



Course Title: **The Science of Nutrition**

Produced by: **Fitness Learning Systems**
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Course Type: **e-Learning Home Study**

Credit hours: IACET (International Association for Continuing Education and Training) 0.5 (5 Hours) Approved and Accepted by several additional organizations.

Continuing Education:

To receive continuing education for this course you must receive a 75% or higher score on a multiple choice quiz.

Author:

American Academy of Sports Dietitians and Nutritionist

AASDN is a 501 (c) 6 non-profit organization with the mission to provide health professionals with sound, scientific nutrition programs, under the guidance of licensed dietetic professionals, to help increase access to nutritional services.

Dr. Jane Pentz

Founder

Dr. Jane began her career in nutrition with an undergraduate degree in nutritional biochemistry from Vassar College while simultaneously raising three children. Her education continued at Tufts University where she received her Masters and Ph.D. degrees in nutritional biochemistry; she is one of only several hundred to ever earn a Ph.D. in Human Nutrition Sciences from the USDA Human Nutrition Research Center on Aging at Tufts University. In addition, Dr. Jane worked with the USDA Human Nutrition Research Center's team that completed ground breaking research on the effects of weight training in 80 and 90 year olds. After almost a decade of experience, Dr. Jane became aware of the need for a more formalized, safe and professionally accepted nutrition certification component for fitness professionals. Dr. Jane along with several colleagues founded the American Academy of Sports Dietitians and Nutritionists - www.aasdn.org. AASDN has established the Nutrition Specialist Certification.

Greg Salgueiro, MS, RD, LDN

Greg Salgueiro is a Registered and Licensed Dietitian in the State of Rhode Island. Greg began teaching the two-day Nutrition for Professionals course with Dr. Jane in 2008. He also held the position of the Director of Sports Nutrition for Lifestyle Management Associates and currently is the AASDN Nutrition Director. Greg is an ACSM Certified Exercise Physiologist and possesses a B.S. in Nutritional Sciences from Cornell University. Greg completed his Dietetic Internship at the Bronx VA Medical Center while simultaneously completing his M.S. in Clinical Nutrition at New York University.

Michael McElveen

Michael McElveen holds a bachelor's of science in health science and a master of science in sports medicine. Michael has been instructing the two-day Nutrition for Professionals course with Dr. Jane since July 2011. He began instructing the course after completing the sports nutrition certificate program through AASDN. Michael has experience working in a variety of settings including hospitals, other non-profit organizations and in the private setting. For the last ten years, Michael has worked full time in higher education. He currently serves as the director of recreation at Berry College. He is an active member of the NSCA and an active in the NIRSA, currently serving on the editorial board for the Recreational Sports Journal, NIRSA's scholarly publication. Michael's other credentials include: NSCA's certified strength and conditioning specialist, AASDN's nutrition specialist, NASM's performance enhancement specialist, FCB's tobacco treatment specialist and is a certified instructor through the American Red Cross.

Course Summary:

The percentage of consumers (your clients) who actively seek information about nutrition and healthful eating has more than doubled from 19% in 2000 to 46% in 2011 (Quagliani, 2015).

The purpose of this course is to provide a foundational understanding of the macronutrients and introduce the micronutrients. This course will cover the basic biochemistry of the energy nutrients including metabolism, digestion, absorption, and transport which provides you with knowledge about their basic physiological function in the body.

This fundamental understanding is an essential building block to the lifelong study of nutrition. The goal is to allow you to be able to better separate the science-based food and nutrition information from the plethora of misinformation, to properly advise and communicate about nutrition with your clients.

