Course Name: Nutrition

Course Number: BIO - 151

Course Department: Science

Course Term:

Last Revised by Department: May, 2017

Total Semester Hour(s) Credit: 3

Total Contact Hours per Semester:

Lecture**:** 45

Catalog Description: The principles of human nutrition are studied in this course. This involves the metabolism of carbohydrates, lipids, and proteins. A study of vitamins, minerals, and water is also included. Emphasis is placed on proper nutrition during adulthood and proper diet in reference to disease. It is strongly recommended that BIO-112 General Biology I, BIO-168 Human Anatomy and Physiology I w/Lab, or equivalent precede this course. Three hours lecture.

Pre-requisites and/or Co-requisites:

Textbook Required: Loose Leaf for Wardlaw's Perspectives in Nutrition, 10 edition, ISBN: 9781260245820

Access Code: Connect Access ISBN: 9781260245820

Materials Required: N/A

Suggested Materials: N/A

Institutional Outcomes:

Critical Thinking: The ability to dissect a multitude of incoming information, sorting the pertinent from the irrelevant, in order to analyze, evaluate, synthesize, or apply the information to a defendable conclusion.

Effective Communication: Information, thoughts, feelings, attitudes, or beliefs transferred either verbally or nonverbally through a medium in which the intended meaning is clearly and correctly understood by the recipient with the expectation of feedback.

Personal Responsibility: Initiative to consistently meet or exceed stated expectations over time.

Department/Program Outcomes:

1. Students will be able to use the scientific method.
2. Students will be able to express how science impacts everyday life.
3. Students will be able to evaluate the results of an experiment.

Student Learning Outcomes:

- Evaluate nutrition related claims and advice.
- Apply dietary guidelines during the following stages of the life cycle: pregnancy, breastfeeding, growing years, and adult years.
- Discuss factors affecting food and water safety.
- Describe human digestion and absorption of nutrients.
- Describe the necessity of the energy-yielding nutrients.
- Discuss the health effects of alcohol.
- Describe energy metabolism.
- Use the concept of energy balance to make recommendations for weight control.
- Explain the benefits of physical activity and dietary advice for athletes.

Unit Objectives:

Unit 1: Define general nutrition terms.

Objective 1: Define nutrition, macronutrient, micronutrient, kilocalorie, malnutrition.

Unit 2: Classify nutrients.

Objective 1: Differentiate between essential and nonessential nutrients.
Objective 2: Distinguish and list the six major classes of nutrients.
Objective 3: List the differences between organic and inorganic nutrients.
Objective 4: Distinguish between energy yielding and non-energy yielding nutrients.
Objective 5: State the kilocalories available in a gram of carbohydrates, fats, proteins, and alcohol.

Unit 3: Use food planning systems and diet evaluation methods.

Objective 1: Match foods with the food group to which they belong using the new Daily Food Guide.
Objective 2: Identify the numbers of servings required for each food group using the new Daily Food Guide and the approximate amounts of foods required to count as a "serving".
Objective 3: Identify how the exchange system works and why foods can be exchanged for one another in this system.
Objective 4: Identify the uses of the exchange system.

Objective 5: Compare the exchange system to the Daily Food Guide.
Objective 6: List seven dietary guidelines for Americans, in general, for heart disease prevention, and for cancer prevention.
Objective 7: State the dietary requirements for lipids, carbohydrates, and proteins in the diet and computer the RDA for protein.

Unit 4: Interpret food labels.
Objective 1: Identify the meanings of labeling terms.
Objective 2: Interpret the meanings of food label content lists.
Objective 3: Differentiate between the RDA, RDI, and % Daily Value.
Objective 4: Use the metric system to make standard nutrition-related calculations.
Objective 5: Complete food label analysis.
Objective 6: Complete metric measurement exercise.

Unit 5: Understand the etiology of nutritionally implicated diseases.
Objective 1: Define heart disease, hypertension, and atherosclerosis.
Objective 2: List several factors which contribute to heart disease, hypertension, and atherosclerosis development and several foods which contribute to or aggravate these conditions.
Objective 3: Define cancer and state several factors which can lead to cancer development.
Objective 4: List several recommendations for reducing cancer risk.
Objective 5: Define diabetes mellitus type 1 and type 2.
Objective 6: List complications of diabetes mellitus.
Objective 7: Define HIV/AIDS.
Objective 8: Describe the HIV wasting syndrome.
Objective 9: List dietary recommendations for individuals diagnosed with diabetes mellitus, heart disease, hypertension, HIV/AIDS, and cancer.

Unit 6: Summarize the processes of digestion, absorption, and transport of nutrients.
Objective 1: Identify the path which food takes through the gastrointestinal tract.
Objective 2: Using diagrams, identify the anatomy of the gastrointestinal tract and describe the functions of each component.
Objective 3: Explain the function and location of the sphincters of the digestive system.
Objective 4: Identify the functions of insulin, glucagon, bile, CCK, Gastrin, secretin, bicarbonate, mucus, and HCl and the organ which secretes each.
Objective 5: Define digestion and absorption.
Objective 6: Distinguish between digestible and non-digestible materials.
Objective 7: Characterize enzyme function (lock & key analogy) and match the enzymes with their substrates.
Objective 8: Define mastication, peristalsis, chyme, and segmentation.
Objective 9: Identify where digestion of carbohydrates, fats, and proteins begins.
Objective10: Identify the different mechanisms of absorption (diffusion, active transport, facilitated diffusion, osmosis) and identify what each mechanism transports.
Objective11: Describe how monosaccharides, lipids, fatty acids, and amino acids are transported through the intestinal wall and throughout the body.
Objective 12: Identify the components of the circulatory system and lymphatic systems that relate to absorption and transport of food.
Objective 13: Identify routes by which nutrients are transported in the body.

Unit 7: Summarize characteristics of carbohydrates.
Objective 1: Differentiate between simple and complex carbohydrates.

Objective 2: Identify the major monosaccharides, disaccharides, and polysaccharides and state functions for each.
Objective 3: Differentiate between soluble and insoluble fibers and the functions and dietary sources of each.
Objective 4: Explain how the blood glucose levels are maintained.
Objective 5: Explain how glycogen is formed and where it is stored.
Objective 6: Define hypoglycemia and hyperglycemia and state the normal fasting blood glucose level.
Objective 7: Discuss lactose intolerance.

Unit 8: Summarize characteristics of lipids.
Objective 1: List and describe the three major types of lipids.
Objective 2: List the differences between saturated, monounsaturated, and polyunsaturated fatty acids by description.
Objective 3: List the primary functions of lipids in the body.
Objective 4: List the essential fatty acids and sources of them in the diet.
Objective 5: Identify the primary dietary sources of cholesterol and foods which are cholesterol free.
Objective 6: Define the term lipoprotein.
Objective 7: Name the serum lipoproteins and desired blood lipid profile.

Unit 9: Summarize characteristics of amino acids and proteins.
Objective 1: Describe the basic structure of an amino acid.
Objective 2: State how protein function is related to structure.
Objective 3: List functions of protein in the body.
Objective 4: Differentiate between incomplete and complete dietary proteins.
Objective 5: Define protein-energy malnutrition and differentiate between the clinical syndromes.
Objective 6: Differentiate between essential and nonessential amino acids.

Unit 10: Describe the processes of metabolism and energy expenditure.
Objective 1: Define metabolism and distinguish between anabolism and catabolism.
Objective 2: Identify the molecule that is the energy currency of the cell.
Objective 3: Describe the differences between aerobic and anaerobic metabolism and the energy yield of each.
Objective 4: State the preferred molecule for metabolism.
Objective 5: Define glycolysis and state where it occurs.
Objective 6: Describe the role of electron carriers and acetyl CoA in energy metabolism.
Objective 7: Describe the TCA cycle and the electron transport system and state where each occurs.
Objective 8: Define nitrogen balance and differentiate between positive and negative balance in relation to the life cycle.
Objective 9: Define deamination, transamination, and beta-oxidation.
Objective10: State the byproducts of lipid and protein metabolism and why they are a concern.
Objective11: List and describe the components of energy expenditure by the body.

Unit 11: Assess Diets.
Objective 1: List the diet-planning principles.
Objective 2: Define nutrient density and state nutritional impact.

Objective 3: Using the computer analysis program, analyze diets for the nutrient compositions and state changes that would improve them.
Objective 4: List and define the components of a nutritional assessment.

Unit 12: Understand the importance of vitamins.
Objective 1: List the differences between water-soluble and fat-soluble vitamins.
Objective 2: List the water-soluble vitamins along with their DRI and function.
Objective 3: List the deficiency and toxicity conditions for each water-soluble vitamin and the populations most at risk.
Objective 4: List the fat-soluble vitamins along with their DRI and function.
Objective 5: List the deficiency and toxicity conditions for each fat-soluble vitamin and the populations most at risk.
Objective 6: List the important dietary sources for all vitamins.

Unit 13: Understand the importance of minerals and water in the diet.
Objective 1: List the major minerals along with their DRI and functions.
Objective 2: List the deficiency and toxicity conditions of each major mineral and the populations at risk.
Objective 3: List the trace minerals along with their DRI and functions.
Objective 4: List the deficiency and toxicity conditions of each trace mineral and the populations at risk.
Objective 5: List the functions of water.
Objective 6: Explain how water balance is maintained in the body and state the importance of proper water balance.

Unit 14: Describe the agents which can make food unsafe to eat.
Objective 1: Define food-borne illness.
Objective 2: List ways to prevent food-borne illness.
Objective 3: List the food sources, symptoms, vectors, and prevention methods for Giardiasis, Hepatitis, Salmonellosis, E. Coli, Botulism, and staphylococcal infection.
Objective 4: Explain the role of food additives in food processing.
Task 5: Describe the benefits and dangers of pesticides in agriculture and food production.

