

Nutrition

CE Best Practice Session

BioBeat 5.1 -Nutrients, Biochemistry, Physiology, and Health (Pg. 225)

- Biochemical processes in animals drive function or physiology. If the biochemical processes do not proceed normally, the physiology is disturbed, and the result is dysfunction or illness. The essential vitamins all play a critical role in biochemical reactions, because they are essential structural components of enzymes as cofactors for enzymes (coenzymes). Recall that enzymes are required to catalyze many biochemical reactions in metabolism. If too much or too little of essential vitamins is consumed, the enzymes are compromised and deteriorate. You will note that deficiency and toxicity characteristics describe the changes in physiology. Many of the essential minerals also play biochemical roles, but many are required for the structure of tissue as well. The iron molecule required in hemoglobin is a good example of the structural role a mineral plays in a biological molecule. When iron is deficient, the blood has too little hemoglobin. Without sufficient hemoglobin in the blood cells, there is not enough oxygen-carrying capacity in the red blood cells, and the individual experiences iron-deficiency anemia.

Lisa Jeppson

- I start the beginning of the semester with an activity. 4 posters, each has a different question at the top: 1-What foods do you consider to be unhealthy? 2-What do you do for exercise? 3-What would make people become healthier by eating healthier and exercising more? 4-If it is unhealthy why do people overeat and not exercise? I put the class into 4 groups and each group has a marker. The posters are in 4 areas of the room and the group travels (with the marker) around the room--about 2 minutes each. They are to list as many things as they can without repeating previous answers.

Nutrition 1020

Interactive Notebook

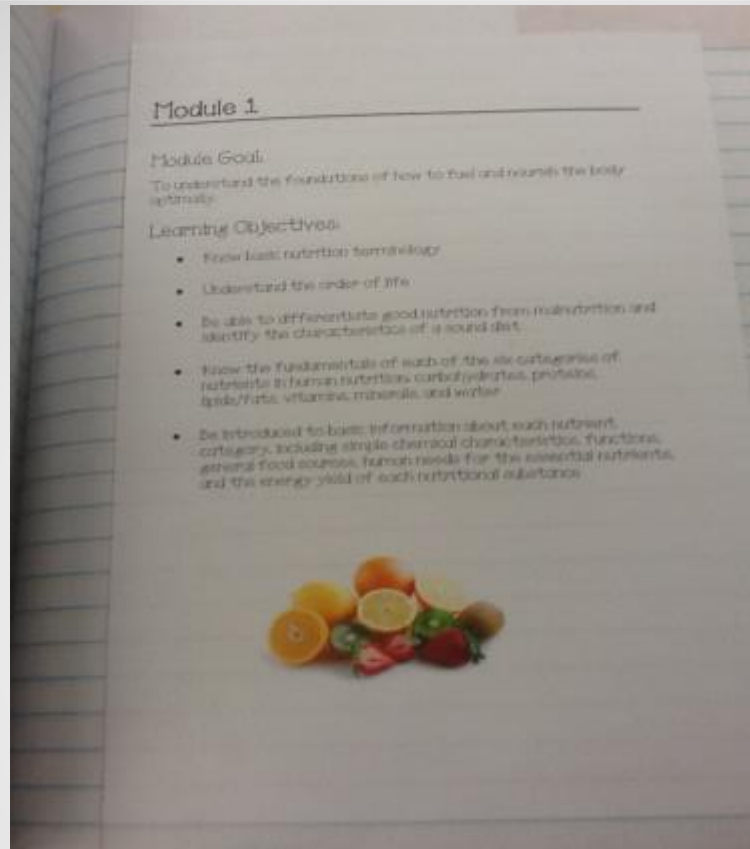
I apologize for not being here to present this in person. Here is a small sample. Most of these foldables I found using a Google search, die cut available at my school or the following website:

http://www.homeschoolshare.com/lapbooking_resources.php

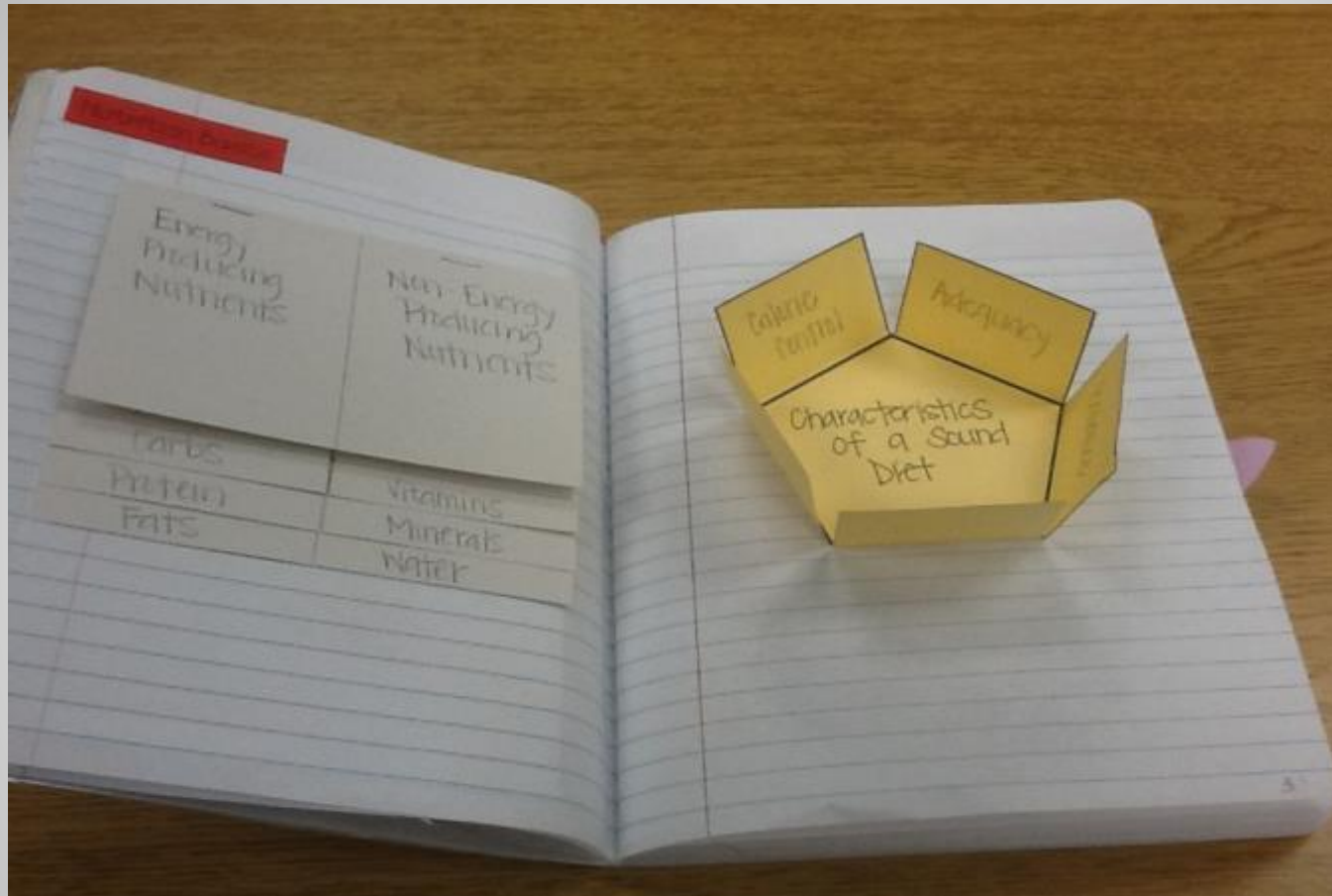
If you have any questions, please don't hesitate to contact me. I am happy to share what I have created.

