ZO 120

Wildlife & Fisheries Biology

3 Credits

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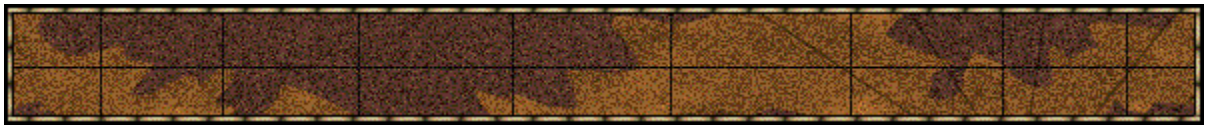

Wildlife & Fisheries Biology

Calendar Description

Students learn the classification, identification, anatomy, physiology, biology and ecology of fish and wildlife found in the Prairie Provinces. Species are comparatively distinguished using morphological characteristics. Additionally, amphibians are identified by calls and mammals by skull and dental characteristics and by hides. Students can earn a certificate in amphibian identification and will begin training towards obtaining their Electrofishing and Pleasure Craft Operator certifications.

Rationale

This is a required course for the Wildlife and Fisheries Conservation major. By providing the fundamental skillset of fish and wildlife identification by sight and sound, this course prepares the student for working with fish and wildlife and provides a foundation for subsequent courses in this program. In addition, this course begins to equip students with qualification and certifications sought after by employers.

Prerequisites

BI 110

Co-Requisites

None

Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. identify and give the function of major anatomical features of fish and wildlife.
2. identify the sport fish of Alberta and Saskatchewan by sight.
3. describe aspects of the biology, ecology and broad habitat requirements of the sport fish of Alberta and Saskatchewan.
4. describe electrofishing theory, techniques and associated water safety considerations.
5. acquire a pleasure craft operator card, required to legally operate a motorized watercraft.

6. identify the amphibians and reptiles of the prairie provinces by sight and the amphibians by calls.
7. Acquire a competency certificate for visual and auditory amphibian identification.
8. describe aspects of the biology, ecology and physiology of selected terrestrial vertebrates.
9. identify mammals of the prairie provinces using slides, hides, skulls and mounts.
10. describe the procedures for mammalian dissection and for labeling biological samples.
11. list the taxonomic classification of the vertebrates covered.

Essential Employability Skills

Essential employability skills are critical for workplace success and lifelong learning. Lakeland College prepares its graduates for the workplace and lifelong learning by integrating and promoting essential employability skills development in its curricula. Each credit course offered at Lakeland College emphasizes one or more of the following five essential employability skills:

A. **Communication Skills** that enable individuals to listen, interpret, express, and convey knowledge and ideas so that they are received and understood.
B. **Teamwork Skills** that enable individuals to respect the thoughts and opinions of others as they work together to plan activities, meet deadlines, complete projects, and contribute to an organization's goals.
C. **Critical Thinking Skills** that enable individuals to conceptualize and analyze issues from various perspectives while rationally evaluating the strengths and limitations of each perspective and deciding what action to take.
D. **Adaptability Skills** that enable individuals to respond quickly, willingly, and positively to new conditions and changing times.
E. **Positive Attitude and Behavioural Skills** that enable individuals to be confident about themselves and to deal with people, problems, and situations with honesty, integrity, and personal ethics.

Resource Materials

***Required Textbook(s)*:**
A course booklet is required for the second half of the course that covers terrestrial vertebrates. This is sold to students in class for the cost of printing.

***Required App(s)*:**

- NatureTracking. iTrackWildlife Pro.
    - This app includes wildlife identification including skull and signs like animal tracks and scats that will be used in the next year of the program.