Unit 15: Discuss the importance of proper nutrition during pregnancy and lactation.
Task 1: Define critical periods during fetal development.
Task 2: Outline current recommendations for energy intake and weight gain for the pregnant woman.
Task 3: Discuss the dietary needs for protein, carbohydrate, vitamins, and minerals during pregnancy and lactation.
Task 4: List the high-risk pregnancy factors.
Task 5: List the practices incompatible with pregnancy and lactation.

Unit 16: Discuss the importance of proper nutrition during the life cycle.
Task 1: Describe the energy and nutrient needs of infants, children, adolescents, and older adults.
Task 2: Explain the consequences of undernutrition at different stages of growth and development.
Task 3: Describe the changes that occur due to aging that affect nutrition.
Task 4: List the characteristics of the eating disorders anorexia nervosa and bulimia nervosa and the general guidelines for combating them.

Task 5: List the criteria for defining a healthy body weight.
Task 6: Define fitness and list the benefits and components of fitness.

College Procedures: All college-wide procedures are located in the Iowa Central Community College Student Handbook

Assessments: (Be specific. Include points, weighting, percentages, etc. Include all assessments both summative and formative quizzes, exams, papers, homework, etc.) Please note that assessments are subject to change (This statement needs to stay here to protect you in case of unexpected circumstances)

Non-discrimination statement:

It is the policy of Iowa Central Community College not to discriminate on the basis of race, color, national origin, sex, disability, age (employment), sexual orientation, gender identity, creed, religion, and actual or potential parental, family or marital status in its programs, activities, or employment practices as required by the Iowa Code §§ 216.6 and 216.9, Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C. §§ 1681 – 1688), Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), Age Discrimination Act of 1975 (34 CFR Part 110), and Title II of the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.).
If you have questions or complaints related to compliance with this policy, please contact Kim Whitmore, Director of Human Resources, phone number 515-574-1138, whitmore@iowacentral.edu; or the Director of the Office for Civil Rights, U.S. Department of Education, Citigroup Center, 500 W. Madison, Suite 1475, Chicago, IL 60661, phone number 312-730-1560, fax 312-730-1576.

Disability/Accommodation Services

If you have a request for an accommodation based on the impact of a disability, it is Iowa Central's policy that you contact the Academic Assistance & Accommodations Coordinator to discuss your specific needs and to provide supporting information and documentation, so we may determine appropriate accommodations. The office for accommodations is located in the Academic Resource Center, and it can be reached by calling 515-574-1045. For online information about accommodations, please go to www.iowacentral.edu/accommodations.

Bias-Free Classroom Statement

Nutrition maintains high standards of respect in regard to individual beliefs and values when selecting classroom materials including textbooks, project activities, power points, videos, presentations, and classroom discussions.

It is our belief that all people have the right to obtain an education within our department/program courses free of bias, with full respect demonstrated to all who enroll in the courses of this department/program.

The items in red are examples.
Course Name: Human Anatomy & Physiology I

Course Number: BIO-168

Course Department: Science

Course Term:

Last Revised by Department: May 2017

Total Semester Hour(s) Credit: 4

Total Contact Hours per Semester:

Lecture**:** 45 Lab: 30

Catalog Description: A study of the structure and function of the human body. This course is the first course of a two-semester sequence. The study begins at the molecular and cellular level and proceeds through the integumentary system, skeletal system, muscular system, the central, and peripheral and autonomic nervous systems. At least one year of high school biology or chemistry or the equivalent is recommended. Three hours lecture, two hours lab.

Pre-requisites and/or Co-requisites: None.

Textbook Required: Shier, D., Butler, J., and Lewis, R. Custom *Hole's Human Anatomy & Physiology*. 14th edition. McGraw-Hill, 2014. ISBN 978-007-802-4290

Martin. Custom *Laboratory Manual for Hole's Human Anatomy & Physiology*. 3rd edition. McGraw-Hill, 2016. ISBN 978-125-929-8653

Access Code: Connect access code ISBN 007-739-0792 *or*
Connect Plus access code ISBN 007-739-0830

Materials Required:

Suggested Materials: Optional text: Krieger*. A Visual Analogy Guide to Human Anatomy & Physiology*. 2nd edition. ISBN 161731066-2

Institutional Outcomes:

Critical Thinking: The ability to dissect a multitude of incoming information, sorting the pertinent from the irrelevant, in order to analyze, evaluate, synthesize, or apply the information to a defendable conclusion.

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Personal Responsibility: Initiative to consistently meet or exceed stated expectations over time.

Department/Program Outcomes:
1. Students will be able to use the scientific method.
2. Students will be able to express how science impacts everyday life.
3. Students will be able to evaluate the results of an experiment.

Student Learning Outcomes:
At the completion of the course, the student will be able to:

- analyze the levels of biological organization within the human body.
- identify the structures and systems of the human body in their form and organization.
- examine the mechanisms by which the human organism functions.

Unit Objectives:
Unit 1: Fundamentals of Human Anatomy & Physiology
Objective 1: Identify the levels of organization of the human body.
Objective 2: List the systems of the human body and give a brief explanation of the function of each.
Objective 3: Properly use anatomical terms that describe relative positions and body regions.
Objective 4: List the body cavities and the major organs which are found in each cavity.
Objective 5: Explain how negative feedback controls homeostasis.
Objective 6: Describe basic chemical concepts, including atomic structure and chemical bonding.
Objective 7: Describe the structure of an atom.
Objective 8: Describe the different types of chemical bonds.
Objective 9: Explain the pH scale and the function of buffers.
Objective 10: Identify the difference between organic and inorganic compounds.
Objective 11: Describe the structural and functional differences between carbohydrates, proteins, lipids, and nucleic acids.

Unit 2: Cellular Organization and Metabolism
Objective 1: Explain the general structure and function of a cell and relate this to the

functioning of the human body.
Objective 2: List cell organelles and describe their function.
Objective 3: Explain how proteins are synthesized in a cell.
Objective 4: Explain the process of cell division by mitosis.
Objective 5: Perform laboratory exercise to investigate cell structure and mitosis.
Objective 6: Explain how energy moves through a natural system by the processes of anabolism and catabolism.
Objective 7: Describe the structure and function of enzymes.
Objective 8: Compare the energy production from anaerobic and aerobic cellular respiration.
Objective 9: Describe how carbohydrates, proteins and lipids are utilized as energy sources.
Objective 10: Describe the processes used to transport materials across a cell's plasma membrane.
Objective 11: Define diffusion and describe the factors that affect the rate of transport.
Objective 12: Describe how the movement of water by osmosis is affected by the tonicity of the solutions separated by a semipermeable membrane.
Objective 13: Describe the difference between facilitated diffusion and active transport.
Objective 14: Perform laboratory experiments to investigate factors influencing transport.

Unit 3: Histology
Objective 1: List the four basic tissues of the body.
Objective 2: Describe the structure and give a location and function of each type of epithelial tissue.
Objective 3: Explain how exocrine glands are classified.
Objective 4: Describe the structure and give a location and function of each type of muscle tissue.
Objective 5: Describe the structure and give a location and function of each type of connective tissue.
Objective 6: Describe the structure and give a location and function of each type of cell found in nervous tissue.
Objective 7: Describe the four types of membranes.
Objective 8: Analyze and identify tissue samples.

Unit 4: Integumentary System
Objective 1: List the layers of the skin and describe the characteristics of each.
Objective 2: Explain the basic functions of the integumentary system.
Objective 3: List and describe the structure and function of epidermal derivatives.
Objective 4: Describe the three types of burns.

Unit 5: Skeletal system
Objective 1: Explain the functions of the skeletal system.
Objective 2: Classify bones according to their shapes.
Objective 3: Describe the histology and gross anatomy of bones.
Objective 4: Describe the processes of bone development and bone growth.
Objective 5: Locate and name the bones of the axial and appendicular skeleton.

Objective 6: Identify the major bone markings used for muscle attachment, ligament attachment and articulation.
Objective 7: Describe the healing process of a broken bone.
Objective 8: List the major joints of the body and describe the range of motion found in each.
Outcome 9: Describe the classification of joints according to structure, function and amount of movement.
Objective 10: List and describe the various movements which can be performed at articulations.

Unit 6: Muscular System
Objective 1: Describe the structure of a skeletal muscle.
Objective 2: Explain how neurons control skeletal muscle contractions.
Objective 3: Describe the sliding filament model and the major events of skeletal muscle contraction.
Objective 4: Describe the different types of muscle contractions and how each type is used in the body.
Objective 5: Compare and contrast the structural and physiological differences between skeletal, cardiac and smooth muscle.
Outcome 6: List the major muscle groups in the body and describe how they produce movement at the major joints.
Objective 7: Explain how muscles function according to location and cooperative function.

Unit 7: Nervous System
Outcome 1: Identify and describe the structural and functional components of the central and peripheral nervous systems.
Objective 2: Describe how the nervous system detects and responds to stimuli.
Objective 3: Explain how information is transferred along a presynaptic neuron and then passed to a postsynaptic neuron.
Objective 4: Describe the functions of the major parts of the brain and brainstem.
Objective 5: Explain the function, production and flow of cerebrospinal fluid.
Objective 6: Describe the structure of the spinal cord in relation to the spinal nerves and tracts.
Objective 7: Explain how an action potential is generated.
Objective 8: Perform a dissection of the sheep brain in the laboratory.
Objective 9: List the twelve cranial nerves and describe the function of each.
Objective 10: Describe the meninges.
Objective 11: List the plexuses of the spinal nerves and the major nerves arising from each.
Outcome 12: Define reflex arc and list its components.
Objective 13: Describe the anatomical and physiological differences between the sympathetic and parasympathetic division of the autonomic nervous system.
Objective 14: Explain how different neurotransmitters influence cells.
Objective 15: Distinguish between cholinergic and adrenergic nerve fibers.
Objective 16: Compare the neurotransmitters produced by postganglionic neurons.

