

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: 3/3/2016 Date revised 4/13/2021

4. Department/discipline: Science

5. Department(s) endorsement(s): _____
(Signatures of the person(s) providing the endorsement are required.)

6. Course Title: Investigative Science II
Abbreviated course title for Transcripts (25 characters or less): _____

7. Course Designator: SCI 8. Course Level: 1285

9. Number of Credits: Lecture 3 Lab 1

10. Control Number (on site) 30 Control Number (online) 25

11. Catalog/Course description:

This course will provide an exploration of fundamental concepts in physics, Earth, and space science through inquiry-based, hands-on exercises including the preparation and proper use of equipment and supplies in Earth science laboratory. Emphasis will be placed on science education principles and connections to state and national science education standards. This course will incorporate the Anishinaabe perspective throughout the course. (Meets MnTC goal area 3).

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

Prerequisite(s):

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).

Integrated Science; Sixth Edition Bill Tillery, Eldon D. Enger and Frederick C Ross; McGraw Hill; 2011

Standard Composition notebook (approx. 8 X 10")

14. **Course Content** (Provide an outline of major topics covered in course)

1. Scientific perspectives in physics, Earth, and space science
2. Scientific connections in physics, Earth, and space science
3. Science in personal and social perspectives as it relates to physics and Earth/space science
4. Science methods and materials for teaching science and scientific inquiry in physics and Earth/space science

5. Careers and contributions in physical sciences and engineering
6. Basic properties of kinematics and momentum
7. Technology in the Earth and space sciences
8. Properties of light and the electromagnetic spectrum
9. Forms of energy and matter
10. Identification and classification of rocks and minerals
11. The-changing earth through the rock cycle, the structure of the Earth, plate tectonics and the landforms that occur from said processes
12. Weather and climate
13. The Solar System, its formation, celestial bodies
14. Current technologies for identifying planets where life could be sustained
15. The Anishinaabe perspective of science in shaping tradition and protecting native traditions vital to the people

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
Identify examples of Indigenous Earth System and Space Scientific phenomena. Apply the scientific method to laboratory activities, a scientific project based upon a hypothesis, an engineering project; and apply measurements, tools and metric system in laboratory activities.	A, B, C	4
Describe the basic principles of motion and force and apply basics to laboratory exercises. Describe and apply the basic principles of energy, heat, light, sound,	B, C	1

electricity, and magnetism.		
Interpret information provided in maps and the importance of other types of scientific models to help study science.	B, C, D	2
Describe and apply the four sub-division of Earth and Space Science.		

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.
2. **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 www.mntransfer.org

Goal Area(s): 3

Goal 3: Natural Sciences

Goal: 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.

Students will be able to:

Demonstrate understanding of scientific theories.

Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

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

Yes No

MN PELSB Standards of Effective Practice (SEP) and/or Content Standards

Content Standards: *8710.3200 Elementary Education*

Minnesota Board of Teaching Learning Standards: 8710.3200 Subject Matter standards:

8710.3200 Subject Matter standards:

J: A teacher of children in kindergarten through grade 6 must demonstrate a fundamental knowledge of scientific perspectives, scientific connections, science in personal and social perspectives, the domains of science, and the methods and materials for teaching science and scientific inquiry. The teacher must: § J2: know and apply the understandings and abilities of scientific inquiry including the ability to:

J2c: use appropriate scientific instrumentation and equipment and mathematics as tools to improve scientific investigations and communications;

J2e: evaluate alternative explanations and models based on evidence, current scientific understanding, and logic.

J2f: communicate and defend a scientific argument.

J5: know and apply the fundamental concepts and principles of physical science concerning properties of and changes in matter; position, motion, and force; light, heat, electricity, and magnetism; and kinds of and ways to transfer energy.

J7: know and apply the fundamental concepts and principles of earth and space science concerning properties of earth materials; objects in the sky; changes in earth and sky; structure of the earth system, including hydrosphere, biosphere, atmosphere, and lithosphere; history of the earth; and earth in the solar system

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