



# CT<sup>2</sup> Course Design

2016 CT<sup>2</sup> Faculty Institute

- design and develop a communication-intensive  $CT^2$  Seminar on the topic or subject the faculty member chooses and that integrates targeted student learning outcomes related to critical thinking;
- redesign and redevelop existing faculty members' course(s) to integrate the targeted student learning outcomes related to *Clemson Thinks<sup>2</sup>*;
- develop and integrate activities and assignments into faculty members' courses that will develop the targeted  $CT^2$  skills in their students and enhance academic and engagement experiences;
- develop strategies for engaging students and ensuring they comprehend assignments and are achieving  $CT^2$  learning outcomes;
- identify alternatives for assessing student  $CT^2$  skills;
- monitor and assess students' competency in  $CT^2$  skills using multiple assessment instruments.

## Outcomes of the Faculty Institute

- Stated Course Student Learning Outcomes (SLOs)
- Alignment with  $CT^2$  SLOs
- Discussion of  $CT^2$
- Discussion of critical thinking pedagogic methods—activities, assignments, etc.
- $CT^2$  Pre and Post Testing
- $CT^2$  Artifacts
- University required syllabus elements: Title IX statement, Attendance Policy, Disability Access Statement, Inclement Weather Statement

## Review of Submitted Syllabi

- 1 to 5 scale for each item
- 1 = not present
- 2 = vague
- 3 = adequate
- 4 = good
- 5 = excellence

## Evaluation Scale

## CT<sup>2</sup> Faculty Institute Syllabus Review

### CT<sup>2</sup> Student Learning Outcomes

- Explore complex challenges
- Analyze multi-dimensional problems
- Extrapolate from one conceptual context to others
- Synthesize alternative solutions to multi-dimensional challenges
- Communicate effectively, complex ideas

Class

Instructor's Name

Please rate the syllabus on the following points:

	Excellent	Good	Adequate	Vague	Not Present
Stated Course SLOs	<input type="radio"/>				
Alignment with CT <sup>2</sup> SLOs	<input type="radio"/>				
Discussion of Critical Thinking	<input type="radio"/>				
Discussion of CT <sup>2</sup>	<input type="radio"/>				
CT <sup>2</sup> Pre and Post Tests in Syllabus	<input type="radio"/>				
Discussion of CT Pedagogic Methods	<input type="radio"/>				
Discussion of CT <sup>2</sup> Artifacts	<input type="radio"/>				
Overall Score	<input type="radio"/>				

### University Requirements

- Academic Integrity Statement
- Attendance Policy
- Disability Access Statement
- Title IX Statement
- Inclement Weather Statement

Comments

# Evaluation Form

- Identify examples of approaches that would enhance or improve your drafted or revised syllabus
- Share with you the evaluations
- Discuss strategies that would improve/enhance your syllabus
- Set a deadline for a revision of the syllabus submitted
- The examples are from actual CT<sup>2</sup> syllabi

**Today's agenda**

- Critical thinking is the “intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. More simply, critical thinking is a self-aware process of thinking in a clear and systematic way in order to gain a deeper understanding. To do so it requires engaging in metacognition, which means reflecting on your own thinking by recognizing your own biases, assumptions, and considering how you create knowledge. Critical thinking does not come naturally to most people; therefore, you must practice critical thinking – which is one of the goals of this course. While in-class activities, discussions of readings, and other assignments may help you practice critical thinking, the case studies used in this course are being used as critical thinking artifacts. (FCS 830)