Objective 17: List general body response to stimulation by the sympathetic and parasympathetic divisions.

Unit 8: Life-span changes
Objective 1: Describe the life-span changes that affect cells, the integumentary system, the skeletal system, the muscular system, and the nervous system.

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The items in red are examples.
Course Name: Human Anatomy & Physiology II

Course Number: BIO-173

Course Department: Science

Course Term:

Last Revised by Department: May 2017

Total Semester Hour(s) Credit: 4

Total Contact Hours per Semester:

Lecture**:** 45 Lab: 30

Catalog Description: The second course in a two-semester sequence. The study continues with the senses, endocrine system, blood and cardiovascular system, lymphatic system and immunity, respiratory, digestive, urinary, and the reproductive systems. Three hours lecture, two hours lab.

Pre-requisites and/or Co-requisites: None.

Textbook Required: Shier, D., Butler, J., and Lewis, R. Custom *Hole's Human Anatomy & Physiology*. 14th edition. McGraw-Hill, 2014. ISBN 978-007-802-4290

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- examine the mechanisms by which the human organism functions.

Unit Objectives:
Unit 1: Senses
Objective 1: Describe the general and special senses and their primary functions.
Objective 2: Name the five types of sensory receptors and explain the function of each.
Objective 3: Describe how sensory impulses are produced.
Objective 4: Explain how sensory information is interpreted in the brain..
Objective 5: Explain how the senses of taste and smell are produced and the relationship between the two.
Objective 6: Identify the anatomical features of the outer, middle and inner ear and explain their functions in hearing and equilibrium.
Objective 7: Identify the anatomical features of the eye and explain their functions.
Objective 8: Describe the pathway associated with vision and image processing.

Unit 2: Endocrine System
Objective 1: Distinguish between endocrine and exocrine glands.
Objective 2: Classify hormones and describe how each type stimulates its target cells.
Objective 3: Name and describe the locations of the major endocrine glands. .
Objective 4: List the hormones secreted by the major endocrine glands and list the functions of each hormone.
Objective 5: Explain how hormone levels are controlled by negative feedback mechanisms.

Objective 6: Explain common diseases and disorders associated with hypersecretion and hyposecretion of hormones.
Objective 7: List examples of hormones produced by body tissues, which are not part of the endocrine system.
Objective 8: Describe the hypothalamic-pituitary-adrenal axis and the general stress response.

Unit 3: Cardiovascular System and Blood
Objective 1: Identify the components of blood and describe the function(s) of each.
Objective 2: Discuss erythrocytes including cell count, erythropoiesis, hemoglobin, dietary factors that control affect production, and blood groups.
Objective 3: List leukocytes and give the percentage and function of each in the blood.
Objective 4: Summarize the process of blood clotting and compare extrinsic to intrinsic clotting.
Objective 5: Identify the anatomy of the heart and major blood vessels of the body and explain their relationships in the circulation of blood.
Objective 6: Explain the cardiac cycle including the conduction system, electrocardiogram, heart sounds and pressure changes.
Objective 7: Discuss factors that influence the flow of blood through the vessels.
Objective 8: Identify the major arteries and veins of the human body.
Objective 9: Explain common diseases and disorders of the cardiovascular system.
Objective 10: Define cardiac output and explain how it is controlled by heart rate and stroke volume.
Objective 11: Explain the processes involved in regulation of heart rate and stroke volume.
Objective 12: Describe the factors, which influence blood volume.
Objective 13: Compare the path of circulation through the pulmonary and systemic circuits.

Unit 4: Lymphatic System
Objective 1: Identify and describe the major lymphatic pathways.
Objective 2: List the basic functions of the lymphatic system.
Objective 3: Compare and contrast the structure of lymphatic vessels to the vessels of the circulatory system.
Objective 4: Discuss major lymphatic tissues and lymphatic organs.
Objective 5: List and describe innate body defenses.
Objective 6: Explain the difference between innate defenses and adaptive immunity.
Objective 7: Describe the methods by which cell mediated and humoral immunity protect against pathogens.
Objective 8: Distinguish between primary and secondary immunity.
Objective 9: Identify the parts of an antibody molecule.
Objective 10: Discuss the five types of immunoglobulins.
Objective 11: Explain the four practical classifications of immunity and herd immunity.
Objective 12: Explain how immune mechanisms cause hypersensitivity reactions, tissue rejection reactions, and autoimmunity.

