Sonoma State would like this new course to be as good as possible. The faculty is very interested in getting your views about it. To help you feel comfortable being candid as possible, information is being collected by WestEd, an education research company. WestEd is completely independent from SSU.

Please know that WestEd will NOT provide SSU with your identity or your individual responses when giving reports from this survey. Therefore, it is not possible for any information that you provide here to affect your course grade. WestEd asks for your name merely to let researchers follow your views over time.

FYI. WestEd also will contact you next year, to get your retrospective views of the course experience.

Your name ____________________________________________

We estimate that it will take you about 20 minutes to complete this survey. Questions in this survey ask you to reflect on this semester, unless indicated otherwise.

Comments on survey results. This summary includes three parts. Part 1 shows the change in response for the redesigned course (2015) compared to the original course (2014). Part 2 shows several questions about how 2015 students assessed their learning during the redesigned course. Part 3 lists open ended comments by students in response to specific questions.

Results of open ended question about currently declared majors for survey participants

<table>
<thead>
<tr>
<th>Major</th>
<th># students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>3</td>
</tr>
<tr>
<td>Environmental Studies and Planning</td>
<td>10</td>
</tr>
<tr>
<td>Geology/Earth Science</td>
<td>4</td>
</tr>
<tr>
<td>Physics</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science</td>
<td>9</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>Statistics/Psychology</td>
<td>1</td>
</tr>
<tr>
<td>Business</td>
<td>1</td>
</tr>
</tbody>
</table>

Part 1. Comparison between 2014 and 2015- These questions were given to ?? students in 2014 and to 42 students in 2015. Questions shown represent all cases where the response differed between 2014 and 2015 by more than 10%. Other questions received a similar response in both years. Note that each response shows a
positive increase for the redesigned course (2015) compared to the prior version of the course (2014), with one exception (Question 6b).

1. Think about working with the Community partners (SSU Preserves and Gold Ridge RCD)  

<table>
<thead>
<tr>
<th>Question</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did interacting with the Community Partners increase your interest in science?</td>
<td>50%</td>
<td>69%</td>
</tr>
<tr>
<td>Did you feel more connected to the local area after working with the Community Partners?</td>
<td>46%</td>
<td>64%</td>
</tr>
<tr>
<td>Did interacting with the Community Partners increase your understanding of science fields and careers?</td>
<td>60%</td>
<td>71%</td>
</tr>
<tr>
<td>Did interacting with the Community Partners increase your interest in science fields and careers?</td>
<td>35%</td>
<td>62%</td>
</tr>
</tbody>
</table>

3. Think about working on projects in groups with your classmates this semester.

<table>
<thead>
<tr>
<th>Activity</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>I engaged in a variety of roles over the semester (e.g., leader, data analyst, presenter, etc.)</td>
<td>64%</td>
<td>95%</td>
</tr>
<tr>
<td>My peers often were not doing equal work as me.</td>
<td>46%</td>
<td>35%</td>
</tr>
</tbody>
</table>

4. Were this semester’s “Transitional” sessions important for your adjustment to SSU campus life?

<table>
<thead>
<tr>
<th>Activity</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student and faculty panels</td>
<td>28%</td>
<td>64%</td>
</tr>
<tr>
<td>Field trip from FOP to Ocean</td>
<td>46%</td>
<td>69%</td>
</tr>
</tbody>
</table>

5. Think about the two Academic Advising sessions this year in SCI120 (one in fall; one in spring). Did the advising help you to:

<table>
<thead>
<tr>
<th>Activity</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>understand course pathways for completing a STEM major in 4 years?</td>
<td>43%</td>
<td>57%</td>
</tr>
</tbody>
</table>

6. Think about the Peer Mentors this semester (NOT the TA).

<table>
<thead>
<tr>
<th>Question</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were the Peer Mentors effective for delivering the “Transitional Elements” sessions?</td>
<td>75%</td>
<td>81%</td>
</tr>
<tr>
<td>How important were the peer mentors for your success this semester?</td>
<td>80%</td>
<td>71%</td>
</tr>
</tbody>
</table>

7. How often did you interact with peer mentors outside of class such as through e-mails or meetings?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Once or twice</td>
<td>32%</td>
<td>19%</td>
</tr>
<tr>
<td>A few times</td>
<td>32%</td>
<td>48%</td>
</tr>
</tbody>
</table>
8. Outside of class sessions, how much time did you spend on the course throughout both semesters this year (working on projects, reading, studying)?

