

Course ID: ESCI 5460  
Name of the Instructor: Thomas Koballa  
Semester and Year Syllabus is for: Fall 04

## ESCI 5460 SYLLABUS

Fall 2004  
Secondary Science Education  
School-Based Internship

Student Teaching Coordinator;

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This document is provided to both the student teacher and the mentor teacher in hopes that it will give direction for the conduct of student teaching. It is further hoped that students and teachers will feel free to contact the university supervisors if they have concerns or questions. Please understand that this document describes tentative school-based activities and assignments that may change due to unforeseen circumstances or school requirements or policies.

An important supplement to this syllabus is the UGA College of Education Student Teaching Handbook (available on-line at <http://www.coe.uga.edu/TED/handbook.new/>). Outlined in this document are the overall goals for student teaching; the roles of the student teacher, mentor teacher and university supervisor; and information about procedures for completing required reports. This document should be read by the student teacher on the first day of student teaching.

### **Principal Course Assignments**

The course assignments focus on activities that are intended to help the student teacher develop competence and confidence as a teacher of middle and secondary students in science. The specific course activities are described in the Secondary Student Teaching Pacing Guide.

### **Specific Course Requirements**

The required competencies for passing student teaching are outlined in the final section of the Student Teaching Pacing Guide. Competencies address fall into the categories of Professionalism, Content, Planning, Instruction, Assessment, and Classroom Management.

### **Attendance Policy**

The first day of student teaching is Thursday, August 19th and the last day is Friday, October 29th. During this period, the student teacher will follow the calendar of the school to which he/she has been assigned regarding breaks and holidays.

There are few reasons for a student teacher to be absent from school. Good judgment should be exercised by the student teacher in this regard and lesson plans must be made available to the mentor teacher so that instruction proceeds without interruption. Illness and death in the family are justifiable reasons for being absent from school. Additionally, a student teacher may need to miss a portion of a school day for job interviews. The student teacher is to schedule interviews as late in the day as possible so as not to disrupt instruction and to inform the mentor teacher and university supervisor well in advance of any interviews to which he/she has been invited. The student teacher must have the consent of his/her mentor teacher and that of his/her university supervisor to be absent from school for job interviews. Absence of more than two days must be made up after October 29th.

### **Evaluation and Grading Policy**

Student teachers will be evaluated on a regular basis throughout the semester. As a rule of thumb, supervisors from the university will visit at least 4 times, but more visits may be made as special needs are realized. Although there is not a specific plan for how a given supervisory visit will be conducted, the university supervisor will make an initial visit during the first week of the semester for the purpose of meeting the mentor teachers and establishing routines. After that initial visit, supervisory visits (which will involve observing the student teacher as he/she teaches, and may last for a full class period) will be arranged. After or before most of these visits, the university supervisor should conference with the student teacher and/or the mentor teacher. The duration of these conferences may range from 10 minutes to 1 hour. Please feel free to express concerns and ask questions during these conferences.

Student teachers will be evaluated using one or more teacher performance strategies by the mentor teacher and university supervisor. Some of these will provide the evaluator with a checklist of specific behaviors to look for and some will not. Ask questions about items on any instruments used to evaluate teaching performance if the meaning is unclear.

Performance data gather by the student teacher, mentor teacher, and university supervisor will be used to inform the student teacher and assist him/her to develop professionally. It is hoped that the mentor teacher, university supervisor, and student teacher will act as a team to provide the best possible learning experience for the secondary or middle grades students.

The student teacher will be evaluated on the skills that are demonstrated during planning, teaching and in the conduct of other tasks during the school day. It is expected that the student teacher will make serious attempts to deal with problems and issues that he/she encounters during the school experience. The grade in ESCI 5460/7460 is not assigned just for effective instruction. All activities related to the field experience will have an effect on a satisfactory grade in student teaching. The grade received for student teaching is either S (satisfactory) or U (unsatisfactory).

