

# COURSES DESCRIPTION PROFESSIONAL LEVEL

- 3D HUMAN ANATOMY & PHYSIOLOGY  
(10 weeks) *Beginners level*

## Duke University

About this Course

In this course, students learn to recognize and to apply the basic concepts that govern integrated body function (as an intact organism) in the body's nine organ systems.

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**Taught by:** [Jennifer Carbrey](#), Assistant Research Professor

Department of Cell Biology

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**Taught by:** [Emma Jakoi](#), Associate Research Professor

Department of Cell Biology

Commitment 22 hours of videos and assessments

Language English, **Subtitles:** Chinese (Simplified)

How To Pass Pass all graded assignments to complete the course.

User Ratings Average User Rating 4.7

# Syllabus

## WEEK 1

### Welcome and Additional Resources

Start here!

1 video, 6 readings

1. **Video:** Course Introduction
2. **Reading:** Welcome to Human Physiology
3. **Reading:** How to Use Discussion Forums
4. **Reading:** Course Logistics
5. **Reading:** About Us
6. **Reading:** FAQ\_Including Syllabus for Downloading
7. **Reading:** Get to Know Your Classmates

### Homeostasis and Endocrine System

Welcome to Module 2 of Introductory Human Physiology! We begin our study of the human body with an overview of the basic concepts that underlie the functions of cells and organs within the body and their integration to maintain life. This is an important introduction to how physiologists view the body. We will return to these basic concepts again as we progress through the organs systems and consider how they respond to perturbations incurred in daily functions and in disease. The things to do this week are to watch the 6 videos, to answer the in-video questions, to read the notes for each topic, and to complete two problem sets (homeostasis, transporters & channels, and endocrine concepts). It will be most effective if you follow the sequence of videos. The notes provide a more detailed summary of each topic. We encourage you to find which resource (videos and/or notes) works best for you. We have included a set of problems to be completed as homework exercises. We strongly encourage you to complete these problems sets. They are not graded and are for your personal feedback. It has been our experience that these exercises are helpful in increasing understanding and retention of the newly learned materials. Please use the interactive forum as a means to exchange ideas, to ask questions, to form study groups and interest groups, and to meet your community. We will monitor the forum daily. Thank you for joining us. We are excited about sharing this educational experience with you. Welcome!

6 videos, 1 reading, 2 practice quizzes

1. **Video:** Homeostasis and Fluid Compartments
2. **Video:** Regulation of Homeostasis
3. **Video:** Transporters Pumps and Channels
4. **Video:** Solute and Water Transport
5. **Practice Quiz:** Practice Problem Set: Transporters, Channels, and Homeostasis
6. **Video:** General Concepts
7. **Video:** Assessment and Pathology
8. **Practice Quiz:** Practice Problem Set: Endocrine Concepts
9. **Reading:** Resources

## **Graded:** Homeostasis and Endocrine System Exam

### WEEK 2

#### The Nervous System

We hope you are enjoying the course! Last week's lectures can be challenging because we introduce many concepts that may be new to you. This module will allow you to apply some of the concepts that you learned last week and provide you with more concrete examples. In this module we will begin our tour of the various organ systems with the nervous system. We start by considering the function of the individual cells (neurons) and then how they interact as an integrative system. The nervous system provides rapid communication throughout the body coordinating the actions of trillions of cells. It responds to internal changes to the body as well as to changes in our external environment. This is a busy week. The things to do this week are to watch the 5 videos, to answer the in-video questions, to read the notes, and to complete the Nervous System problem set. We suggest that you read the notes, watch the videos, and answer the in-video questions before you start on the problem sets. The problem sets require you to apply your knowledge from the lectures so it is best to be fairly familiar with the material before tackling them. The problem sets are not graded, and there is no due-date for them.

5 videos, 2 readings, 1 practice quiz

1. **Video:** Introduction and Cell Types
2. **Video:** Membrane Potentials
3. **Reading:** How To Calculate The Equilibrium Potential
4. **Video:** Action Potentials
5. **Video:** Methods of Communication
6. **Video:** Organization
7. **Practice Quiz:** Practice Problem Set: The Nervous System
8. **Reading:** Resources

## **Graded:** The Nervous System Exam

### WEEK 3

#### The Senses and the Somatic Nervous System

In this module, we consider two types of cells: one that relays information to the central nervous system (brain) for interpretation and a second set, motor neurons which relay information away from the central nervous system to govern voluntary movement. The input pathway to the brain is mediated by specific cells called senses. The senses convert energy (such as light or heat) into an energy form (electrical potentials) recognized by neurons in the brain. The brain, in turn, interprets this information (as vision or pain) and then sends out a motor response via the motor neurons of the somatic nervous system to effector cells in the body. The motor neurons activate skeletal muscle to control breathing and the movement of the limbs. The things to do this week are to watch the 5 videos, to answer the in-video questions, to read the notes, and to complete the problem set. It will be most effective if you follow the sequence of videos. The notes provide a more detailed summary of each topic. We encourage you to find which resource (videos and/or notes) works best for you and to try the problems sets. The

problem sets are not graded. Both your understanding and retention will increase with application of the new learned information.

