

Chapter 2 Reading Guide and Supplemental Lectures

Reading Guide Questions:

1. Describe adequacy, moderation, balance and variety as they relate to diet.
2. Go into some detail in describing the term “nutrient density.”
3. List the components of a typical food label.
4. List the components of the “Nutrition Facts” part of a food label. Which vitamins and minerals are required to be listed?
5. Generally describe “DV” and “RDI.” Compare the DV for iron with the RDAs (this is different than RDI) for iron. Using that comparison, explain how you think the DVs/RDIs are derived.
6. Using the box on page 51, specifically calculate the % DV for Calcium (Ca²⁺) and Iron (Fe²⁺)
7. Define the following terms:
 - a. Reduced/fewer kcalories
 - b. Low kcalorie, low sodium, low cholesterol, low fat
 - c. Organic
 - d. Fat free, cholesterol free, trans-fat free
 - e. High fiber
8. The following is the nutrition information from a jar of peanut butter. Read it and answer the questions that follow. For more help with reading/analyzing food labels, see the “Nutrition Label Activity” boxes on pg. 156, 200, and 244.

Serving size	2 tablespoons
Kcalories	190
Fat kcals	130
Total fat	16 g
Saturated fat	3 g
Trans fat	0g
Cholesterol	0 g
Sodium	150 mg
Carbohydrates	7 g
Dietary fiber	2 g
Sugars	3 g
Protein	8 g
Iron	4 % DV
Vitamin E	10 % DV
Riboflavin	2% DV
Niacin	20% DV
* not a significant source of vitamin A, C or calcium	

- a. What percent of the total kcals come from fat?
- b. What percent of the total FAT grams come from saturated fat?
- c. What percent of the total FAT kcals come from saturated fat?

- d. What percent of the total kcals come from carbohydrates?
 - e. What percent of the carbohydrates are composed of fiber? (see required link about reading food labels for more info)
 - f. What percent of the total kcals come from protein?
 - g. Why do you think vitamins E and niacin are listed, even though they are not required to be listed by law?
 - h. Approximately how many mg of niacin are provided by one serving of this peanut butter?
9. What's the difference between "enriched" and "fortified?"
10. Describe one serving of, and list the "food pyramid" recommendations for (be sure to reference figure 2.5):
- a. Grains
 - b. Vegetables
 - c. Fruits
 - d. Meat and beans
 - e. Dairy
11. Briefly compare and contrast food pyramids from different countries, and the Healthy Eating Pyramid from Harvard. Describe the Mediterranean diet.
12. Summarize the information from pp. 66-68.
13. What are some problems with the current food pyramid? Be sure to visit the required link to Harvard's "building food pyramids" for more detail.
14. What are grains? Legumes? Nuts? Seeds? Vegetables? Fruits? Provide an example of each.
15. Discuss how eating out can be a risky prospect in terms of maintaining a healthful diet. What can you do to make the most healthful choices at a restaurant?
16. The ingredients list of a product lists hydrogenated oil. The nutrition panel says "Trans Fat: 0g." Does this product have any trans fat? Explain.
17. A product advertises "fat free," but lists soybean oil as an ingredient. Oil is a fat. If you ate 4 servings of this product, how much fat might you actually be ingesting? Explain.
18. What are phytochemicals? Can you get them from steak? Chicken? Beans?

Supplemental Material

I. A note on "nutrient density"

1. One day I hope to write a best-selling diet book called the "nutrient-dense diet." This is really what nutritionists have been getting at for quite a while: eat foods that are loaded with vitamins, minerals and (when appropriate) phytochemicals, fiber and good fats, relative to their calorie content. That is, high nutrition, low kcalorie. What's included in the nutrient dense diet? Vegetables, fruits, beans (all legumes), whole grain products, lean and healthfully raised meats, low fat dairy from healthfully raised cows, eggs, nuts and vegetable oils. All of the above are chock full of good stuff with relatively few kcals. Okay, nuts and oils do have a lot of kcals, but they are **LOADED** with good stuff, especially the nuts.

What's NOT included in the nutrient-dense diet? For example: white breads, white rice, white pasta, potatoes without skin, candy, soda, sugary cereal, most desserts, pastries, potato chips, energy bars (these are essentially vitamin supplements soaked in sugar and Metamucil).

2. So, the “nutrient dense” diet is a whole foods diet. Here is a guide for identifying whole foods:

a. **Identifying whole grains-** First, a grain is technically the seed of a grass plant (including wheat, barley, etc). So nuts, beans and other seeds (flax) are not technically GRAINS, but they are still extremely healthful. More on them later. Grains are seeds with a baby plant (where most of the vitamins/minerals are), a protective outer coat (where most of the fiber and many vitamins/minerals are), and food for the baby plant (where almost all of the starch is but hardly any other nutrients). Refined grains separate the starch component and throw out the healthiest parts: the baby plant and the outer covering. Whole grains keep the entire seed intact. Eating whole grain products is associated with all sorts of health benefits, as we will see over and over throughout the quarter. However, it's not always easy to identify whole grain products: First, grains that are in seed form and/or rolled, ground, or chopped are whole. Oatmeal is an example; even instant! Wheat berries, corn (including popcorn!), and quinoa are further examples. But polished grains in seed form are NOT whole; the most common example is white rice.