<table>
<thead>
<tr>
<th>Time Spent</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than an hour a week</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>1 to 3 hours a week</td>
<td>32%</td>
<td>24%</td>
</tr>
<tr>
<td>3 to 6 hours a week</td>
<td>32%</td>
<td>50%</td>
</tr>
</tbody>
</table>

9. My current official major is:

<table>
<thead>
<tr>
<th>Major</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>39%</td>
<td>21%</td>
</tr>
<tr>
<td>Declared</td>
<td>61%</td>
<td>79%</td>
</tr>
</tbody>
</table>

10a. If you have DECLARED a major, how confident are you at this time that you will continue in this major? (Do not answer if you are Undeclared.)

<table>
<thead>
<tr>
<th>Confidence</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>confident</td>
<td>47%</td>
<td>80%</td>
</tr>
</tbody>
</table>

11. How much did these course elements influence your interest in considering or pursuing STEM majors?

<table>
<thead>
<tr>
<th>Element</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Interacting with Community Partners</td>
<td>32%</td>
<td>50%</td>
</tr>
<tr>
<td>b. Interactions with Main Course Faculty</td>
<td>39%</td>
<td>66%</td>
</tr>
<tr>
<td>c. Interactions with other SST Faculty</td>
<td>29%</td>
<td>57%</td>
</tr>
<tr>
<td>d. Interactions with TAs</td>
<td>22%</td>
<td>38%</td>
</tr>
<tr>
<td>e. Interactions with peer mentors</td>
<td>25%</td>
<td>40%</td>
</tr>
<tr>
<td>e. Research projects</td>
<td>33%</td>
<td>53%</td>
</tr>
<tr>
<td>f. Other research-related activities</td>
<td>25%</td>
<td>55%</td>
</tr>
<tr>
<td>g. Group Work</td>
<td>25%</td>
<td>46%</td>
</tr>
</tbody>
</table>

14. Having completed the entire course, I am satisfied with my decision to enroll in this Freshman Learning Cohort (FLC)?

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>47%</td>
<td>73%</td>
</tr>
</tbody>
</table>
Part 2. Responses to questions about learning in redesigned course - These questions were given to 42 students in May 2015. Results show that students felt they had gained substantial knowledge in skills that relate closely to the course learning outcomes.

2. Before this course, did you have any substantial field experiences of going out to collect data?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>26%</td>
<td>74%</td>
</tr>
</tbody>
</table>

13. Rate your ability to do the following BEFORE and AFTER this semester.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>develop idea for an experiment or research</td>
<td>49%</td>
<td>92%</td>
</tr>
<tr>
<td>plan an experiment</td>
<td>51%</td>
<td>96%</td>
</tr>
<tr>
<td>conduct an experiment</td>
<td>64%</td>
<td>98%</td>
</tr>
<tr>
<td>build or adapt instruments or apparatus</td>
<td>39%</td>
<td>85%</td>
</tr>
<tr>
<td>use existing instruments or apparatus</td>
<td>44%</td>
<td>95%</td>
</tr>
<tr>
<td>make measurements and collect data</td>
<td>80%</td>
<td>98%</td>
</tr>
<tr>
<td>record and organize data</td>
<td>78%</td>
<td>95%</td>
</tr>
<tr>
<td>analyze data</td>
<td>61%</td>
<td>92%</td>
</tr>
<tr>
<td>create charts and graphs</td>
<td>63%</td>
<td>91%</td>
</tr>
<tr>
<td>discuss data</td>
<td>61%</td>
<td>95%</td>
</tr>
<tr>
<td>develop a presentation</td>
<td>68%</td>
<td>95%</td>
</tr>
<tr>
<td>present results to an audience</td>
<td>46%</td>
<td>84%</td>
</tr>
<tr>
<td>manage a project and meet deadlines</td>
<td>64%</td>
<td>88%</td>
</tr>
</tbody>
</table>

18. Please let us know whether you disagree or agree with these statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I learned how to use math functions to model systems.</td>
<td>83%</td>
</tr>
<tr>
<td>I gained a better understanding of the local watershed.</td>
<td>94%</td>
</tr>
<tr>
<td>My ability to think critically increased.</td>
<td>81%</td>
</tr>
<tr>
<td>My ability to do work in the field/lab increased.</td>
<td>95%</td>
</tr>
</tbody>
</table>
Part 3. Responses to open ended questions in redesigned course- We show all comments made by students and transcribed for five questions on the survey. Comments were sorted into positive, neutral, and negative for ease of examining overall patterns in student comments.

Question: What additional skills (if any) do you feel that you need before considering being a STEM major?

- I would need to take more biology classes to make sure that is what I would major in.
- I feel like I'm adequate in the field but need more studying skills.
- Become better at math.
- Taking more science classes, and being able to declare.
- Being adept in mathematics.
- I would like to finish all my GE's before deciding on a major.
- More confidence by myself when not working in a group.
- I need to really understand pre-ide and be comfortable with it.
- none
- Another submitted application
- More science classes and increase my confidence that I would do well in the required classes.
- If I was confident that's what I would do.
- I want to be a nurse or a CSI agent. I only took this course to get rid of 3 or 4 GE's.
- Calculus, getting into the necessary classes that SSU no longer offers to my major (general chem)
- pre-req courses
- I've tried to declare a KIN major already but didn't get in the first time.
- IDK if I'm STEM or not
- The ability to actually get into a general chemistry class.
- It would take me wanting to be a STEM major. No interest.

Question: What about working at Osborn Preserve was eye-opening to you?

- It was a great experience getting outside, being able to see the scope of Sonoma County. I also greatly enjoyed getting hands on experience with macro invertebrates in the creek and taking data for water quality.
- I loved going to FOP. I always walked away with a new concept for my research and life as well.
- I got to see and learn about local ecology, and meet new and interesting people.
- The fact that we had the access to such a place with countless opportunities to explore science related subjects was the thing that stuck out to me most.
- I liked how we were able to really get out in the field and do real research. I enjoyed seeing what scientists actually do for a career.
- I loved being out on the field. It was a great experience to work on actual land.
- I had done my first fieldwork there and it made science more appealing to me.
Question: What about working at Osborn Preserve was eye-opening to you? (ctd)

- Having community partners who cared about our input. Having the opportunity to do research outside and collect data that was actually taken into consideration and not just for the grade.
- It was cool to be able to walk through the preserve and experience what it was like at multiple parts of it.
- their sensor array
- Working with Claudia Luke was a great experience and it made me realize how many people it takes to manage somewhere like FOP.
- I was able to interact and help with research was a huge eye opener for me.
- How much blackberries affect biodiversity
- I learned about what a watershed is and how it is related to our community.
- The amount of ongoing research being done there
- I met people who were passionate about their job.
- getting to work in the field
- How important it was to conserve water. Also was cool to see where our watershed starts at.
- It showed how people are trying to preserve and live with nature
- To see a vast amount of space that is all for research was eye-opening to me.
- I liked that the school had its own preserve. Made them seem really official.
- Discussing the effects the drought had/is having on water supply
- The rattlesnake
- the amount of invasive species
- How beautiful nature is when it is "untouched" by mankind. So many invasive blackberries!
- There is a lot about nature that I don't know
- It was really green and we need more areas like that.
- You can do and there are a lot of projects and it's very diverse.
- The amount of work they put into a preserve
- The importane of macro/micro invertebrates in the ecosystem
- How much work goes into field work.
- The views and how it was much more forested than the nearby areas.
- How it was all connected.
- How relaxing it is up there and how nice it would be to have an internship up there.
- The drought
- The incompetance of my professors
- The water quality
- nothing
- I realized I didn't want to do field work as my career
- nothing really
Question: What about working at Gold Ridge RCD was eye-opening to you?

