HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE TITLE & NUMBER: Genetics: BIOL 2100
CREDITS: 4 (Lecture 3 / Lab 1)
PREREQUISITES: College-level reading. BIOL 1510 required. BIOL 1520 strongly recommended.

CATALOG DESCRIPTION:

Genetics is an exploration of heredity and the variation of inherited characteristics. It includes the study of genes, how genes function, interact, and produce the visible and measurable characteristics we see in individuals and populations of species as they change from one generation to the next, over time, and in different environments. Previous coursework in chemistry is helpful but not required. MNTC Goal Area(s): (03) Natural Sciences.

OUTLINE OF MAJOR CONTENT AREAS:

1. DNA structure and function
2. Cell cycle, mitosis, and meiosis
3. Mendelian principles and analysis of inheritance
4. Multi-gene expression
5. Non-Mendelian inheritance
6. Gene mapping
7. Chromosomal abnormalities
8. Genome organization in viruses, prokaryotes, and eukaryotes
9. DNA replication
10. Transcription
11. Translation
12. Mutations
13. Population and evolutionary genetics
14. Cancer and medical genetics
15. Current issues and bioethics

COURSE GOALS/OBJECTIVES/OUTCOMES:

1. Students will explain and apply fundamental concepts related to the storage, transfer, and expression of genetic information at the cellular, organismal, and population level.
2. Students will use critical thinking skills to understand, evaluate, and analyze processes of inheritance.
3. Students will demonstrate ability to apply relevant statistical tests to genetic data.
4. Students will formulate a hypothesis, and conduct and analyze an experiment with a model organism.
5. Students will organize, draft, edit, and revise formal scientific writing.
6. Students will read, interpret, incorporate, and cite information and ideas from primary literature into writing.
7. Students will utilize and understand the application of a genetic technology.

MNTC GOALS AND COMPETENCIES MET:

Natural Sciences

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 confine laboratory activities to only those assigned and are required to follow all written safety rules. Protective equipment will be provided.

METHODS FOR EVALUATING STUDENT LEARNING:

Student assessment shall take place using instruments selected/developed by the course instructor.

SPECIAL INFORMATION:

This course requires college-level reading and the ability to function in a laboratory. Laboratory includes the use of microscopes, small instruments, glassware, heat sources, lab animals and chemicals. Students will be expected to follow all laboratory safety procedures as distributed to students prior to the initial laboratory session.

Curriculum Committee Approval Date: December 3, 2018

AASC APPROVAL DATE: December 19, 2018
REVIEW DATE: December 2023