COURSE UNIT PLAN

Title of Unit: Egg Chemistry (Anatomy, Proteins & Enzymes) **Grade Level**: 12
Curriculum Area: Food Science II **Time Frame**: 3 weeks

DESIRED RESULTS

Common Core State Standards	College and Career Readiness Standards
What standards are you specifically targeting in this lesson?	***Which technical standards/21st century skills are you specifically targeting in this lesson?***
NGSS HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. Reading Standards for Literacy Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. Math Standards • Interpreting Categorical and Quantitative Data • Represent data with plots on the real number line (dot plots, histograms, and box plots).	NATIONAL STANDARDS 9.7.1 Explain the properties of elements, compounds, and mixtures in foods and food products. 9.7.2 Analyze the effects of thermodynamics on chemical reactions in foods and food products. 9.7.3 Explain the process of ionization in the formation of acids and bases and effect on food and food products. 9.7.4 Explain the impact of molecular structure of simple and complex carbohydrates on digestion, nutrition, and food preparation procedures. 21ST CENTURY SKILLS 3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams. 8.A.3 Utilize time and manage workload efficiently. 9.A.1 Know when it is appropriate to listen and when to speak.

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Understandings/Knowledge/Skills	Essential Questions
What do you want students to understand, know, and/or be able to do at the end of this unit? • Describe the nutritive value of an egg, along with its chemical components • Clearly construct and label the structure of an egg • State the functions of protein in food/egg production • List at least 6 factors that denature proteins • Describe the molecular structure of glycerides, phospholipids and sterols • Analyze the role of egg in a nutritional diet	***What questions will foster inquiry, understanding, and transfer of learning?*** • What is the average calorie count of an egg? • How does the yolk differ from the white? • What is the chemical role of eggs? • Why are only egg whites used in whip cream? • What causes bacterial infection in eggs? • Why do eggs turn hard when heated? • Why is pasteurization needed for dairy products? • What is the proper storage for eggs? Freezing eggs? Drying eggs? Egg substitutes?

ASSESSMENT EVIDENCE

Performance Task	Other Evidence
How will you authentically assess students to determine if they have mastered the material? • Use of creative thinking skills • Construct and label an egg, along with chemical components • Create a brochure on the role of eggs in a nutritional diet for seniors. ***What criteria will you use to assess the levels of mastery?*** Teacher made rubric	***How will students reflect upon and self-assess their learning?*** Completion of construction and labeling of an egg, along with chemical components.

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LEARNING PLAN

Focus of the Week	Learning Activities	Assessments (Formal and Informal)
Week 1: Anatomy of an Egg	**Day 1:** Students observe, discuss, and test their predictions about eggs **Egg Observation Activity** – have all 5 types off eggs on display in classroom. Make students take out notebook and make silent observations on each egg. Encourage them to guess which type of egg each sample is… **Lecture Discussion**: Egg Science & Anatomy **Homework**: Reading assignment and Embryology worksheet **Day 2**: Egg lab I **Day 3**: Egg lab II begin lab report guidelines, sample report, graph requirements **Day 4**: Day to work on Lab Reports **Day 5**: Lab Reports are due. Lab Quiz, Lab Cleanup and overview of weekly concepts.	**Bell work**: "Egg Parts" worksheet is passed out and students must fill out as much as they know. Discuss with a partner. Ask students if they know what types of eggs they see Ask students what they think the science is behind poached eggs, boiled, scrambled, etc. Ask students questions during lecture to check for understanding. Include open discussion during lecture. All students will be graded and evaluated on their proficiency of all 5 eggs.

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Week 2: Chemical role of egg yolks vs. egg whites	**Matching Activity:** All students will be asked to stand up. One side of the room represents egg yolks, one side represents egg whites. Pictures of food products will be displayed on the board that are made with only egg whites, egg yolks or both. Students must go to the side they believe is correct. **Lecture Discussion**: Egg Science & the role of Egg yolks vs. Egg whites **Homework**: Reading assignment and worksheet about peaks and structures **Day 1**: Egg White lab. Separating egg whites. Create whip cream. Study role of cream of tarter, sugar and appropriate times to add them. Record Data and complete lab sheet in Lab Workbook on page 148-150. **Day 2**: Egg Yolk Lab. Study eggs role in custards. Prepare custards. **Day 3**: Go over lab data, work on Lab Reports. **Day 4**: Lab Reports are due. Lab Quiz, Lab Cleanup and overview of weekly concepts.	Ask students why they chose egg yolk vs. egg white vs. both. Ask questions during lecture. Bell work for the day is to answer post lab questions. Lab Report has questions about the lab that must be answered. Ask students if they have ever had macaroons before. Possibly have a sample for them to try.

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Week 3: Role of Eggs in Macaroon Science	Macaroon science article and video. Annotate the article for bell work. **Lecture Discussion**: The role of eggs in Macaroons and the science behind making the perfect macaroon. **Homework**: answer questions that go with the article. **Day 1**: Macaroon Lab. **Day 2**: Pass out review on Egg Unit. Go over lab data. Post Lab Quiz. Explain Lab Report Guidelines. **Day 3**: Processing Day. Lab Report time with chrome books 3rd period. **Day 4**: Lab Reports are due. "Eggzam" is on Tuesday. Go over exam review. Lab clean up day.	Post lab quiz will discuss concepts talked about and test the students' knowledge. Unit exam.