5 videos, 1 reading, 1 practice quiz

1. **Video:** Introduction and Vision
2. **Video:** Hearing and the Vestibular System
3. **Video:** Chemical Senses
4. **Video:** Intro and Structure
5. **Video:** Control of Movement
6. **Practice Quiz:** Practice Problem Set: Senses and Nervous System
7. **Reading:** Resources

**Graded:** The Senses and the Somatic Nervous System Exam

WEEK 4

Muscle

In this module, we consider the effectors of the body that govern voluntary and involuntary movement. These effectors are specialized cells called muscle which are capable of generating force (tension). Muscle cells are classified as one of three types: skeletal, smooth, and cardiac. Although all three types generate tension, each is specialized for a given function. Skeletal muscle governs voluntary movement of the limbs and is critical for expansion of the lung during breathing. Smooth and cardiac muscle are contractile cells found in the walls of blood vessels and the heart, respectively. We will return to the basic principles that govern these cells types when we consider the respiratory and cardiovascular systems. The things to do this week are to watch the 4 videos, to answer the in-video questions, to read the notes, and to complete two problem sets (skeletal muscle and smooth & cardiac muscle). It will be most effective if you follow the sequence of videos. The notes provide a more detailed summary of each topic. We encourage you to find which resource (videos and/or notes) works best for you and to try the problems sets. The problem sets are not graded. Both your understanding and retention will increase with application of the new learned information.

4 videos, 1 reading, 2 practice quizzes

1. **Video:** Intro and Contraction
2. **Video:** Tension and Metabolism
3. **Practice Quiz:** Practice Problem Set: Skeletal Muscle
4. **Video:** Smooth Muscle Structure, Regulation and Pacemakers
5. **Video:** Cardiac Muscle Structure, E-C Coupling and Force Generation
6. **Practice Quiz:** Practice Problem Set: Smooth and Cardiac Muscle
7. **Reading:** Resources

**Graded:** Muscle Exam

## WEEK 5

### Cardiovascular System

Welcome back! In this module we consider how the circulatory system works to deliver oxygen and nutrients to the specific organs. We start with a discussion of the electrical and mechanical functions of the heart which enable it to generate a pressure gradient. This pressure gradient propels the blood through the blood vessels, in a unidirectional manner. The following session considers the factors that govern delivery of gases and nutrients at the tissue level. The last session considers the entire reflex loop, its control, and its response to daily demands (rest and exercise) and how pathology affects these responses. This is a busy week! The things to do this week are to watch the 5 videos, to answer the in-video questions, to read the notes, and to complete the CV problem set. It will be most effective if you follow the sequence of videos. The notes provide a more detailed summary of each topic. We encourage you to find which resource (videos and/or notes) works best for you and to try the problems sets. The problem sets are not graded. Both your understanding and retention will increase with application of the new learned information.

5 videos, 1 reading, 1 practice quiz

1. **Video:** Heart Electrical Activity
2. **Video:** Heart As A Pump
3. **Video:** Cardiac Performance
4. **Video:** Circulatory System
5. **Video:** Reflex Control
6. **Practice Quiz:** Practice Problem Set: The Cardiovascular System
7. **Reading:** Resources

**Graded:** Cardiovascular System Exam

## WEEK 6

### Respiratory System

We hope that you are enjoying the course! This module considers the respiratory system. In these lessons, we explore topics such as how we get air into our lungs, the role of airway resistance in ventilation, the transport of oxygen and carbon dioxide between the lungs and tissues, and the regulation of breathing. There are a couple of demonstrations of lung function in the videos! The things to do this week are to watch the 8 videos, to answer the in-video questions, to read the notes, and to complete the Respiratory System problem set. We suggest that you read the notes, watch the videos, and answer the in-video questions before you start on the problem sets, which are not graded. Take a deep breath and have fun with it!

8 videos, 1 reading, 1 practice quiz

1. **Video:** Anatomy and Mechanics
2. **Video:** Lung Volumes and Compliance
3. **Video:** Pressure Changes and Resistance

4. **Video:** Pulmonary Function Tests and Alveolar Ventilation
5. **Video:** Oxygen Transport
6. **Video:** CO<sub>2</sub> Transport and V/Q Mismatch
7. **Video:** Exercise and Hypoxia
8. **Video:** Regulation of Breathing
9. **Practice Quiz:** Practice Problem Set: The Respiratory System
10. **Reading:** Resources

**Graded:** Respiratory System Exam

WEEK 7

## The Endocrine System

In this module, we return our attention to the endocrine system and its role in the maintenance of homeostasis. In particular we consider the hypothalamus-pituitary axis, which integrates signals from the nervous system and from the blood to regulate most homeostatic functions, including growth, ion balance, fluid balance, response to stress, and energy use. The first lesson gives an overview of the hypothalamus-pituitary axis and its actions in regulating growth of the body. In later lessons we consider how this complex negative feedback loop governs the body's energy use and its response to stress. Then, later in lesson 3, we turn our attention to the simple reflex loop by which the endocrine pancreas regulates metabolism in both the fed and fasted states and the failures of this system (diabetes mellitus). The hypothalamus-pituitary axis and its control of reproduction in both males and females are considered in the next module (Module 9). The things to do this week are to watch the 6 videos, to answer the in-video questions, to read the notes, and to do the two problem sets (endocrine system and fuel homeostasis). Please note that each module can stand alone, however, it will be most effective if you do the first two videos (H-P-axis) before any of the others. The notes provide a more detailed summary of each topic and again we encourage you to use the resource (videos and/or notes) that works best for you. Please do try the problems sets for self-review. Both your understanding and retention will increase with application of the new learned information.