***Recommended Websites*:**
1) Alberta Conservation Association. Amphibians of Alberta.
https://www.ab-conservation.com/avamp/identification-keys/juvenile-and-adult-amphibians-of-alberta/

2) Alberta Conservation Association. Reptiles of Alberta.
https://www.ab-conservation.com/avamp/identification-keys/juvenile-and-adult-reptiles-of-alberta/

3) NatureNorth. Amphibians of Manitoba. (this site has the calls of all our amphibians except the western toad).
http://naturenorth.com/1np/Species/amphibian/1Spec-am.html

4) Alberta Conservation Association. Alberta Volunteer Amphibian Monitoring Program. (submit citizen science submissions on sightings of herptiles and hibernacula)
https://www.ab-conservation.com/avamp/identification-keys/juvenile-and-adult-amphibians-of-alberta/frogs-and-toads/

5) Canadian Herpetological Society. Amphibians and Reptiles of Canada.
http://www.canadianherpetology.ca/species/index.html

6) Alberta Amphibian and Reptile Conservancy. Species.
http://savingalbertasherps.org/Species.html

Recommended Apps:

1. Audubon Mammals
2. Mammals of North America (Princeton)
3. Audubon Fishes
4. Audubon Reptiles and Amphibians
5. NatureWatch: FrogWatch

***Reference Textbook(s)*:**

Current identification guidebooks that cover the species present in western Canada are commonly carried in the field by biologists. Many wildlife identification guidebooks are now available as an app that can be purchased and downloaded from iTunes or the Android store. Detailed notes are provided in class, but the following books are recommended (*out of print - used copies available only):

Books:

Naughton, D. 2012. The natural history of Canadian mammals. Canadian Museum of Nature, University of Toronto Press.

*Eder, T., and G. Kennedy. 2012. Mammals of Canada. Lone Pine Publishing.

*Fisher, C., A. Joynt and R. Brooks. 2007. Reptiles and Amphibians of Canada. Lone Pine Publishing.

*Russell, A., and A.M. Bauer. 2000. The Amphibians and Reptiles of Alberta: A field guide and primer of Boreal Herpetology. University of Calgary Press.

*Joynt, A., and M.G. Sullivan. 2003. Fish of Alberta. Lone Pine Publishing.

*Nelson, J.S., and M.J. Paetz. 1992. The fishes of Alberta. University of Alberta Press.

Scott, W.B., and E.J. Crossman. 1998. Freshwater fishes of Canada. Bulletin 184. Fisheries Research Board of Canada, Ottawa, Ontario.

Conduct of Course

This course is a lecture/lab course that is divided into two sections; the first dealing with fish, and the second with the amphibians, reptiles and mammals of the Prairie Provinces. The lecture is a formalized classroom situation where the instructor discusses pertinent topics. The lab component is composed of both lecture material and specimen examination, emphasizing identification skills using comparisons. Students can earn certification for amphibian identification by sight and sound. Labs include training for certification in electrofishing and towards obtaining a Pleasure Craft Operators card. Clean and sealed rubber boots, a lab coat and safety glasses are required for the mammal dissection lab.

Evaluation Procedures

The final grade for the course is weighted according to the following schedule:

Fisheries Lecture Exam	15%
Fisheries Lab Exam: • Identification using photos and/or specimens	15%
Fisheries Labs (Assignment or Quiz) (5 at 4% each)	20%
Wildlife Lecture Exam: • Identification from slides (7.5%) and questions from lecture material (7.5%)	15%
Wildlife Lab Exam: • Identification using mounts, hides, skulls and preserved specimens (15%)	15%
Wildlife Quizzes (5% each) 1) Visual identification of herptiles 2) Auditory identification of amphibians by calls 3) Visual identification of hoofed mammals and carnivores 4) Visual identification of lagomorphs and rodents	20%
Total	100%

To obtain credit in this course, all assignments must be completed and, where appropriate, handed in on time. Late assignments are NOT graded: a grade of zero is assigned.