Flours are made when grains are ground into very fine pieces. Most of the flours used today are made from wheat seeds that have had the most nutritious parts removed (the baby plant and outer covering) so that only the starch... which is sugar as far as your body is concerned... remains. When you are looking for products made with whole grain flours, for example pasta, bread and cereal, look for the word “whole” in front of the grain. If you don't see the word “whole,” it is likely not to be whole (exceptions: oats are always whole, kamut and emmer are usually whole, amaranth is usually whole, corn is usually whole).

When choosing products, such as breads and pastas, look for grains that come from the top part of the following table. Many products “trick” you into thinking they are whole but are actually a mix (mostly refined flour plus a little whole flour). Use this table to help identify what is whole and what is not whole.

Here's a list of common grains and how to identify if whole:

Whole Grain: these all retain the entire grain	Grain	Grain Flour	Notes
	Wheat berries, cracked wheat, bulgur	Whole wheat flour, Whole white wheat flour	There are two common varieties of wheat, hard (red) and soft (white). WHOLE white wheat flour is just as nutritious as whole red wheat flour.
	Brown rice	Brown rice flour	
	Corn kernels, corn on the cob, popcorn	Corn meal, corn flour, masa, polenta	
	Oats, steel cut oats, rolled oats, instant oatmeal	Oat flour	
	Wild rice		
	Buckwheat, buckwheat groats, kasha	Buckwheat flour	
	Spelt	Whole spelt flour	
	Quinoa		
	Barley, hulled barley	Whole barley flour	
	Rye	Whole rye flour	
	Millet	Millet flour, whole millet flour	
	Kamut	Kamut flour (from my research, this appears to always be whole)	
Mostly whole grain or beneficial part of grain intact	Grain		Notes
	Wheat bran, wheat germ		Bran has a lot of fiber, germ has a lot of nutrients
	Pearled barley		Just a little bit of the bran (outer covering) is missing; overall, most of the whole grain is retained
Refined; not whole	Grain	Grain Flour	Notes
	Degerminated corn	Degerminated corn flour, corn starch	
		Wheat flour, enriched flour, durum, semolina	
		Spelt flour	
	White rice	Rice flour, rice noodles	

b. Identifying other whole foods:

i. Seeds and nuts- these are always whole, even ground into **flours** or **butters**. Examples: flax, sunflower, pumpkin, sesame; almonds, walnuts, coconut, peanuts (which are actually legumes).

ii. Legumes- these are generally whole, even ground into **flours** and **spreads**. Examples: beans, lentils, chickpeas, peas. Soybeans and peanuts are also legumes. Soy is often heavily processed; I and others are suspicious of heavily processed soy products. Soy flour, tofu and tempeh are tried and true.

iii. Fruits- fruits, **dried** fruits and fruit **purees** are whole. Make sure to eat edible peels, this is where most of the antioxidants are concentrated. Fruit juices and concentrated fruit juices are not whole.

iv. Vegetables- whole; even dried or ground

v. Eggs, milk, cream, butter and meats- can be considered whole, but we will talk a lot about how to choose and how much to eat throughout the class; generally, organic/pastured/free range are important for your health, the animals' health, and the environment's health

vi. Oils- not really whole, but can be wholesome. Preferred oils are olive, canola, avocado; then, **VARIETY** is important. Other than three listed above, try to use different types of vegetable oils; sometimes peanut, sometimes walnut, sometimes safflower, etc. We'll see why later.

c. Identifying sugars: here is a list of ingredients that are essentially sugar.

Sugars with no extra nutritional value	Sugars with a small amount of nutrients/antioxidants; and/or is absorbed more slowly; and/or processing is better for the environment: these are preferred, but still sugar!!!
Sucrose, glucose, dextrose, fructose, lactose, levulose	Molasses
Corn syrup, corn syrup solids, high fructose corn syrup	Honey
Malted anything; malt; maltodextrin	Maple syrup
Rice syrup	Concentrated fruit juice, fruit juice
Sugar, brown sugar, powdered sugar, confectioner's sugar	Agave syrup
Cane juice, evaporated cane juice	Turbinado sugar
	Brown rice syrup
	Barley malt
	Date sugar
	Sucanat

d. What to avoid: hydrogenated oils, shortenings/margarines, high fructose corn syrup (still being debated, but alternatives are often superior for other reasons, so why not go for the alternatives), anything with lots of sugar, soybean oil (because we get so much of it in so many products... it's not BAD like hydrogenated oils, just too much of one thing).

e. What to be suspicious of: anything with long lists of hard-to-pronounce ingredients, including vitamins and minerals (this indicates the food may be highly refined/processed so needs added vitamins/minerals); anything with artificial sweeteners (aspartame, sucralose, acesulfame **K**, etc); artificial food colors; anything with a description of mechanical manipulation to an ingredient, though this takes some learning to discover what is "good" processing, and what may not be so good.