Unit 5: Respiratory System
Objective 1: List the basic functions of the respiratory system.
Objective 2: Identify and describe the anatomical components of the respiratory system.
Objective 3: Describe the processes of ventilation.
Objective 4: List nonrespiratory air movements.
Objective 5: Explain gas exchange in internal and external respiration with consideration given to partial pressure of gases.
Objective 6: Describe the manner in which oxygen and carbon dioxide are transported in the blood.
Objective 7: Describe the factors and processes, which control respiratory rate and depth of respiration.
Objective 8: Explain how respiration controls the pH of the blood.
Objective 9: Explain common diseases and disorders of the respiratory system.

Unit 6: Digestive System
Objective 1: Identify the anatomy of the digestive system and describe the mechanical and chemical digestion which occurs throughout the system.
Objective 2: Explain the location and method of absorption of carbohydrates, proteins and lipids.
Objective 3: Describe the mechanisms which regulate the processes of digestion.
Objective 4: Identify and give functions for the different types of teeth.
Objective 5: Explain common diseases and disorders of the digestive system.

Unit 7: Urinary System and Water, Electrolyte, and Acid-Base Balance
Objective 1: List the functions of the urinary system.
Objective 2: Identify the anatomy of the urinary system and explain the function of its parts.
Objective 3: Describe the process of glomerular filtration and the make-up of filtrate.
Objective 4: Explain the ways that glomerular filtration rate is regulated.
Objective 5: Describe the processes of reabsorption and secretion in the tubules of the nephron, and its role in electrolyte and acid-base balance.
Objective 6: Explain common diseases and disorders of the urinary system.
Objective 7: Explain how water and electrolyte balance is maintained.
Objective 8: Describe fluid distribution and movements in body compartments.
Objective 9: Explain acid-base balance and the mechanisms used to maintain pH of body fluids.

Unit 8: Reproductive System
Objective 1: Outline the process of meiosis and the role of meiosis in the production of spermatocytes and oocytes.
Objective 2: Identify and describe the anatomical components of the male reproductive system.
Objective 3: Explain the regulation and production of sperm within the seminiferous tubules.
Objective 4: Describe the processes of erection, emission and ejaculation.
Objective 5: Explain common causes of male and female infertility.

Objective 6: Identify and describe the anatomical components of the female reproductive system.
Objective 7: Describe the phases and hormonal control of the menstrual cycle.
Objective 8: Describe methods of birth control.

Unit 9: Life-span changes
Objective 1: Describe the life-span changes that affect the senses, the endocrine system, the cardiovascular system, the lymphatic system, the respiratory system, the digestive system, the urinary system, and the reproductive system.

College Procedures: All college-wide procedures are located in the Iowa Central Community College Student Handbook

Assessments: (Be specific. Include points, weighting, percentages, etc. Include all assessments both summative and formative quizzes, exams, papers, homework, etc.)
Please note that assessments are subject to change (This statement needs to stay here to protect you in case of unexpected circumstances)

Non-discrimination statement:

It is the policy of Iowa Central Community College not to discriminate on the basis of race, color, national origin, sex, disability, age (employment), sexual orientation, gender identity, creed, religion, and actual or potential parental, family or marital status in its programs, activities, or employment practices as required by the Iowa Code §§ 216.6 and 216.9, Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C. §§ 1681 – 1688), Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), Age Discrimination Act of 1975 (34 CFR Part 110), and Title II of the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.).
If you have questions or complaints related to compliance with this policy, please contact Kim Whitmore, Director of Human Resources, phone number 515-574-1138, whitmore@iowacentral.edu; or the Director of the Office for Civil Rights, U.S. Department of Education, Citigroup Center, 500 W. Madison, Suite 1475, Chicago, IL 60661, phone number 312-730-1560, fax 312-730-1576.

Disability/Accommodation Services

If you have a request for an accommodation based on the impact of a disability, it is Iowa Central's policy that you contact the Academic Assistance & Accommodations Coordinator to discuss your specific needs and to provide supporting information and documentation, so we may determine appropriate accommodations. The office for accommodations is located in the Academic Resource Center, and it can be reached by calling 515-574-1045. For online information about accommodations, please go to www.iowacentral.edu/accommodations.

Bias-Free Classroom Statement

Human Anatomy & Physiology II maintains high standards of respect in regard to individual beliefs and values when selecting classroom materials including textbooks, project activities, power points, videos, presentations, and classroom discussions.

It is our belief that all people have the right to obtain an education within our department/program courses free of bias, with full respect demonstrated to all who enroll in the courses of this department/program.

