Composite Science BS

Goal 1: Proficiency of Graduates

Goal Description:

Prepare students seeking Composite Science certification to become successful 7th-12th grade science teachers based upon their knowledge of both science and pedagogy

Providing Department: Composite Science BS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

G1O1: Content Proficiency

Learning Objective Description:

Students in the Composite Science program will be proficient in the content areas of the degree pertaining to astronomy, biology, chemistry, geology/earth science, and physics. The standards established by the National Science Teachers Association (NSTA) can be found at https://www.nsta.org/preservice/ .The coursework which comprises the science curriculum component of the degree was specifically selected in order to prepare students to meet these standards.

RELATED ITEM LEVEL 2

G1O1I1: Representative Exam (proficiency) - Indicator

Indicator Description:

Students will take the Representative Exam available on the ETS website to assess their proficiency in both the Common Core component of the Composite Science degree and the advanced content in each discipline. This exam will be used to prepare students to take the TExES exam. The Representative exam will be taken the semester before the Methods Block.

Criterion Description:

80% of students taking the Representative exam will earn a score of 80% or higher.

Findings Description:

We had 9 students take the Representative Practice Exam this past year.

All students eventually passed it, as a prerequisite for signing up for the TExES exam.

We did have 2 students struggle to get to this passing score.

RELATED ITEM LEVEL 3

G101/1: Representative Exam (Proficiency)

Action Description:

We will keep this as an indicator, though I will work with the instructor (over BIOL 3390) to record more detailed scores in the system. We may need to discuss re-takes at the end of the semester for those that do not meet the minimum criteria.

RELATED ITEM LEVEL 2

G1O1I2: TExES Exam (proficiency) - Indicator

Indicator Description:

Students will take the TExES exam.

Criterion Description:

80% of students taking the TExES exam will pass on their first attempt with a score of 80% or higher (minimum of 240 points). Those who do not pass on their first attempt will pass it on their second attempt. Students will take the TExES exam during their Methods Block. *Although students do not have to pass the test before doing their Student Teaching Block, they must pass the exam to receive certification. In addition, from the standpoint of program accountability, students must pass the test by their second attempt, though they can take it as many as five times.

Findings Description:
Of the 9 students that took the TExES exam this past semester, 6 passed it the first time (240pts or higher).

Unfortunately, 3 failed to pass the exam. We've been worried about some of them for a while now (given their grades).

1 submitted study plans, took the practice test several times, and re-took the exam 3 times - but failed all 3 times, was a mere 2 points away from passing this last time (214, 237, 238).

The remaining 2 submitted their study plans and will be retaking the practice tests as well.

RELATED ITEM LEVEL 3

G101I2: TExES Exam (proficiency)
Action Description:
We knew we would have a small bubble of students that would struggle with this, as they struggled with their content specific courses.

Our current strategy is to help them create study plans and find access to resources for preparation.

While this will remain an indicator, I would like to build in some recruitment indicators - as the program has shrunk since the pandemic. We will also want to recruit more students with skill/ability/preparedness with STEM content. I may need to work with marketing and CoSET (or Biological Sciences) to formulate a plan. Students that graduate with this major can earn healthy salaries and can easily choose the district they wish to work in (they are in high demand).

RELATED ITEM LEVEL 2

G1O1I3: Science Methods Assignments (proficiency) - Indicator
Indicator Description:

Students will complete designated assignments which address critical thinking and scientific reasoning. These assignments are:

1. *a) NSTA research assignment, or similar assignment (completed in the Science Teaching Methods course)*
2. *b) The Texas Education Agency (TEA) Science Safety Training for High School certification course and exam (completed in the Science Methods course).*
   This course is a self-paced foundational training module for science safety at the high school level. The course provides a review safety policies, procedures, and responsibilities that pertain to instructional settings. Below is a link to the site which provides information about this course/certification.
   (https://www.texasgateway.org/resource-index/science%2520safety%2520training.)

Criterion Description:
Students will score 80% or higher on the NSTA/research assignment and all students will pass the safety certification course.

Findings Description:
All 8 students completed both the research assignment AND the safety assignment during Science Methods (BIOL 3390)

RELATED ITEM LEVEL 3

G101/3: Science Methods Assignments (proficiency)
Action Description:
This is required by TEA, so will keep this as an indicator (so we do not forget). Institutional memory (including my own) will need this to remain.