Thanks!

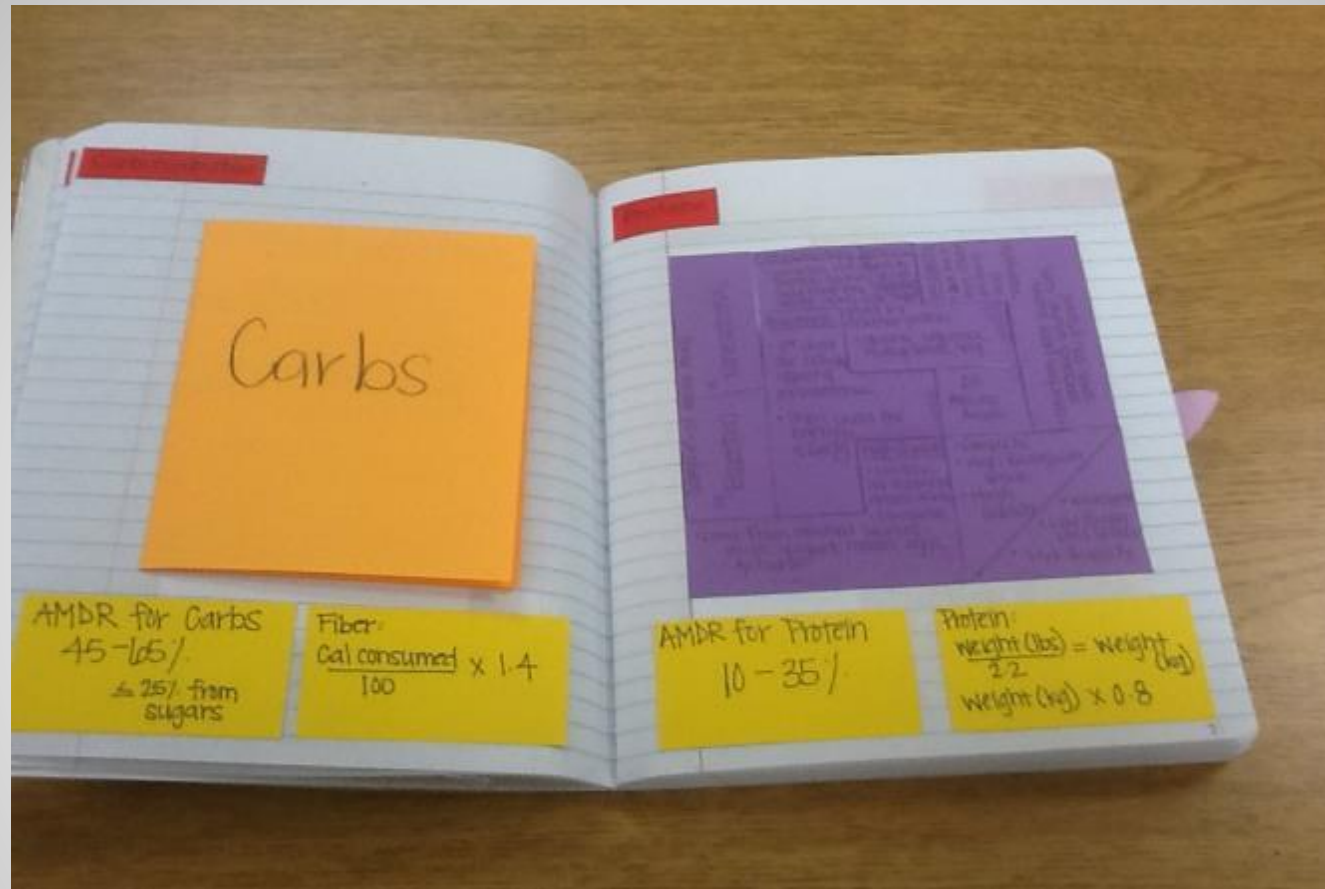
katherine.borgmeier@jordandistrict.org



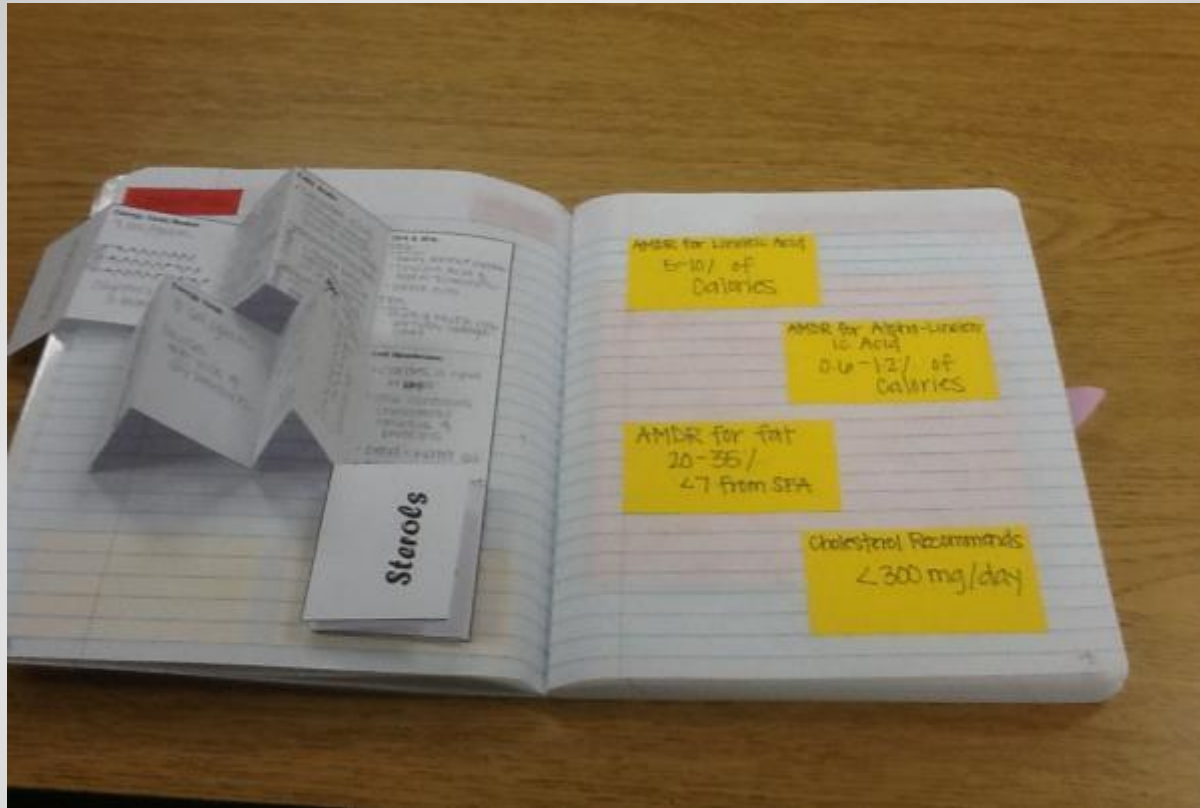
