After going through this lesson, you will be able to:

- Recognize the benefits of eating breakfast, meal planning, making a grocery list, grocery shopping regularly, preparing food at home, and packing healthy food with you;
- Identify and practice healthy cooking methods;
- Interpret the nutritional value of foods using Nutrition Facts labels and ingredients lists;
- Recognize signs of food spoilage and strategies for preventing food waste; and
- Recall important food safety practices.

Just beginning to think about what you’re going to eat and when you’re going to eat it is a step toward a healthier diet.

Unfortunately, eating often becomes an afterthought; many people grab whatever they can while rushing from one thing to the next or after getting to the point of extreme hunger because they’ve gone for too long without eating. Planning ahead can help us avoid putting ourselves in those predicaments. We can provide ourselves with regular and healthy meals and snacks so that we keep our bodies fueled with the energy they need to function at their best, of course while still being mindful of and honoring our hunger cues. Yes, it can take a bit of effort to plan ahead up front, but it actually saves time in the long run, and the benefits are well worth the effort. Note that we’re not suggesting you think about food all the time. Planning ahead can actually help you to avoid having to think about it too much.

Food is Fuel

Video Transcript

Mark: How can my diet affect my energy level throughout the day?
Jacob: It affects it a lot.
Food is Fuel Transcript Continued…

Samantha: If you eat something that’s really heavy, you’re just going to feel really dull and slow-witted, whereas if you eat something that’s healthy and light, you’ll probably want to go out and exercise or go out and have fun and do something that’s actually you know, more energetic.

Sigin: If you don’t get sufficient nutrition into your body, you are going to be very, very—I mean, you’re going to feel it. You’re going to be tired, you’re going to be drowsy, you’re not going to be able to focus in a lot of your courses, and you just need all of that in your body in order to live.

Annie: I definitely notice that if I skip breakfast, my whole day is just down the drain, because I don’t have enough energy to make it through the day and I don’t want to get to the rec center that evening. So I think what I eat each day helps me continue with energy and makes myself more vibrant to other people, and I’m not cranky. So, I think eating is really important.

Dianne Neumark-Sztainer: Starting off the day with breakfast can protect against weight gain. And then continuing throughout the day with reasonable portion sizes with lots of fruits and vegetables, eating a bit of everything, not overly restricting any types of foods, and paying attention to what your body is telling you.

Mark Pereira: Consume regular meal patterns. In other words, decent breakfast, lunch, and dinner, and maybe a couple of healthy snacks that might help you control your appetite throughout the day. Breakfast is thought of as the most important meal of the day, and sometimes we just come back to what our grandmothers and great-grandmothers have been telling us, and we do research on it, and lo and behold it turns out to be true. And these are things like: eat your whole grains, eat your oatmeal, eat your breakfast. So we’ve done a lot of research on this topic over the past several years, and it turns out to be potentially really, really helpful. Because if you start the day with a healthy breakfast, you’re less likely to overeat or binge later in the day on the vast food environment that offers us highly processed junk food at very low cost.

Do you feel like eating when you first wake up?

Some people are famished, while others are less excited about putting anything in their stomachs right away in the morning. A group of researchers led by Carol O’Neil did a comprehensive review of the literature confirming the many benefits of eating a healthy breakfast.¹

It stimulates your brain and enhances cognitive function.² ³ ⁴ It also jump-starts metabolism. After eating, your body must work to digest and absorb the food, which in turn stimulates the body’s metabolism to use the ingested nutrients in order to accomplish various bodily functions. In a controlled lab intervention
study, eating breakfast led to higher resting energy expenditure compared to skipping breakfast, and skipping breakfast made participants feel more hungry and have a greater desire to eat between breakfast and lunch.5

Eating breakfast is associated with better overall diet quality, including a greater total intake of essential nutrients like fiber; vitamins A, D, and C; calcium, potassium, folate, iron, and magnesium throughout the day. People who eat breakfast also consume less added sugars, saturated fatty acids, solid fats, cholesterol, and sodium than people who skip breakfast.1,6 Further, eating breakfast may play a role in weight management and help reduce the risk of cardiovascular disease and type 2 diabetes.1,7,8,9,10,11 Lastly, eating breakfast contributes to feelings of wellbeing with positive effects on stress and mood.1

To reap the benefits of breakfast, eat something within a couple hours of waking up, even if it’s small and on the go. It doesn’t have to consist of traditional American breakfast foods, and you can keep it simple and quick. You could have leftovers from the night before if you want. What’s important is eating something—ideally something nutritionally balanced. Aim to include nutrient dense choices from at least three food groups, including a source of protein, if you can.

Some healthy breakfast ideas include:

- Whole grain cereal, oatmeal, or steel cut oats with fruit, nuts, and milk or yogurt
- Scrambled eggs, black beans, or tofu with veggies or chunky salsa and perhaps some cheese in a whole grain tortilla
- Milk or yogurt blended with berries—and perhaps even some spinach, cucumber, or other veggies—into a smoothie
- Leftover brown rice, quinoa, or other whole grain with milk or yogurt, fruit, nuts, and cinnamon or with beans and veggies

The possibilities are endless. Get creative and eat a good breakfast that will help get you going.
Snacking often gets a bad rap, but that's undeserved.

As long as they don’t contribute to excessive total daily calorie intake, healthy snacks between meals can be beneficial by preventing us from getting over-hungry, which can make us more likely to overeat or grab relatively unhealthy things just because they’re quick and even more tempting when we’re really hungry.

Consider children: they may eat breakfast, a morning snack, lunch, an afternoon snack, then dinner, and maybe even a bedtime snack. Since their stomachs are so small, they fill up fast. If left alone with their impulses, their natural feelings of hunger and satiety guide them in terms of how much to eat. Children are generally excellent self-regulators, except when it comes to candy. However, when adults encourage children to eat more or everything on their plates, they begin to lose sight of their own sense of hunger and fullness.

It’s generally not a good idea to let long periods of time pass without consuming food. Most nutrition experts recommend that we eat every few hours while awake, or four to five meals and snacks throughout the day. Now, of course, we’re not recommending that you eat a three-course meal every three hours, but if you feel hungry or have low energy, having a snack is not a bad idea. Think of this as putting gas in a car: most of us would pay attention to the gas gauge and fill the car up before being left stranded on the highway with no fuel. Why not plan ahead for your own body’s fuel as well by keeping healthy snacks available for when you need them?

Also note that eating significant calories during the evening or nighttime hours has been associated with obesity. So, it’s especially important to choose foods wisely if you eat late at night. Meat lovers pizza or a hamburger and fries isn’t the best bed-time snack. Nutrient dense whole foods are good choices.
A bowl of low-sugar, whole grain cereal with milk would be fine, and it might even help you sleep by increasing the amount of tryptophan in your blood.\textsuperscript{14}

**Fruits and vegetables can be some of the most healthy and portable snacks.**

Often, all you have to do with fresh produce is wash it, and maybe peel it. Apples, oranges, bananas, grapes, pears, tomatoes, carrots, celery, peppers, cucumbers, snap peas, and other fruits and vegetables are all quick and easy nutrient dense snacks. It’s a good idea to pair them with a healthy source of protein, such as nuts, nut butter, hummus, or dairy products such as string cheese, cottage cheese, or yogurt.

Nuts, while relatively high in fat, are very nutrient dense. They provide quite a bit of protein, fiber, and other essential nutrients. Additionally, the fat they provide is largely unsaturated, so it’s the healthy fat that our bodies need. Nuts are easy to take with you, too. Just try to select ones that are unsalted, and be mindful of your portion size.

Dry cereals can make a good snack as long as you choose those that are relatively high in fiber and low in added sugar. Again, it’s a good idea to pair something like this with a protein-rich food.

If you’re craving something like chips, note that baked versions are generally lower in calories than original versions and therefore a better option. Regardless, they’re not nutrient dense, so it’s best to eat a small portion and avoid eating them every day. Popcorn is a relatively good choice, as it’s a whole grain, but beware of microwave popcorn that is high in hydrogenated oil. Plain, air-popped popcorn is healthier. Use the nutrition facts labels and ingredients lists to compare similar food products.

**Resources**

- List of Healthy Granola Bars
- List of Healthy Cereals
- Food Scores Tool (over 80,000 products rated on their nutrition, ingredients, and processing)
**Food Tips Video**

*Video transcript*

Carlene: Obviously if you plan to eat it, and you have it for you, like you buy it ahead of time, it's a lot easier. But, if you don't plan and have it set up, then you're just like, "Oh man, I really wish I could have an apple, but I guess these potato chips will do, because I don't have that."

Ellery: Make meals at night before you go to bed to bring to school if you can't get healthy meals at school.

Jon: It's easier to go get a burger real quick than having to go home and make a sandwich or make a lunch for yourself, but lately I've been doing that, and it's been definitely really beneficial, at least in the way I feel, and the food itself actually tastes better.

Ryan: One of the best ways to improve your diet is to limit fast food to maybe once or twice a week. Other than that, try and make food at your apartment or dorm room, or make healthy choices when you're at a cafeteria.

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**Most if not all of us eat meals away from home at least some of the time.**

Delis and fast-food restaurants can provide convenient options, and for those of you who live on campus, eating in a dining hall is probably the norm. Consider the following strategies for making healthy choices when you’re away from home:

- Avoid buffets and salad bars, or be selective about what you choose from them and mindful of your fullness cues.
- Drink water; it’s better for you than other beverages, and it’s usually free.
- More often than not, avoid fried foods; limit French fries, fried chicken fingers, fried fish, and the like. Broiled or steamed foods are healthier choices.
- Order smaller sizes; supersizing is not a bargain if you’re just getting unnecessary calories.
- Limit the use of sauces and toppings, which are often high in sugar, sodium, or unhealthy fats. Order dressings, sauces, mayo, sour cream, and other condiments on the side so that you can decide how much to put on your food. Also, try to limit how often you choose foods prepared in cream- or cheese-based sauces.
- Choose a salad, vegetables, or fruit as the side to your entrée in place of fries or chips.
- Taste your food before adding salt; it’s probably salty enough already. If you’re craving added flavor, try black pepper instead.
• Split an entrée with someone or take part of it home for another meal later.
• If you’re eating pizza, consider ordering extra veggies, thin crust, and lean meat like chicken.
• If having dessert, split it with others at your table.

Remember to always keep the big picture in mind. If you make nutrient dense food choices most of the time, you’ll have room for energy dense meals or snacks on occasion. Also recall that part of eating mindfully is honoring your cravings; it’s OK to choose what sounds good to you, even if there may be a healthier option available. Just try to practice the BASICS of mindful eating; savor your food.

**Community Resources:**
University Dining Services

**Resources**
Portion Distortion Quiz
Tasting Mindfulness BASICS of Mindful Eating

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**Large Portions**

**Video Transcript**
Mark Pereira: It’s relatively common to go to a restaurant or a fast food, or a gas station, and be able to, for a dollar or two, get a very large portion of some kind of a soft drink or energy drink, and consume 500, 600, 700 calories in a matter of 20 minutes. And for the average young adult with a moderately active lifestyle, the energy requirements for a normal bodyweight and healthy function are approximately 2,500 calories per day. And if you’re going to go to some of these fast food places, and really get the large portion sizes and very dense with fat and sugar, you can easily consume one half or more of your entire daily energy needs in a matter of 15 minutes.

Dianne Neumark-Sztainer: We are surrounded by large portions of food. Within the dormitories there are many options for good foods at the meals, but there is a lot of food. If you’re on your own, and you’re going out to eat, you may choose to go to a fast food restaurant, because that’s cheaper, but again, you’ll be presented with large portions of food, that are often high in calories and low in nutrients. And all of this leads us to—can lead us to overeat, and can take us away from paying attention to what our body is actually telling us.
A recent study of over 12,000 people found that those who ate at fast food and full-service restaurants consumed more calories, sodium, saturated fat, and sugar compared to those who didn’t.\textsuperscript{15} Home food preparation is generally less expensive than eating out, too. For example, one study found that the average cost per calorie of food from fast food restaurants and other convenience stores was 24% higher than the cost of healthy foods from local supermarkets.\textsuperscript{16} In other words, it pays to make your own meals. Furthermore, when you prepare your own food, you get to exercise your preferences, freedom, values, and creative energy. You’re not limited by a restaurant’s options; you get to choose which ingredients to use and where the food comes from, how the food is prepared, and how much to put on your plate. You can apply what you’re learning with regards to nutritionally balanced meals and provide your body with the variety of nutrients that it needs to function optimally.

Cooking can feel intimidating to many, but it really isn't all that difficult and can be a lot of fun, particularly if done with friends, roommates, or family members. It can be a way to disconnect from other things on your mind, too. Cooking is a skill that improves with practice.

**Joy of Cooking**

**Video Transcripts**

Ellery: I think it’s fun to create different things and to eat what I make. I enjoy that.

Tonya: It’s just fun. I don’t know. It’s fun to throw a bunch of stuff together and see what you can get out of it. I like going with recipes and like following the recipe when I have, I guess, big elaborate recipes. When I have more time, I try to do those. I don’t know, I just like the whole cooking process.

Jon: I really enjoy the fact of knowing what I’m putting in my food, and it’s fun because you can do whatever you want.

Nathaniel: You can cook a food to taste the way you want it to.
Joy of Cooking Video Transcripts Cont’d…
Mark: It’s nice to have a home-cooked meal instead of all these fast, processed things that we get nowadays. And you get to feel like you’ve accomplished something, and it’s nice to be able to have that skill, to cook something good for yourself and for others.
Lydia: It’s relaxing. Mostly for the smell. Because you can just inhale food cooking, and that’s sustenance itself.
Jessica: It’s relaxing, I think. It’s just time to think and do something that isn’t so demanding of my time or effort or anything.

There are many methods for cooking in healthy ways.
The basics include:
• Using a variety of whole, nutrient dense ingredients
• Using healthy fats such as olive or canola oil
• Using spices and herbs to enhance flavor while minimizing salt and unhealthy sauces or condiments
• Using healthy cooking methods such as steaming, stir-frying, sautéing, roasting, and baking
• Not cooking foods in aluminum foil, because the heat can cause aluminum to leach into the food17
• Not charring meat when grilling18
• Draining ground meat in a strainer and rinsing it under hot water after browning it to remove excess fat.
• Steaming vegetables just until they become soft; overcooking them can cause loss of some of the nutrients.
• Substituting healthier versions of fat, flour, and sugar in recipes when you can.
• Substituting one cup of applesauce for one cup of butter or oil in muffin and bread recipes.

Worried that you don’t have all the tools you’ll need? It really doesn’t take much to get started. You don’t need a lot fancy kitchen gadgets to make wonderful meals, and you don’t need to spend a lot of money, either. Stick to the basics, such as a good knife, cutting board, and skillet, and consider buying things gently used or mentioning kitchen equipment you’d like if friends or family members ask for gift ideas.

To see these strategies in action, learn even more tips, and get a variety of quick and healthy meal ideas and recipes, check out the resources below as well as the “Cooking Demo Videos” lesson.
Community Resources:
UMTC Course FScN 2002: Cooking on a Student’s Budget

Resources
Cooking Fats 101: What’s a Smoke Point and Why Does it Matter?
Tips for Cooking with Fats and Oils
USDA Mixing Bowl: Recipes, Cookbooks, and Menus
Healthy Cooking for One or Two
Information about Grilling and Cancer and Tips to Decrease Risk
Is charring meat on the grill a cancer danger? (includes tips to decrease risk)
American Heart Association: Common Terminology for Healthy Cooking
Learn To Cook
The Kitchn’s Cooking School
Recommended Kitchen Equipment

Get Cooking: Student Audience
Video Transcript
Tonya: Cooking doesn’t take really that long, if you think about it. It might look like it takes forever, but it doesn’t really take that long.
Mark: A lot of people think it’s harder than it is. If you just take a simple recipe and just follow the steps, you can get through it pretty quickly and pretty easily.
Cianneh: Just try, and you can get better at it.
Rob: Start with something simple, something— a food that you like to eat that if you mess it up a little bit, it won’t be a big deal.
Jamee: I think that it’s always worth trying kind of like food. You never know if you’ll like food until you try it. So I think they should definitely try. Definitely have somebody else cook with you too, maybe who really likes cooking. Because I know my dad really likes cooking, and that makes me like cooking more, too.
Leo: There’s a ton of resources you could use if you don’t know how to cook. Just, it’s basically just tons of recipes you could look up online.
Nathaniel: Find a cookbook that has the type of food you like, and start doing it.

Of course, if you’re going to prepare your food at home and either eat it there or pack it to take with you, then you need to go grocery shopping!
This can’t be emphasized enough: make a list before you go to the store—regardless of how often you need to go or how much or little you plan to purchase. Blocking off a bit of time to plan a menu for the week and preparing a grocery list according to that plan will actually save you time in the long run; your shopping will be efficient and you’ll save yourself subsequent trips to the
store or market, not to mention you won’t waste time or stress wondering what you’re going to have for dinner. Sticking to your list will also help you avoid impulse buying, which can really add up at the checkout register. However, consider allowing yourself to buy a new item each time you go to the store to expand your palate and introduce more variety into your diet.

Keep in mind that your planning doesn’t need to be anything elaborate; it could be as simple as identifying one or two meals you’ll make for the week and noting their ingredients on your grocery list, along with your weekly staples, such as eggs and produce. Perhaps it would be helpful to create an overall framework that you can personalize with different recipes each week, for example meatless Mondays, taco or Mexican Tuesdays, breakfast-for-dinner Wednesdays, Italian Thursdays, fish Fridays, and the like. You don’t necessarily need to cook every day; you can make a couple meals one day and eat the leftovers throughout the week. Also, consider preparing multiple things when you have some extra time and freezing them in individual servings to rely on when you have a particularly busy week; this tends to work well with things like soup or casseroles.

If getting to a grocery store regularly is of concern—whether due to location, time, or both—you may want to consider a grocery delivery service. The delivery fee is usually pretty minimal as long as a spending minimum is met, and you may not actually have a hard time meeting the minimum, particularly if you can go in on an order with some roommates or neighbors.

For tips on how to make healthy choices as you navigate the grocery aisles, check out the “Grocery Store Tour” lesson.

