HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE NUMBER & TITLE: BIOL 1050 - Human Biology
CREDITS: 3 (Lecture 2 / Lab 1)
PREREQUISITES: None

CATALOG DESCRIPTION:
Human Biology is a course in modern biology intended for non-majors. Major topics include genetics and inherited traits, ecology and evolution, human physiology and development, adaptation, and interactions involved in natural systems. Human Biology is centered on relevant concepts affecting humans. MNTC goal areas: (3)Natural Science and (10)People and Environment.

OUTLINE OF MAJOR CONTENT AREAS:

I. Introduction to human biology
   A. Science and the scientific method
   B. Characteristics of life
   C. Future directions in biology
II. Chemistry of life
   A. Organic molecules
   B. Enzymes
   C. Energy and adenosine triphosphate (ATP)
   D. Deoxyribonucleic acid (DNA) and ribonucleic acid (RNA)
III. Human genetics
   A. Mitosis and meiosis
   B. Mendelian genetics
   C. Diversity within species
IV. Natural selection and evolution
   A. Speciation
   B. Evolutionary change
V. Ecosystem organization and energy flow
   A. Ecology and the environment
   B. Ecological communities
   C. Ecosystems
   D. Community interactions
VI. Human physiology and adaptation
   A. Circulation
   B. Gas exchange
   C. Obtaining nutrients
   D. Waste disposal
   E. Nutrition

F. Control systems
G. Reproduction and human sexuality

VII. Origin and classification of life
A. Theories on the origin of life
B. Classification of organisms

COURSE GOALS/OBJECTIVES/OUTCOMES:

The student will

1. define biology and list several ways in which biology is relevant to his/her life.
2. differentiate among science, non-science, and pseudoscience and provide examples of each.
3. explain what is meant by the scientific method and describe the basic steps commonly used by scientists.
4. list the major characteristics of living organisms.
5. list and describe several major trends in biology which dramatically affect humans.
6. relate the science of chemistry to the study of biological systems.
7. list the major organic molecules, give examples of organic molecules, and provide an explanation of the importance of organic molecules to living organisms.
8. diagram the lock and key hypothesis of enzyme action, explain the importance of enzymes in living organisms, and list several examples of enzymes.
9. describe how living organisms obtain, process, and transform energy.
10. diagram the structure of DNA and RNA, and explain the processes of replication, transcription, and translation.
11. explain how DNA research and technology impact human life.
12. identify the stages of mitosis and meiosis and explain the significance of cell division to living organisms.
13. discuss the contributions of Gregor Mendel to the field of biology and genetics.
14. solve genetics problems which deal with common human inheritance patterns.
15. describe how inherited human characteristics are passed from generation to generation.
16. relate the concept of diversity within species to the significance of population genetics as a way to understand how human genetic diseases are transmitted
17. explain the role of natural selection in evolution.
18. identify how genetic differences come about and how they may change a sexually reproducing species over thousands of generations.
19. describe how energy is used and converted within living groups.
20. diagram the ecological order of living organisms and list examples of communities and ecosystems of the world.

21. describe the interactions that occur within ecosystems and how organisms within communities affect each other in the cycling of matter.
22. list the systems of the human body responsible for materials exchange.
23. describe how humans obtain nutrients and deal with metabolic wastes.
24. describe the systems responsible for control and regulation of physiological processes.
25. describe the human reproductive system and discuss current societal issues related to it.
26. describe several theories which seek to explain the origin of cellular life.
27. explain how living organisms are classified, list the major groups of living organisms, and discuss the reasons for extinction of species, both past and present.

MNTC GOALS AND COMPETENCIES MET:
Natural Science
People and the Environment

HCC COMPETENCIES MET:
Working Productively and Cooperatively
Communicating Clearly and Effectively
Thinking Creatively and Critically

STUDENT CONTRIBUTIONS:
Students are expected to attend all lecture and laboratory sessions, participate in and contribute to class discussions, complete all assignments on time, and request assistance when needed. Attendance is critical for the successful completion of this course. Students must abide by all rules of laboratory safety, act in a responsible manner, and treat others with respect.

METHODS FOR EVALUATING STUDENT LEARNING:
Student evaluation will be on the basis of cumulative points gained during the course. The evaluative methods are written examinations, quizzes, writing exercises, journal article analysis, laboratory notebooks and exams, case study exercises, class participation, and data collection and evaluation.

SPECIAL INFORMATION:
The laboratory portion of this course may involve moderate physical activities, exposure to harmful chemicals, and field work under extreme weather conditions. Students will be supplied with pertinent information relating to the above at the appropriate time.

AASC APPROVAL DATE: February 25, 2014

REVIEW DATE: February 2019

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