Every unit starts out with the Module Goal and Learning Objectives.



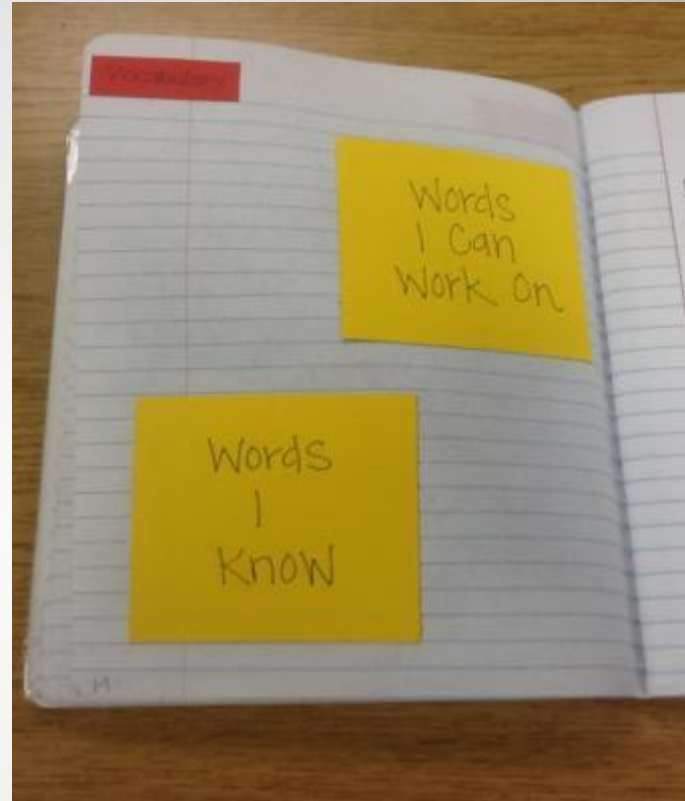
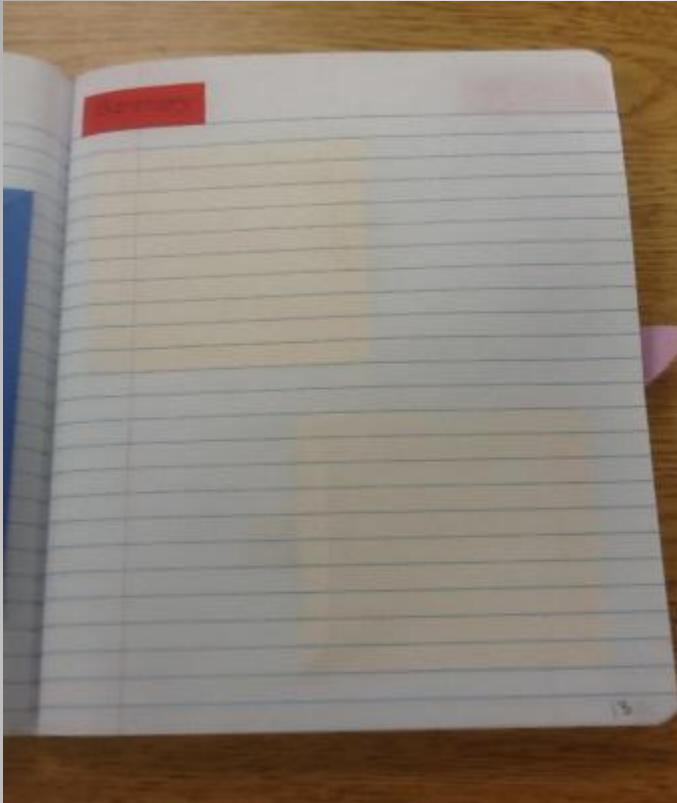
Module 1 Examples



