I. **Catalog Description:**

**Lecture BIO 216:** This course is an introduction to the study of plants and medicines used by Native Americans and basic plant biology as taught in traditional universities. Topics to be covered include plant cell biology, morphology, and physiology, photosynthesis and plant classification and identification. Ecology, food production and wood usage will be discussed along with techniques and philosophies for proper harvesting, care and medicinal applications according to indigenous knowledge. The course will encompass the medicinal, ceremonial, and culinary uses of plants among Native American tribes and the contemporary worldwide adoption of indigenous plant knowledge.

**Lab BIO 216A:** The lab will supplement the lecture with experiential learning incorporating the above objectives.

II. **Prerequisites, pre-/co-requisites, co-requisites, recommended:** BIO 216 has a co-requisite laboratory class-BIO 216A that enhances the information and concepts discussed in this course. Also, instruction of how to successfully identify plants requires students to experience and study plant life and diversity in the field.

It is highly recommended that students have tested out of ENG 096, ENG 098, and MTH 095 through their COPASS assessment session. The rationale for this recommendation is based from the instructor’s classroom experience with students that have challenges with reading comprehension, basic writing skills and math. The unprepared student struggles with understanding the science texts, terminology and concepts.

III. **Rationale for Course Level:** Through the study of Native American botanical science the student will develop the skills to understand Indigenous and Western plant biology/knowledge at an introductory level. We will explore and integrate concepts, principles and processes important to living in a sustainable manner with Mother Earth and photosynthetic life. Awareness of Indigenous plant use (and loss due to industrialization and globalization) will encourage students to support environmental justice for all and appreciate the diverse gifts from photosynthetic life.

The course does not cover all topics that have traditionally been taught in Botany curriculum; however, it does provide a comprehensive background in plant biology, by emphasizing depth rather than breadth, the course seeks to empower students rather than intimidate them with a collection of isolated and forgettable facts. Teachers are free to add related concepts and skills, but they are expected to teach all the standards and objectives specified in the SOR. This course relates directly to student needs and interests. It is grounded in the natural world in which we live. Relevance of science to other endeavors enables students to transfer skills gained from science instruction into their other school subjects and into their lives outside the classroom.
IV. **Suggested Textbooks:**

Botany in a Day: The Patterns Method of Plant Identification, Thomas J. Elpel, 1892784353  
Strength of the Earth, Frances Densmore, 0873515625  
A Field Guide to Medicinal Plants and Herbs of Eastern and Cent NA, James A Duke and Stephen Foster, 0395988144

V. **Student Learning Course Objectives:**

**Institutional Learning Goals:**

Students will:

1. Demonstrate competency in reading, writing, oral communication, and numerical literacy  
2. Be able to evaluate information  
3. Consider multiple perspectives from the diversity of human experience

**Student learning outcomes:**

**Lecture Outcomes:**

1. Summarize introductory concepts of plant physiology including nutrition, water relations, internal transport, respiration and photosynthesis.  
2. Compare and contrast between Western botanical and indigenous relationships with the plant world with a focus on Anishinaabe plant knowledge  
3. Conduct basic research and report on individual plant species regarding growth habit, ecological status, biological characteristics, important chemical constituents, cautions and applications by humans.

**Laboratory outcomes:**

1. Create and maintain a laboratory notebook that reflects understanding of the scientific process and method.  
2. Identify and explain the functions of the major parts of plants as examined in the lab, of fruits, flowers, stems, roots and leaves.  
3. Demonstrate the fundamental approach to plant identification and recognize the key character traits of a minimum of 8 plant families (families: grass, legume, Brassicaceae, Apiaceae, Lamiaceae, Lilaceae, Asteraceae, Malvaceae) through plant collections created by each student.  
4. Applying knowledge to prepare and/ or utilize plant based products such as salves, cleaning products, tinctures, infusions and dyes.
### VI. Suggested Course Outline:

<table>
<thead>
<tr>
<th>Week</th>
<th>Daily Topic lectures &amp; discussions</th>
<th>L O</th>
<th>Readings</th>
<th>Weekly LAB topics</th>
<th>L O</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction – Natural versus Unnatural &amp; “wholistic” health (Medicine Wheel)</td>
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<td>syllabus</td>
<td>Introduction to lab</td>
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<td></td>
<td>Plants in our Lives/ Natural vs Unnatural</td>
<td></td>
<td>Chap 1 PS</td>
<td>Onion Creek Plant walk</td>
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<td>BD pg 1-15</td>
<td>Wild Plants in Your Yard</td>
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<td>2</td>
<td>The Plant Cell</td>
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<td>Chap 2 PS</td>
<td>Lab Safety session &amp; safety quiz</td>
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<td></td>
<td>The Plant Body</td>
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<td>BD pg 16-24</td>
<td>Investigation of plant cells &amp; tissues with microscopes</td>
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<td>Learn to use your plant identification texts</td>
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<td>Chap 3 PS</td>
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<td>BD pg 25-35</td>
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<td>3</td>
<td>Plant Life Cycle: Flowers</td>
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<td>Chap 5 PS</td>
<td>Leaf , Flowers, Seeds &amp; Fruits</td>
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<td>Plant Life Cycle: Fruits &amp; Seeds</td>
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<td>BD 36-54</td>
<td>Morphology – Start seed viability test</td>
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<td>Chap 6 PS</td>
<td>Plant Identification Session</td>
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<td>4</td>
<td>Plant Physiology</td>
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<td>Chap 4 PS</td>
<td>Plant Collections and</td>
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<td>BD p 55-67</td>
<td>Introduction to research projects</td>
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<td>Plant Systematics</td>
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<td>Chap 8 PS</td>
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<td>BD pg 70-84</td>
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<td>5</td>
<td>Diversity of Plant Life</td>
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<td>Chap 9 PS</td>
<td>Photosynthesis &amp; Respiration</td>
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<td>BD p 85-104</td>
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<td>Human Nutrition- food as medicine</td>
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<td>Chap 10 PS</td>
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<td>Anishinaabek foods</td>
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<td>BD p 105-122</td>
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<td>6</td>
<td>Origins of Agriculture</td>
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<td>Chap 11 PS</td>
<td>LAB PRACTICUM</td>
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<td>Indigenous agriculture</td>
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<td>BD 123-140</td>
<td>Sprouting Beans</td>
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<td></td>
<td>Course</td>
<td>Chapter or Section</td>
<td>Syllabus Material</td>
<td>Notes</td>
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<td>7</td>
<td>The Grasses</td>
<td>Chap 12</td>
<td>PS BD p141-159</td>
<td>The Three Sisters &amp; Exam study session</td>
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<td></td>
<td>Sweet Grass</td>
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<td>7</td>
<td>MIDTERM EXAM chaps 1-12</td>
<td>STUDY</td>
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<td>The Four Sacred plants (Spiritual medicine) &amp;</td>
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<td></td>
<td>Legumes</td>
<td>Chap 13-14</td>
<td>PS BD p 160-178</td>
<td>Cedar Salve Lab</td>
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<td>Starchy Staples</td>
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<td>8</td>
<td>Stimulating Beverages</td>
<td>Chap 16</td>
<td>PS BD p 179-192</td>
<td>Teas, Cocoa, Herbs and Spice lab-listening to plants using all our senses (Mental medicine)</td>
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<td></td>
<td>Herbs &amp; Spices</td>
<td>Chap 17</td>
<td>PS BD p17</td>
<td>Plant collections Due</td>
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<tr>
<td>9</td>
<td>Medicinal Plants</td>
<td>Chap 19</td>
<td>PS BD p194-206</td>
<td>Research &amp; Outline presentations</td>
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<td>Native Medicines: Tonics, tinctures, infusions lab</td>
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<td>10</td>
<td>Psychoactive Plants</td>
<td>Chap 20</td>
<td>PS BD p 210-218</td>
<td>Finish presentations</td>
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<td>MIDTERM Grades due &amp; last week to withdraw</td>
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<td>Finish infusions etc</td>
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<td>Poisonous &amp; Allergy Plants</td>
<td>Chap 21</td>
<td>PS</td>
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<td>11</td>
<td>Materials: Clothes, wood etc</td>
<td>Chap 18</td>
<td>PS</td>
<td>Begin Plant Dye/ Soap lab</td>
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<td>Plants Ecology</td>
<td>Chap 26</td>
<td>PS</td>
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<td>12</td>
<td>Plants used by Anishinaabe</td>
<td>Strength Earth</td>
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<td>Investigate traditional plant uses - with guest facilitator</td>
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<td>13</td>
<td>Plants used by Anishinaabe</td>
<td>handouts</td>
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<td>Native Food Feast → potluck-nutritional medicine</td>
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<td>Wilderness First Aid</td>
<td>Handouts</td>
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<td>THANKSGIVING WEEK no class on Thursday</td>
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<td>15</td>
<td>Presentations of Research Projects</td>
<td>TBA</td>
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<td>16</td>
<td>Lecture Final &amp; Lab final</td>
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VIII. Suggested Course Evaluation:

Assignments, quizzes & exams will document the student’s understanding of course topics. Lab journals will be maintained by each student to monitor the student’s growth in research capabilities, and critical analysis efforts. A Plant & Medicine Cultural Research Project that requires investigation of a plant(s) usage and integrates botanical and indigenous science aspects will serve as the final project.

1] Mid-term exam (10%); 2] assignments/ quizzes (25%)
3] Participation points (10%) 4] cumulative final lecture (10 %)
5] The Plant & Medicine Cultural Research Project (25%)

Lab:

1] Participation points (10%) 2] quality of lab journals (20%)
3] Lab assignments/ quizzes (40%) 4] exams (20%)
5] Plant Collection (10%)

IX. Bibliography


**Instructor edited or shared PowerPoint presentations:**


**DVDs and Videos**


References FYI: Native American Plants & Medicine BIO 216 & 216A

**EDIBLE FLOWERS• GREAT WEBSITE (16 PAGES & PHOTOS)**

http://whatscookingamerica.net/EdibleFlowers/EdibleFlowersMain.htm

**COOKING WITH LAVENDER**

http://www.joys-of-lavender.com/lavender-recipes.html

**MICHIGAN WETLANDS PROTECTION**

http://www.michigan.gov/deq/0,1607,7-135-3313_3687---,00.html

Wildflowers & Weeds

http://www.wildflowers-and-weeds.com/

Potawatami Medicine

http://www.manataka.org/page53.html

Household Products Database


Household Hazard Report •


Omâmiwinini Pimâdjwowin: The Algonquin Way Cultural Centre

http://www.thealgonquinway.ca/English/about-e.php

Susun Weed• Herbal practitioner

http://www.susunweed.com/susunweedarticles.htm

**Syllabus Prepared By:**

Cheryl Calhoun BS

**Typed Name of Faculty, Credentials**

(Date Syllabus Created/Updated if MCS Review)

**Date**