## Discussion of Critical Thinking

- This class is a Clemson Thinks2 (CT2) seminar developed to increase and enhance your critical thinking skills. What is critical thinking? For this class, we will work with the definition from the Delphi report: “We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based” (Facione, 1990, 1998). **The judgments we will focus on are those regarding technological knowledge claims in research, popular culture, and news.** (COMM 8030)
- This course is part of the Clemson Thinks2 program which is an ‘ambitious experiment in critical thinking that will transform learning and teaching through second-year CT seminars’. **Critical Thinking skills are essential for well-considered architectural design in any context.** Critical thinking is reasoned and reflective judgment applied to solving problems or making decisions about what to believe or what to do. Critical thinking gives reasoned consideration to defining and analyzing problems, identifying and evaluating options, inferring likely outcomes and probable consequences, and explaining the reasons, evidence, methods and standards used in making those analyses, inferences and evaluations. Critical thinking is skeptical without being cynical, evaluative without being judgmental, and purposefully focused on following reasons and evidence wherever they may lead. (ARCH 2510)
- Since this course is a CT2 seminar, **we will also explicitly discuss the role of critical thinking in geomatics.** In particular, we will not only discuss the role of critical thinking in problem solving, but we will also discuss why surveying is done in the way it is, what makes good surveying, and why surveyors have chosen a particular framework for surveying. (BE 2200)
- Religion 3000 is a Clemson Thinks2 course. Clemson Thinks2 courses aim to increase students’ critical thinking skills. Stated simply, critical thinking is the art of “thinking about thinking.” The readings and assignments for this course will augment your skill at this art. To facilitate this skill building, **we will try to be very clear about the thought processes of the religious studies scholars whose works we read,** as well as our own thought processes. The critical thinking skills of analyzing, inferring, evaluating, deducing, and critiquing that you will learn in this classroom are not limited to the study of religion. You will be able to use these skills in your other courses as well as outside of the classroom. (REL 3000)

## Discussion of Critical Thinking: Tying CT to specific course outcomes

- Writing Student Learning Outcomes
- **S**pecific
- **M**easureable
- **A**ttainable
- **R**elevant
- **T**ime-related

**Creating Effective Student Learning Outcomes (SLOs)**

- Define basic mathematical objects
- Describe the standard mathematical proof techniques
- Identify, summarize, and analyze the key steps of a given proof (this should be divided into three objectives if you plan to evaluate each component)
- Produce written mathematical proofs that express complex and technical arguments
- Critique given proofs

**Stated Course SLOs**

- Distinguish between scientific and pseudo-scientific reasoning.
- Evaluate the accuracy of statistical statements to identify inadequate or deceptive statistics.
- Compute and interpret basic statistics and probabilities.
- Interpret statistical information or evidence and draw appropriate conclusions.
- Determine the consequences of errors in computing and interpreting statistics and probabilities.
- Identify fallacious reasoning in both inductive and deductive arguments.

**Stated Course SLOs**

- Apply evolutionary theory to evaluate changes in human populations, from cellular through species levels
- Construct primate taxonomies and infer relationships among extinct and extant non-human primates
- Apply biological anthropology methodology

**Stated Course SLOs**

## **Core Critical Thinking Skills**

1. *Determine the relevance of information for evaluating an argument or conclusion.*
2. *Recognize the flaws and inconsistencies in an argument.*
3. *Propose and evaluate competing causal explanations.*
4. *Evaluate explanations for consistency with established facts.*
5. *Determine whether an interpretation is supported by evidence.*
6. *Recognize relevant features or themes in a published work (e.g., article, image, etc.).*
7. *Evaluate the appropriateness of procedures for investigating a question of causation.*
8. *Evaluate data for consistency with established facts, hypotheses, or methods.*

Your ability to apply and demonstrate these skills will be an important part of the criteria used to establish your grade in this course as discussed below in the *How Will I Be Assessed* section of this syllabus.

**Stated Course SLOs—inclusive of  
CT<sup>2</sup> learning objectives**

- Explore complex problems with nuanced understanding of multiple perspectives
- Analyze multi-dimensional issues and controversies of the present that do not have one single “right” answer
- Synthesize findings into papers that develop clear and well-reasoned arguments
- Interdisciplinary thinking that applies insights from one field of research into another (could be improved by moving the verb)

**Stated Course SLOs—inclusive of CT<sup>2</sup> learning objectives**

- **Explore Complex Challenges:** Preventing child abuse is a very complex challenge. Define the problem, list assumptions and develop hypotheses based on assumptions.
- **Analyze multi-dimensional problems:**
  - Distinguish between descriptive and inferential statistics, discrete versus continuous, categorical versus quantitative data
  - Construct useful graphical and numerical summaries of data
  - Compute probabilities using basic probability rules
  - Compute probabilities using probability distributions, particularly the normal and binomial distributions.
- **Extrapolate from one conceptual context to others**
  - Perform hypothesis tests and construct confidence intervals for various statistics, (particularly in relation to the assumptions about the Child Abuse problem.)
  - Use categorical data analysis to evaluate goodness of fit and independence of categorical variables.
  - Determine correlations and fit regression lines to given data when appropriate.
  - Perform a one-way Analysis of Variance test (ANOVA)
- **Synthesize alternative solutions to multi-dimensional challenges.**
  - Use inference to project results of hypothesis tests and regression analysis (to project results to the general problem of child abuse and possible factors that could be addressed.)
- **Effectively communicate complex ideas**
  - Create a clear and concise report of the results of research (to the client complete with analysis and recommendations.)