Students do well on this and it is a worth-while assignment.

RELATED ITEM LEVEL 1

G1O2: Proficiency in Critical Thinking and Scientific Reasoning

Learning Objective Description:

Students in the Composite Science program will demonstrate proficiency in critical thinking and scientific reasoning.

RELATED ITEM LEVEL 2

G1O2I1 CAT Assessment (proficiency) - Indicator

Indicator Description:

Students will take the Critical Thinking Assessment Test (CAT) developed by Tennessee Tech University as part of their Foundations of Science course (BIOL 1436). The test will be taken again in the Science Methods course near the end of the course. This approach will indicate whether students demonstrate gains in critical thinking/scientific reasoning in the Foundations of Science course, and additional gains during the period between the time in which the students took the Foundations of Science course and the Science Methods course.

Criterion Description:

Students will show improvement between the pre-test and post-test taken in the Foundations of Science course; and, they will maintain or improve their score in the Science Methods course (relative to the post-test in the Foundations of Science course).

Findings Description:

My apologies, I never omitted this standard. We do not have the bandwidth (especially since COVID) to compare grades from 3 years ago.

All 8 students did, however, completed a pre/post CAT (critical thinking) assessment during Science Methods (BIOL 3390) and maintained their score or improved.

RELATED ITEM LEVEL 3

G1O2I1 CAT Assessment (proficiency)

Action Description:

Students perform well on this assessment. Now that we have shifted out of the (direct anyway) effects of the pandemic and (due to decreased budgets) with alternating assessment of BIOL 1436 students, we will need to be more strategic in conducting longitudinal assessments.

RELATED ITEM LEVEL 2

G1O2I2: Science Methods Assignments (proficiency) - Indicator

Indicator Description:

Students will complete designated assignments which address critical thinking and scientific reasoning.

These assignments are:

a) NSTA research assignment, or similar assignment (completed in the Science Methods course)

b) Science Safety Training Certification exam for High School (completed in the Science Methods course). This course/certification is offered free of charge through the Texas Education Agency Gateway resource.

Criterion Description:

Crit. 1. 80% of students who complete the research assignment will score 80% or higher.

Crit. 2. All students will pass the safety certification exam

Findings Description:

All 8 students successfully completed the science methods assignment during Science Methods (BIOL 3390)

This assignment is the one where the students get to practice with the objectives they were weakest on.

1 student did the bare minimum (and happened to be one of our students that failed the TExES exam).

RELATED ITEM LEVEL 1

G1O3: Proficiency in Meeting Science Standards Established by the Texas Education Agency
Learning Objective Description:

Students in the Composite Science program will demonstrate pedagogical proficiency as defined by TEA standards These standards can be found at

file:///C:/Users/geo_bmg/AppData/Local/Microsoft/Windows/INetCache/IE/J6O6J70I/DRAFT_TX_Science7-12(2).pdf

RELATED ITEM LEVEL 2

G1O3I1: Pedagogical Standards (proficiency) - Indicators
Indicator Description:

Assessments from appropriate coursework pertaining to teacher certification requirements in the College of Education will be used to assess pedagogical proficiency.These assessments include:

a) Unit Plans

b) Focused Content Observations (FCOs)

c) Student Portfolios

Criterion Description:

a) 80% of the Unit Plans must be rated as satisfactory or better by the evaluator

b) 80% of the FCOs must be rated as satisfactory by the evaluator.*Both College of Education and College of Science and Engineering Technology faculty members may participate in the FCOs.

c) 80% of the Student Portfolios must be rated as satisfactory by the evaluators.

Findings Description:

My apologies, this standard needed to be removed. The Education Department no longer uses this evaluation.

RELATED ITEM LEVEL 3

G1O3I1: Pedagogical Standards (proficiency)
Action Description:

While all students that complete this state assessment pass it, it is required by TEA. We will likely keep this as an indicator - just to make sure we are keeping an eye on it.

RELATED ITEM LEVEL 1

G1O4: Proficiency in Pedagogical Techniques
Learning Objective Description:

Students in the Composite Science program will demonstrate proficiency in pedagogical techniques used in science courses.

RELATED ITEM LEVEL 2

G1O4I1: Pedagogies for Teaching Science Content (proficiency) - Indicator

Indicator Description:

Scores on designated assignments (lesson plans) in the Science Methods course will be used to assess students' proficiency pertaining to pedagogical approaches used to teach science.

Criterion Description:

80% of students who complete the required assignments will earn a score of 80% or higher.

Findings Description:

All 8 students completed the lesson plan assignments during Science Methods (BIOL 3390)

1 individual did the bare minimum on these assignments (and was also one of our students that failed the TExES exam)

Goal 2: Mentoring and Support

Goal Description:

Provide appropriate mentoring and advising support for students seeking Composite Science Certification.

Providing Department: Composite Science BS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

G2O1: Tracking System for Mentoring and Support

Learning Objective Description:

The Composite Science program administrator (currently the Associate Dean in the College of Science and Engineering Technology) and advisors for the Composite Science program will establish a system for tracking students in the program for purposes of ensuring that the students are taking the required assessments at the required time.

RELATED ITEM LEVEL 2

G2O1I1: Database Tracking Systems - Indicator

Indicator Description:

A Composite Science database will be maintained as part of the TK-20 system and as part of the Program Coordinator's data base which will include the names of all students in the Composite Science program, their year in their program, a list of all assessments required of the students, their scores on these assessments, and notes comments/feedback provide by supervising instructors.

The following student information will be entered:

a) Name

b) SHSU GPAs in major and minor, and cumulative GPA

c) Date of admission to the SED program

d) Content area of emphasis (Biology, Chemistry, Earth Science, Physics)

The following are the assessment scores that will be entered:

a) Three Cat scores (taken in the FOS course as a pre-and post-test and in the Science methods course

b) NSTA research assignment, or similar assignment (completed in the Science Methods course)

c) TEA Science Safety Certification exam (completed in the Science Methods course)

d) Science teaching pedagogy assignments (completed in the Science Methods course)

e) Representative exam score/s (taken prior to the Methods Block; i.e., normally during the same semester as the Science Methods course is taken)

f) TExES exam score/s (taken during the Methods Block)

g) Unit Plans (completed during the Methods Block and Teaching Block)

h) Focused Content Observations (made during the Teaching Block)

i) Student Portfolios (submitted during the Teaching Block)

Criterion Description:

The TK-20 database and Program Coordinator's database are in place and student information is added upon receipt of Declaration of Major information and information regarding grades on assessments. Meetings among advisors will be held as needed to determine whether modifications are needed to the TK-20 database.

Findings Description:

This indicator needs to be removed. No longer assessed by Education Department.

RELATED ITEM LEVEL 3

G2O1I1: Database Tracking Systems

Action Description:

We built the majority of documentation into our Science Methods course, so I can just access the course in BB to see how things change.

I need to be more diligent with CAT scores from BIOL 1436.

What would be more helpful is running some reports on demographics and time to completion.

RELATED ITEM LEVEL 1

G2O2: Student Support and Mentoring

Learning Objective Description:

The Composite Science program administrator and advisors for the Composite Science program will use the TK-20 database to track the academic progress of the students for purposes of identifying students who may be struggling and for providing appropriate advising and mentoring.

RELATED ITEM LEVEL 2

G2O2I1: Student Support and Mentoring - Indicator

Indicator Description:

Using the TK-20 database and that of the Program Coordinator, those students who appear to be struggling with their coursework will be contacted by either the Composite Science program administrator or the advisor/s for the discipline-specific area in which the student is struggling. Scores on the Representative Exam and TExES exam are sent to the Program Advisor and the faculty advisors by the Teacher Education Certification Officer. In addition, the database is checked by the Composite Science administrator at the end of each semester, and the program administrator and/or the relevant advisor/s contact the student to set up a meeting between them. Notes will be entered into the Degree Works database following the meetings.

Criterion Description:

Students will be contacted if their Representative and/or TExES exam scores are less than 80% and m*entoring will be required in such cases.*

Findings Description:

Jean Hubbart is phenomenal. She works with us, both during Science Methods (w practice scores) and when students take their TExES exams.

She emails me their scores and we proceed accordingly.

We worked closely with students that scored below the requisite scores to develop study plans and associate them with mentors/advisors that could help them with any lower content scores.

RELATED ITEM LEVEL 3

G202I1: Student Support and Mentoring
Action Description:
I worked with the SAM Center and regularly attend trainings and updates.

I still feel like I am learning the bureaucracy of it all (forms, etc) - but it is getting better.

In addition to recruitment, I would like to build in some celebratory components. We may conduct a survey to find what the student want. Ultimately, I was thinking we could have celebratory graduation events (though we are so small) or create a website for the major, or celebrate our students more on campus media.

Goal 3: Retention

Goal Description:
Maintain a high level of retention in the program.

Providing Department: Composite Science BS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

G3O1: Advisor Support for Retention
Learning Objective Description:
Use the Composite Science advising and mentoring program to encourage students to continue in the program by providing support for all students in the program, and especially those who may be struggling.

RELATED ITEM LEVEL 2

G3O1I1: Information Updates (retention) - Indicator
Indicator Description:
Students will be sent information updates regarding the program as they progress through it.

Criterion Description:
All students in the database will receive these e-mails as needed.

Findings Description:
Done. Students receive these emails during the few months of advising and again when they enter their senior year.

RELATED ITEM LEVEL 3

G3O1I1: Information Updates (retention)
Action Description:
This is adequate at the moment, but could be systematized.

I hope to create some professional templates and calendar reminders for future use. My time commitments and limitations have grown. This way, if I need to shift out of my role as coordinator/advisor, the next person can pick it up more easily.

Goal 4: Program Improvement

Goal Description:
Establish a system for obtaining feedback which can be used to improve the program.

Providing Department: Composite Science BS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

G4O1: Student Perceptions for Program Improvement

Learning Objective Description:

Obtain information regarding student experiences and perceptions of the program.

RELATED ITEM LEVEL 2

G4O1I1: Senior Surveys (program improvement) - Indicators

Indicator Description:

Seniors, or recent graduates, will be surveyed using the Services and Operations instrument (attached) to obtain information about their experiences which can be used to improve the program. This survey is given during the Student Teaching Block.

Attached Files

Services and Operations Teacher Candidate Exit Survey.pdf

Criterion Description:

90% of the seniors who complete the survey will indicate that they were satisfied with the program.

Findings Description:

Not done.

This will be conducted this summer (early Fall).

RELATED ITEM LEVEL 3

G4O1I1: Senior Surveys (program improvement)

Action Description:

We just need to do this.

I was hoping to find some funding to do this, but missed the deadline.

I will work with CoSET (or Biology) to find some funds to encourage participation.

Update to Previous Cycle's Plan for Continuous Improvement Item

Previous Cycle's Plan For Continuous Improvement (Do Not Modify):

Closing Summary

In the 2022-2023 academic year, efforts will be made to improve the ability to monitor student progress, especially as regards grades on the TExES practice exam. As discussed, this was not documented with the granularity desired. The goal is to ensure that students develop plan of study to remediate any deficiencies, to ultimately receive the tutoring necessary to do well on the actual TExES exam.

Greater effort will need to be made to ensure that all (or most) of the Composite Science students who take the CAT exams when they are in the FOS course. Greater effort will be made to report detailed results, rather than just pass/fail.

There is some redundancy in the KPIs for this program. We will need to maintain the items required by TEA, but with greater detail and nuance. Some items will likely be eliminated in lieu of indicators tied to recruitment and retainment.

Update of Progress to the Previous Cycle's PCI:

Closing Summary

In the 2023-2024 academic year, we will work on developing a recruitment plan to grow the program.

Greater effort will need to be made to ensure that all (or most) of the Composite Science students who take the CAT exams when they are in the FOS course. Greater effort will be made to report detailed results, rather than just pass/fail.

Templates and calendar reminders will be created for regular messaging to students.

We will conduct a survey to find ways to celebrate and promote our students and the major.

New Plan for Continuous Improvement Item

Closing Summary:

In the 2023-2024 academic year, we will work on developing a recruitment plan to grow the program.

Greater effort will need to be made to ensure that all (or most) of the Composite Science students who take the CAT exams when they are in the FOS course. Greater effort will be made to report detailed results, rather than just pass/fail.

Templates and calendar reminders will be created for regular messaging to students.

We will conduct a survey to find ways to celebrate and promote our students and the major.