

EDU 5170 – Science Teaching Methods

University of Utah

Spring 2016

Syllabus



Course Instructor

Doug Jorgensen B.S./M.Ed./OBBT/FOFB/1W

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Course Times and Location: January 12 – April 15

Tuesdays 4:30-7:00 - Highland High D201

Instructor's Philosophy

The instructor and student work together to make the school experience educational, beneficial, and enjoyable. The teacher has the responsibility to be prepared to facilitate learning. Each student has the responsibility to come to school ready to learn, and willing to participate fully in the education process. It is the teacher's belief that each student has the ability to learn, contribute, to progress, to make changes, and to evolve into a more enhanced individual.

Two quotes contribute in governing the instructor's philosophy:

“Life is like a sewer – you get out what you put in.” - Tom Lehrer

“When everyone thinks the same, no one is thinking very much.” – Bob Lesh
(Radio talk show host – I'm not sure where he got the quote or if it is his own.)

Expectations

- Students are expected to read assignments for each class discussion. Students will be asked to comment on the reading and/or to answer questions related to readings during class sessions.
- Given the interactive format of the class, students are expected to attend and participate in all sessions. Your absence from class (leaving early, arriving late, etc) may result in a loss of daily participation points. If a student is aware of a calendar conflict, the student must take responsibility for making prior arrangements with the instructor and your team members.
- Students with special needs should discuss accommodations with the instructor in advance of assignments and evaluation procedures.
- Please be nice and considerate and avoid any distracting behaviors while in class, such as; inappropriate side discussions during class, texting, calling your mom, playing games, listening to music, etc. Please keep your cell phones turned down during class. I know, I know, you are waiting for that all important text... just be patient, keep it off, and then you can text your guts out during the break.

Course Description

This course is an introduction to a range of methods for teaching science to secondary students. Emphasis is placed on developing the ability to translate the theories of science education into classroom practice. The course will focus on lesson and unit planning, alternative methods of student assessment, and methods of inclusive science teaching for diverse student populations. Students will gain insight into instructional strategies by observation exercises, classroom discussions, electronic readings, and through teaching experiences.

Course Assignments

- 1. Participation** - Each student is expected to contribute to class discussions and activities, and act in a professional manner.
48 points (4 points each night)
- 2. Nightly reflection papers** – Write a reflection paper after each Tuesday night class. The reflection is due on or before Sunday.
48 points (4 points for each night)
- 3. Mini-lessons** – Three mini-lessons will be taught during the course. One lesson presented to the class and two lessons taught in the public school system.
36 points 4 x 3 x 3
- 4. Class Observations** – You are asked to do three formal class observations during the semester focusing obviously on science classes.
36 Points 4 x 3 x 3
- 5. Science Teacher Interview** – This interview asks teachers about lesson planning, and teaching methods.
16 Points 4 x 4
- 6. Student interview** – These are two interviews asking students about their thoughts about how science teachers teach.
12 Points 4 x 3
- 7. LOTB (Huh?)**
16 Points 4 x 4
- 8. PPP (Really?)**
40 Points 4 x 10

Total: 252 Points

Grade Scale	
A	85-100%
B	75-84 %
C	65 -74%
D	55-54%

Legal Stuff...

UNIVERSITY RULES AND REGULATIONS AMERICANS WITH DISABILITIES ACT (ADA)

If you have special needs, as addressed by the American with Disabilities Act (ADA) and need assistance, please notify the Center for Disability Services (<http://www.sa.utah.edu/ds>). Please notify me if you have special needs that I can address in any way and I will make every effort to accommodate your special needs.

“The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. Upon request, this information is available in alternative formats, such as cassette, Braille, or large print.”
www.hr.utah.edu/oeo/ada/guide/faculty/

STUDENTS' RIGHTS AND RESPONSIBILITIES

In order to maintain a positive, civil environment for learning I expect that all students will strive to meet the goals described in the University of Utah's Student Code, which states *“the mission of the University of Utah is to educate the individual and to discover, refine and disseminate knowledge. The University supports the intellectual, personal, social and ethical development of members of the University community. These goals can best be achieved in an open and supportive environment that encourages reasoned discourse, honesty, and respect for the rights of all individuals. Students at the University of Utah are encouraged to exercise personal responsibility and self-discipline and engage in the rigors of discovery and scholarship.”*

ACADEMIC HONESTY

You must do your own original work in this course. Wherever the ideas or words of others appear in your own work, they must be properly cited. Failure to make clear the sources of any outside material you incorporate in your work constitutes plagiarism, which is against university standards. Plagiarized material submitted for assignments will not be tolerated and may result in failure of the course and potential dismissal from the University of Utah.