**Alignment with  $CT^2$  SLOs**

- **Explore complex issues**
  - Identify and critique assumptions associated with a problem , to include competing assumptions
  - Explain the factors that should be used in critically evaluating any assumptions, or prior research reports on a subject
  - Look at ideas from several different perspectives
- **Analyze multi-dimensional problems**
  - Come to a consensus on the assumptions to be evaluated for accuracy and validity
  - Be able to construct what should be an appropriate research design
    - State clear research question
    - Evaluate data collection/sampling techniques
    - Identify the appropriate data analysis to be used
- **Extrapolate from one conceptual context to others**
  - Correctly and appropriately identify – but not calculate – how techniques such as correlation and regression analysis are used
  - Clearly interpret results of statistical analysis in relation to original problem
  - Explain why “correlation is not causation.”

**Alignment with  $CT^2$  SLOs**

Clemson Thinks <sup>2</sup> Learning Outcomes	Outcomes as realized in this course
Explore complex challenges.	Analyze complex problems; manipulate and decompose problems; know what constitutes reliable and sufficient evidence.
Analyze multi-dimensional problems.	e.g., when competing interests volley for control of a situation, ethical values, such as trust, cooperation, honest representation of the facts, may be needed to improve outcomes driven only by self-interest.
Extrapolate from one conceptual context to others.	Certain mathematical representations and strategies used to solve one type of problem may also be useful in others.
Synthesize alternative solutions to multi-dimensional challenges.	It is necessary to analyze the assumptions underlying alternative solutions to contemporary problems, such as those involving medical or legal issues.
Communicate complex ideas effectively.	Communicate complex ideas effectively.

## Alignment with *CT<sup>2</sup>* SLOs

- **Explore complex challenges.** The literature chosen for this course at times foregrounds the issue of the environment and at other times portrays the environment only in background settings and scenes. Students will learn to discern different levels of thought—attitudes of characters, of author, of the text—towards the environment, noting the explicit and implicit depictions of these attitudes and teasing out the subtleties and complications of those attitudes.
- **Analyze multi-dimensional problems.** Literature presents the complexities of emotional, intellectual, and sociological dimensions around human interactions with others and their environments. Given that competing demands and desires are often at the heart of a literary work, literary scenarios present students an optimal form for examining contested value systems concerning use of land and resources.
- **Extrapolate from one conceptual context to others.** Literature represents by metaphor and figure imaginary spheres by which to gauge actions, thoughts, and conceptions of the real world. Students will learn to view the imagined worlds of aesthetic works as “cognitive maps” for various ideological and political positions on environmental issues.
- **Synthesize alternative solutions to multi-dimensional challenges.** This course is designed to examine more than one author’s viewpoint within a unit, posing radically different (traditional vs. ironic) perspectives towards ecological contexts. In-class discussion and papers will provide students an opportunity to compare ideas from the literature that require judgment or choice.
- **Communicate effectively complex ideas.** This course depends on active in-class discussion, as well as short and longer essays that state a position and provide evidence and explanation in support of that position.

**Alignment with CT<sup>2</sup> SLOs**

## Critical Thinking Integration

This course is participating in the "*Clemson Thinks<sup>2</sup>*" critical thinking experiment. We will use nanotechnology themes to increase your ability to think critically and imaginatively. Much of critical thinking revolves around asking questions and considering their answers. Some key questions are those described in our critical thinking textbook (see above):

- What Are the Issue and the Conclusion?
- What Are the Reasons?
- What Words or Phrases Are Ambiguous?
- What Are the Value Conflicts and Assumptions?
- What Are the Descriptive Assumptions?
- Are There Any Fallacies in the Reasoning?
- How Good Is the Evidence: Intuition, Appeals to Authority, and Testimonials?
- How Good Is the Evidence: Personal Observation, Case Studies, Research Studies, and Analogies?
- Are There Rival Causes?
- Are the Statistics Deceptive?
- What Significant Information Is Omitted?
- What Reasonable Conclusions Are Possible?