II. **A little botany: What ARE the plant foods we eat?**

1. **Vegetables:** the non-reproductive parts of plants, including leaves (ex, kale), stems (ex, celery), roots (ex, carrots), tubers (ex, potatoes) and unopened flowers (ex, broccoli, capers). Flower petals are also vegetables; some examples of edible flowers are Nasturtium and Calendula.
2. **Fruits:** specialized parts of flowering plants that are typically designed to attract animals, so that the animals can help the plant disperse its seed. Fruits hold seeds. The usual pathway is that the animal eats the fruit, seed and all, and the seeds go through the animal undigested. Then they come out the other end of the animal, and get deposited in a nice fertile heap of warm soil. It gives the seed a nice head start. So... what about peppers and tomatoes? Are they fruits or vegetables? Well, do they have seeds? Yep, they do: they are fruits!
3. **Seeds-** the plant version of an egg. A seed contains a baby plant plus nutrients to feed it for the beginning of its life. Plants don't really want us to eat their seeds, they want us to help distribute them. But, seeds are highly nutritious and delicious so we often do eat them. Examples of edible seeds are sunflower seeds and pumpkin seeds. Oh, by the way, is a pumpkin a fruit or a vegetable (does it have seeds?)?
4. **Grains, beans and nuts-** these are seeds that are held by an inedible fruit. They do not rely on animals to eat the fruit to disperse the seeds.
 - i. Grains are the seeds of grasses (ex, wheat, corn, rye).
 - ii. Beans are the seeds of legumes, which produce seeds in pods. Some other examples of legumes are lentils, peanuts and soybeans.
 - iii. Nuts are the seeds of certain trees. Examples include almonds, pecans and walnuts. The hard part you crack open is essentially the modified (but inedible) fruit.

III. **Another reason to choose whole grain products and eat plenty of beans, fruits and vegetables: fiber.** Fiber makes you feel fuller, and doesn't have any calories! In addition, fiber is not absorbed (that is, it cannot be broken into small enough pieces to get into your blood). That's good,

because fiber keeps your digestive tract moving things along nicely AND it drags cholesterol out with it, right into the toilet! So, eating plenty of fiber helps reduce your blood cholesterol.

- IV. I just want to be really clear about the ingredients list on food labels:** ingredients are listed in descending order by weight. That means the first ingredient listed is the **MOST** abundant, and the last ingredient listed is the **LEAST** abundant. If you're trying to compare, for example, cereals, pay very close attention to the first five ingredients or so.
- V. A note on fortification of certain foods:** some foods, especially cereals, are so heavily fortified that they are essentially delivering a vitamin/mineral pill. Check your cereal to see if it is fortified and if so, how much of each of the nutrients it provides. You may want to adjust the amount/type of supplement pills that you take. At best, you could be wasting money. At worst, you could be taking in too many of certain vitamins/minerals.
- VI. Introduction to *trans* fats:** *trans* fat is made when vegetable oil is processed in such a way that it changes from a liquid to a more solid form. This process is called hydrogenation. Shortening and traditional margarine are both hydrogenated vegetable oils. It turns out that *trans* fat is absolutely the worst type of fat in terms of putting you at risk for heart disease, stroke, and so forth. Think you don't eat *trans* fat? Do you eat fried food at restaurants? Oreos? Baked goods from the grocery store/restaurants? Then you are probably eating *trans* fats.

A product can legally claim "trans fat free" or list "0 grams trans fats" if it contains .5 g or less **PER SERVING**. So, if a manufacturer makes a serving size small enough, they can claim the product contains no *trans* fat. However, **ANY PRODUCT WITH HYDROGENATED OIL CONTAINS TRANS FAT**. So, rather than looking at the nutrition panel to determine if there is *trans* fat, look at the ingredients list. Here's an example: the primary ingredient in Crisco is hydrogenated oil. The nutrition panel lists "0 g *trans* fat." A serving size is 1 Tablespoon. So potentially, if you're making a pie crust that contains 1 cup of Crisco (12 tablespoons), there could be 6 grams of *trans* fat. If you divide the pie into 6-8 pieces, you're getting almost 1 g. Nobody knows how much is "safe" to ingest in a sitting, day, week, or life. So... if a product lists hydrogenated oil, look for an alternate product.