodate your situation. However, please understand that, because of the nature of the course, there are limits as to how much can be excused and so, at some point, it may be necessary for you to drop the course. Also, if you wait until after-the-fact, at the end of the semester, to let me know that you were experiencing these adverse circumstances, there is nothing I can do about it at that time. I cannot retroactively make accommodations and I do not give extra credit assignments to make up for grade deficiencies.

Summary of Reading Assignments

- Schick = *How to Think about Weird Things* by Schick and Vaughn
- FOS = *Foundations of Science* text. * In addition to the custom *Foundations of Science* (FOS) page numbers, the earlier *Conceptual Integrated Science* (CIS) page numbers are also listed after the FOS page numbers in case you have the earlier edition.
- PowerPoint lectures on BB

- 1) Schick – Chapter 1 **all**: “Close Encounters with the Strange” pp. 1-13
- 3) FOS - Chapter 1: “About Science” pp. 1-14; (CIS – Chapter 1 **all**: “About Science” pp. 1-12)
- 4) Schick Chapter 6: “Science and Its Pretenders” **part** 158-181 (nature of science and scientific reasoning)
- 5) Schick – Chapter 3: “Arguments Good, Bad and Weird” **parts** 34-36 and 49-55. (Pay particular attention to pages 49-55 dealing with informal fallacies)

- 1) Schick Chapter 4: “Knowledge, Belief and Evidence” **parts** 62-84 and summary on 90 (opinion vs. knowledge and expertise)

- 1) Schick Chapter 5: “Looking for Truth in Personal Experience” **part** 96-142 (perception and memory problems)
- 2) Read FOS Chapter 2: “The Universe” pp. 15-34 (CIS Chapter 28: **all** pp. 649-666)

- 1) FOS Chapter 3: “The Atom” pp. 35-56 (CIS Chapter 9: “The Atom” **part** 167-179)
- 2) FOS Chapter 4: “Energy and Momentum” pp. 57-76 (CIS Chapter 4 on Energy **part** 63 -74)
- 3) Schick Chapter 4 Knowledge, Belief and Evidence” **part** 84-90 (astrology section)
- 4) Schick Chapter 7: Case Studies in the Extraordinary” **part** 234-247 (UFO abductions)
- 5) Read FOS Chapter 5: “Heat” pp. 77-98 (CIS Chapter 6 “Heat” **part** 98-104)

- 1) *Laws and Relativity* lecture posted on BB.
- 2) FOS Chapter 6 “Describing Motion” pp. 99-116 (CIS Chapter 2 **all**: pp. 17-30)
- 3) FOS Chapter 7: “Newton’s Laws of Motion” pp. 117-138 (CIS Chapter 3: “Newton’s Laws of Motion” **part** 36-49)
- 4) *The Paranormal – Part 1: History of Ghosts, Psychic Energy, Psychic Powers, Psychic Detectives, Psychic Healers and Mediums* lecture on BB
- 5) Schick Chapter 2 **all**: “The Possibility of the Impossible” pp. 14-29
- 6) Schick Chapter 6: “Science and Its Pretenders” **part** 197-211 (parapsychology)
- 7) Schick Chapter 7: “Case Studies in the Extraordinary” **parts** 220-227 and 247-275 (talking to the dead, near-death experiences, and ghosts)

- 1) Schick Chapter 7 (homeopathy) **part** 227-231
- 2) Schick Chapter 5 “Looking for Truth in Personal Experience” **part** 142-150 (anecdotal evidence, placebo effects and controlled studies)

- 1) FOS Chapter 8: Human Biology – Care and Maintenance” pp. 139-160 (CIS Chapter 20: “Human Biology II – Care and Maintenance” **part** 461-463 and page 70 on the “Placebo Effect”)
- 2) FOS Chapter 9: “Rocks and Minerals” pp. 161-184 (CIS Chapter 23: “Rocks and Minerals” **parts** 531-537 and 541-552)
- 3) FOS Chapter 10: “Plate Tectonics” pp. 185-210 (CIS Chapter 22 **all**: “Plate Tectonics” pp. 505-526)

4) FOS Chapter 11: "The Solar System" pp. 211-232 (*CIS Chapter 27 all: "The Solar System" pp. 320-338*)

1) FOS Chapter 12: "The Basic Unit of Life – the Cell" – pp. 233-260 (*CIS Chapter 15: "The basic Unit of Life – the Cell" - parts 319-328 and 334-336 (cell reproduction)*)

2) FOS Chapter 13 all: "Genetics" – pp. 261-286 (*CIS Chapter 16 all: "Genetics" – pp. 348-368*)

3) Schick Chapter 8 **all**: "Relativism, Truth and Reality" pp. 295-316

4) FOS Chapter 14 all: "Evolution" pp. 287-316 (*CIS Chapter 17 all: "Evolution" pp. 372-396*)

5) Schick Chapter 6: "Science and Its Pretenders" **part** 181-197 (creationism)

Summary of Exam Dates

Exam 1 – 02/16

Exam 2 – 03/09

Exam 3- 04/09

Exam 4- 05/04

Exam 5 – during Finals Week