Each assignment and activity in which you participate will include questions or sections specifically geared toward helping you to think critically about the subject matter.

## Discussion of CT<sup>2</sup>

## What is This Course Like?

- The most important goal of this course is to teach proof-writing. A proof is a formal and logical argument, in essay form, in which you argue for the truth of a statement. Many 4000-level mathematics courses assume competence in proof-writing and require proof-writing as a major component of the class. This course is a gate-way course to advanced mathematics. After you have taken this course, you will be prepared for a wide and exciting range of mathematics.
- Your first step in this course will be to
  - memorize and understand the basic mathematical definitions and theorems in the course, and
  - study and internalize the basic structures for proof writing.

Continued on next slide

# Discussion of CT<sup>2</sup>

In addition to covering the material of MATH 3190, this course has a critical thinking component. Critical thinking will play a role in this course in several ways:

- (1) When given a problem, you must make assessments of what of the given information is most important to the problem.
- (2) When given a problem, you must make assessments of what mathematical knowledge will be most applicable to this problem.
- (3) After determining the appropriate mathematical knowledge, you must plan out how to combine that knowledge into a coherent argument.
- (4) After planning out your argument, you must carry out your plan and turn it into a well-communicated short essay that expresses how to combine the appropriate information.
- (5) After finishing a proof, you will be expected to reflect upon it and study what made this plan successful and how to apply or generalize the results. Note that these steps follow the spirit of "The List" in *How to Solve It* by George Polya.

## Discussion of CT<sup>2</sup>

- As you can see, the Clemson Thinks<sup>2</sup> learning outcomes closely mirror our stated Course Objectives. Above all, when you leave this course, I want you to be able to critically analyze complex, modern, real life issues surrounding biological sciences and be able to have educated, intelligent discussions with anyone regarding those issues. In order to assess Critical Thinking competencies you will take the CAT assessment of Critical Thinking at the beginning and end of course. You will also be expected to maintain artifacts of assignments that demonstrate your critical thinking development.

## Discussion of CT<sup>2</sup>

- We will investigate the role of water in our lives and the environment by reflecting on cross-discipline experiences from the United States and around the world. Our focus will be on understanding how sustainability of this critical resource is impacted by scientific, engineering, social, economic, and political factors. **Clemson Thinks2:** This course is part of the Clemson Thinks2 (CT2) program that is aimed at improving student critical thinking skills. Memorizing facts and being able to repeat definitions or procedures is not a sufficient skill set to address the complex problems facing our world today. You need to develop the ability to *reason*, *evaluate*, and *decide* if you are to become successful in your career and an effective steward of our future. (GEOL 2700)
- This is a *Clemson Thinks2* course where students develop and apply critical thinking skills by analyzing and applying ethical judgment. In this course such skills stem from learning how ethical theories apply to both hypothetical and current issues. **This involves not only critically assessing theories of this field of study but also *thinking about the manner in which both accurate and meaningful arguments are crafted about ethical issues.*** In other words, this is a course that involves not only thinking about ethics, but also thinking *about* this thinking. It is this second, metacognitive part that makes this a *Clemson Thinks2* course. By acquiring the reflective skills for assessing arguments, thinking through problems, and deriving sound arguments, beliefs, and courses of action, students will possess the judgment that is applicable, in principle, to all academic studies—indeed, to all facets of your life and world. (PHIL 1030)

## Discussion of CT<sup>2</sup>

## Classroom Strategies for Critical Thinking:

- **Modeling:** During the course of the semester, we will be doing many proofs in class. While completing these proofs, I will model my thought process for each problem. I will focus my discussion on what choices I'm making and why I'm making them.
- **"The List"/Socratic Method:** At a few points in class and always during office hours, I will use "The List" from *How to Solve It* by George Polya, which is a specialized form of the Socratic Method to help you prove various statements. "The List" will be handed out part-way through the semester and consists of a collection of questions which you can ask yourself to help organize your knowledge and choose the proper steps.
- **Analyzing Work:** Throughout the semester, we will frequently analyze proofs. To analyze a proof means to study it and to investigate its components. In particular, we will ask questions about why certain choices were made, understand how all of the conditions in the theorem were used, and consider generalizations or applications. After each lecture, you will have a short reaction assignment that asks you to analyze the proofs discussed in class. A few times in the semester we will also analyze proofs in class or on homework.

