**Lesson plan**

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| **Lesson Title**  | FBI- Say wah? Food Borne Illness  |
| **Instructor** | Ms. Yesenia Alvarez |
| **Suggested grade level/course** | High School. Food prep I |
| **Time suggested** | 90 minute block |
| **National Standards addressed:*** State the entire standard, not just the number

**Objectives:*** State the informational and the instructional objective.
* What will students know and be able to do at the end of the lesson?
 | 8.2 Demonstrate food safety and sanitation procedures.8.2. 1 Identify characteristics of major food borne pathogens, their role in causing illness, foods involved in outbreaks and methods of prevention. The student will define food borne illness and pathogens. The student will give examples of common food borne illnesses.The student will determine symptoms associated with food borne illnesses.The student will examine out how food borne illnesses spread.The student will propose practices for handling food that can help prevent food borne illnesses.  |
| **Strategy and Rationale for the lesson:*** Why are you choosing this activity/strategies?
* How will this strategy help your students be successful with your objectives?
 | I am choosing this activity/ strategies because high school students are at a point in development where they seek independence. One way they do this is to try new foods and experiment with cooking. By not knowing how properly or handle food, they are at risk for endangering not only their wellbeing but those around them.  |
| **Concepts/ideas covered*** List/outline the major concepts/ideas of the lesson. What are the BIG IDEAS?
* Be sure to include CTE, academic, and 21st century knowledge and skills
 | **CTE 21ST century: Critical thinking ( STEM)** ***Food Borne Illness***: Food borne illness is carried or transmitted to humans by eating food that has been contaminated with an unwanted micro-organism. Bacteria, parasites and viruses are micro-organisms that can cause food borne illness or "food poisoning". Microbes and pathogens also describe the microorganisms that cause food borne illness. 12 most UNWANTED bacteria ( All information is on power point) 1. Campylobacter jejuni
2. Clostridium botulinum
3. Clostridium perfrigens
4. Escherichia coli O157:H7
5. Listeria Monocytogenes
6. Salmonella enteritidis
7. Salmonella typhimurium
8. Shigella
9. Staphylococcus aureus
10. Vibrio cholera
11. Vibrio vulnificus
12. Yersinia enterocolitica

***What Is required for bacteria growth:*** * **Time/ Temperature:** Under the right conditions, some bacteria can double their numbers within minutes and form toxins that cause illness within hours. To minimize bacterial growth in foods, it’s important to keep food temps below 40◦ F ( 4◦ C) or above 140◦F ( 60◦ C). The level in between this temperature is known as the Danger Zone.
* **Nutrients: Bacteria need many of the same nutrients as humans in order to thrive. (Glucose, amino acids, and some vitamins/minerals.) For example, bacteria grow rapidly in high protein foods like meat, poultry, eggs, dairy and seafood.**
* **pH:** Microorganisms thrive in a pH range above 4.6. That’s why acidic foods like vinegar and citrus juices are not favorable foods for pathogenic bacteria to grow; however, they may survive.
* **Moisture:** Most bacteria thrive in moist environments; they don’t grown on dry foods. That’s why dry foods like cereals can safely sit out at room temp.

**☼ Note:** *If dry foods like dry cereals or spices become contaminated from infected hands or equipment, bacteria can survive on the food and make people sick, but they can’t grow or multiply until the food is consumed.* ***The 4 C’s of Food Safety Control Bacteria:***1. **Cooking**: Kills bacteria by breaking down their cell walls and destroying enzymes, which they need to thrive.
2. **Chilling:** Slow down the bacteria’s metabolism, thus slowing their growth. Not only can bacteria grow to large numbers and make people sick, they can also spread everywhere. That’s where cleaning and combating contamination come in.
3. **Cleaning:** Removes bacteria from hands and surfaces.
4. **Combating Cross Contamination:** (Spreading foods)- prevents bacteria from spreading from one item to another
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| **Assessment:*** How will you know students can do the above?
 | Ticket out the door: Pass out sticky notes, on those sticky notes they are to pick one food after they have selected the food they are to pick a food borne illness that that food is mostly to attract if not properly cared for. Place it on the poster board/ designated area. The sticky note must contain the following: * Name of student
* One food
* A food borne illness

The note will serve as points for being in class and a way to check for understanding.  |
| Materials needed: | Sticky notes, computer, projector, white board, paper, markers/crayons. Glue sticks, scissors. 1.5 ml tube of 1ml distilled water or a 1.5 ml tube containing the diseased solution.  |
| **Procedure/activities**1. **The instructor will start off class with an exercise that will involve the whole class. Students will be asked to imaging they are at a restaurant and they will be ordering their favorite food. Then then the following will be asked:**
* **Think about your favorite food, in your groups discuss what their favorite food is.**

**Students will do this for about two minutes to discuss with them before sharing with the whole class.** * **Then ask a students to give you examples of their food and if they know how it is made ( ingredient wise)**

**Pick on one student and have them tell you. Write it on the board. Once written ask the class if there may be anything on the food that they perhaps didn’t order. This part will be done as a class. Hopefully, as student will realize its bacteria, if not keep dropping hints such as they are things we cannot see. Then that will be one of the BINGO moments.** 1. **A short power point will be given about the definitions of Food Borne Illness as well as microorganisms, and the 4 C’s.**
2. **Then the class will be divided into groups so that there are 12 groups total. Then a power point will be given out with information about their given unwanted bacteria. They are to answer the following questions about their bacteria: ( a worksheet with the questions)**
* **What does it need to thrive?**
* **What are the foods/sources associated with it and possible contaminants?**
* **What is an implicated illness?**
* **What is the incubation period for the illness?**
* **What is the duration of the symptoms?**
* **What steps for prevention?**
* **The groups will have 15 minutes to answer the questions of the worksheet.**
1. **After the groups have had 15 minutes to answer the questions, they will then be given a choice in how they would like to present their information to the class.**

**Option A: Poster** **Option B: Poem** **Option C: Song** **Option D: Skit** * **The students will have 20 minutes to complete their choice. They will have to include all of the information from their worksheet in their chosen option. They will then present to the class. Presentations can take no more than 5 minutes.**
* **A power point slide with information missing will be handed to each person in the group so that they can take notes.**
1. **The infectious disease will then take place. The student will interact with the students and know nothing about why they are doing this activity until the color change occurs. ( Instructions/ Activity sheet are attached)**
2. **Discussion will then occur about the point of the infectious disease, and perhaps what it means to food safety.**
3. **Then class will have a discussion about the rules for the class. They will name off some of the rules they would think would be necessary. The instructor would lead off by summarizing quickly about bacteria and how they spread and then give the class the floor to come up with rules.**

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| References and resources | <http://www.sciencedaily.com/articles/m/microorganism.htm><http://www.publichealthmdc.com/environmental/sfc/pdf_files/m15-foodborneillness.pdf><http://www.youtube.com/watch?v=1EkehFkhWf4> |

Include attachments of any handouts, assessments, and/or powerpoints, etc.