- We got to experience our study of salmon in the classroom in an actual creek containing Coho.
- Actually getting to see the things we spend so long discussing was an eye opening experience.
- I liked seeing projects that were in progress so we can be a part of them.
- Learning how salmon travel through streams. Salmon life-cycle.
- Same as above, and how and inviting and friendly the people that worked on the preserve were.
- Learning about the creek and the animals which live in and how they care for them.
- you can collect a lot of data
- the importance of salmon
- I really was amazed by the techniques that were used to restore Dutch Bill creek.
- I was able to learn all the experiments they are doing to help salmon was an eye opener to me.
- Learning how to properly take and record data from the tests we did.
- The ways they are helping salmon.
- We didn't go to Gold Ridge but working with Britany Deck was cool because she was an SSU graduate who got a job that I might want to get.
- Seeing and understanding what it does for its watershed
- I became more aware of how sensitive salmon habitat can be and emphasized the dangers the species faces.
- How far our water travels, and how far salmon travel to spawn
- Gold Ridge was interesting because they seemed very knowledgeable about their area, and had a lot of projects going on throughout that we were able to observe, like the dead fish carcasses.
- Salmon carcasses.
- The amount of ponds where salmon could swim through. The large woody debris was very eye opening.
- Working with the water quality.
- I learned slightly more about hatcheries.
- Same as FOP, I liked to organizing data not collecting it.
- There is a lot of planning/designing that happens to keep nature healthy.
- Salmon and a lot of work.
- Redds
- The amount of work that goes into the creek to keep the salmon habitat healthy.
- How important salmon are to the ecosystem.
- Dead fish are put in creeks to add nutrients to the water.
- How fragile these ecosystems were
- none
- Did not enjoy. I felt like this was just pushed on us.
Question: What about working at Gold Ridge RCD was eye-opening to you? (ctd)

- nothing
- not much I grabbed rocks in a stream.
- nothing
- We were kind of hurried and didn't get to experience much of the place.
- not much
- nothing really
- not much at all
- Nothing, I only saw the bridge.

Question: What thing(s) did you find most valuable about the final project?

- Working as group
- group dynamic
- The most valuable aspects of the projects was the opportunity to get hands on experience outside of the classroom, take data, then analyze and discuss it with my fellow classmates.
- Time management. Confirmed whose character lacked and how they can deal with people.
- Working together and conducting our own experiments/research taught us to be more independent.
- Using instruments and planning
- Probably getting out and making our own experiment/performing and presenting the data.
- Working in groups. Meeting deadlines. Choosing our own project topics. A lot of feedback from peers and professors.
- Not exactly the content but the experience that we gained from the projects such as the skills of conducting experiments and analyzing data.
- Learning to work with my group members
- The most valuable thing I got from doing these projects is learning how to gather, record, and interpret data and turn it into a presentation.
- Working together. Getting exposed to hands on work. Meeting community partners. Getting out of the classroom.
- The feedback we get after.
- Working with different people and overcoming difficulties.
- Got to outreach to community partners.
- Working with more than our professor to do projects and having the hands on experience.
- Learning how to take data. Being about to think outside the box.
- Working with others. Hands on field work. Gaining out of class experience. Learning proper ways to conduct experiments. Learning proper ways to present info/data.
- Presenting our results to an audience helped with public speaking skills.
- Learning how to develop an idea for a research project.
Question: What thing(s) did you find most valuable about the final project? (ctd)

- Working with groups, learning how to use the sensors, getting an increased overall confidence with the act of experimenting scientifically and analyzing those results.
- Learning about the local ecosystem
- The learning experience.
- How they forced individuals to work as a team in order to achieve a common goal.
- I found that I got to help and put my feedback on what each place was doing
- That we got to work in groups and didn't really have the teachers telling us what to do.
- It taught good analytical skills.
- Working in a group and coming up with an idea was the most valuable.
- working with others and collecting the data
- Working with the groups outside of class and presenting in front of people.
- They taught us how to plan experiments, work with group members, adapt to changes in our plans, and analyze/present data.
- Learning skills that one can only learn in the field.
- Learning how to do field work
- They were somewhat practical.
- The planning of the presentation was the only valuable thing.
- group work based learning
- teamwork
- Most valuable I'd say the data.
- field work
- I learned not to do group projects with people that don't do any work.
- [hypothetical]
- not much

Question: What thing(s) did you find least valuable about the project?