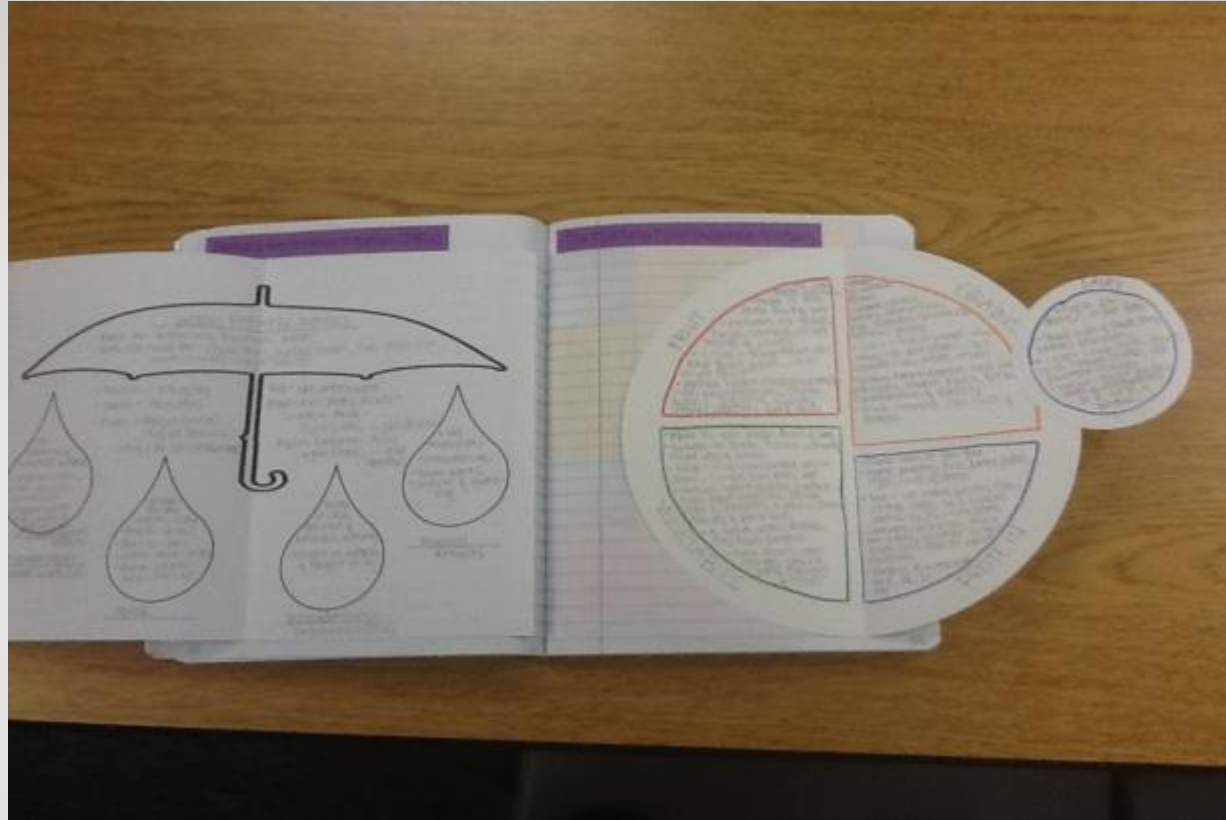
All of the important info to remember is on the yellow cards.



More from Module 1

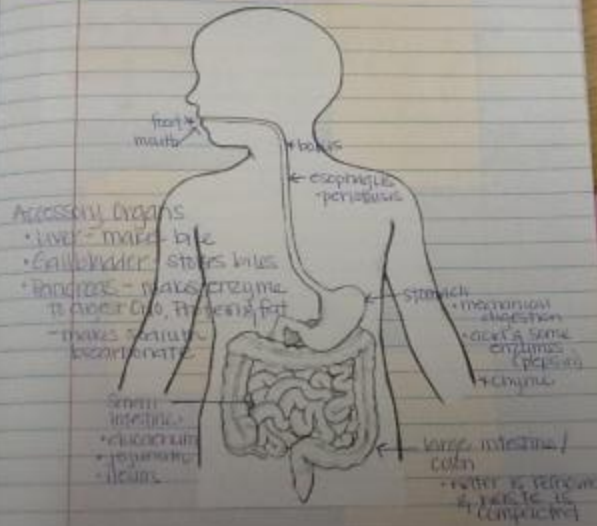


At the end of each unit is a place for student summary and vocabulary

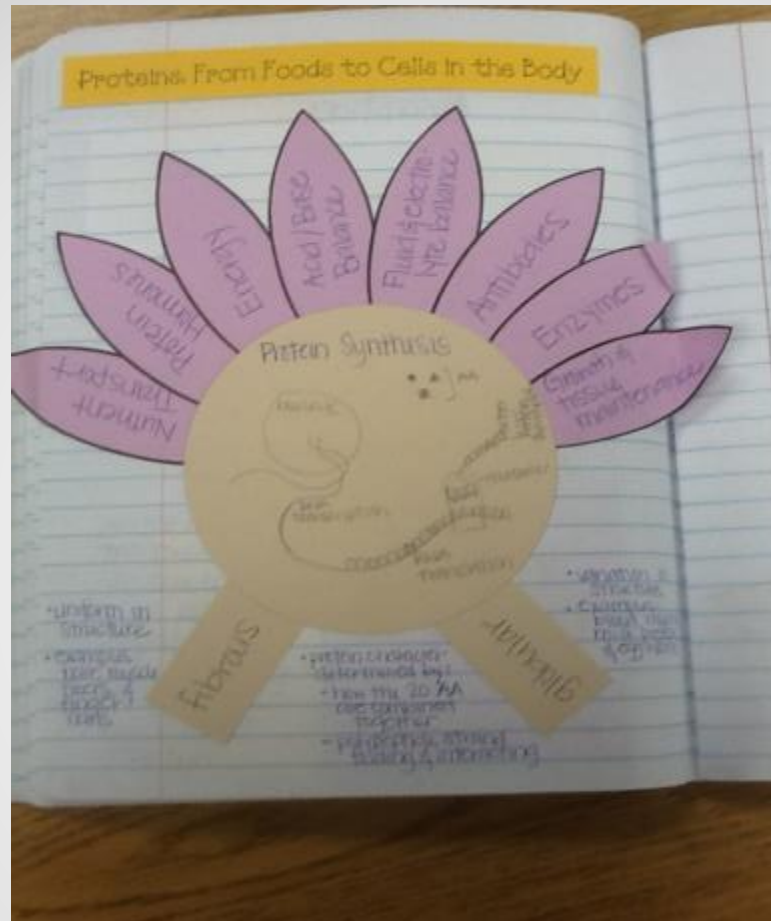


Other Examples – DRIs and MyPlate

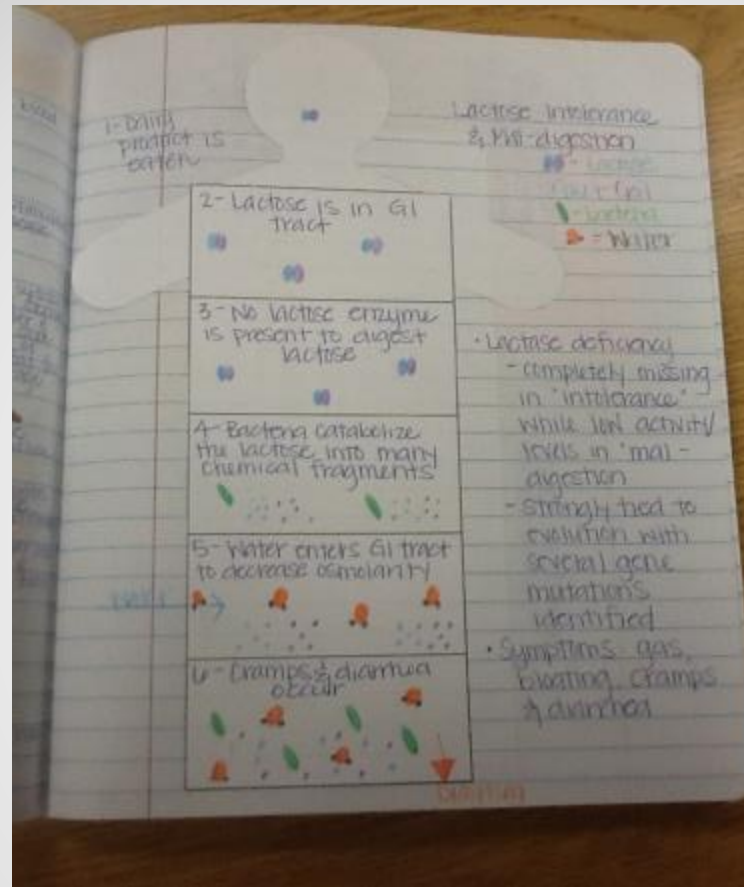
The Gastrointestinal System



Digestion



Protein Synthesis & Functions



Lactose Intolerance & Mal-digestion

For module 1

- Lisa Jeppson
- For the calories per gram carb-4 pro-4 fat-9 alco-7 I put them into groups and they have to come up with a skit, song, poem, acronym, something that helps them remember it. Then they perform for the class.

For module 1

- Jerrie Lin
- Carol and Ben made out viciously! == Calorie control, Adequacy, Balance, Moderation, Variety
- Monosaccharides (First Half of the alphabet) and Disaccharides (Second Half of the alphabet).'
- 1st Chemistry lesson = "ose" sugar, "ase" enzyme "ine" amino acid, "ol" alcohol
- 1st calculations = 10 labels (Figure calories from Fat, PRO, CHO / total calories/ Fiber DRI 105, 117, 137, 159, 183)
- 2nd calculations = 10 labels (figure calories from SFA, PRO, Sugar / Total calories/ Fiber DRI/ PRO DRI)
- H₂O Soluble Vitamin = relate to nutrients that are added back Bread products.

For module 1

- Fall Exam 1 --- Questions 11, 17, 33, 34, 48
- Spring Exam 1 ---- Questions 14, 43, 44

11. Dietary fat intake should be as low as possible for optimal health.

- ☐ True
- ☒ False

17. Soybeans provide a source of cholesterol and phospholipids.

- ☐ True
- ☒ False

33. Which of the following is an essential and inorganic nutrient?

- ☐ Linoleic acid
- ☐ Folic acid
- ☒ Iodine
- ☐ Cellulose
- ☐ Lecithin

34. Which of the following is an essential and organic nutrient?

- ☐ Cholesterol
- ☐ Oleic acid
- ☐ Manganese
- ☒ Thiamin
- ☐ Water

48. Which of the following answers includes only major minerals?

- ☐ Iron, zinc, and magnesium
- ☒ Sodium, potassium, and chloride
- ☐ Calcium, phosphorus, and selenium
- ☐ Magnesium, copper, and zinc
- ☐ Fluoride, iodine, and chromium

14. Vitamins can function in acid-base balance.

- ☐ True
- ☒ False

43. Which of the following answers includes three vitamins and one mineral?

- ☐ Thiamin, niacin, riboflavin, vitamin C
- ☐ Niacin, biotin, riboflavin, choline
- ☐ Thiamin, pantothenic acid, riboflavin, vitamin B6.
- ☐ Vitamin B12, vitamin E, vitamin C, biotin
- ☒ Folate, molybdenum, vitamin C, thiamin

44. Which of the following answers includes only trace minerals?

- ☐ Iron, zinc, and magnesium
- ☐ Sodium, potassium, and chloride
- ☐ Calcium, phosphorus, and selenium
- ☐ Magnesium, copper, and zinc
- ☒ Fluoride, iodine, and chromium

For module 2

- Lisa Jeppson
- I have lots and lots of food labels that we look at and do math with

For module 2

- Jerrie Lin
- Appendix C --- Have students highlight Headings (includes, servings, Health Benefits, Nutrients) important for Exam 4. Highlight the beta-carotene (pro-vitamin A and Vitamin C), Amounts bar.
- More calculations
- Vocabulary, pg 53, Health Claims by disease,
- Patterning practices using MyPlate and the Exchange List.
- Compare AHA, ACS, DG, MyPlate, Exchange List, and then use them analyze diet to find if it meets the recommendations.

For module 2

- Fall Exam 2 --- Questions 12, 23, 30, 31
- Spring Exam 2 --- Questions 19, 37, 43

12. Food composition tables and databases explain the biological function of nutrients.

☐

True

☒

False

23. MyPlate foods that may reduce neural tube defects _____.

☐

☒ refined grains

☐

fruits and vegetables

☐

empty Calorie foods

☐

dairy products

☐

oils

30. The Tolerable Upper Intake Levels (ULs) are:

☐

levels known to cause toxic reactions.