Factors considered in evaluation are described in the Student Teaching Pacing Guide and generally focus on:

1. skill development and professional growth - these characteristics should be evident in planning, teaching, assessments, analysis of individual teaching episodes, and seminar participation;

2. observations and reports by the mentor teacher;
3. observations and reports by the university supervisor;
4. punctuality and acceptance of responsibilities in student teaching and in completion of assignments.

It is intended that written and oral feedback will be provided to the student teacher throughout the student teaching period. Shortly after mid-term, a formative assessment which outlines the student teacher's progress should be provided to the student teacher. Ideally, the assessment report is a joint product of the mentor teacher and university supervisor. The report is intended to communicate to the student his/her accomplishments and areas of needed improvement at that point of the student teaching experience. This report may project a grade. It is hoped that the student teacher will discuss matters of growth, development, and evaluation with the university supervisor and mentor teacher at any time considered appropriate. In summary, student teaching evaluation will be determined jointly by the university supervisor and the mentor teacher. The final evaluation will be based upon the quality of teaching skills exhibited and developed during the student teaching experience.

**Honor Code**

All activities associated with student teaching are governed by the University's Academic Honest Policy. Student teachers are expected to have read the University's Academic Honest Policy and to comply with it.

# University of Georgia Science Education

## Secondary Science Student Teaching Pacing Guide

to accompany the syllabus for

ESCI 5460– Science Education School-Based Internship

Fall Semester 2004

To the Student Teacher:

Secondary science student teaching is an 11-week experience. Thus, the following guide is arranged in blocks of time ranging for one to three weeks. Most of the tasks described in the following pages will be ones that you should be able to complete during the designated time period; however, please recognize that due to your particular circumstances there may be occasions when some tasks will not be completed during the designated period. When this occurs, with the cooperation of your mentor teacher and university supervisor, try to schedule the incomplete task during the next block of time. It is perfectly fine to complete a task before it is designated to be completed.

During your weekly planning conferences with your mentor teacher use this guide in arranging your activities for the coming weeks. Completing the tasks listed in this guide is important. Successful completion of these tasks will likely insure a favorable final evaluation.

At the end of each period, your progress on these tasks will be assessed. This may occur during a conference involving you, your mentor teacher, and your university supervisor. If you have not completed some of the required tasks or other tasks that you, your mentor teacher or your university supervisor believe you should complete, add these tasks to the list for the next time block in the space provided.

Finally, student teaching is intended to be a life changing experience. Your mentor teacher and university supervisor are persons capable of helping you learn a great deal about science teaching and learning. Make the most of the time you will spend with these people and have a great 11 weeks.

To the Mentor Teacher:

This pacing guide is provided to guide the experiences of the student teacher you have agreed to host in your classroom. The tasks identified in this guide are considered appropriate experiences for a student teacher--experiences that are believed to help the student teacher learn the basics of science teaching. Feel free to add additional tasks to the ones listed in this guide or address them in the order that you feel is most appropriate.

This guide was most recently revised in August 2004 and reflects the work of many to identify experiences appropriate for secondary science student teachers. Works that contributed substantially to the refinement of this pacing guide include: a pacing guide developed by Earl J. Montague and Frank E. Crawley and used with secondary science student teachers at The University of Texas at Austin; the National Science Teachers Association Standards for Science Teacher Preparation; Strands and Themes Document of the UGA Secondary Science Teacher Preparation Program, 1994-1995; and the Student Teacher Evaluation Form developed in Summer 1997 by participants and staff of the UGA Teacher Support Specialist in Science Program.

This guide will always be a work in progress. Thus, your input about how to improve the guide and the experiences of student teachers is always welcome.

Secondary Science Education  
University of Georgia  
Athens, GA 30602  
(706) 542-1763

## STUDENT TEACHING PACING GUIDE

STUDENT TEACHER'S NAME: \_\_\_\_\_

### WEEK 1

The student teacher will:

1. \_\_\_\_\_ meet with the Principal/Assistant Principal, Science Department Head or Team Leader, Counselor, Security Officer, and Office Secretary.
2. \_\_\_\_\_ attend a media-center orientation in the school.
3. \_\_\_\_\_ become familiar with the procedures for requesting instructional (including laboratory) materials within the school, school district, the local RESA, etc.
4. \_\_\_\_\_ become familiar with the community and cultural backgrounds of the students you will teach and discuss with your mentor teacher how the cultural backgrounds of these students should be considered in teaching science.
5. \_\_\_\_\_ become familiar with the administrative organization of the school and the school's philosophy.