IOWA CENTRAL COMMUNITY COLLEGE

Course Syllabus		
Course Name: Microbiology Course Number: BIO-186- Course Department: Science Course Term: Revised: May 2017		
Room: Day: Time: Room: Day: Time:		
Course Start Date:	Course End Date:	
Instructor:	Office Location:	
E-mail Address:	Office Hours: Days: Times:	
Phone: (515) 574- or (800) 362-2793 x	Days: Times: Days: Times:	
Final Exam: Day:	Date: Time:	

Total Semester Hour(s) Credit: 4

Total Contact Hours per Semester:

Lecture: 45 Lab: 30

Catalog Description:
This is a study of microorganisms with emphasis on bacteria and viruses along with an overview of fungi and protozoan. Topics covered include scientific method, classification, morphology, physiology, culturing techniques, identification, control, diseases, and host defense. It is designed for health-care majors. It is strongly recommended that BIO-112 General Biology I or BIO-168 Human Anatomy and Physiology w/Lab or equivalent precede this course. Three hours lecture, two hours lab.

Pre-requisites and/or Co-requisites:

Textbook Required: ISBN #978-161-731-8474 Microbiology: Laboratory Theory and Application. Leboffe and Pierce. Custom 4th edition. ISBN #978-126-024-7053 Microbiology: A Systems Approach w/Connect Plus Access Code. Cowan. 5th edition plus access code.

Materials Required: (All additional course material, i.e. a folder, calculator, etc. If you are requiring "clickers," include that statement here)

Suggested Materials: (include anything that might help your students, i.e. a suggested reading list)

Institutional Outcomes:

Critical Thinking: The ability to dissect a multitude of incoming information, sorting the pertinent from the irrelevant, in order to analyze, evaluate, synthesize, or apply the information to a defendable conclusion.

Effective Communication: Information, thoughts, feelings, attitudes, or beliefs transferred either verbally or nonverbally through a medium in which the intended meaning is clearly and correctly understood by the recipient with the expectation of feedback.

Personal Responsibility: Initiative to consistently meet or exceed stated expectations over time.

Department/Program Outcomes:
1. Students will be able to use the scientific method.
2. Students will be able to express how science impacts everyday life.
3. Students will be able to evaluate the results of an experiment.

Student Learning Outcomes
1. Rank the impact of the scientific discoveries that led to modern day microbiology
2. Compare the domains of life
3. Evaluate the relationship between microbes and their hosts
4. Compare the methods to control, inhibit or improve microbial growth
5. Summarize the chemicals and processes that constitute microorganisms

Unit Objectives
Unit 1: Underlying themes of microbiology
Objective 1: Apply the steps of the Scientific Method to microbiology.
Objective 2: Demonstrate microbiological techniques.

Unit 2: Bacteria, Archaea and Eukarya
Objective 1: Summarize the classification system.
Objective 2: Contrast the morphological characteristics of microbiological organisms and viruses.

Unit 3: Microbe-human interactions
Objective 1: Diagram the steps of the infection process.
Objective 2: Diagram the lines of host defense.

Unit 4: Microbial growth

Objective 1: Recommend appropriate methods for microbial control.

Objective 2: Differentiate the growth requirements of microorganisms.

Unit 5: Chemistry and metabolism of microbes

Objective 1: Compare the macromolecules.

Objective 2: Describe the physiological process of microorganisms.

College Procedures:

Administrative Withdrawal: An expectation of this course is that you will participate in all class meetings and conscientiously complete all required course activities and/or assignments. You will be notified via Iowa Central email and Triton Alerts when you have missed 15%, 20%, and 25%. It is your responsibility to check email and signup for Triton Alerts. After you miss 25% of scheduled class meetings, you will be administratively withdrawn from this course. You have the right to appeal the withdrawal to the Vice President of Instruction. Administrative withdrawal may have academic, scholarship, financial aid, and/or housing implications. If you have questions about the administrative withdrawal policy at any point during the semester, please contact me.

Americans with Disabilities Act (Nondiscrimination) Statement:

As required by the Department of Education, it is the policy of Iowa Central Community College not to discriminate on the basis of race, creed, color, sexual orientation, gender identity, national origin, sex, disability, religion, or age in its programs, activities, or employment practices as required by the Iowa Code sections 216.9 and 256.10(2), Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C.§§ 1681 – 1688), Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), and the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.).

Individuals having questions or complaints related to compliance with this policy should contact the Vice President of Enrollment Management and Student Development or the Director of the Office for Civil Rights, U.S. Department of Education, Citigroup Center, 500 W. Madison, Suite 1475, Chicago, IL 60661, phone number 312/730-1560, fax 312/730-1576.

Children in the Classroom: Students are not allowed to bring children into the classrooms, labs, shops, or hallways during class times.

Class Cancelation: Class cancelations will be posted on Triton Pass and emailed to students. Cancelations, including campus closings, are also available as text messages through Triton Alerts.

Course Withdrawal Procedure:

1. The student will submit the withdrawal request online. This is located in WebAdvisor.
2. The instructor immediately receives an email telling him/her that the student has requested the drop.
3. The instructor will go into WebAdvisor and approve or deny the request. The instructor may also contact you to discuss the request.
4. If the instructor does not respond immediately, he/she will receive an email each night until the request is approved or denied.
5. If the instructor does not respond after two working days, the dean will receive an email saying the instructor has not responded to the request yet.
6. Once the request is approved, the Student Records Office will withdraw the student based on the date the student submitted the request.

