Assessment Date: ____June 2013 (Spring semester class)____

Faculty Name(s): ____Laurie Issel-Tarver______________

1. Course Name and Number:

Biology105

2. All Course SLOs from the Course Outline of Record:

1. Describe the basic principles of gene transmission and allelic interactions that determine phenotype.
2. Recognize basic cellular structures and synthesize how their functions allow for cell maintenance, survival and reproduction.
3. Describe the structure of DNA and utilize the genetic code to predict proteins, recognize mutations, and link DNA to commonly occurring human syndromes.
4. Identify advances in biotechnology and their potential impact on society, health, and ethics.
5. Apply an understanding of natural selection to determine the evolutionary relationship

3. Specific Course SLO(s) assessed as part of this project:

Describe the basic principles of gene transmission and allelic interactions that determine phenotype.

4. Will this SLO assessment count toward GE Plan A?  _x_ Yes  __ No

If Yes, identify what area: _x_ Area I Natural Sciences  __Area II Social and Behavioral Sciences  __Area III Fine Arts/Humanities  __Area IV Language and Rationality  __Area V Physical Education/Wellness  __Area VI Intercultural/International Studies

Identify GE SLO(s) assessed as part of this project (see Catalog pages 49-51):

Analyze and apply concepts of biological and/or physical science obtained through the scientific method.

5. Assessment strategy or tool used in the assessment. (Describe below, and if applicable copy/paste any additional related documents at end of this form (i.e. Rubric, score sheet, test questions, essay assignment, etc.)
Exam and pedigree assignment

**NOTE:** This will usually consist of things you are already using to evaluate student work, i.e. Final Exam questions, Final Essay, Final Presentation or Culminating Project, other Assignments, Portfolio Evaluation, Performance Assessment, Department Testing, Pre and Post Tests, Vendor or Industry Certification Examinations, Indirect Assessments (Student Surveys, Focus Group Discussions, Interviews), etc.

6. **Specific aspects of the assessment tool which link up to specific Course SLOs being assessed** (i.e. Which specific test questions measured which Course SLOs? Note: May describe with #4 above):

The pedigree assignment required students to show the relationships between members of their own family, as well as to indicate any health issues. It was assessed by rubric (below).

The exam covered pedigree and Mendelian Genetics concepts, including dominant and recessive relationships between alleles.

Example: Huntington’s disease is a degenerative nerve disease caused by a rare dominant allele that does not show its effect until after reproductive age. The gene is autosomal. Jack, a man with two sons, discovers that his own father (the kids’ grandfather) is suffering from the disease. No one else in the family is (yet) showing any symptoms. Draw the pedigree of this family, filling in the appropriate symbols. Assume wives have normal genotypes and phenotypes. Indicate Jack as the proband. What is the probability that Jack’s firstborn son is carrying the bad allele? (Show or explain your work.) If the firstborn son were carrying the bad allele, what is the likelihood that Jack is also carrying the bad allele?

7. **Results and analysis of the data.** *(Explain below and if applicable copy/paste any related documents, i.e. spreadsheets with data, at the end of this document.)*

Average exam score for this material: 70%; average pedigree score: 93%

Students have a good ability to analyze their own family structures, understand the genetic relatedness among family members, and assign health status. Most human traits followed in pedigrees like this (cancer, diabetes, heart disease) are polygenic, and don’t have a pattern of Mendelian inheritance. When it comes to solving problems with Mendelian genetics (for example, Punnett square analysis), students have more trouble. I think they have trouble making the connection between movement of alleles into gametes during meiosis, and production of offspring.

8. **Describe any faculty dialogue that occurred as part of the assessment process** (i.e. Were results shared at a department meeting? Was there discussion about changing any SLOs? Etc.):

I discussed this with peers at the CCB-FEST (community college biology faculty enhancement through scientific teaching) program at SFSU; we worked on activities that can enhance student understanding of meiosis and how it relates to inheritance patterns.
9. **Next steps** (i.e. any planned revisions to curriculum or teaching strategies to promote student success, future assessment plans, etc.):

Incorporating hands-on and group activities such as meiosis card sorting and Mendelian genetics problems with actual specimens of different phenotypes.

10. **Results of implemented changes, if available at this time:**

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**Please save your finished document in the following format.** (Date should be for the semester in which data was collected; same date should be listed at top of this form.)

`yyyysemester-sloa-courseid.doc`

Example: `2013fall-sloa-engl101c.doc`

**Rubric, Biol 105: Pedigree with correct structure, information**

- correct symbols (circles for females, squares for males, etc.); correct connections for spouses, children, siblings **<required for credit>**
- both mother’s and father’s sides represented, with siblings/parents/ grandparents/aunts/uncles/cousins/kids represented, max 10 pts: ______
- health issues for family members indicated, max 10 pts: ______
- good neatness/readability, max 3 pt: ______
- line through symbols for deceased, max 1 pt: ______
- arrow to proband, max 1 pt: ______