- I really didn't think anything was unvaluable. Everything served a purpose and was really helpful.
- Not all group members were as excited about the project as I was.
- The first semester discussion classes. The labs were helpful for this semester and the plenaries explained many problems in the watershed, but the discussions seemed totally irrelevant.
- For people who have a lot of experience outdoors and working to collect data, some of the projects feel boring and pointless, though they help others who don't have experience.
- Having to struggle with group members.
- Could've had more time on project 2
- salmon, topics
- When group members don't do their part. Lack of communication.
Question: What thing(s) did you find least valuable about the project?

- The amount of little assignments we have to do.
- Constant updates mandatory to the grade.
- the poison oak and ticks
- individual reports
- teammates lack of effort
- The projects were rushed/disorganized
- the amount of time they took
- The strict deadlines
- The little amount of preparation time.
- I didn't like how we only had a small amount of time.
- How little time we got on some of them.
- The number of time we had to present the information to the class before presenting the final project
- Many group projects, 4 hour long classes since we basically used 2 hours of the time most of the time, unclear instructions.
- Can be disorganized sometimes. Sometimes seems repetitive.
- The amount of projects
- The insignificance of most projects.
- Having the projects be similar and somewhat repetitive.
- The lack of organization from the teachers.
- The limited and rushed time we had for each project.
- repetitiveness, lack of direction
- Instructors who would over commit us as students.
- They weren't interesting, our sensors were bad, there wasn't much time, all leading to pointless results.
- They were rushed and closely crammed together. Some were unorganized as well.
- the vague descriptions of time lines we had for these projects
- The projects felt very repetitive and working with groups is not my forte.
- Gold Ridge was a pretty useless project.
- so unorganized, never knew when things were due and who had to turn them in
- Wasting of time.
- a lack of organization
- the disorganization
Question: Please let us know if you have any ideas for the course next year.

- Somehow get more people to be passionate about their work, there is a big lack of motivation this year in a lot of students.
- None, I enjoyed everything this course had to offer.
- more class discussion time.
- More time for testing products, data collection
- I really enjoyed when we were able to design our own experiments, and I think more of that would be good.
- nope
- Do a wider variety of projects.
- Timing. If you're going to allow the Sci 120 students to do the science symp allow adequate timing.
- More community interaction.
- So some ideas for next year would be to keep the plenary session, and bring back with lab with Dr. Fran Keller. These parts were the only valuable and significant moments for the class. Once they were gone we were left with a class where we discussed basic
- Make sure groups analyze data, I never got a chance to even go over any of my data that my group members had. And teach how to analyze better, and more diversity in work projects.
- It should be fun and aimed at students who DON'T already have a science major
- organize course materials so all teachers are on same page. More in depth math help.
- Have a general theme to what is taught, don't go from salmon to stars to pre-calc to rabbits and foxes, stay on one thing like certain majors. Brush ip on some general topics (interesting).
- less salmon stuff in the first semester
- Please talk to each other more before confusing the class with your differenting ideas on what we are doing.
- Friday class was hard to get motivated for, especially the longer ones 2nd semester. More structure/cohesion with professors. One prof would say one thing in one class, and another would say something else to the other.
- Spread the projects in both years and give more time for the last project because it's really rushed. Be more organized.
- Get the students more interested in the cause by doing more fun activities in class and having better flexible deadlines.
- more organization
- Have class spread out through the week.
- Change the scheduling as it was inconvenient at times.
- More organization and communication between professors.
- Be more organized. Plan out full days without non-productive activities.
Question: Please let us know if you have any ideas for the course next year.

- Try to be more organized with the course, and give more time for the final project. Also, try to help with time management. I know it's up to the students, but deadlines come up fast. I don't know how you can help with that, but maybe a [plan] all this is
- Try understanding that some kids don't know [some] ideas and to take extra time to know they are struggling in certain areas.
- Be more organized.
- Be more organized with a thought-out plan.
- Less math that we don't even use.
- no truth tables, still don't know how to do them or when in life I will use one. Actually have stuff for lab, not random crap to fill time