Knowledge/Skills Matrix

Students apply and demonstrate their knowledge and skills to use

A. Communication Skills

A1. by listening, reading, interpreting information, and communicating effectively
Evaluation(s)/Goal(s): Quizzes, Midterm and Final Exams; Goals 1-11
A2. by using written, spoken, and/or visual formats and media to communicate and meet needs of each particular audience
Evaluation(s)/Goal(s): Quizzes, Midterm and Final Exams; Goals 1-11
A3. by using libraries, internet, technical publications, journals and other sources to find pertinent information
Evaluation(s)/Goal(s): Quizzes, Midterm and Final Exams; Goals 1-11

B. Teamwork Skills

B1. by using interpersonal skills to create an atmosphere that maximizes the strengths of group members to accomplish tasks
Evaluation(s)/Goal(s): Water safety, mammal dissection lab, in-class review of material
B2. by using interpersonal skills to resolve conflict, relate to others, and assist others
Evaluation(s)/Goal(s): Water safety, mammal dissection lab, in-class review
B3. by contributing and listening to others as group determines realistic objectives, prioritizes tasks, and identifies resources and timelines
Evaluation(s)/Goal(s): Water safety, mammal dissection
B4. by treating other members of the group open-mindedly and fairly
Evaluation(s)/Goal(s): Water safety, mammal dissection, in-class discussions
B5. by developing tactics/strategies to accomplish tasks
Evaluation(s)/Goal(s): Water safety, mammal dissection

C. Critical Thinking Skills

C1. by seeing critical thinking as a lifelong process of self assessment
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
C2. by examining problems closely
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
C3. by examining beliefs, assumptions, and opinions, and weigh them against the facts
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
C4. by seeking out the truth
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
C5. by finding solutions; make decisions
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
C6. by incorporating new ideas that may not necessarily agree with previous thought on the topic
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
C7. by seeing connections between topics and use knowledge from other disciplines to enhance reading and learning experiences
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes

D. Adaptability Skills

D1. by working independently or as part of team
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
D2. by carrying out multiple tasks or projects
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
D3. by being innovative and resourceful: identify and suggest alternative ways to get the job done
Evaluation(s)/Goal(s): Goals 1-11; Laboratory Assignments/Quizzes
D4. by being open and respond constructively to change and uncertainty
Evaluation(s)/Goal(s): Goals 1-11; Laboratory Assignments/Quizzes - water safety

E. Positive Attitude and Behavioural Skills

E1. by dealing with people, problems, and situations with honesty, integrity, and personal ethics
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
E2. by showing interest, initiative, and effort
Evaluation(s)/Goal(s): Midterm and Final Exams; Goals 1-11; Laboratory Assignments/Quizzes
E3. by affirming the need for positive solutions and encourage positive interaction and feedback
Evaluation(s)/Goal(s): Goals 1-11; Laboratory Assignments/Quizzes
E4. by balancing personal and family activities with job-related activities
Evaluation(s)/Goal(s): N/A

Grade Equivalents and Course Pass Requirements

A minimum grade of D (50%) (1.00) is required to pass this course.

Letter	F	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Percent Range	0-49	50-52	53-56	57-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100
Points	0.00	1.00	1.30	1.70	2.00	2.30	2.70	3.00	3.30	3.70	4.00	4.00

Students must maintain a cumulative grade of C (GPA - Grade Point Average of 2.00) in order to qualify to graduate.

Attendance

Classroom and laboratory attendance is considered vital to the learning process and as significant to the students' evaluation as examinations and reports, therefore absenteeism is recorded.

a. Students having a combination of excused and/or unexcused absence of 20 percent or higher for the scheduled course hours can be required to withdraw and would then automatically receive a "RW" (required withdrawal) for the course, regardless of any other evaluation results. (RW is a failing grade).

b. An excused absence is one that is verified with your instructor. Verification should be prior to the absence or the next class day following the absence. Verification of the absence may take the form of a note from your doctor/College nurse regarding illness, or a note from another instructor regarding a field trip or other activity, or authorization by your instructor following an in-person meeting. