

>> Hi, everyone. Okay, we're going to start with chapter one. Keep in mind that the first couple of chapters, the first probably three, actually, are introductory. The material is crucial for understanding the rest of the course. But the information is a little bit easier, so the more advanced chapters will get a little bit more challenging. But this first chapter goes through, you know, what kinds of foods do we eat and why. And let's start by defining nutrition. What exactly do we mean by nutrition? It's a science, which means that it's looking at how your diet affects your health. We know that most diseases, whether it's heart disease, cancer, diabetes, Alzheimer's, even, and so many more of these chronic diseases, high blood pressure, high cholesterol, gallbladder problems, et cetera, that most of these are actually due to influences from your diet and lifestyle, exercise, and we'll get more into that. In the past, a lot of people just blamed everything on genetics, but we now know that genetics actually plays a very small role. And even if you do have the genetics for a disease, let's say heart disease, it doesn't mean you're actually going to get it. And how you eat throughout your lifetime can affect those genes. And we know that certain foods can turn off bad genes and certain foods can turn them on. And we'll get more into that later in other chapters. But a bad diet, whether you're lacking certain nutrients or you're getting too much of other ones, usually will increase your risk for many of the top diseases and that's what we're saying here, that most of these diseases can be either prevented or reversed, even. Even diabetes type two many, many doctors have written books showing how you can reverse type two diabetes by changing your lifestyle. So that's pretty exciting, actually. And by the way, because nutrition is a science, that's why the information changes a lot. You might hear on the TV one year that something is good for you and a year or two later, you might hear that that same food is not good for you because research changes the information that's known. And because nutrition is a science, different people are doing research and come out with different results. But what we do know for sure is that a poor diet and a sedentary lifestyle are absolute known risk factors for chronic disease. So if, you know, you don't eat well, you're not active, you're at risk for all these chronic diseases, meaning heart disease, cancer, diabetes, high blood pressure, high cholesterol, et cetera. And these things start in childhood. You know, you don't wake up in your 50s with heart disease from something that you did yesterday. We feel good when we're a kid but as we get older, 30s, 40s, 50s, things might start catching up to us. So these chronic diseases are mostly preventable. How fast or slowly you age is also partly your choice. You know, do you, you know, you can look at two people that are 40 years old, one looks 50-something, one looks 30-something and there's, of course, genetic factors, but stress and bad diet, lack of exercise throughout your life, eventually it catches up to you and you just might age faster than somebody else. But like I said, these nutritional deficiencies or excesses really as a child is what and as a teenager is what's going to affect you later in life. So please, for the quiz, you should definitely know at least the top three leading causes of death in the United States: heart disease, cancer, and COPD, which is chronic bronchitis or emphysema. That's COPD. And then you can see four is stroke, accidents, Alzheimer's, diabetes. And you can see in

parentheses from your textbook what are the top causes of those diseases and you see that diet really is involved with pretty much all of them and exercise to an extent as well. So going to show once again that what you eat and exercise does play a big role. The combination of, you know, you don't eat well and you don't exercise, that is indirectly the second leading cause of death. And for the quiz, again please know that smoking is the leading cause of preventable death in the United States. Smoking, okay? And then obesity is the second leading cause because when you smoke or you're obese, you increase your risk for pretty much everything. Okay? So that's some basic information. Now let's talk about what is a nutrient? Nutrients are substances in foods that serve a purpose. Some of them help give us energy. We'll get more into that later in the term. Some provide structure, for instance for your hair, your nails, your skin, your bones. Many regulate your chemical reactions in your body. Every cell has chemical reactions going on all day long, like converting your food into energy. And we need these nutrients to keep us healthy, to give us the energy, to provide a structure for our body, et cetera. So there's the different classes – There's six main classes of nutrients, basically, you carbs, fats, proteins, which we're all familiar with, vitamins, minerals and water. And we'll get into them in their own chapters later on. In this chapter, we're going to start with just a brief introduction to each of these, but please keep in mind we're going to go into greater detail in subsequent chapters. So just briefly, carbs, the main role that carbs play in our body is that no matter what kind of carb you eat, they all break down to glucose. Glucose is a form of sugar. And why do we need glucose? It's because every cell in your body needs glucose because that's what's going to give that cell energy. Okay? So whether you're eating bread, crackers, cookies, cakes, fruits, vegetables, dairy, anything with carbs, it all breaks down to glucose and then to energy. So please know that part. Lipids, another name for fat, so whether they're solid fats and oils. Lipids in the past have gotten such a bad rap. There was the low-fat diets in the past and now the latest research is showing we really need fat in our diet. Fat provides us with a lot of energy. It is a part of every cell membrane in your body. And if you don't have enough fat for those cell membranes, the cells break down. And it's a huge part of our nervous system. That means your brain and all the nerves in your body. Your brain is about 60% fat. So a lack of fat in your diet, like a low-fat diet can increase the risk of cognitive problems, behavioral problems, dementia, and so forth. So we need fats for so many functions and we'll go through it again in the chapter that deals with just fats. Protein, most of us are pretty familiar with the fact that we need protein for structures in our body, like your bones, your muscles but also for blood and our skin, enzymes to break down food and our immune system all rely on good sources of protein. And then vitamins, again, we're going to spend a whole chapter on all of these. But just briefly, vitamins are not something you take as a supplement now and then. We hopefully are getting vitamins from our foods, but the research shows most Americans are deficient in most vitamins and it's not an optional substance. We need vitamins for keeping healthy, for our cells to function properly, for our body to function properly. But you'll see in bold, again please know this for the quiz, vitamins

help you break down your foods into energy. We call that energy ATP. Again, we'll get into that later. But carbs, fats, proteins to break down into energy requires vitamins. And if you're lacking them, you may not be getting the energy from your foods that you could be possibly getting. There's water-soluble vitamins and fat-soluble vitamins. Please know the difference. The water-soluble vitamins are vitamin C and the B vitamins. Water soluble means basically you don't need fat in the meal to absorb them. They also mean that if you take too – Let's say you eat, you take a supplement of vitamin C. If you take too much, basically, the excess gets urinated out, whereas the fat-soluble vitamins, A, D, E and K, tend to get stored in our fat. But again, most people are deficient in these. And the research also shows that our foods, our fruits, our vegetables have a fraction of the amount of vitamins and minerals that they used to have years ago, back in the '50s and '60s, and even before that. But there's so much research that shows that vitamins help prevent and treat various different diseases. So they're quite important. Minerals, same thing, very, very important: iron, selenium, et cetera. These are minerals, help form a big part of all the structures of our body, our hair, nails, skin, your bones. Again, we'll get more into that in later chapters. Sodium, we all know is involved with water balance. But like vitamins, they also help you get energy from your foods. Okay? And again, many of us are lacking in many, many vitamins. Water, please know just the basic. Our body is about 60% water. Most of it is in our muscle tissue. Men typically need about 13 cups a day; women, nine. There's more accurate ways of figuring it out how much water you need. I like to use your body weight in ounces. You take your body weight in ounces and that's how much you need a day. If you weigh let's say 200 pounds, you take actually half that, so like 100 ounces of water. And we need water – But for the test, know the cups, please. We need water for transporting nutrients, for keeping our temperature regulated properly, and we need water to help break down our foods to energy. Okay, so what exactly is energy? I've been saying about energy, energy is what we get from breaking down our foods into what we call ATP. Okay? So that's – We obviously need energy. Just like your car needs gasoline, our bodies need fuel and we call that ATP. Okay? So our carbs, our fats, our protein all contain this energy. It's a chemical energy. We call it adenosine triphosphate. And our carbs, fats and proteins all break down into ATP. ATP is just a high-energy compound that we get from our foods. We can't live without it. Actually, one of the signs of aging is that we don't break our foods very well to energy. And you see that a lot in older people. They have a lot less energy. So we need energy, you know, basically to function, to move, to conduct nerve signals, for our cells to maintain themselves, for your brain to work, your memory. And I kind of make this analogy of your body using the nutrients like a wind, think of like these wind turbines that are out, like out in Tehachapi. You're taking – Those wind turbines are taking a form of energy, the wind, and converting it into electrical energy. And it's the same thing with our foods. We're taking our foods and converting it into a form of energy we can use and that's called ATP. Okay, I'm actually going to stop this here. I'm going to do these lectures in 15-minute increments. So we're almost up to that. So the next 15 minutes

we'll do a bunch more slides.