Objectives:

AASDN determined the need for a scientific, safe, and legal Nutrition Certification program for health professionals through a job analysis survey. The results of this survey also provided the required information for identification of the 5 performance domains used to develop the Nutrition Specialist Certification Exam

After completing this course you will be able to:

1. Describe the basic biology of cells and tissues in the human body, and their relationship to the study of nutrition.
2. Define digestion and absorption.
3. Briefly describe the vascular and lymphatic systems.
4. Define calories and identify the number of calories in the macro and micro nutrients.
5. Define metabolism, anabolism, catabolism, and homeostasis and discuss their importance in the human body.
6. Describe the importance and relationship of 4 dietary guideline systems.
7. Explain the function and role of carbohydrates in the human body and diet including:
 - Digestion and absorption
 - Glycogen
 - Glucose homeostasis
 - Gluconeogenesis
 - Ketosis
 - Glycemic index
 - Insulin resistance
 - Dietary fiber
 - Alcohol
 - Sweeteners
8. Explain the function and role of lipids in the human body and diet including:
 - Triglycerides and phospholipids
 - Fatty acids
 - Essential fatty acids

- Steroids
 - Digestion and absorption
 - Transport of lipids
9. Explain the function and role of proteins in the human body and diet including:
- Amino acids
 - Nitrogen
 - Digestion and absorption
 - Protein transport
 - Protein quality
10. Discuss the role of and requirements for water in the human body and diet.
11. Describe the role of, and requirements for, the 2 micronutrients in the human body and diet.
12. Explain how energy is produced in the human body and what systems are involved including:
- ATP-PC
 - Glycolysis
 - Tricarboxylic Acid (TCA) Cycle
 - Electron Transport Chain
 - ATP
13. Discuss energy nutrient utilization in the human body.
14. Identify the current concepts for energy intake including:
- Nutrient timing/periodization
 - Carbohydrates
 - Fats
 - Proteins
 - Fluids
 - Micronutrients
15. Explain 4 aspects of determining and meeting energy needs for the human diet.

Outline:

What is Nutrition?

Biology of Cells

Tissues in the Human Body

Digestion and Absorption

The Vascular System

The Lymphatic System

Calories

Anabolism and Catabolism

Homeostasis

Dietary Guidelines

- Individual Nutrient Intake Guidelines

- Daily Values on Food Labeling

- Dietary Guidelines for Americans

- Food Guidance Systems

- ChooseMyPlate.gov

- Healthy Eating Plate

Section 1 Review Questions

Essential Nutrients

- Carbohydrates

- Digestion of Carbohydrates

- Absorption of Carbohydrates

- Glycogen

Glucose Homeostasis

Gluconeogenesis

Ketosis

Glycemic Index

Insulin Resistance

Dietary Fiber

Alcohol

Sweeteners

Section 2 Review Questions

Lipids

Triglycerides and Phospholipids

Fatty Acids

Essential Fatty Acids

Steroids

Digestion of Lipids

Absorption of Lipids

Transport of Lipids

Section 3 Review Questions

Proteins

Amino Acids

Non-essential Amino Acids

Essential Amino Acids

Nitrogen

Digestion of Proteins

Absorption of Proteins

Protein Transport

Protein Quality

Section 4 Review Questions

Water

Micronutrients

Vitamins

Water Soluble Vitamins

Fat Soluble Vitamins

Minerals

Major Minerals

Trace Minerals

Energy

Energy Production

ATP-PC

Glycolysis

Tricarboxylic Acid (TCA) Cycle

Electron Transport Chain ATP

ATP

Energy Nutrient Utilization

Energy Intake

Nutrient Timing/Periodization

Carbohydrates

Fats

Protein

Fluids

Micronutrients

Section 5 Review Questions

Meeting Energy Needs

Basal Metabolic Rate (BMR)

Thermic Effect of Food (TEF)

Physical Activity (PA)

Estimated Energy Requirements (EER)

Summary

AASDN Position Statement Summary

Closing

Glossary of Nutrition Terms

Bibliography:

The information and material for this course is adapted from the American Academy of Sports Dietitians and Nutritionists Specialist Certificate Program. The ancillary text book for the certificate program and primary reference for this course is:

Pentz J and McElveen M (authors), Salueiro G, Reeza J, Coates EF, and Carr L (reviewers). (2013) Nutrition for Professionals. 9th Edition. info@AASDN.org. <http://aasdn.org>.

Additional primary references that may be found beneficial or interesting have been listed as well.

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