Grade Appeal Process:

Students who believe a course grade they have received is inaccurate may seek an appeal. Please refer to the Student Handbook for more specific information.

Weather Policy: In the event of delayed or canceled classes due to extreme weather conditions an email will be sent out to ALL students and staff. The Triton Alerts emergency text messaging service will send a text message to all students who are signed up for the service. Notifications will also be distributed through the Iowa Central App. Instructors may make final decisions on make-ups due to inclement weather. The final decision to attend college classes can only be made by the individual based on his or her specific extenuating circumstances that may make it hazardous for him or her to travel. Additional information can be found on the Iowa Central web site. (Current Students - Student Life)

Special Assistance:

Iowa Central Community College offers a wide variety of individual help for students. We have academic assistance in the Academic Resource Center & Student Support Services/TRIO programs, a licensed counselor, a school nurse and services to help students map and achieve goals. These services are free of charge and available to all Iowa Central students:

- Academic Resource Center (ARC): 1-515-574-1045
- Counselor: 1-515-574-1051
- Triton Enrichment Center: 1-515-574-1192
- Nurse: 1-515-574-1047
- Student Support Services/TRIO: 1-515-574-1165

If you may need an accommodation based on the impact of a disability, please contact the Academic Assistance & Accommodations Coordinator to discuss

your specific needs and to determine appropriate accommodations. The office for accommodations is located in the Academic Resource Center, and it can be reached by calling 515.574.1045. For online information about accommodations, please go to http://www.iowacentral.edu/arc.

Course Specific Policies: (If there is something you need to add, then please do so. For example, a statement about safety. You are not allowed to remove any of the following heading. If you do not use iNET for example, simple state that you will not be using it or put N/A.)

Assessments: (Be specific. Include points, weighting, percentages, etc. Include all assessments both summative and formative quizzes, exams, papers, homework, etc.)

Please note that assessments are subject to change (This statement needs to stay here to protect you in case of unexpected circumstances)

Classroom Management and Behavior: (Please explain student behaviors that will not be tolerated, e.g. texting, inappropriate language, packing up their bags before class is over, etc. What is your specific technology policy? Can they use tablets/laptops for notes?)

Communication: (How should students contact you? Do you want them texting you? How soon will you respond to emails? Do we need to include a statement about grammar, etc. in regards to email? Can we add it to one of the above? What email do you want your students to use? If you only want them to use their Iowa Central email, please state so)

Computer Considerations: (a statement similar to: The college computers have "Microsoft Word". "Works" and other programs may not open unless you save the file as a rich text format or .rtf file. Excuses about disks or printers are not acceptable. Complete your work early and this will not be a problem.)

Course Syllabus Agreement: (Include a statement that basically explains that by remaining enrolled in your course, the student agrees to the policies in the syllabi. A student acknowledgement could be added to the end of the syllabus for submission)

Extra Credit Policy: (Include type and number of points. If no extra credit is available, state that here. Extra credit points need to be established before the start of your class)

Final Exam Policy: (What is the penalty for missing or arriving late to the final exam period?)

Grading Policy/Scale: (Explain your specific grading policy here. 100-90 is an "A" etc.)

Group Work/Collaboration: (Can students work in groups or together on assignments?)

iNET Statement: (Please include a statement about if and how you will use iNET in your classes.)

Late Work Policy: (Do you accept it? What are the penalties?)

Participation/Attendance Policy: (Be specific here about number of classes that can be missed and regarding points (or not) for participation.
Be specific regarding points (or not) for participation)

Personal Responsibility: (What do you expect of them in the event that they miss class? Do they contact you? How do they contact you? Is it their responsibility to come to your office to collect material that they miss?)

Previous Work: (Can students submit work that has been previously submitted in other courses? What about resubmitting work again in the event of a retake? Many colleges view this as a form of plagiarism)

Scholastic Dishonesty: (What specifically is your policy? Do they fail the course without the chance of dropping if they cheat or plagiarize? Your specific policy and penalties need to be outlined here. YOU CANNOT SIMPLY STATE "SEE STUDENT HANDBOOK" Please refer to the examples in the email with this document attached for examples of specific policies.)

Standards for Written Work: (Do you require work to be typed? What are standards for grammar, punctuation, etc? Will you be using MLA or APA format if applicable?)

Teaching Philosophy: (What techniques are you going to use in your class, lecture, group work, discussion?)

Turnitin.com Statement: (If you use it, include a statement about evaluations being submitted and that this is a requirement for the course if you are using it. It is recommended that you would at minimum state that you may use it.)

This workforce solution is funded by the IHUM Consortium which is 100% financed through a $15,000,000 grant from the U.S. Department of Labor's Employment & Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.