**Community Resources**
CobornsDelivers.com

**Resources**
31 Crock-Pot Freezer Meals for Back-to-School
How To Make Freezer Meals
Shopping Tips

Video Transcripts
Jon: Don't go when you're hungry, or else you might just buy something that your appetite wants.
Tonya: Make a list and stick to your list. Don't go in, get the stuff you need plus extra, because then that's when it gets you.
Sabe: Have something on your refrigerator that shows, you know, the kind of food that you need, and then make your list from that. You'll save time, and you'll get what you need.
Brian: Don't always go for the brand names.
James: Look for the best deals, look for coupons, but also you know, look for what you need.
Nathaniel: Just kind of have a system of where you go in the store first, kind of do it in a series.
Kaitlin: Start around the perimeter of the store where they have the fresh fruits, the fresh meat, the dairy, that sort of stuff, and then go towards the center where all the processed food is.
Jon: There's a lot of little hidden things, so learn how to read a food label, and just allow yourself an extra 15 minutes in the store you know, so you can actually do that, and then you benefit from it.

Google Form: Favorite meal planning
Return to page 16 of the online lessons or share your favorite meal planning tips, tools, apps and resources with your classmates directly in this survey.

The Nutrition Facts label for an item can provide a good snapshot of the nutrient density of that food.
Remember that a food is considered to be nutrient dense if it provides a good amount of nutrients relative to the calories it provides. For instance, if a label tells you that the food provides ample amounts of fiber, protein, vitamins A and C, iron, and calcium, and it is fairly low or moderate in calories, then it's probably nutrient dense.

Many times, people choose to just look at the fat content of a food. This can be informative, but also misleading. Not all low-fat and fat-free foods are nutrient dense. For example, jelly beans contain no fat, but they contain a high amount of simple sugar and not much else of nutritional value. They are not a nutrient dense food. This doesn’t mean that jelly beans are bad; it just means that
they're something you probably don't want to be in the habit of eating every day.

The point here? Read the whole label to get the best snapshot of any given food product.

**Nutrition Facts**

Serving Size 1 cup (228g)
Servings Per Container 2
Amount Per Serving

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<tr>
<th>Calories</th>
<th>2,000</th>
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<tbody>
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<tr>
<td>Sat Fat</td>
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<tr>
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<tr>
<td>Dietary Fiber</td>
<td>25g</td>
<td>30g</td>
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*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

Let’s cover some basics about the **Nutrition Facts label.** First, the information on the chart is per serving. So, it’s important to see what the serving size is and then figure out your intake from there. For instance, if you eat an entire box of macaroni and cheese and the nutrition label says there are four servings in the
box, you'll need to multiply all of the information by four. That can be an eye-opener.

Second, the **percent daily values** on a nutrition facts label are based upon a 2000-calorie-a-day diet. Your calorie needs may be higher or lower than that. Thus, focusing on the actual nutrient amounts on the left side of the label—as opposed to the percent daily values on the right side—might make more sense for you personally. If you do use percent daily values as a guide, any amount listed as 5% or less is generally considered low, while any amount listed as 20% or more is considered high.

Finally, it’s generally a good idea to choose items that are relatively low in sugars, saturated fat, trans fat, cholesterol, and sodium but high in fiber and protein.

Note that you can find nutrition facts for many foods online, which can be helpful when planning what you want to purchase before you actually go to the store or when you want to know the nutritional information for a food that doesn’t come in a package.

**Resources**

- **Personal Calorie Estimator:**
- **Food-A-Pedia Nutrition Facts for over 8,000 Foods**
- **SELF Nutrition Data Database**
- **Resources for Understanding and Using Nutrition Facts Labels**
- **FDA’s Tips for How to Understand and Use the Nutrition Facts Label**
- **American Heart Association’s Tips for Understanding Food Nutrition Labels**
Check out the labels on this page for an example on nutrient density.
The first label is for 245 grams of fruit-flavored low-fat yogurt, and the second is for 245 grams of plain low-fat yogurt. Compare the nutrients on each label.

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<thead>
<tr>
<th>Yogurt, fruit, low fat, 10 grams protein per 8 ounce¹</th>
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<tr>
<td><strong>Nutrition Facts</strong></td>
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<tr>
<td>Protein 11g</td>
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<table>
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Which yogurt is more nutrient dense? Both yogurts provide relatively the same amount of vitamin A, vitamin C, iron, sodium, total fat, and saturated fat, but the plain yogurt is higher in protein and calcium and lower in calories and sugar. In fact, there’s quite a large difference between the sugar in the plain yogurt—17 grams—and the sugar in the fruit-flavored yogurt—47 grams. Given that we want to limit sugar and maximize our consumption of other nutrients such as protein and calcium, the plain yogurt is clearly the more nutrient dense choice in this case. Also note that vanilla yogurt, while better than the fruit-flavored version, is still quite high in sugar, with 34 grams.¹⁹
If plain yogurt doesn’t sound very appealing, keep in mind that you can sweeten it yourself and still consume less overall sugar compared to pre-sweetened yogurt. For example, a tablespoon of maple syrup would add 12 grams of sugar or a tablespoon of honey, 17 grams, and a ½ cup of strawberries four grams. Plus, the real fruit adds fiber and other beneficial nutrients.