**Explicit and Intentional Discussion  
of Critical Thinking Strategies**

- **Side-by-side:** Several times in the semester, I will give you several different completed proofs for the same theorem. In class and for homework, the task will be to compare them side-by-side and discuss the advantages and disadvantages of each technique.
- **Incorrect Proofs:** I have a collection of incorrect proofs. Often throughout the semester, we will break into small groups and your task will be to study these proofs. You will be asked to look at these proofs line-by-line, check that each statement follows logically from the previous steps, and attempt to find any errors. Finally, you will give each proof a grade.
- **Analyze the Work of Others:** Periodically throughout the semester, I plan on collecting your proofs and selecting a few of them for you to analyze. I will retype the work so that your identities are hidden and you will be asked, not to grade, but to comment on the good and bad parts of the work.
- **Reflect on Work:** A few homework assignments throughout the semester will go into metacognition in a little more depth. You will be asked to describe your thought processes. You will be asked about both good and bad ideas and how you were able to make them work.

## Explicit and Intentional Discussion of Critical Thinking Strategies

## Course Approach and Format:

- Based on a framework of *participatory education and critical thinking and writing*, this course requires active involvement of students in all facets of the learning experience. The course is based on the idea that students can and should take responsibility for their own learning, just as citizens can and should take responsibility for advocating for themselves and others. Important features of this course are metacognition and collaborative learning. The instructors believe that real learning occurs through active involvement with the course material and in the community. Because this is an upper-level course, lectures will build on, rather than just summarize assigned readings. We will expect the knowledge you derive from the readings and engaged learning experiences to be reflected in your class discussions and other assignments. Thus, we will engage in intensive reflection and discussion of your experiences, with the goal of connecting to the broader themes of sustainability and leadership for positive change.

# Explicit and Intentional Discussion of Critical Thinking Strategies

## **COURSE SCHEDULE:**

### **Unit 1:**

**Evolutionary Theory: Students will review basic genetics, explore modern evolutionary theory, analyze modern human variation, and synthesize a solution to race in medicine.**

Week 1: Course Introduction and Introduction to Critical Thinking

Questions:

What is anthropology and how does biological anthropology fit within the discipline.

What is critical thinking and why is it important?

Students will:

Complete CAT pretest

Week 2: Evolution: Constructing a Scientific Theory

Questions:

How did the theory of evolution come to be?

What was Darwin's contribution to the theory of evolution?

What has happened since Darwin in the development of our understanding of evolution?

Students will:

Read chapters 1 & 2 and complete online quiz

Complete Natural Selection Concept Inventory

**Explicit and Intentional Discussion  
of Critical Thinking Strategies**

- **Lectures:** In-class or online instructor led presentation of material. No advanced preparation is generally required, but in-class **participation** is expected; participation will be assessed in a variety of ways including informal discussions, web-based polls, and quizzes. Online lectures will be provided through Canvas and will have associated **online assessments** (e.g., self-graded questions) that must be completed in order to gain credit for the lecture. You should build on concepts presented in the lectures in your position statements throughout the term.
- **Readings and Videos:** Throughout the term you will complete a variety of readings and videos expanding on or providing examples of topics discussed in the classroom. For each of these readings or videos, you will be required to complete an associated **online assessment** in Canvas. You should use examples from these materials to help support the arguments you make in your position statements throughout the term.
- **Case Studies:** A focused in-class exploration of issues in a specific place/context. Students should prepare outside of class by completing readings and performing web searches to provide general environmental, social, and economic context and issues for the region being studied that can be shared with the class. Extra material brought to the class (and posted in Canvas) to enrich case study discussions will contribute to your **participation** grade. Note that most case studies will also have a position statement or other assessment associated with it.
- **Group Discussions (GD):** Student led exploration of content through focused discussion of material. Students must prepare **outside of class** by completing readings, performing supporting independent research, and preparing a **Position Statement** (must be posted before class on the appropriate Canvas discussion board). In class students will discuss the positions statements within small groups to develop a single, coherent statement for the group that is clearly thought out, supported by data, and takes in multiple points of view to present possible options or resolutions to the question posed. Each group will subsequently present their results to the class to identify commonalities and differences in the groups.
- **Village Meeting:** Similar to GDs, but focused on problems faced in the village of Naranpur. Requires analysis of data generated through player **Game Reports** (see Reports menu in the game) throughout the term to support your **Position Statements**. Position Statements for the village meeting should outline a definitive policy action that can be voted on for adoption.
- **Role Play:** A formal role playing exercise where students will complete a simulation to resolve a specific issue. We will complete three role-playing activities throughout the term (Klamath Watershed, Water on the West Bank, and the Naranpur simulation) which will be assessed using short graded **Projects**. (GEOL 2700)

