Course: CHEM 1100 Introductory Chemistry – Service-Learning

Course Description: A one-semester course covering some basic concepts and applications of chemistry for non-science majors. Laboratory exercises supplement the lecture material.

Student Population: 19 of 20 students enrolled were Culinary Arts majors

Time Frame: 4 week summer class


Course Schedule:

Monday, June 2 - Syllabus, Introductions, Chapter 1 – About Science and Chapter 2 – Particles of Matter; Lab – Safety and MSDS Assignment / Safety Quiz
Tuesday, June 3 - Chapter 3 – Elements of Chemistry; Lab – Vernier Handout - Boyle’s Law
Wednesday, June 4 - Chapter 4 – Subatomic Particles and Chapter 5 – The Atomic Nucleus; Lab - Investigation 3 – Chromatographic Study of Dyes and Inks
Thursday, June 5 - Presentation by America’s Second Harvest – Ms. Chandra Mahony, Chapter 6 How Atoms Bond; Lab - Investigation 6 – Color and Light Behaves; Lab - Investigation 16 – Measuring Hard Water
Friday, June 6 - Chapter 11 – How Chemicals React; Lab - Investigation 10 – Verifying Molar Ratios in Chemical Reactions
Saturday, June 7 - Exam I (Chapters 1-5, Labs – Safety, Boyle’s Law, Investigation 3), Chapter 7 – How Molecules Mix; Lab - Investigation 8 – Molecular Models, Bonds, and Shapes
Tuesday, June 10 - Chapter 7 – How Molecules Mix and Chapter 8 – How Water Behaves; Lab - Investigation 16 – Measuring Hard Water
Wednesday, June 11 – Chapter 9 – How Chemicals React; Lab - Investigation 10 – Verifying Molar Ratios in Chemical Reactions
Thursday, June 12 - Chapter 10 – Acids and Bases in Our Environment; Lab - Investigation 12 – Comparing the Energy Content of Fuels
Monday, June 16 - Exam II (Chapter 6-9, Labs – Investigations 6, 8, 16, 10)
Tuesday, June 17 - Analysis of Vinegar
Wednesday, June 18 - Chapter 12 – Organic Compounds
Thursday, June 19 - Chapter 13 – Nutrients of Life; Lab - Investigation 26 – Identifying Common Plastics
Monday, June 23 - Exam III (Chapter 10-12 & Lab – Investigations 12, 20, 15, 33)
Monday, June 27 - Service-Learning Project Cook-Off Contest
Tuesday, June 24 - Chapter 15 – Optimizing Food Products; Lab - Investigation 31 - Measuring Sugar Content of Beverages
Wednesday, June 26 - Service-Learning Project Cook-Off Contest
Thursday, June 26 - Exam IV (Chapter 13, 15 & Labs – Investigations 28, 26, 30, 31)

Course Requirements:
- 4 Exams (dropping lowest exam) – 30% (300 points)
- Homework Average – 16.7% (100 points)
- Lab Assignment Average – 16.7% (100 points)
- Service-Learning Project – 16.7% (100 points)

Service-Learning Project (100 points):
- 5 questions about America’s Second Harvest (6-3-14) – 10 points
- Reflection Paper (6-12-14) – 20 points
- Rough Draft of Recipe/Nutritional Information (6-19-14) – 20 points
- Final copy of Recipe with Nutritional Information and Prepared Dish for Cook Off Contest – 50 points

Service-Learning Outcomes:
Students who have completed Introductory Chemistry (CHEM 1100) are expected to demonstrate the knowledge of the following Service-Learning outcomes:
- Students will demonstrate ability to effectively apply theories, concepts, and methods to practical problems
- Students will demonstrate comprehension of the community issues that are relevant to their service-learning course content.

This Service-Learning Project allowed the class to partner with America’s Second Harvest of Coastal Georgia and to help deepen their understanding of the connection between food and chemistry. The goal of this project was to learn about the work done by America’s Second Harvest, reflect on the importance of this work, and to provide healthy, easy to follow recipes which utilized canned foods which are sometimes difficult to find a use for. The project culminated in a cook off contest on campus where cash donations were collected for America’s Second Harvest and a food tasting and vote allowed us to choose the top recipes.

Pre-Survey Students’ Perceptions of Service-Learning
Learning that we base on serving the community – Not sure what it is – Learning to be able to serve others outside the classroom – What? I have no perception of learning – Community service for class credit done outside of class – Learning something you didn’t already know by completing a service – Working to learn – I like helping so if it is helping then good – I have never done a service-learning class, but wouldn’t hesitate to participate in one – Volunteering somewhere helping with a project of some sort – To learn with some help – Learning in a way that encourages and fulfills helping the needs of others – Learning more on things based on your environment – Learning by doing non-school related activities – Doing some type of community service that is relevant to the subject – I have no idea – Doing projects out in the community and out of the classroom – Learning in different ways – Not sure exactly what that means

Post-Survey Students’ Perceptions of Service-Learning
Looks like – I think it really tied so much together – The chemistry of it all, the culinary approach, the desire to help the local community – I think it is a fantastic way to learn – A hands-on experience to help us get a better understanding of the concepts while also helping out the community – I think service-learning is a great thing because you get a chance to help others and also maybe learn something you don’t know – It was a lot of fun and very interesting. It also felt really good to raise money and awareness of America’s Second Harvest – A way to learn while providing a service to those in need – Learning the material needed while still impacting the community – Working towards a goal to help or better a problem or situation. Learning about what your project is all about by participating – Learning from doing a service that benefits other people – A way to do a fun community service – It was great tying Chemist to Culinary – It was very informative and fun to do – Service-learning is learning dependently via help involved – Good to incorporate the community into end of semester project. Help them and a fun way to do a project – I loved giving back. I felt very humbled and yet fulfilled – It was a lot to take in – It was a great way to help the community and learn something – Helping and volunteering in the community – It was a good thing – Fun way to help the community - Learning with purpose

Expectations/Perceptions of CHEM 1100
(5 is strongly agree, 4 is agree, 3 is neutral, 2 is disagree, 1 is Strongly disagree)
- I expect to learn / learned the basic concepts of chemistry in CHEM 1100. Pre-Survey 4.75 Post-Survey 4.75
- I expect / CHEM 100 was relevant to my major/program of study. Pre-Survey 3.8/5 Post-Survey 4/5
- I expect / CHEM 100 was relevant to my life. Pre-Survey 3.3/5 Post-Survey 3/5

Students were asked to give five words that described their feelings about CHEM 1100.
- Nervous, Excited, Interesting, Stressed, Overwhelmed (5), Hard (4, Curious (3), Confusion (3)

Post-Survey
- Fun, Exciting, Learning, Challenging, Cool (4), Awesome (3)