Finally, note that Greek yogurt is a great option compared to other yogurts because it’s much higher in protein.

**Resources**

Food Label Quiz

**In addition to the Nutrition Facts label, the ingredient list is a great source of information about a food product.**

Note that, according to federal regulations, foods that contain .5 g or less of trans fat per serving can actually report their trans fat content as 0 on the food label. Thus, it is possible to find foods that claim to be trans fat free when they’re really not. Any food that has partially hydrogenated or hydrogenated oils in the ingredient list contains trans fat. So, try to minimize your consumption of foods with these ingredients.

Similarly, reading the ingredient list will help you determine what types of carbohydrates the food contains. The recommendation is to minimize intake of simple sugars and maximize intake of complex carbohydrates. High fructose corn syrup is a concentrated simple sugar used as a sweetener in many food and beverage products. Thus, if high fructose corn syrup is on the ingredients list, be mindful of how much of that food or beverage you’re consuming, or perhaps choose something else that’s not so high in simple sugar.

One last but very important note on ingredient lists: ingredients are listed in order of prevalence from most to least. If sugar, high fructose corn syrup, hydrogenated or partially hydrogenated oil, artificial flavorings or colors, or things you can’t even pronounce appear near the top of an ingredient list, you might want to investigate that product a bit more before you buy it. Generally speaking: the shorter the list the better.
You may have heard the hype about local foods and sustainable agriculture. What’s it all about? Produce that is grown locally is typically allowed to come to peak ripeness on the plant, which maximizes the food’s nutritional value. Locally grown fruits and vegetables are likely to be eaten during the typical growing season, and in-season foods tend to be cheaper, fresher, and better tasting. Unlike produce that is shipped across the country or world, locally grown food can end up on your plate in less than 24 hours from when it was harvested. On the other hand, food that has to travel 1500 miles, for example, may take up to several weeks from the time of being harvested to being on the grocery shelf, where it may be on display for several days before purchase. Nutrient loss naturally occurs during this time. For example, vitamin C begins to degrade immediately after harvest. So, from a nutritional standpoint, the sooner you can consume fresh fruits and vegetables after harvest and purchase, the better. Additionally, many people choose to buy local food due to its impact on the environment; buying locally reduces greenhouse gas emissions and atmosphere pollution that comes from shipping fruits and vegetables over long distances.

Farmer’s markets, food co-ops, community supported agriculture programs (CSAs), and community gardens are great places to find locally grown foods.

It’s also worth noting here that frozen and canned produce is generally processed when it’s at its peak ripeness, which is also when it’s at its peak nutritional value, so canned and frozen fruits and vegetables are great options.
Some people are concerned that adding chemicals to our food, water, and land has unintended health consequences.

An organic food is produced without pesticides or chemical fertilizer and has not been genetically modified in a laboratory. Although we still have a lot to learn about the connection between organic food and health, many people are choosing to reduce their consumption of non-organic foods. However, organic food can sometimes cost more than non-organic food, and it has not been consistently or clearly demonstrated by research that organic produce is better nutritionally. If you want to eat organic, for whatever reason, but are on a limited food budget, consider buying organic versions of the fruits and vegetables listed below – called the “Dirty Dozen.” U.S. researchers have found conventional versions of these to have the highest levels of pesticide residue on them. Then, don’t worry too much about buying organic versions of other foods, particularly those that have low levels of pesticide residue. Also keep in mind that, just because a food product is made of organic ingredients, doesn’t mean it’s necessarily good for you. For example, an organic pastry is still a pastry, and likely loaded with added sugars, unhealthy fats, and other ingredients that offer little in terms of real nutritional value.

The “Dirty Dozen” includes:

- Peaches
- Apples
- Sweet Bell Peppers
- Celery
- Nectarines
- Strawberries
- Cherries
- Pears
- Imported Grapes
- Spinach
- Lettuce
- Potatoes
In 2015, the Environmental Working Group added hot peppers and kale and collard greens to this list, now referred to as the “Dirty Dozen Plus.”

Conversely, the fruits and vegetables that have been found to have the lowest levels of pesticide residue—referred to as the “Clean Fifteen”—are:

- Sweet Corn
- Pineapples
- Avocado
- Asparagus
- Sweet peas
- Mangoes
- Eggplant
- Cantaloupe
- Kiwi
- Cabbage
- Watermelon
- Sweet potatoes
- Grapefruit
- Mushrooms
- Cauliflower
- Onions
- Papayas

It may not be as important to buy organic versions of these, depending on your personal values and priorities.