## Strategies

4	T	Jan 21	CT – Elements of Thought (Data); Validate your data sources – Discussion with a librarian; Groups will search literature/data on select topics related to history and culture of Haiti and produce annotated bibliography and presentation
5	Th	Jan 23	
6	T	Jan 28	CT – Elements of Thought (Purpose and Problem); Select readings from Killing with Kindness, Students will try to determine how some NGOs have gone wrong in defining their purpose in Haiti and the problems that need to be solved?, Students will engage in defining the purpose and problem for CEDC
7	Th	Jan 30	
8	T	Feb 4	CT – Elements of Thought (Point of View); Select readings from Farewell Fred Voodoo, Activity – Living on a dollar a day, Students will have to live on meager earnings to attempt to experience one aspect of the typical Haitian point of view – that of limited resources; Students will discuss numerous differences in point of view between US and Haiti citizens and determine how this can affect design

## Explicit and Intentional Discussion of Critical Thinking Strategies

CT Skill – Analyze a design using the Elements of Thought; Give the problem of getting the 2000 lb pump 1200' down the mountain without a road; Have students walk through each of the elements and come up alternative solutions to get the pump down the mountain. Determine which additional data sources would be helpful and discuss the chosen method to get the pump down.

CT Skill – Determine whether an artistic interpretation is supported by evidence contained in the work; Select readings from *The Big Truck that Went By* (Gut Feeling); In small groups, students will walk through 8 Elements of Thought to make a determination on this literary piece that portrays the Cholera Epidemic

CT Skill – Evaluate data for consistency with established facts and methods; Give the students data on the cholera epidemic in the central plateau and have them determine whether the NGO should spend their money on treatment or prevention; Discuss ethical ramifications of both choices

## Explicit and Intentional Discussion of Critical Thinking Strategies

- To assess your improvement in critical thinking you will take the California Critical Thinking Skills Test (CCTST) at the beginning and end of the course. CCTST scores will be used to assess how well the instructors taught you how to think critically while they delivered material on nanotechnology. (*BIOE 3700*)
- In order to measure student's progress in critical thinking, students will complete the California Critical Thinking Skills (CCTST) at the beginning and end of the semester. This is an online test. Students will be given information about how to access the test. Students who spend a reasonable amount of time on the test and complete it will receive 10 points. Your score on the test will not affect your credit for having taken it unless it is clear that you did not seriously attend to the test. (*SOC 4600*)
- *The California Critical Thinking Test.* You will be asked to take an online test at the beginning and end of the course as a home-work assignment called the California Critical Thinking Test, this test will assess your strengths in a number of areas of critical thinking. Your scores have no impact on your grade, your standing at Clemson, or anything else. Taking these exams helps Clemson University and myself improve teaching methods to improve the quality of our student progress. These exams typically take 45-50 minutes, and do not involve any studying, preparing, or outside work. (*BIOE 4310/6310*)

## CT<sup>2</sup> Pre and Post Testing

- The  $CT^2$  program is being implemented as a campus wide research effort to improve the University's ability to teach students critical thinking skills. As a result, ***you will be required to complete two general critical thinking exams*** (one at the beginning of the term and one at the end) that will be used to study the effectiveness of different teaching methods. ***The results of these exams do not count toward your grade or degree progress at Clemson and only aggregate results will be used to evaluate the teaching strategies of this course versus other  $CT^2$  courses.***
- **California Critical Thinking Skills Test:** In this course, we will use the California Critical Thinking Skills Test to evaluate and monitor your growth in critical thinking. You will receive a grade for the completion of this test.