6. \_\_\_\_\_ become familiar with school rules and procedures you will need to follow and/or enforce.
7. \_\_\_\_\_ locate the place designated for keeping personal things in the classroom.
8. \_\_\_\_\_ obtain seating charts, class and daily schedules, and classroom rules and procedures.
9. \_\_\_\_\_ learn students' names in the class(es) to which you have been assigned, and begin taking roll for your mentor teacher.
10. \_\_\_\_\_ assist your mentor teacher in the preparation of class and laboratory activities, and "house-keeping" routines.
11. \_\_\_\_\_ become familiar with the curriculum guide (including relevant QCC/GPS and ITBS standards) and the instructional materials in the subject area(s) you teach as well as your mentor teacher's overall plan for the course(s).
12. \_\_\_\_\_ become familiar with the discipline policies of the school as well as any particular discipline policies or restrictions that apply to student teachers.
13. \_\_\_\_\_ become familiar with the fire drill, tornado alert and other emergency procedures, as well as the placement of fire extinguishers and other safety equipment.
14. \_\_\_\_\_ become familiar with the location of laboratory and other instructional materials available to you.
15. \_\_\_\_\_ become familiar with the procedures your mentor teacher follows in preparing materials for a substitute when absent, and then establish the procedures to be followed when you (the student teacher) is absent.
26. \_\_\_\_\_ become familiar with the school's and your mentor teacher's grading policies and practices.
17. \_\_\_\_\_ help with grading tests, homework, and other products of learning of the students that you are going to be teaching when you assume responsibilities for the first class.
18. \_\_\_\_\_ assist students while they are engaged in classroom activities in any ways directed by the mentor teacher.
19. \_\_\_\_\_ tutor a small group of students as directed by your mentor teacher.
20. \_\_\_\_\_ prepare a plan for a short (20 minute) lesson, have the plan approved by your mentor teacher at least 3 days before teaching the lesson, and then teach the lesson.
21. \_\_\_\_\_ study the information in the "UGA Student Teaching Handbook" and discuss any questions with your mentor teacher and university supervisor. (Since the Handbook is used by student teachers from content areas other than science,

please ask your university supervisor to point out the sections that do not apply to you.)

22. \_\_\_\_\_ complete any classroom observation forms assigned by your university supervisor.
23. \_\_\_\_\_ determine through mutual agreement with your mentor teacher the time(s) of your weekly planning conference and other conferences the mentor teacher wishes to schedule. Ultimately, it is your responsibility to make time available for conferences during periods other than scheduled hours for student teaching should your mentor teacher's schedule preclude scheduling conferences during the regular student teaching hours.

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NOTE: At the end of the first week of student teaching this section of the pacing guide, with each task initialed by your mentor teacher, will be given to the university supervisor.

## STUDENT TEACHING PACING GUIDE

STUDENT TEACHER'S NAME: \_\_\_\_\_

### WEEK 2

The student teacher will:

1. \_\_\_\_\_ lead a discussion or conduct a demonstration of approximately 15-20 minutes duration, using your mentor teacher's plans.
2. \_\_\_\_\_ conduct a laboratory/hands-on lesson using your mentor teacher's plans, including the preparation of materials, the pre-lab/hands-on discussion, supervision of the lab/hands-on activity, post-lab/hands-on discussion, and clean up.
3. \_\_\_\_\_ proctor a test constructed by your mentor teacher, score the students' responses, and go over the results of the test with the class.
4. \_\_\_\_\_ help with grading homework, and other products of learning of the students that you are going to be teaching when you assume responsibilities for the first class.
5. \_\_\_\_\_ plan and conduct two lessons (each of one class period or less in duration), having the lesson plans for the lessons approved at least 3 days prior to the lessons. During the lessons, use different types of questions to encourage higher-order thinking and to probe for divergent student responses.
6. \_\_\_\_\_ video or audio tape one of the lessons taught this week, and check to see if you are demonstrating any distracting verbal mannerisms such as "OK", "You Know", "uh", or others. If so, continue taping each and every lesson until you have been able to eliminate the mannerism. If no distracting verbal mannerisms are detected, video or audio tape a second lesson and note your use of wait-time and level of questions and answers.
7. \_\_\_\_\_ assist students while they are engaged in classroom activities in any ways directed by the mentor teacher.
8. \_\_\_\_\_ tutor a small group of students as directed by your mentor teacher.
9. \_\_\_\_\_ plan for taking over all of the instructional activities for at least one course (about the 3rd week). All plans will need to be approved at least three days prior to the teaching of any lesson. **AT NO TIME WILL YOU BE PERMITTED TO TEACH USING YOUR PLANS UNLESS THEY HAVE BEEN READ AND APPROVED BY YOUR MENTOR TEACHER.** In many school districts, it is an established policy that no student teacher may teach unless using approved plans. For a mentor teacher in these districts to do otherwise means he or she is risking termination from the district. Therefore, please do not ask or expect a mentor teacher to permit you to teach without approving your plans.

Tasks incomplete from first week:

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

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NOTE: Please turn in this portion of the pacing guide at the end of the second week of student teaching. Add any uncompleted tasks to the next period with the approval of your mentor teacher and university supervisor.

## STUDENT TEACHING PACING GUIDE

STUDENT TEACHER'S NAME: \_\_\_\_\_

WEEKS 3-4

The student teacher will:

1. \_\_\_\_\_ identify 1 or 2 students with whom you seem to have poor rapport, plan a course of action that holds a promise of improving the rapport, have your mentor teacher approve the plan, carry out the plan, and then assess the effectiveness of the actions taken.
2. \_\_\_\_\_ attend two of the following: departmental meeting, faculty meeting, PTA meeting, athletic event, science club meeting, student IEP meeting, or other school event.
3. \_\_\_\_\_ continue to plan and conduct all of the instructional activities for one class, with all lesson plans being approved by your mentor teacher at least three days prior to the teaching of any given lesson. Laboratory/hands-on investigations must comprise at least 25% of this two-week period, and lessons should include objectives related to the Georgia QCC/GPS and/or ITBS, if applicable.
4. \_\_\_\_\_ begin to actively assist your mentor teacher in additional courses which you will add to your instructional responsibilities.
5. \_\_\_\_\_ begin to plan for assuming complete instructional responsibility for additional classes and have your lesson plans approved by both your mentor teacher and university supervisor.
6. \_\_\_\_\_ determine common student misconceptions or naive conceptions related to what you are teaching in a lesson and their likely sources, then plan and conduct at least one activity to help students develop scientifically acceptable conceptions.
7. \_\_\_\_\_ determine, with the help of your mentor teacher or university supervisor, the approximate percent of on-task student behavior demonstrated during a lesson you taught. Develop a plan for improving the percent of on-task time, and share this with your mentor teacher and university supervisor.

Tasks incomplete from last period:

8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

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NOTE: Please turn in this portion of the pacing guide at the end of the sixth week of student teaching. Add any uncompleted tasks to the next period with the approval of your mentor teacher and university supervisor.

## STUDENT TEACHING PACING GUIDE

STUDENT TEACHER'S NAME: \_\_\_\_\_

WEEKS 5-6

The student teacher will:

1. \_\_\_\_\_ plan and conduct all of the instructional activities for at least two classes, with all lesson plans being approved by your mentor teacher at least three days prior to the teaching of any given lesson. Laboratory investigations or hands-on activities must comprise at least 25% of this two-week period, and lessons should include objectives related to the Georgia QCC/GPS and/or ITBS, if applicable.
2. \_\_\_\_\_ contact parents (or guardians) of students who are experiencing behavioral, attendance, or academic problems, and elicit parental support for actions needed to improve the students' performance.
3. \_\_\_\_\_ contact parents (or guardians) of students who are doing well in the science course taught by the student teacher, and elicit their continued support for course goals.
4. \_\_\_\_\_ plan and conduct a lesson using an outside resource person approved by your mentor teacher as a guest speaker.
5. \_\_\_\_\_ document in your lesson plans your use of data-based activities that require students to reflect upon their findings, make inferences, and link new ideas to preexisting knowledge.
6. \_\_\_\_\_ document in your lesson plans your use of activities with different structures of inquiry including inductive (exploratory) and deductive (experimental) studies.
7. \_\_\_\_\_ document in your lesson plans your use of activities that show multiple ways of creating scientific knowledge and the tentative nature of scientific knowledge.
8. \_\_\_\_\_ document in your lesson plans your use of activities that provide examples of changes in science knowledge over time, referring to the historical developments of foundational concepts in the discipline.
9. \_\_\_\_\_ document in your lesson plans your use of authentic assessment strategies (i.e., other than tests).
10. \_\_\_\_\_ document in your lesson plans your use of science teaching strategies appropriate for learners with diverse backgrounds and learning styles.
11. \_\_\_\_\_ participate in a mid-term evaluation conference during week 6 with your mentor teacher and university supervisor to evaluate your performance to date.
12. \_\_\_\_\_ visit classes taught by at least one other teacher during week 6.

Tasks incomplete from last period:

13. \_\_\_\_\_

14. \_\_\_\_\_

15. \_\_\_\_\_

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NOTE: Please turn in this portion of the pacing guide at the end of the sixth week of student teaching. Add any uncompleted tasks to the next period with the approval of your mentor teacher and university supervisor.

## STUDENT TEACHING PACING GUIDE

STUDENT TEACHER'S NAME: \_\_\_\_\_

WEEKS 7-8

The student teacher will:

1. \_\_\_\_\_ plan and conduct all of the instructional activities for all classes (or as many as reasonably possible), with all lesson plans being approved by your mentor teacher at least three days prior to the teaching of any given lesson. Laboratory investigations or hands-on activities must comprise at least 25% of this two-week period, and lessons should include objectives related to the Georgia QCC/GPS and/or ITBS, if applicable.
2. \_\_\_\_\_ use science teaching strategies appropriate for learners with diverse backgrounds and learning styles.
3. \_\_\_\_\_ use appropriate technology in your lessons, including computers, to provide science instruction.
4. \_\_\_\_\_ use instructional materials in your lessons from a variety of sources, including the World Wide Web.
5. \_\_\_\_\_ involve students' families in the science teaching/learning process.
6. \_\_\_\_\_ use of data-based instructional activities that require students to reflect upon their findings, make inferences, and link new ideas to preexisting knowledge.
7. \_\_\_\_\_ use instructional activities with different structures of inquiry including inductive (exploratory) and deductive (experimental) studies.
8. \_\_\_\_\_ use of instructional activities that show multiple ways of creating scientific knowledge and the tentative nature of scientific knowledge.
9. \_\_\_\_\_ use instructional activities that provide examples of changes in science knowledge over time, referring to the historical developments of foundational concepts in the discipline.
10. \_\_\_\_\_ use of authentic assessment strategies (i.e., other than tests).

Tasks incomplete from last period:

11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_

15. \_\_\_\_\_

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NOTE: Please turn in this portion of the pacing guide at the end of the eighth week of student teaching. Add any uncompleted tasks to the next period with the approval of your mentor teacher and university supervisor.

## STUDENT TEACHING PACING GUIDE

STUDENT TEACHER'S NAME: \_\_\_\_\_

WEEKS 9, 10 & 11

The student teacher will:

1. \_\_\_\_\_ plan and conduct all of the instructional activities for all classes (or as many as reasonably possible) taught by your mentor teacher during weeks 9 and 10, with all lesson plans being approved by your mentor teacher at least three days prior to the teaching of any given lesson. Laboratory investigations or hands-on activities must comprise at least 25% of this three week period, and lessons should include objectives related to the Georgia QCC/GPS and/or ITBS, if applicable.
2. \_\_\_\_\_ plan lessons for week 11 so as to return instructional responsibility of classes to your mentor teacher during this week.
3. \_\_\_\_\_ use science teaching strategies appropriate for learners with diverse backgrounds and learning styles.
4. \_\_\_\_\_ use appropriate technology, including computers, to provide science instruction.
5. \_\_\_\_\_ use instructional materials from a variety of sources, including the World Wide Web.
6. \_\_\_\_\_ document in your lesson plans the involvement of students' families in the science teaching/learning process.
7. \_\_\_\_\_ document in your lesson plans your use of data-based activities that require students to reflect upon their findings, make inferences, and link new ideas to preexisting knowledge.
8. \_\_\_\_\_ document in your lesson plans your use of activities with different structures of inquiry including inductive (exploratory), correlational and deductive (experimental) studies.
9. \_\_\_\_\_ document in your lesson plans your use of activities that show multiple ways of creating scientific knowledge and the tentative nature of scientific knowledge.
10. \_\_\_\_\_ document in your lesson plans your use of activities that provide examples of changes in science knowledge over time, referring to the historical developments of foundational concepts in science.
11. \_\_\_\_\_ document in your lesson plans your use of activities that relate science to other school subjects.
12. \_\_\_\_\_ document in your lesson plans your use of authentic assessment strategies (i.e., other than tests).

- 13.\_\_\_\_\_ discuss with your mentor teacher how he or she begins and ends the school year. Particular attention should be given to management of students and instructional materials.
- 14.\_\_\_\_\_ complete a final evaluation conference with your mentor teacher and university supervisor during week 11.

Tasks incomplete from last period:

16.\_\_\_\_\_

17.\_\_\_\_\_

18.\_\_\_\_\_

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NOTE: Please turn in this portion of the pacing guide at the end of the eleventh week of student teaching. Add any uncompleted tasks to the next period with the approval of your mentor teacher and university supervisor.

ESCI 5460  
Secondary Science Education  
School-Based Internship

Expectations for Passing Student Teaching

Professionalism

- Demonstrates the ability to handle problems and tensions calmly and effectively, and to relate to peers, parents, instructors and supervisors with integrity.
- Is present at school during the full contract day.
- Consistently wears appropriate dress (follows school policy).
- Uses good judgment when interacting with students (avoids being sarcastic, sexist, racist, or engaging in inappropriate physical or social contact).

Content

- Demonstrates strong and significant understanding of major concepts in the teaching area(s).
- Demonstrates an understanding of the nature of science (i.e., science is a way of knowing, science is tentative, science knowledge changes over time, science knowledge is linked to the culture in which it was created).

Planning

- Develops sufficiently detailed daily and long-range plans with clear goals, methods, materials and assessments.
- Uses classroom dialog and student outcomes to make adjustment to instruction.
- Demonstrates willingness and the ability to learn new content.
- Uses materials from a variety of sources in planning, including the local community, the World Wide Web, textbooks, journals, etc.

Instruction

- Uses a variety of instructional strategies, such as inquiry, laboratory, computer-based laboratory, demonstration, discussion.
- Demonstrates the ability to effectively engage students of all cultural backgrounds in learning science, both individually and in group work.
- Demonstrates the ability to effectively engage students in learning science that relates science to the personal lives and interests of students, to potential careers and knowledge of other subjects.
- Uses questions to encourage inquiry and probe for divergent student responses.
- Demonstrates the ability to effectively engage students in learning about the nature of science (i.e., science is tentative, science knowledge changes over time, science knowledge is linked to the culture in which it was created).

Assessment

- Demonstrates consistency relating objectives, instruction and assessment.
- Uses consistent and fair grading practices (knows uses of keys, rubrics, appropriate criteria, etc.).
- Uses a variety of assessment techniques.
- Demonstrates accurate record keeping and student feedback practices.

Classroom Environment and Management

- Identifies and promotes an exciting and stimulating science learning environment.

- Follows procedures for safe and humane handling of animals and the safe handling, labeling and storage of chemicals, electrical equipment, and knows actions to take to prevent or report an emergency.
- Monitors student behavior while conducting instruction.
- Effectively manages instruction with a variety of student groupings (whole class, small group, etc.)
- Is aware of and addresses students' different needs and abilities.
- Knows and implements school, district and classroom discipline policies.

