Fond du Lac Tribal and Community College **COURSE OUTLINE FORM**

03/19/19

Please return this form to the college vice president of academic affairs and the chairperson of the Academic Affairs and Standards Council (AASC)

1. Prepared by:	
2. Date submitted:	
3. Date approved: 04/27/23	Date revised
4. Department/discipline: Biology	
5. Department(s) endorsement(s): (Signatures of the person(s) providing the endorsement)	ndorsement are required.)
6. Course Title: <u>Genetics</u> Abbreviated course title for Transcripts (25	characters or less):
7. Course Designator: <u>BIOL</u>	8. Course Level: 2101
9. Number of Credits: Lecture 3	Lab <u>1</u>
10. Control Number (on site) 48	Control Number (online) 25
11. Catalog/Course description:	
This course is a survey of molecular and M	endelian genetics for the student interested in

transfer to a 4-year degree in Biology. Students will be expected to understand and apply genetic concepts at the molecular, cellular, organismal, and population levels. An introduction to statistical analysis of genetic data as well as the use of traditional and modern laboratory techniques will complete this course. Research will also be emphasized. (MnTC goal area 3).

12. Course prerequisite(s) or co-requisite(s): Accuplacer scores/ Other courses

Prerequisite(s): BIOL 1101 General Biology I and BIOL 1102 General Biology II Co-requisite:

13. Course Materials (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

Text such as Essentials of Genetics, 10th Ed. Klug, Cummings, Spencer, Palladino, and Killian, Pearson.

- 14. Course Content (Provide an outline of major topics covered in course)
 - 1. Mitosis and Meiosis
 - 2. Mendelian Genetics
 - 3. Sex Determination and Sex Chromosomes
 - 4. Chromosome Mutations
 - 5. Linkage and Chromosome Mapping in Eukaryotes
 - 6. Genetic Analysis and Mapping in Bacteria and Bateriaphages
 - 7. DNA Structure and Analysis

8. DNA Replication

- 9. Chromosome Structure and DNA Sequence Organization
- 10. The Genetic Code and Transcription
- 11. Translation and Proteins
- 12. Gene Mutation, DNA Repair, and Transposition
- 13. Regulation of Gene Expression in Bacteria and Eukaryotes
- 14. Recombinant DNA Technology
- 15. Genomics and Bioinformatics

15. Learning Goals, Outcomes, and Assessment

At FDLTCC we have 4 Competencies Across the Curriculum (CAC) areas. They are as follows:

- A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information.)
- B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)
- C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)
- D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one's own traditions and culture, knowledge of others' traditions and cultures, culture of work, culture of academic disciplines and/or respect for global diversity.)

Upon completion of this course, the student will be able to:

Learning Outcomes	Competencies (CAC)	Cultural Standards
Explain fundamental	B, C	
concepts related to the		
storage, transfer, and		
expression of genetic		
information.		
Understand and evaluate	B, C	
processes of inheritance.		
Formulate a hypothesis and	B, C	
test that hypothesis		
experimentally.		
Communicate experimental	В	
findings.		
Demonstrate effective	С	
laboratory technique in the		
genetics lab.		

WINHEC Cultural Standards:

- 1. GIKENDAASOWIN *Knowing knowledge:* To develop human beings who value knowledge, learning, and critical thinking and are able to effectively use the language, knowledge, and skills central to an Ojibwe-Anishinaabe way of knowing.
- GWAYAKWAADIZIWIN *Living a balanced way:* To develop balanced human beings who are reflective, informed learners who understand the interrelatedness of human society and the natural environment, recognize the importance of living in

harmony with creation, and are able to apply a systems approach to understanding and deciding on a course of action.

- **3. ZOONGIDE'EWIN** *Strong hearted:* To increase the students' capacity to live and walk with a strong heart, humble and open to new ideas and courageous enough to confront the accepted truths of history and society.
- **4. AANGWAAMIZIWIN** *Diligence and caution:* To develop students' capacity to proceed carefully, after identifying, discussing, and reflecting on the logical and ethical dimensions of political, social, and personal life.
- **5. DEBWEWIN** *Honesty and integrity:* To increase students' capacity to think and act with honesty and integrity as they understand and face the realities of increasingly interdependent nations and people.
- 6. ZAAGI' IDIWIN *Loving and Caring:* To encourage students' acceptance of the diversity within their school, community, and environment by developing healthy, caring relationships built on respect for all.
- 7. ZHAWENINDIWIN *Compassion:* To expand students' knowledge of the human condition and human cultures and the importance of compassion especially in relation to behavior, ideas, and values expressed in the works of human imagination and thought.

16. Minnesota Transfer Curriculum (MnTC): List which goal area(s) – up to two – this course fulfills.

See <u>www.mntransfer.org</u>

Goal Area(s): 3

Goal Area 3: Natural Sciences

To improve students' understanding of natural science principles and of the methods of scientific inquiry, i.e., the ways in which scientists investigate natural science phenomena. As a basis for lifelong learning, students need to know the vocabulary of science and to realize that while a set of principles has been developed through the work of previous scientists, ongoing scientific inquiry and new knowledge will bring changes in some of the ways scientists view the world. By studying the problems that engage today's scientists, students learn to appreciate the importance of science in their lives and to understand the value of a scientific perspective. Students should be encouraged to study both the biological and physical sciences.

17. Are there any additional licensing/certification requirements involved?

Yes X No

Provide the required documentation to show course meets required licensing/certification standards.

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