☒

☒ established for most essential vitamins and minerals.

☐

established for carbohydrate, protein, and fat.

☐

A and B

☐

A and C

31. The Dietary Reference Intakes (DRIs) are used for:

☐

food package label health claims.

☐

MyPlate patterning.

☐

Exchange Lists serving sizes.

☐

☒ dietary analysis.

☐

all of the above.

19. MyPlate foods that prevent neural tube defects:

- ☒ Whole grains
- ☐ Beans and peas
- ☐ Empty-Calorie foods
- ☐ Nonfat milk products
- ☐ Oils

37. The Dietary Guidelines are based upon:

- ☐ public demand.
- ☐ Dietary Reference Intakes.
- ☐ food manufacturers.
- ☒ scientific evidence.
- ☐ None of the above

41. Nutrition Facts: Extra Crunchy All Natural Peanut Butter

Serving Size 2 Tbsp. (32g)	
Servings Per Container 25	
Amount Per Serving	
Calories 190	Calories from Fat 130
	% Daily Value
Total Fat 16g	26%
Saturated Fat 3g	16%
<i>Trans</i> Fat 0g	
Cholesterol 0mg	0%
Sodium 130mg	5%
Total Carbohydrate 7g	2%
Dietary Fiber 2g	9%
Sugars 0g	
Protein 8g	
Vitamin A 0%	Vitamin C 0%
Calcium 0%	Iron 4%
Ingredients: Peanuts, sugar, vegetable oil, salt	

In terms of percent of Calories from fat, the peanut butter is a: (use the figure provided)

- ☒ high-fat food.
- ☐ moderately high-fat food.
- ☐ low-fat food.

For module 3

- Lisa Jeppson
- I show the magic school bus digestion episode--it's about 30 minutes
- Jerrie Lin
- Catabolic (Cat tears apart a mouse/ CAT machinery tears down a mountain) and Anabolic (aunt Bell gives you compliments to build up your confidence / Ant builds up and keeps building up his ant mountain.)



For module 3

- Fall Exam 3 --- Questions 26, 28, 31, 50
- Spring Exam 3 ---- Questions 6, 10, 24, 32,



26. Protein denaturation involves:
- ☐ anabolic reactions.
 - ☐ catabolic reactions.
 - ☒ neither anabolic nor catabolic reactions.

28. Glucagon promotes:
- ☐ anabolic reactions.
 - ☒ catabolic reactions.
 - ☐ neither anabolic nor catabolic reactions.

31. Muscle glycogen is used:
- ☐ to maintain blood glucose levels.
 - ☒ by the working muscle.
 - ☐ for the pancreas.
 - ☐ All of the above
 - ☐ None of the above

50. Which food in Scott's diet provides healthy fats? (see figure)
- ☐ Doughnut
 - ☐ Milk
 - ☐ Eggs
 - ☐ Ham/Spam
 - ☒ None of the above

6. Protein is synthesized according to the genetic code inside the nucleus of human cells.

☒ True

☐ False

10. Hypoglycemia is high blood sugar.

☐ True

☒ False

24. Transit time is:

☐ anabolic.

☐ catabolic.

☒ neither anabolic nor catabolic.

32. Omega-3 fatty acids are naturally found in abundance in:

☐ olive oil.

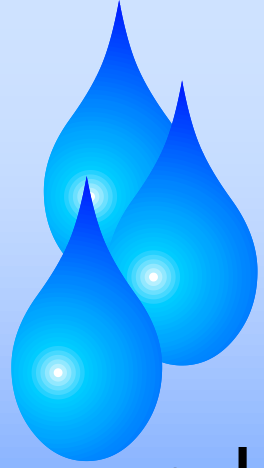
☐ fish oil.

☐ flaxseed oil.

☒ B and C

☐ A, B, and C





For module 4

- Lisa Jeppson
- I have my school website helps for exam 4. I also do the corn starch experiment I got from Lisa Gardner for hypothesis.

For module 5

- Lisa Jeppson
- I put them into groups and they make a poster about a vit/min. Their poster has to include name (other names), function, food sources (with pictures), deficiency symptoms, and toxicity symptoms. I then have them present in class and follow up with the PPT if anything was missed. Then we hang the posters up.



For module 5

- Jerrie Lin
- Vit/Min Presentation- The students have to read and watch the T-takes about their vit/min and then make a presentation including all the information from book and T-talks plus new information about their vit/min. The also bring a food item to share with the class that contains their vit/min. 4 days of food=yum!



For module 5

- Fall Exam 5 --- Questions 15, 26, 38
- Spring Exam 5 --- Questions 6, 10, 32



15. Metabolism can provide a source of water for the body.



True



False

26. The Dietary Reference Intake (DRI) for _____ is based on Calorie intake.



vitamin B6



riboflavin



iron



biotin



boron

38. Which of the following nutrients enhances the absorption of iron from the gastrointestinal tract?



Biotin



Vitamin C



Vitamin D



Calcium



Vitamin E



6. If someone does not eat adequate calcium, it is important for him/her to consume extra phosphorous to maintain bone density.

☐ True

☒ False

10. Pantothenic acid remains stable during food processing.

☐ True

☒ False

32. Which of the following is true regarding recommended vitamin and mineral intakes?

☐ Higher levels of fat-soluble vitamins are not harmful because the body utilizes them to absorb fat.

☐ Vitamins and minerals provide a minimal level of Calories too small to measure.

☒ Toxicities of water-soluble vitamins are short-lived as compared to those of fat-soluble vitamins.

☐ An inappropriate intake of water-soluble vitamins is not possible.

☐ Deficiencies of major minerals are more detrimental to health than deficiencies of trace minerals.



Module 6

- Lisa Jeppson
- I show the terrible but funny music videos about food safety from ucdavis.edu. "don't get sick with it" and "you better wash your hands"
-
- Jerrie Lin
- Show the Logan, Handling Food correctly video.

Module 6

- Fall Exam 6 --- Questions 2, 6, 12, 22
- Spring Exam 6 --- Questions 14, 18, 21, 38, 39,

2.

Food Label Nutrition Facts: Cheetos	
Serving size: 1 oz (28 grams, 21 pieces) Servings per container: 1	
Calories: 160 Calories from fat: 90	
	% Daily Value
Total Fat: 10 g	15%
Saturated fat: 2 g	10%
Trans fat: 0 g	
Cholesterol: <5 mg	0%
Sodium: 290 mg	12%
Total Carbohydrate: 15 g	5%
Dietary fiber: <1 g	0%
Sugars: 1 g	
Protein: 2 g	
Vitamin A	0%
Calcium	0%
Vitamin E	6%
Riboflavin	4%
Phosphorus	2%
Vitamin C	0%
Iron	2%
Thiamin	4%
Niacin	4%
Ingredients: Enriched corn meal (ferrous sulfate, niacin, thiamin mononitrate, riboflavin, and folic acid), vegetable oil (corn, soybean, or sunflower oil), whey, salt cheddar cheese (cultured milk, salt, enzymes), partially hydrogenated soybean oil, maltodextrin, disodium phosphate, sour cream (cultured cream, nonfat milk), artific flavor, monosodium glutamate, lactic acid, artificial colors (including FD&C yellow # and citric acid.	

- Which of the following statements is true regarding the protein in one ounce of Cheetos?
- ☒ It is from high and low biological value sources
 - ☐ It provides 18 Calories
 - ☐ It provides 14% of the Dietary Reference Intake (DRI) for protein for a 160 pound 23 year old male
 - ☐ Both A and C
 - ☐ A, B, and C

6.

Leo and June eat a processed food diet. Basically everything they eat is from a box, bag, can or container. They have been married for two years and they are trying to get pregnant. She has been through fertility tests and they all have come back normal. So now they are concerned with Leo's health. Leo has agreed to have a total health assessment including: diet analysis, body composition, lipid profile, blood glucose, and blood pressure in addition to seeking medical advice for male fertility. Meanwhile, June is reading up on fertility, diet, and health for both of them. Her sources of information include: Men's Magazine, the local newspaper, and the following websites: Diet-and-Health.net, healthfinder.gov, and eMaxHealth.com. As Leo had his 1-day diet analyzed, he noted that he took a Hungry Man frozen entrée out of the freezer to thaw at 7:30 AM. June opened it and warmed it up for him at 5:00 PM, but Leo didn't return home to eat it until 10:00 PM. Leo stated that he had gastrointestinal distress including cramps and diarrhea shortly after eating lunch that day. Then, within 45 minutes of eating his dinner, he had violent flu like symptoms that lasted 36 hours. Following are the results of Leo's total health assessment and diet analysis based upon a typical day of eating for him.			
Leo's Personal Information			
Gender: Male	Height: 5 feet 8 inches	Weight: 160 pounds	Blood Pressure: 141/91 mm Hg
Age: 23			
Activity level: Low (<30 minutes/day)	Blood Glucose: 115 mg/dl	Body Fat: 26.3%	Waist: 37 inches
Total Cholesterol: 253 mg/dl	LDL Cholesterol: 210 mg/dl	HDL Cholesterol: 43 mg/dl	Triglycerides: 131 mg/dl
Leo's One-Day Diet for a processed food eating style			
7:00 AM Breakfast: 2 brown sugar and cinnamon pop tarts and 16 fluid ounces Tang orange fruit punch.			
10:00 AM Snack: 1 Hostess cup cake and 1 ounce mixed nuts.			
1:00 PM Lunch: 2 cups milk-based canned tomato soup, 2½ cups macaroni and cheese, 1 ounce Cheetos curls, and 16 fluid ounces Tang orange fruit punch.			
10:00 PM Dinner: 1 Hungry Man Salisbury steak frozen dinner and 16 fluid ounces water.			
Leo's Diet Analysis Results			
<i>His Estimated Energy Requirement (EER) is 2797 Calories</i>			
Digestible Carbohydrate: 392 gm Sugar: 167 gm Fiber: 20.4 gm Protein: 91 gm	Fat: 131 gm Saturated: 48 gm Monounsaturated: 40 gm Polyunsaturated: 18 gm Linoleic: 6.2 gm Alpha-linolenic: 0.4 gm Cholesterol: 166 mg	Thiamin: 1.54 mg Riboflavin: 2.7 mg Niacin: 31 mg Vitamin B ₆ : 1.75 mg Vitamin B ₁₂ : 0.91 µg Folate: 59 µg Vitamin C: 379 mg Vitamin D: 0.0 µg Vitamin A: 2090 µg Vitamin E: 15.03 mg	Calcium: 1,479 mg Phosphorus: 1,787 mg Iron: 20 mg Magnesium: 207 mg Potassium: 1,755 mg Zinc: 7.0 mg Sodium: 6,083 mg

- Which statement below is true regarding Leo's fiber intake and need?
- ☐ It was adequate; he needed 20 grams
 - ☐ It was inadequate; he needed 38 grams
 - ☐ It was inadequate; he needed 39 grams
 - ☒ It was deficient; he needed 44 grams
 - ☐ It was excessive; he needed 15 grams

Leo and June eat a processed food diet. Basically everything they have been married for two years and they are trying to get pregnant. They all have come back normal. So now they are concerned with health assessment including; diet analysis, body composition, lipid addition to seeking medical advice for male fertility. Meanwhile, Leo for both of them. Her sources of information include: Men's Mag websites: Diet-and-Health.net, healthfinder.gov, and eMaxHealth noted that he took a Hungry Man frozen entrée out of the freezer, warmed it up for him at 5:00 PM, but Leo didn't return home to gastrointestinal distress including cramps and diarrhea shortly after minutes of eating his dinner, he had violent flu like symptoms that Leo's total health assessment and diet analysis based upon a type

Leo's Personal Information

Gender: Male	Height: 5 feet 8 inches	Weight: 175 lb
Age: 23		
Activity level: Low (<30 minutes/day)	Blood Glucose: 115 mg/dl	Body Mass Index: 24.5
Total Cholesterol: 253 mg/dl	LDL Cholesterol: 210 mg/dl	HDL Cholesterol: 43 mg/dl