**Resources**
- Environmental Working Group’s Shopper’s Guide to Produce [Video]
- Environmental Working Group’s Full List
- Environmental Working Group’s Dirty Dozen list
- Environmental Working Group’s Clean Fifteen list
- The Dirty Dozen Plus: 14 Foods You Should Buy Organic – Slideshow
- Organic Food – Is ‘Natural’ Worth the Extra Cost?
- Buying Organic Food is Worth it Harvard School of Public Health Professor Says
- How Can I Wash Pesticides from Fruits and Veggies?

**Food safety deserves some attention here.**

Food poisoning and food-borne illness outbreaks continue to be an important public health concern. Our food is more processed than ever before, and it’s often shipped long distances and stored for relatively long periods of time before being consumed. Do you have your own garden? Do you raise your own cows, chickens, or pigs? Most of us don’t, and that’s OK, but it does mean that
we need to be careful with the food that we purchase and consume. Who has time to be sick? Following the simple guidelines on the next few pages will help you reduce your risk of food poisoning.

When you’re shopping:
- Don’t purchase canned foods if the can is dented.
- Avoid buying unpasteurized milk, juices, or other products, raw or partially cooked eggs or foods containing raw eggs, and raw sprouts.
- Choose dairy, deli, meat, and frozen items last, regardless of how the grocery store is set up.
- Separate raw meat, poultry, and seafood from other foods in the grocery cart.
- Use hand sanitizer after handling raw meat packages and wash your hands when you get home from the store.

At home, store food safely.
- Set your refrigerator temperature at 40 degrees Fahrenheit or lower. Your freezer temperature should be below 0 degrees.
- Store raw meat, poultry, and seafood on a plate or in a dish on the bottom shelf of the refrigerator so that juices don’t drip onto other foods.
- Refrigerate or freeze leftovers within two hours.

Note that manufacturers indicate “use by” and “best by” dates to tell consumers how long food products are likely to remain at their best quality, but these dates are not safety ratings. Therefore, many foods are still fine to eat beyond the “use by” or “best by” date—just be sure to smell and examine the food first. If you think the food has gone bad or spoiled, compost it. The following are some signs that may indicate a food has spoiled.

- The food smells sour or foul.
- The color of the food has changed or the color isn’t uniform—there are spots or pockets that are a different color.
- There is white, green, black, or blue growth on the food or on the lid of the food container.
- Meats have turned sticky or slimy, faded or darkened in color, or emit a bad odor.
- Produce has become wilted, mushy, or slimy.
- Milk has the consistency of yogurt or emits a bad odor.
In the U.S., approximately 13% of greenhouse gases, which are linked with global climate change, are associated with growing, manufacturing, transporting, and disposing of food.\textsuperscript{30}

Additionally, approximately 40% of food gets wasted somewhere along the production line. Unfortunately, most of this food waste ends up in landfills, where it produces methane gas, a greenhouse gas 21 times the global warming potential of carbon dioxide.\textsuperscript{30} Take a moment to think of how much food waste—banana peels, coffee grounds, veggie skins, uneaten food, etc.—gets added to the garbage each day. There are things each of us can do to reduce food waste and have a positive effect on the environment. When purchasing food, we can avoid impulse buys and buy only what we need and will consume before it spoils. At home, we can focus on eating leftovers—for example, designating one dinner each week as a “use-it-up meal” can be a helpful strategy—storing food better, such as using airtight containers, and using all parts of the food, such as broccoli stems along with the florets, when cooking. Any food left uneaten can be composted, which is a great way to recover food waste, restore soil structure, and reduce air and water pollution.

Resources
U.S. Environmental Protection Agency
Food Recovery Challenge, US EPA
29 Smart and Easy Tips to Reduce Food Waste
Food Storage Tips (so that it lasts longer and less gets wasted)
Food Storage Tips (quick reference)
The Role Food Waste Plays in Climate Change

When you’re preparing your own food:
• Wash your hands in hot soapy water before you get started.
• Scrub fresh produce—organic or not—briskly with your hands or a brush under clean, running water to remove dirt and surface microorganisms, then dry after washing. Avoid using dish soap to wash your produce; oddly enough this can actually make germs and pesticides more likely to stick to the surface, and it can seep into the pores of the produce.\textsuperscript{31}
• Wash your hands and cutting boards, knives, utensils, and counter
tops with hot soapy water after preparing each food item and
before going onto the next one to avoid cross-contamination.
• Thaw food in the refrigerator, in an airtight package under cold
running water, or in the microwave. Don’t leave it out at room
temperature.
• Place a thermometer in the thickest part of cooked meat, poultry, or
egg dishes to measure their
internal temperature and
make sure that they’re
cooked all the way through.
Allow meat to rest for three
minutes before carving or
consuming.
• Stir food cooked in the
microwave and test it to
make sure it reaches an
adequate temperature
throughout.

See the resources tab for a list of safe cooking temperatures for various foods.