Student Teacher \_\_\_\_\_  
 Mentor/Supervisor \_\_\_\_\_  
 Date \_\_\_\_\_

ESCI 5460/7460 - Science Education Student Teaching

Student Teacher Self-Assessment

<b>Professionalism</b>	Excellent	Satisfactory	Unsatisfactory
<ul style="list-style-type: none"> <li>• Demonstrates the ability to handle problems and tensions calmly and effectively, and to relate to peers, parents, instructors and supervisors with integrity.</li> </ul>			
<ul style="list-style-type: none"> <li>• Is present at school during the full contract day.</li> </ul>			
<ul style="list-style-type: none"> <li>• Consistently wears appropriate dress (follows school policy).</li> </ul>			
<ul style="list-style-type: none"> <li>• Uses good judgment when interacting with students (avoids being sarcastic, sexist, racist, or engaging in inappropriate physical or social contact).</li> </ul>			

<b>Content</b>	Excellent	Satisfactory	Unsatisfactory
<ul style="list-style-type: none"> <li>• Demonstrates strong and significant understanding of major concepts in the teaching area(s).</li> </ul>			
<ul style="list-style-type: none"> <li>• Demonstrates an understanding of the nature of science (i.e., science is a way of knowing, science is tentative, science knowledge changes over time, science knowledge is linked to the culture in which it was created).</li> </ul>			

<b>Planning</b>	Excellent	Satisfactory	Unsatisfactory
<ul style="list-style-type: none"> <li>• Develops sufficiently detailed daily and long-range plans with clear goals, methods, materials and assessments.</li> </ul>			
<ul style="list-style-type: none"> <li>• Uses classroom dialog and student outcomes to make adjustment to instruction.</li> </ul>			
<ul style="list-style-type: none"> <li>• Demonstrates willingness and the ability to learn new content.</li> </ul>			
<ul style="list-style-type: none"> <li>• Uses materials from a variety of sources in planning, including the local community, the World Wide Web, textbooks, journals, etc.</li> </ul>			

<b>Instruction</b>	Excellent	Satisfactory	Unsatisfactory
<ul style="list-style-type: none"> <li>• Uses a variety of instructional strategies, such as inquiry, laboratory, computer-based laboratory, demonstration, discussion.</li> </ul>			
<ul style="list-style-type: none"> <li>• Demonstrates the ability to effectively engage students of all cultural backgrounds in learning science, both individually and in group work.</li> </ul>			
<ul style="list-style-type: none"> <li>• Demonstrates the ability to effectively engage students in learning science that relates science to the personal lives and interests of students, to potential careers and knowledge of other subjects.</li> </ul>			
<ul style="list-style-type: none"> <li>• Uses questions to encourage inquiry and probe for divergent student responses.</li> </ul>			
<ul style="list-style-type: none"> <li>• Demonstrates the ability to effectively engage students in learning about the nature of science (i.e., science is tentative, science knowledge changes over time, science knowledge is linked to the culture in which it was created).</li> </ul>			

<b>Assessment</b>	Excellent	Satisfactory	Unsatisfactory
• Demonstrates consistency relating objectives, instruction and assessment.			
• Uses consistent and fair grading practices (knows uses of keys, rubrics, appropriate criteria, etc.).			
• Uses a variety of assessment techniques.			
• Demonstrates accurate record keeping and student feedback practices.			

<b>Classroom Environment and Management</b>	Excellent	Satisfactory	Unsatisfactory
• Identifies and promotes an exciting and stimulating science learning environment.			
• Follows procedures for safe and humane handling of animals and the safe handling, labeling and storage of chemicals, electrical equipment, and knows actions to take to prevent or report an emergency.			
• Monitors student behavior while conducting instruction.			
• Effectively manages instruction with a variety of student groupings (whole class, small group, etc.)			
• Is aware of and addresses students' different needs and abilities.			
• Knows and implements school, district and classroom discipline policies.			