## **$CT^2$ Pre and Post Testing**

Week Of	Topics and Activities	Readings/Assignment
8/21	Wednesday: Introduction to Course, Meet and Greet	Reading: Syllabus Due: Student Information Sheet
8/26	<p>Monday: <b>CAT Assessment of Critical Thinking Pre</b></p> <p>Wednesday: What questions are being posed currently in biology? How do current questions we see in the news relate to the big questions of biology as a science?</p>	<p>Monday:</p> <p>Wednesday:</p> <p>Assignment: Top 10 Discover Stories of 2014</p>

# CT<sup>2</sup> Pre and Post Testing

**Aug 29 TH CT test**

- Assignment 2: critical thinking visual essay (includes an image that is properly cited)
- Read *What is Critical Thinking?* by S. Brookfield (available on Blackboard)

**Sept 3 T Sustainability: Critical thinking processes; sustainable teams: multidisciplinary and interdisciplinary; roles of team players**

Group exercise

- Read *Sustainable Landscape Management* chapters 3 & 4 (pp. 39-79)
- Read *The Sustainable Sites Initiative: The Case for Sustainable Landscapes* chapter 2 (pp. 12-25)
- Assignment 2 due

**Sept 5 TH Sustainable landscape construction**

- Assignment 3: critical thinking visual essay (includes an image that is properly cited)

**CT<sup>2</sup> Pre and Post Testing**

## Critical Thinking Portfolio

Over the course of this semester, we will be creating a critical thinking portfolio. This portfolio will consist of a selection of your work which is designed to exhibit the growth of your critical thinking skills over the course of the semester . . . it will show you how much you've learned this semester.

- **Artifacts:** The artifacts in your critical thinking portfolio will come from approximately three assignments over the course of the semester. These homework assignments will be identified as critical thinking artifacts, and they will be more substantial than typical homework problems. These artifacts will include reflective questions and may involve several drafts.
- **Rubrics:** The artifacts will be evaluated using the "Problem Solving VALUE Rubric" to assess your development over the course of the semester. The artifacts will be graded, however, according to the proof grading rubric.

**CT<sup>2</sup> Artifacts**

## General Education Competencies and e-Portfolio:

- **A Note on Artifacts:** There are a variety of assignments in this course that you can utilize as artifacts to demonstrate your refinement of critical thinking skills over the term (e.g., position statements and projects). The product you create for the Naranpur project will provide you the opportunity to synthesize your work over the semester . . . .
- This course is a Clemson Thinks<sup>2</sup> Critical Thinking Seminar. Your final artifact and several other activities over the course of the semester will function as artifacts representative of Critical Thinking.

**CT<sup>2</sup> Artifacts**

- Adding  $CT^2$  activities as “add on”— examples of where we often do this
  - Non-stand alone Honor’s Courses
  - 400/600 level courses
  - $CT^2$  becomes just an extra activities without being integrated into course
- SLOs are not measurable—no verb, not measurable is the rule of thumb
- It’s important to describe strategies or assignments and their relationship to  $CT^2$

**Avoid these common mistake**

- **Classroom Etiquette**: You should consider this class as “time away” and “space apart” from the rest of your work day. This will require ***your full and undivided attention***. To ensure the best quality time together and the best possible learning environment, please adhere to the following:
  - To minimize distraction and to keep all students’ full intellectual energies inside the classroom, we do not allow the use of computers, mobile phones, BlackBerries or other PDAs, iPods, or any other kind of electronic device during class.
  - The only exception to this policy is for students who have official documentation from Disability Services that recommends the use of technology to accommodate verified learning needs. If this applies to you, please see one of the instructors to discuss your options.
  - Class will begin and end on time. Please arrive to class on time, prepared to participate. Late arrivals are disruptive and will impact your participation grade. If you are late to class, the instructors reserve the right to disallow you from participation in class activities, including any in-class assignments.
  - Please schedule your medical appointments, job interviews, service activities, and other appointments at a time other than during our class time. These are not considered as excused absences.
  - Please plan to stay in class for the entire class period. If you leave early from class, you will be counted as absent, even if you have completed any in-class assignments. If the instructors are late, students are free to leave after waiting 15 minutes. (CU 2010)

## **CU CT<sup>2</sup> Class Etiquette**

- Revise your initial course syllabus to reflect the incorporation of activities specifically designed to address the development of critical thinking skills and participation in the Clemson Thinks<sup>2</sup> program.
- Please resubmit by Friday, July 22<sup>nd</sup>.
  - Your submissions will be reviewed by a panel of experienced faculty members and their scores/comments will be given to you at our August 4<sup>th</sup> meeting.
  - You will then submit a final syllabus incorporating the suggestions and improvements by September 15<sup>th</sup>.

**NEXT STEP**