Leo's One-Day Diet for a processed food eating style

7:00 AM Breakfast: 2 brown sugar and cinnamon pop tarts and

10:00 AM Snack: 1 Hostess cup cake and

1:00 PM Lunch: 2 cups milk-based canned

curds, and 16 fluid ounces Tang orange fruit

10:00 PM Dinner: 1 Hungry Man Salisbury

Leo's Diet Analysis Results

His Estimated Energy Requirement (EER) is

Digestible Carbohydrate: 392 gm	Fat: 131 gm
Sugar: 167 gm	Saturated: 48 gm
Fiber: 20.4 gm	Monounsaturated: 52 gm
Protein: 91 gm	Polyunsaturated: 10 gm
	Linoleic: 6.2 gm
	Alpha-linolenic: 0.5 gm
	Cholesterol: 115 mg

6. Which statement below is true regarding Leo's fiber intake and need?

☐ It was adequate; he needed 20 grams

☐ It was inadequate; he needed 38 grams

☐ It was inadequate; he needed 39 grams

☒ It was deficient; he needed 44 grams

☐ It was excessive; he needed 15 grams

12.

Leo should add _____ to his diet to improve his intake of soluble fiber.

☐ Oatmeal

☐ Apples

☐ Bran flakes

☒ A and B

☐ A, B, and C

22. Which of the following statements is false regarding Leo's energy balance and body composition?

☐ He has 23.3% stored fat mass

☐ He is in positive energy balance

☐ He has normal weight for his height yet he is fat

☒ His waist circumference puts him at risk for type 2 diabetes

☐ His specific dynamic action (SDA) of food for this day is 156-311 Calories

14.

Jack and Jill are health-minded students. They are both vegans. They attend Hatha yoga (slow paced with stretching and meditation) classes for an hour three times a week. Jill read an article in the Yoga Times, written by the Head Yogie at their gym. He quoted the local nutritionist who is an advocate for the Cabbage Cleanse diet. The Cabbage Cleanse process assures that most of the toxins in the body can escape within 24 hours, and there is a 25% reduced risk for developing colon cancer within the next two months. This article was provided as information, but did not cite any peer-reviewed articles. The results of Jack's health assessment and diet analysis are provided below.

Jack's Personal Information (blood values determined when he was fasting)			
Gender: Male	Height: 5 feet 9 inches	Weight: 173 pounds	Blood Pressure: 148/92 mm Hg
Age: 19			
Activity level: Low (<30 minutes/day)	Blood Glucose: 137 mg/dl	% Body Fat: 18%	Waist: 41 inches
Total Cholesterol: 199 mg/dl	LDL Cholesterol: 140 mg/dl	HDL Cholesterol: 35 mg/dl	Triglycerides: 250 mg/dl

Jack's One-Day Diet for a vegan eating style

Breakfast: 16 fluid ounces apple juice, 1 cup oatmeal, 2 tablespoons brown sugar, and 2 servings tofu scrambler.

Lunch: 1 cup kidney beans, ¼ cup cashews, ¼ cup dried cranberries, 1.5 ounces banana chips, 2 servings white and wild rice, 1 serving soybean curd cheese, and 12 fluid diet soda.

Dinner: 1 tofu burger, 2 cups pan fried white potatoes (prepared from a frozen package), 2 tablespoons oil olive, 1 wheat bun, 1 dill pickle, 1 cup tofutti frutti non-dairy dessert, and 32 fluid ounces water.

Jack's Diet Analysis Results

His Estimated Energy Requirement for Calories is 2916

Digestible Carbohydrate: 442 g (Including Sugar: 132 g)	Thiamin: 1.86 mg	Calcium: 1,005 mg
Fiber: 45 g	Riboflavin: 1.2 mg	Phosphorus: 709 mg
Fat: 107 g	Niacin: 19.7 mg	Iron: 34.6 mg
Saturated: 36 g	Vitamin B ₆ : 1.5 mg	Magnesium: 836 mg
Monounsaturated: 52 g	Vitamin B ₁₂ : 0.9 µg	Potassium: 3307 mg
Polyunsaturated: 19 g	Folate: 224 µg	Zinc: 9.5 mg
Linoleic: 16 g	Vitamin C: 45 mg	Sodium: 5538 mg
Alpha-linolenic: 3 g	Vitamin D: 0.0 µg	
Cholesterol: 0 mg	Vitamin A: 446 µg	
Protein: 83 g	Vitamin E: 7.4 mg	

About two hours after Jack ate dinner, his blood lipids increased. Which of the following lipoprotein fractions most significantly increased?

- ☐ VLDL
- ☐ LDL
- ☐ HDL
- ☐ IDL
- ☒ Chylomicron

18. Jack's Resting Energy Expenditure (REE) is 1437 Calories.
How many Calories did he burn doing Hatha yoga for one hour?

- ☒ 90
- ☐ 60
- ☐ 150
- ☐ 187
- ☐ 203

21. Jack expends energy in which three categories?

- ☐ REE, BMR, PA
- ☒ BMR, PA, SDA
- ☐ Protein, carbohydrate, fat
- ☐ Metabolism, energy, outlook
- ☐ Nutrigenomics, genetics, environment

38. Pellagra is a disease caused by a deficiency of _____.

- ☐ riboflavin
- ☐ thiamin
- ☒ niacin
- ☐ selenium
- ☐ Molybdenum

39. Zinc deficiency is characterized by:

- ☐ mental retardation.
- ☒ delayed sexual maturation.
- ☐ goiter.
- ☐ excessive urination.
- ☐ hyper-metabolism.



End of Semester:

- Lisa Jeppson
- Then at the end of the semester if I have time and money I do a food lab--which food is healthier? I usually do canned pears (light and heavy syrup), chips (regular, baked, kettle), jerky (beef and turkey), popcorn (94% fatfree and butter), peanuts (honey roasted and salted). The point of this is to discuss what it means to be healthy--that depends on what your definition of healthy is--what is your purpose? are you watching calories, additives, sodium, fiber, protein, types of fat? So when people say something is healthy--you have to question what they mean by that. It also helps the students really look the food label because they always think honey roasted peanuts has more calories than the salted peanuts but because of the honey (4 cal/g) it has less (fat has 9 cal/g). It's a nice way to end the semester because they get to eat.



- Jerrie Lin – videos