Resources
Minimum Cooking Temperatures
How Can I Wash Pesticides from Fruits and Veggies?

If you take your lunch or other food with you or if you’re on a picnic:
• Keep cold food cold with ice and insulated containers.
• Don’t let perishable food sit out or hang out in your bag without an
icepack longer than two hours.
• Don’t rewarm food in plastic containers, particularly those made
with BPA or PET. Instead use tempered glass containers for foods
that will need to be rewarmed.

When you’re ordering food in restaurants:
• Avoid buffets or salad bars where items may not be kept at proper
temperatures—hot or cold.
• Order hamburgers and other ground meats well done.
• Avoid eating raw meat or seafood. Yes, this includes sushi. Most
commercially prepared sushi is probably safe. However, it has a
higher risk of bacterial, viral, or parasite contamination simply
because it’s not cooked.
Wherever you may be, wash your hands before eating.

**Chicken Burrito Bowls**
Looking for a simple and healthy meal idea? Watch "Chicken Burrito Bowls" or return to page 27 of the online lessons for a delicious recipe that will last you for four meals.

**Resource**
17 Healthy Grain Bowls You Should Make For Dinner

**The following tips will help you stay within your budget and still eat in a healthy manner:**

- If you have a prepaid student meal plan, use it.
- Limit the number of times you eat out or get take-out food from restaurants. Preparing your own food and eating it at home or packing it with you is much more economical.
- When you do go out, use coupons or go to restaurants that run specials. For example, maybe there’s a place that offers two dinners for the price of one on a certain night of the week.
- Plan ahead to avoid having to buy foods out of convenience, as you’ll likely end up spending more for the same items and may not have affordable healthy options, depending on where you are.
- Purchase your groceries at an actual grocery store, if you can, as opposed to a convenience store.
- Make a grocery list before you go to the store, and stick to it.
- Consider buying foods in larger packages or in bulk. Maybe you could split something with a roommate or friend.
- Buy generic or store brands when available. They’re generally cheaper and often just as good.
- Buy only what you’ll use before it spoils to avoid wasting food, which is not only bad for your wallet but also the environment. Also note that how you store perishable items can impact their shelf life.
• If you take food with you during the day, put it in reusable containers. This is less expensive than repeatedly buying plastic or paper bags, and it’s better for the environment.

**Community Resources**
UMN-TC Course: FScN 2002: Cooking on a Student’s Budget

**Resources**
- Food Storage Tips (so that it lasts longer and less gets wasted)
- Food Storage Tips (quick reference)
- 5 Food Storage Tips (video)

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**The Real Cost of Grocery vs. Fast Food**

**Video Transcript**
Mark Pereira: Go to the grocery store, put things in your refrigerator and your cupboards. Because you might think that fast food is not very expensive, but what happens when you go and eat fast food, you’re going to spend four, five, six dollars for one meal, and you’re not going to have any leftovers. But if you go to the store and you’re a careful shopper, and you buy ready-to-eat breakfast cereal, soups, and sandwich things, there’s going to be a little bit of a sticker shock, but that’s food that you’re buying for the whole week. And if you calculate it out, how much does the meal cost, it’s probably going to end up being about half the price of what you’re going to spend over the course of the week going out to restaurants, ordering pizzas and subs, and so forth. And even if you don’t like to cook, you can shop around for some readily—already prepared food that’s relatively healthy. It just takes a little bit of work.

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**Food Labels Quiz**
Return to page 29 of the online lessons or assess your knowledge of nutrition labels directly with this [Food Labels Quiz](#).

**Hopefully, you’ve gained some practical strategies for improving the nutritional quality of your diet.**
Consider your current eating patterns, and compare them to what you’ve learned. Perhaps you can begin to evaluate your choices more carefully and make some changes. Eating a healthy, well-balanced diet will help you feel better physically and emotionally and be more productive. It’s OK to take a little time to focus on your nutrition. Remember, the pay-off is huge and you’re worth it!

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**Food Skills**
24
Finally, in addition to potentially making some changes to your own dietary behaviors, you may wish to advocate for a healthier food environment. If so, check out the materials in the resources tab below. Know that your voice—including where and how you choose to spend your food dollars—matters!

You can learn about how others are advocating for more accessible and affordable healthy food for all Minnesotans in the Minnesota Food Charter video on the next page.

**Community Resources**

Minnesota Food Charter

**Resources**

Daily Food Plans and Worksheets

Student Nutrition Advocacy Collaborative (includes recipes, cooking demo videos, and more!)

MyPlate on Campus (includes ambassador registration and toolkit)

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**Minnesota Food Charter**

Return to page 31 of the online lessons or visit the Minnesota Food Charter site directly to learn more about what this local organization is doing to help guide policy makers and community leaders in providing access to healthy food, affordable and safe for all Minnesotans.

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