6 videos, 1 reading, 2 practice quizzes

1. **Video:** Hypothalamus-Anterior Pituitary Axis- GH
2. **Video:** Hypothalamus-Posterior Pituitary Axis
3. **Video:** Hypothalamus-Pituitary- Adrenal Axis
4. **Video:** Hypothalamus-Pituitary-Thyroid Axis
5. **Practice Quiz:** Practice Problem Set: The Endocrine System
6. **Video:** Fed State & Insulin
7. **Video:** Fasted State and Glucagon
8. **Practice Quiz:** Practice Problem Set: Fuel Homeostasis
9. **Reading:** Resources

**Graded:** The Endocrine System Exam  
WEEK 8

The Reproductive System

Welcome back! This module continues our discussion of the endocrine system and its control of homeostasis. In this series of videos, we consider how the endocrine system regulates the production of gametes (egg and sperm) in the female and male, respectively, as well as the production of the sex hormones. The things to do this week are to watch the 4 videos, to answer the in-video questions, to read the notes, and to complete the problem set. It will be most effective if you follow the sequence of the lectures on the reproductive system. Again please consult the notes for a more detailed summary of each topic. If you have not tried the problems sets, please do so. They will reinforce your understanding of the newly learned information by applying it. Since these problem sets are delivered in the same electronic format as the exams, by completing them, you will gain confidence in using the electronic test format.

4 videos, 1 reading, 1 practice quiz

1. **Video:** Hypothalamus-Pituitary-Gonad Axis
2. **Video:** Sperm and Hormone Production
3. **Video:** Hypothalamus-Pituitary-Gonad Axis
4. **Video:** Menstrual Cycle
5. **Practice Quiz:** Practice Problem Set: The Reproductive System
6. **Reading:** Resources

**Graded:** The Reproductive System Exam  
WEEK 9

The Gastrointestinal System

Congratulations! You have almost completed this course. In this module, we consider the inner workings of your gut. Most of our discussions deal with the function of specific regions of the gastrointestinal tract where complex foods are processed into solutes and nutrients that can be absorbed into the body for use as fuel. This “processing plant” acts in a unidirectional manner from mouth to anus and requires the coordinated secretions of acid, enzymes, bases, and fluids for its normal function. What is unusual about the gastrointestinal (GI) tract and its accessory organs, salivary glands, liver, and pancreas, is that their coordinated actions occur in a timely manner without conscious input from the brain. Instead the gut integrates its diverse actions by locally produced chemicals (hormones and paracrines) as well as by the coordinated actions of the enteric nervous system, a subdivision of the autonomic nervous system. In the last lesson of this module, we consider normal motility of the gut, as well as perturbations that result in gastrointestinal distress such as vomiting and diarrhea. The things to do this week are to watch the 4 videos, to answer the in-video questions, to read the notes, and to complete the gastrointestinal problem set. For this topic, the most effective approach will be to follow the sequence of videos as we move along the gastrointestinal tract. The notes provide a more detailed summary of the video lectures. Again, please use the resource (videos and/or notes) that works best for you. However, we encourage

you to complete the problem sets as both your understanding and retention will increase with application of the new learned information. Hope you enjoy the week!

4 videos, 1 reading, 1 practice quiz

1. **Video:** General Structure and Function
2. **Video:** Regulation of Acid Secretion
3. **Video:** Digestion and Absorption
4. **Video:** Motility
5. **Practice Quiz:** Practice Problem Set: The Gastrointestinal System
6. **Reading:** Resources

**Graded:** The Gastrointestinal System Exam

WEEK 10

The Urinary System

Welcome to module 11 and the last organ system to be covered in this course! In this module, we turn our attention to the urinary system and specifically to the functions of the kidney, a filter of the blood. The kidney is a complicated organ whose actions integrate with those of the cardiovascular system to maintain blood pressure and with the respiratory system to maintain acid-base balance. As we progress through this module, we consider the mechanisms by which the kidney regulates the water content and the electrolyte content of the body. We focus on the roles of the normal kidney but also consider changes in homeostasis due to either disease or drugs. The last lesson of this module considers the role of the kidney in regulating acid-base balance of the body and its integration with the respiratory system. The things to do this week are to watch the 6 videos, to answer the in-video questions, to read the notes, and to complete one problem set (urinary system). In this module, the sequence of videos is important. As you proceed through the videos and notes, try to correlate the specific region of the renal tubule with its function. Often this is best achieved by drawing the renal tubule and labeling the specific changes in structure and function. Again, the notes will provide a more detailed summary of the material presented in the videos. Please note that the first two videos correlate with the first set of notes and the third video with the second set of notes. We encourage you to complete the problem set. The problem set is not graded and is for your personal feedback. Both your understanding and retention will increase with application of the new learned information.

6 videos, 1 reading, 1 practice quiz

1. **Video:** General Structure and Function
2. **Video:** Filtration Rate and Regulation
3. **Video:** Reabsorption and Secretion
4. **Video:** Regulation of Fluid Balance
5. **Video:** General Concepts and Renal Tubule Function
6. **Video:** Balance, Disturbances, and Analysis
7. **Practice Quiz:** Practice Problem Set: The Urinary System
8. **Reading:** Resources

**Graded:** The Urinary System Exam



## **How It Works**

General

### **How do I pass the course?**

To earn your Course Certificate, you'll need to earn a passing grade on each of the required assignments—these can be quizzes, peer-graded assignments, or programming assignments. Videos, readings, and practice exercises are there to help you prepare for the graded assignments.

### **What do start dates and end dates mean?**

Most courses have sessions that run multiple times a year — each with a specific start and end date. Once you enroll, you'll have access to all videos, readings, quizzes, and programming assignments (if applicable). Peer-graded assignments can only be submitted and reviewed once your session has begun. If you choose to explore the course without purchasing, you may not be able to access certain assignments. If you don't finish all graded assignments before the end of the session, you can enroll in the next session. Your progress will be saved and you'll be able to pick up where you left off when the next session begins.

### **What are due dates? Is there a penalty for submitting my work after a due date?**

Within each session there are suggested due dates to help you manage your schedule and keep coursework from piling up. Quizzes and programming assignments can be submitted late without consequence. However, it is possible that you won't receive a grade if you submit your peer-graded assignment too late because classmates usually review assignment within three days of the assignment deadline.

### **Can I re-attempt an assignment?**

Yes. If you want to improve your grade, you can always try again. If you're re-attempting a peer-graded assignment, re-submit your work as soon as you can to make sure there's enough time for your classmates to review your work. In some cases you may need to wait before re-submitting a programming assignment or quiz. We encourage you to review course material during this delay.

## ○ FOOD AND HEALTH (5 weeks, one hour of study per week)

**About this course:** Around the world, we find ourselves facing global epidemics of obesity, Type 2 Diabetes and other predominantly diet-related diseases. To address these public health crises, we urgently need to explore innovative strategies for promoting healthful eating. There is strong evidence that global increases in the consumption of heavily processed foods, coupled with cultural shifts away from the preparation of food in the home, have contributed to high rates of preventable, chronic disease. In this course, learners will be given the information and practical skills they need to begin optimizing the way they eat. This course will shift the focus away from reductionist discussions about nutrients and move, instead, towards practical discussions about real food and the environment in which we consume it. By the end of this course, learners should have the tools they need to distinguish between foods that will support their health and those that threaten it. In addition, we will present a compelling rationale for a return to simple home cooking, an integral part of our efforts to live longer, healthier lives.

**Created by:** Stanford University



• **Taught by:** [Maya Adam, MD](#), Lecturer

Stanford School of Medicine

Level            Beginner

Commitment   5 weeks of study, 1 hour/week

Language       English, **Subtitles:** Russian, Czech

Hardware Req No special hardware required.

How To Pass   Pass all graded assignments to complete the course.

User Ratings   Average User Rating 4.6

Syllabus

WEEK 1

Background on Food & Nutrients

In this section we will examine the social and cultural shifts that have contributed to our modern epidemics of overweight and obesity. We will briefly review the nutrients found in foods, their

different functions in the human body and how we can support our own health by choosing wisely from the foods within each category.

6 videos

1. **Video:** Introduction
2. **Video:** A Sociocultural History of Obesity
3. **Video:** Macronutrient Structure & Metabolism
4. **Video:** Carbohydrate-rich Foods & the Glycemic Index
5. **Video:** Animal & Plant-based Proteins
6. **Video:** Dietary Fats & Their Effects on Human Health

**Graded:** Section 1 Quiz

WEEK 2

Contemporary Trends in Eating

In this section, we will explore the ways in which highly processed foods differ from real, whole food and the implications of food processing on our health. We'll also look at how our consumption of sugar has changed in recent decades and explore sensible solutions for people who wish to start eating better. We will also meet Kevin, a middle-aged pre-diabetic man, and find out how a step-wise approach to behavior change helped him change for the better.

5 videos

1. **Video:** Why Are Highly Processed Foods Generally Less Healthy?
2. **Video:** Trends in Sugar Consumption & Recommendations
3. **Video:** The Case for Cooking
4. **Video:** A Case Study: Middle-aged Pre-diabetic Man
5. **Video:** A Step-wise Approach to Behavior Change

**Graded:** Section 2 Quiz

WEEK 3

Future Directions in Health - Part I

This section focuses on sustainable solutions to the challenge of choosing healthier foods more frequently. Michael Pollan explains his mantra and how we can use it to make better food choices. We also begin to explore practical tips for preparing foods that will support our health and enjoyment.

4 videos

1. **Video:** Eat Food. Not Too Much. Mostly Plants.
2. **Video:** Cooking: Fundamental Ingredients
3. **Video:** Cooking: Increasing Vegetable Intake
4. **Video:** Cooking: Sensible Substitutions

**Graded:** Section 3 Quiz

WEEK 4

Future Directions in Health - Part 2

In this section you will find more practical tips for grocery shopping, reading labels and assembling a balanced meal. We also learn more about the most important secret ingredient for success: moderation.

4 videos

1. **Video:** Constructing a Healthy Plate
2. **Video:** Shopping in a Supermarket
3. **Video:** Reading Nutrition Labels
4. **Video:** The Importance of Moderation in Maintaining a Healthy Diet

**Graded:** Section 4 Quiz

WEEK 5

Cooking Workshop

A few years ago, a friend of mine started a healthy eating and fitness website called Grokker. She asked me to make some instructional cooking videos and generously agreed to share some of them with you. Thanks, Lorna! (If you like this section, you can find many more great videos on cooking and fitness at Grokker.com)

10 videos, 10 readings

1. **Video:** How to Make Gluten Free Crêpes
2. **Reading:** Recipe for Gluten Free Crêpes
3. **Video:** How to Make Lemon Herb Roasted Chicken
4. **Reading:** Recipe for Lemon Herb Chicken
5. **Video:** How to Make Asparagus Torta
6. **Reading:** Recipe for Asparagus Torta
7. **Video:** How to Make Idlis - Indian Rice Cakes
8. **Reading:** Recipe for Indian Rice Cakes
9. **Video:** How to Make Pad Thai
10. **Reading:** Recipe for Pad Thai
11. **Video:** How to Make Lasagna
12. **Reading:** Recipe for Lasagna
13. **Video:** How to Make Ricotta Cake
14. **Reading:** Recipe for Ricotta Cake
15. **Video:** How to Make Pancakes in a Blender
16. **Reading:** Recipe for Easy Blender Pancakes
17. **Video:** How to Make a Sweet Pea Salad
18. **Reading:** Recipe for Sweet Pea Salad
19. **Video:** How to Make Egg Sandwiches
20. **Reading:** Recipe for Egg Sandwiches

Recommended Optional Resources

Here is a list of recommended books and videos that can help deepen your understanding of the course material. Feel free to explore the recommendations on this list to learn more about food, health, eating behaviors, and more.

3 readings

1. **Reading:** List of Recommended Readings
2. **Reading:** List of Recommended Documentaries
3. **Reading:** List of Recommended Websites

## ○ CHILD NUTRITION AND COOKING (5 hours of Training)

**About this course:** Eating patterns that begin in childhood affect health and well-being across the lifespan. The culture of eating has changed significantly in recent decades, especially in parts of the world where processed foods dominate our dietary intake. This course examines contemporary child nutrition and the impact of the individual decisions made by each family. The health risks associated with obesity in childhood are also discussed. Participants will learn what constitutes a healthy diet for children and adults and how to prepare simple, delicious foods aimed at inspiring a lifelong celebration of easy home-cooked meals. This course will help prepare participants to be the leading health providers, teachers and parents of the present and future. The text and other material in this course may include the opinion of the specific instructor and are not statements of advice, endorsement, opinion, or information of Stanford University.

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**Created by:** Stanford University



• **Taught by:** [Maya Adam, MD](#), Lecturer

Stanford School of Medicine

Level Beginner

Commitment 5 hours of videos and quizzes

Language English, **Subtitles:** Croatian, Ukrainian, Chinese (Simplified), Dutch, Bulgarian, Korean, Russian, Spanish, Japanese, Romanian, Polish

Hardware Req No special hardware required.

How To Pass Pass all graded assignments to complete the course.

User Ratings Average User Rating 4.7

Syllabus

## WEEK 1

### Why Home Cooking Matters

A childhood obesity epidemic is facing the USA and many developed nations. Why are so many foods processed, and what can we do to protect our families? We also explore the six basic ingredients every cook should have on hand!

10 videos, 1 reading

1. **Video:** Introduction To Child Nutrition
2. **Video:** Food is more than just nutrition
3. **Video:** Why home cooking matters
4. **Video:** Why are there so many processed foods?
5. **Video:** USDA nutrition guidelines
6. **Video:** The Six Ingredients Every Kitchen Needs
7. **Video:** Stocking a Kitchen Pantry
8. **Video:** Egg-in-a-hole
9. **Video:** Smoothie
10. **Video:** Vegetable Stir-Fry
11. **Reading:** Recommended Readings

**Graded:** Why Home Cooking Matters

**Graded:** Elements of a Healthy Kitchen

**Graded:** Why Home Cooking Matters

## WEEK 2

### What Constitutes a Balanced Meal?

Everything you need to know about what makes up a balanced meal, including fats, carbohydrates, and proteins. Learn tricks for controlling portion sizes while maintaining satisfaction.

10 videos

1. **Video:** How to create a balanced meal
2. **Video:** Carbohydrates
3. **Video:** Fats
4. **Video:** Proteins
5. **Video:** Sugar - Too much of a good thing?
6. **Video:** Hunger and the "Glycemic Index"
7. **Video:** How to eat in moderation
8. **Video:** Oatmeal
9. **Video:** Homemade Pasta Sauce
10. **Video:** Almond Cake

**Graded:** The Elements of a Balanced Meal

**Graded:** Sugar, Hunger and the Glycemic Index

**Graded:** What Constitutes a Balanced Meal?

## WEEK 3

### From Supermarket to Dinner Table to School

Tricks for navigating the supermarket and shop for vegetables. Why the family meal is about more than just food; how to pack a quick, healthy lunch for a child and why this is so important;

how to shop for fruits and vegetables (and teach children to love them); making over our children's favorite foods, and more healthy treats.

8 videos

1. **Video:** Navigating a supermarket
2. **Video:** Shopping for vegetables
3. **Video:** What are the most nutritious foods?
4. **Video:** Packing a lunchbox
5. **Video:** The family meal
6. **Video:** Dealing with picky eaters
7. **Video:** Chicken Nuggets
8. **Video:** Cupcakes

**Graded:** Navigating the supermarket

**Graded:** The Dinner Table

**Graded:** From Supermarket to Dinner Table to School

#### WEEK 4

##### Sustainable Eating

How to make choices that are good for you and the planet. Understand the difference between local, organic, and sustainable. Also, gardening as a way of getting children excited about fresh foods.

9 videos

1. **Video:** Sustainable Eating
2. **Video:** What does "organic" mean?
3. **Video:** What does "locally grown" mean?
4. **Video:** Healthy People = Healthy Planet
5. **Video:** Growing a kitchen garden with Rita Bottini
6. **Video:** Growing a kitchen garden
7. **Video:** Fish
8. **Video:** Soups
9. **Video:** Steam vegetables

**Graded:** What is Sustainable Eating?

**Graded:** Growing a Kitchen Garden

**Graded:** Sustainable Eating

#### WEEK 5

##### Labels, Allergies and Taste

What have we learned about achieving good eating habits based on enjoyment of the right foods? More tips on working with food allergies, reading nutrition labels, and understanding the elements of taste. Cooking this week: the simple stew, a basic homemade salad dressing plus a Sunday morning treat that will make the whole family smile.

9 videos, 1 reading

1. **Video:** The 8 foods that cause most food allergies

2. **Video:** Understanding taste
3. **Video:** Reading nutrition labels
4. **Video:** Protecting Children's Health
5. **Video:** Food's environmental impact
6. **Video:** Stew
7. **Video:** Salad Dressing
8. **Video:** Crepes
9. **Video:** Roast vegetables
10. **Reading:** CASTING CALL: Calling all parents of children aged 7-11!
11. **Peer Review:** The Child Nutrition Global Cookbook

**Graded:** Allergies and Taste Preferences

**Graded:** Health and Nutrition

**Graded:** Labels, Allergies and Taste





## ○ PREGNANCY NUTRITION AND LIFESTYLE (4 weeks)

**About this course:** Nutrition and Lifestyle in Pregnancy offers an overview of the latest research findings and international recommendations on a variety of nutrition-related aspects and outcomes of pregnancy. Ensuring a healthy nutritional status and lifestyle prior to and during pregnancy is one of the best ways to help support the healthy growth and development of the unborn child. We will look at how a healthy diet and lifestyle should ideally be achieved prior to conception and provide recommendations for pre-conception counselling of women. We will also look at the nutrient recommendations for a healthy pregnancy to ensure optimal maternal and fetal outcomes as well as focus on the most common nutrition-related pregnancy complications; obesity and gestational diabetes. The learner will have the opportunity to delve into the cutting-edge world of epigenetic and metabolomic research and appreciate the enormous role that these programming effects have in long-term health and disease outcomes. Finally, we offer real life, everyday situations and questions from pregnant women to aid healthcare professionals in the nutrition-based counselling of pregnant women and their families. In addition to the English original, subtitles in Portuguese language are available now!

**Who is this class for:** The foundation of this course is based strongly on current scientific findings and leading international recommendations. The primary target audience is healthcare professionals (gynecologists, obstetricians, paediatricians, nutritionists, dieticians as well as nurses and midwives) and medical students. Despite the emphasis on current research this course may also be suitable for pregnant women and their families, or those wishing to become pregnant.

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**Created by:** Ludwig-Maximilians-Universität München (LMU)



• **Taught by:** [Berthold Koletzko](#), Professor of Pediatrics

LMU Medical Center Dr. von Hauner Children's Hospital

Level            Intermediate

Language       English, **Subtitles:** Portuguese (Brazilian)

How To Pass Pass all graded assignments to complete the course.

User Ratings Average User Rating 4.7

## Syllabus

### WEEK 1

#### Unit 1 - A Healthy Pregnancy Starts Before Conception

In this Unit we detail what nutrition and lifestyle changes should be considered and already implemented prior to conception and emphasize the important role that a healthy BMI and sufficient folate status play in providing the unborn child with the best start possible.

4 videos, 3 readings

1. **Video:** Course Introduction: Nutrition and Lifestyle in Pregnancy
2. **Video:** Introduction: A Healthy Pregnancy Starts Before Conception
3. **Reading:** Reference List and Further Qualification
4. **Video:** Body Weight: Preparing For Pregnancy
5. **Reading:** Reference List and Further Qualification
6. **Video:** Folic Acid: Preparing for Pregnancy
7. **Reading:** Reference List and Further Qualification

**Graded:** Unit 1

### WEEK 2

#### Unit 2 - Nutrition and Lifestyle for a Healthy Pregnancy

The learner will gain an insight into the current nutrition-related recommendations for healthy pregnancies. We will look at the maternal physiological and metabolic adaptations that occur during pregnancy and what these play in supporting pregnancy and altering nutrient requirements. We will then focus on the changing macro- and micro-nutrient requirements during pregnancy and what outcomes these can have on both the mother and unborn child. Finally, we will focus on food-borne illnesses and what foods and beverages or lifestyle activities to avoid during pregnancy.

8 videos, 4 readings

1. **Video:** Introduction: Nutrition and Lifestyle for a Healthy Pregnancy
2. **Video:** Physiological Adaptations of Pregnancy
3. **Reading:** Reference List and Further Qualification
4. **Video:** Metabolic Adaptations of Pregnancy
5. **Reading:** Reference List and Further Qualification
6. **Video:** Nutrition in Pregnancy: Macronutrients
7. **Reading:** Reference List and Further Qualification
8. **Video:** Nutrition in Pregnancy: Micronutrients
9. **Reading:** Reference List and Further Qualification
10. **Video:** Expert Statement Prof Przyrembel: Regulation of Food Supplements
11. **Video:** Nutritional Restrictions During Pregnancy
12. **Video:** Avoidance of Food-Borne Illnesses

**Graded:** Unit 2

## WEEK 3

### Unit 3 - Nutrition-Related Pregnancy Outcomes

The focus of this unit is the two most common nutrition-related pregnancy complications: obesity and gestational diabetes mellitus. Based on the latest scientific findings the learner will gain an in-depth knowledge of the risk factors, outcomes and recommendations associated with these pregnancy complications to better manage and counsel pregnant women and improve infant outcomes.

5 videos, 5 readings

1. **Video:** Introduction: Nutrition-Related Pregnancy Outcomes
2. **Reading:** Reference List and Further Qualification
3. **Video:** Obesity: Management During Pregnancy
4. **Reading:** Reference List and Further Qualification
5. **Video:** Gestational Diabetes Mellitus: Management During Pregnancy
6. **Reading:** Reference List and Further Qualification
7. **Video:** Early Nutritional Programming: Is Epigenetics the Key?
8. **Reading:** Reference List and Further Qualification
9. **Video:** The Biochemistry of Your Body From a Drop of Blood
10. **Reading:** Reference List and Further Qualification

**Graded:** Unit 3

## WEEK 4

### Unit 4 - Practical Advice for a Healthy Pregnancy

Learners will apply the knowledge gained in the previous lessons to real-life clinical scenarios. Pregnant women pose common questions related to nutrition and lifestyle during pregnancy and experts in the area of early nutrition offer comprehensive, scientific-based answers to aid healthcare professionals in their day-to-day interactions with pregnant women and those wishing to become pregnant.

6 videos, 3 readings

1. **Video:** Introduction: Practical Advice for a Healthy Pregnancy
2. **Video:** Why Pregnant Women Should be Eating Fish
3. **Reading:** Reference List and Further Qualification
4. **Video:** Physical Activity Tips for a Healthy Pregnancy
5. **Reading:** Reference List and Further Qualification
6. **Video:** Nausea and Vomiting in Pregnancy
7. **Reading:** Reference List and Further Qualification
8. **Video:** Planning for Infant Feeding
9. **Video:** Nutrition in Pregnancy: Fact or Fiction?

**Graded:** For the Whole Course

○ VITAL SIGN: UNDERSTAND WHAT THE BODY IS TELLING US  
(6 weeks, three – five hours per week)

**About this course:** The vital signs – heart rate, blood pressure, body temperature, respiration rate, and pain – communicate important information about the physiological status of the human body. In this six-part course we explore the anatomy and physiology underlying the vital signs so that you will develop a systematic, integrated understanding of how the body functions. Relevant body systems are reviewed including cardiovascular and respiratory, followed by explanations of how the function of these systems affects vital signs. We discuss normal ranges, normal variants, and the mechanisms that underlie changes in the objective measurement of vital signs. The course also includes demonstrations of appropriate techniques for measuring vital signs in yourself and others. The course is designed for a broad, general audience but will be particularly interesting for individuals working in healthcare, those considering a career as a healthcare professional, lay caregivers, those with an interest in personal health and fitness, or anyone who simply wants to understand how the body functions.

[Show less](#)

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**Created by:** University of Pennsylvania



• **Taught by:** [Connie B. Scanga, PhD](#), Practice Professor

School of Nursing

Commitment 3-5 hours/week

Language English, **Subtitles:** Dutch

How To Pass Pass all graded assignments to complete the course.

Syllabus

WEEK 1

Week 1: Pulse/Heart Rate

This week we start our exploration of the vital signs with a look at the heart. We'll study the basic structure of the heart, think about how the heart pumps blood through the body, and learn how clinicians assess and think about heart rate and the pulse.

10 videos, 4 readings

1. **Reading:** Week 1 Lecture Outline
2. **Reading:** Week 1 In-Video Quizzes
3. **Video:** 1.1 Basic Heart Anatomy
4. **Video:** 1.2a Your Beating Heart
5. **Video:** 1.2b ECG Demonstration
6. **Video:** 1.3a Heart Valves, Part 1
7. **Video:** 1.3b Heart Valves, Part 2
8. **Video:** 1.3c Assessing Heart Rate Demonstration
9. **Video:** 1.4a Cardiac Cycle, Part 1
10. **Video:** 1.4b Cardiac Cycle, Part 2
11. **Video:** 1.4c Assessing Pulse Demonstration
12. **Video:** 1.5 Cardiac Output
13. **Reading:** Optional Readings
14. **Reading:** Lecture Transcripts (SRT Files)

**Graded:** Week 1 Quiz

WEEK 2

Week 2: Blood Pressure

During week 2 we will learn about the anatomy of the blood vessels and how they function. You will have a better understanding of systolic and diastolic blood pressure, mean arterial pressure, and assessing blood pressure accurately.

6 videos, 4 readings

1. **Reading:** Week 2 Lecture Outline
2. **Reading:** Week 2 In-video Quizzes
3. **Video:** 2.1 Introduction to the Blood Vessels
4. **Video:** 2.2 Blood Vessel Structure
5. **Video:** 2.3 Blood Circulation
6. **Video:** 2.4a Maintaining Blood Flow
7. **Video:** 2.4b Assessing Blood Pressure Demonstration
8. **Video:** 2.5 Blood Pressure Regulation
9. **Reading:** Optional Readings
10. **Reading:** Lecture Transcripts (SRT Files)

**Graded:** Week 2 Quiz

WEEK 3

Week 3: Metabolism

This week we will explore metabolism. We will discuss anabolism and catabolism, basal metabolic rate, how the body generates heat. You will also have a better understanding of how health care providers assess metabolic rate.

5 videos, 4 readings

1. **Reading:** Week 3 Lecture Outline
2. **Reading:** Week 3 In-video Quizzes
3. **Video:** 3.1 Introduction to Metabolism

4. **Video:** 3.2a Cellular Respiration, Part 1
5. **Video:** 3.2b Cellular Respiration, Part 2
6. **Video:** 3.3 Assessing Metabolic Rate Demonstration
7. **Video:** 3.4 Metabolic Lab Discussion
8. **Reading:** Optional Readings
9. **Reading:** Lecture Transcripts (SRT Files)

**Graded:** Week 3 Quiz

#### WEEK 4

Week 4: Temperature

During week 4 you will learn the definition of mean body temperature and how the body regulates temperature. We will discuss hypothermia and the difference between hyperthermia and fever. Lastly, you will learn how to assess body temperature.

5 videos, 4 readings

1. **Reading:** Week 4 Lecture Outline
2. **Reading:** Week 4 In-video Quizzes
3. **Video:** 4.1 Introduction to Thermoregulation
4. **Video:** 4.2 Maintaining Body Temperature
5. **Video:** 4.3 Hypothermia & Hyperthermia
6. **Video:** 4.4 Fever
7. **Video:** 4.5 Assessing Body Temperature Demonstration
8. **Reading:** Optional Readings
9. **Reading:** Lecture Transcripts (SRT Files)

**Graded:** Week 4 Quiz

#### WEEK 5

Week 5: Respiration Rate

This week we will learn about pulmonary anatomy, capillary gas exchange, and regulation of respiration. You will have a better understanding of how health care providers assess respiration rate and the quality of lung sounds.

8 videos, 4 readings

1. **Reading:** Week 5 Lecture Outline
2. **Reading:** Week 5 In-video Quizzes
3. **Video:** 5.1 Basic Anatomy of the Respiratory System
4. **Video:** 5.2 Anatomy of Ventilation
5. **Video:** 5.3 The Mechanics of Breathing
6. **Video:** 5.4 Gas Exchange
7. **Video:** 5.5 Regulating Respiration Rate
8. **Video:** 5.6 Assessing Respiration Rate Demonstration
9. **Video:** 5.7 Regulating Respiration Rate Review
10. **Video:** 5.8 Assessing Breath Sounds Demonstration
11. **Reading:** Optional Readings
12. **Reading:** Lecture Transcripts (SRT Files)

## **Graded:** Week 5 Quiz

### WEEK 6

#### Week 6: Pain

This week we will explore the neurological pathways associated with pain, and the difference between pain tolerance and pain threshold. We will understand what pain is telling us and why accurately assessing and effectively managing pain are important. In addition, we will review how healthcare providers assess pain.

8 videos, 4 readings

1. **Reading:** Week 6 Lecture Outline
2. **Reading:** Week 6 In-video Quizzes
3. **Video:** 6.1 The Anatomy & Physiology of Pain, Part 1
4. **Video:** 6.2 The Anatomy & Physiology of Pain, Part 2
5. **Video:** 6.3 The Anatomy & Physiology of Pain, Part 3
6. **Video:** 6.4 Types of Pain
7. **Video:** 6.5 Assessing Pain Demonstration
8. **Video:** 6.6 Social, Cultural & Psychological Influences on Pain
9. **Video:** 6.7 The Treatment of Pain
10. **Video:** 6.8 Wrapping Up Vital Signs
11. **Reading:** Optional Readings
12. **Reading:** Lecture Transcripts (SRT Files)

## **Graded:** Week 6 Quiz