It is required that you are aware of the University of Utah policies as you will be held accountable to University of Utah standards. Please read the University of Utah Code of Student Rights and Responsibilities, which states in part, "In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating."

Student Code states: “Academic misconduct,” according to the University of Utah Student Code, *“includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information...It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct.”*

You will be held accountable to high standards for academic integrity and should read and understand the policy on academic integrity as printed in the University of Utah's Student Handbook. Please read the Student Code of Academic Conduct available at: <http://www.admin.utah.edu/ppmanual/8/8-10.html>.

EDU 5170 – Science Teaching Methods
University of Utah
Spring 2016

Nightly Reaction/Reflection Papers
48 Points (4 Points each night)

You know how it is. You lay down in bed at the end of a long day and you stop to think about what has happened that day, good and bad.

As you are laying there thinking about your long three hour class at the University of Utah take a few minutes to ponder about what was discussed in class. Please take a minute to write down three things:

1. Your general reaction to what was discussed tonight.
2. What insights, methods, helpful hints, did you gain from class
3. How can you apply what you gained from class?

It is late and you do not want to type too much. So keep it brief but meaningful about three paragraphs. Remember, always look for the good, and learn from those things that may not be so good.

Please email your nightly reflection to Doug by Sunday.

EDU 5170 – Science Teaching Methods
University of Utah
Spring 2016

Mini Lessons Assignment

36 Points (4 x 3 x 3)

You are asked to teach three mini-lessons during the semester. Two of these lessons will be taught in the public schools and one will be taught to your very friendly, happy to help, wonderfully encouraging, 5170 class, and the humble instructor.

It is your responsibility to coordinate the lessons you plan to teach in the school with a science teacher. It would be nice if you could arrange these lessons with a prospective site educator (a teacher you might like to student teach with.)

For this assignment you will need to give your instructor (Doug) the following:

1. A copy of your lesson plan with all the necessary components
2. A brief written comment from the observing teacher
3. A critical reflection about the lesson. Please include what you did well, what you did not so well, how you would do things different, adjustments you made etc.

Oh yes, please be prepared to share your teaching experience with the 5170 class.

So you are asking what is a mini-lesson?

- This lesson should be planned using the basic lesson plan format.
- The lesson needs only to cover one basic concept.
- The lesson should be from 15 to 30 minutes long. It does not need to take the whole class period. But if your teacher allows you to take the whole time. Go ahead – take it!
- Make sure to get guidance from the teacher as to what he/she would like you to teach.

EDU 5170 – Science Teaching Methods
University of Utah
Spring 2016

Class Observations

36 Points (4 x 3 x 3)

You are asked to do three classroom observations this term. Please observe a science classroom, looking specifically for the methods of teaching that the instructor uses. Also please note, the teacher's teaching style, the teacher's mannerisms, the things the teacher does well as it pertains to teaching, the things the teacher may not do as well, etc.

As part of this assignment please write a one page synopsis of what you observed. Feel free to interject your personal and professional opinions of what worked for the teacher and what did not.

Be prepared to share your finding with the class.

EDU 5170 – Science Teaching Methods
University of Utah
Spring 2016

Science Teacher Interview

16 Points (4 x 4)

Please interview a science teacher.

Before the interview please generate a list of questions that are important to you in helping you understand the lesson development, teaching strategies, assessment, etc.

As always generate a one or two page synopsis of the interview. Be prepared to share your results with the class.

EDU 5170 – Science Teaching Methods
University of Utah
Spring 2016

Student Interview Assignment

12 Points (4 x 3)

Take a few minutes and interview at least two students. Before the interview generate a list of interview questions that will help you to understand, from the student's perspective, how science teachers give instruction. You may want to mention that the answers to your questions will not be shown to the instructor or have any bearing on the student's grade.

Please construct a one page paper for each interview. Feel free to interject your opinions and insights about the observations as well as the results of what you found.

Be prepared to share your findings, thoughts, insights, and dinner with the class.

EDU 5170 – Science Teaching Methods
University of Utah
Spring 2016

Unit Plan Assignment

“The effective teaching of science requires a thoughtful combination of direct experiences for children, a shifting of roles by the teacher, a clear sense of purpose, and a skillfully orchestrated discussion” (Stolen from Ken O’Brien, teacher.)

A complete lesson plan includes; Introduction, learning objectives, student performance objectives, science core objectives and connections, list of materials, an outline of the sequence of the lesson, student activities, and some type of assessment.

You are required to develop a science related unit plan, complete with at least (more if you want) three detailed, well developed, lesson plans. This should be handed in to the instructor as a complete unit, not individual lesson plans. However, we will be using one of your plans during a Wednesday night meeting.

EDU 5170 – Secondary Science Methods
University of Utah
Spring 2016

Leader of the Band

16 Points (4 x 4)

Yes, I was listening to Dan Folgelberg when I thought of this. Ok ok I'm old. If you need to, go ahead, ask me who Dan Folgelberg was.

Fred Montague down in the Biology department said to me many years ago, "The best way to learn about something is to teach it."

Each of us has certain topics or issues that we are interested in. Therefore, to help you delve into a topic of personal interest each of you will have the opportunity to lead the class in a group discussion. As you can see by looking at the calendar, we have a bunch of topic to discuss each night. You simply find which of those topics is of most interest to you and poof**** you get to lead a short discussion on that topic.

During the first two nights the instructor will facilitate the discussions while for the remainder of the semester the responsibility will be shared by your humble instructor and you wonderful and capable students.

Here are some guidelines for the leader of the band:

1. Choose a topic that you are interested in.
2. Brainstorm the many aspects and side-chains of that topic.
3. Find at least two articles about your topic that you can share with the class.
4. During class give a brief introduction to your topic 5-10 minutes.
5. Orchestrate a group discussion of your topic. This discussion should last about twenty minutes but can go longer if needed.

Notes:

You can use the articles however you wish, but please use them somehow, somehow.

The instructor will have related material to your topic that will be used in other parts of the nightly class. In other words, this is not a ploy for your instructor to get out of preparing a lesson.

Self Evaluation (4 Points)

You are to write a self-critique of the discussion: your successes (and stumblings) as a discussion leader, your sense of the flow of ideas, and any discoveries, revelations or epiphanies that developed during or as a result of your session. Did this help you? Did it confuse you even more? Yes, it is another reflection paper. Due by Sunday the week you present.

EDU 5170 – Secondary Methods
University of Utah
Spring 2016

PPP – Personal Project and Paper
40 Points (4 x 10)

Life is pretty much what you make it. We can spend a lot of time sitting in school, philosophizing, listening to words of wise sages explain the meaning of life, and biding time until we graduate. However, sometimes we just need to go out and find something to do that will improve ourselves, something we can work on, something that is not dictated to us, just run and do something that we have always wanted to do, write a book, go skydiving, go rocky mountain climbing, go 1.5 seconds on a bull named Fu Man Chu. Wait, I'm sounding like a country song...

What I'm getting at is that I want you to take a topic that is of interest to you. Find something that you can use, something you want to know about, something that will help you become a better teacher, educator, administrator or whatever. Research that issue, look at all sides, see how you can benefit from your research, then give me a paper, or better yet, write you a paper then share it with me.

Sure, sometimes we have to follow certain rules even when we are out on our own doing what we want. Therefore, keeping with University of Utah standards, requirements, and guidelines placed on your humble instructor, please make this paper a professional paper. The paper should be approximately five pages in length, double spaced using standard APA format. Please consult the professional literature and use at least five references from professional journals, legitimate and professional Websites, interviews, etc.

In the past this class has required a Unit Plan. If you feel that a unit plan would be beneficial to you please feel free to do that.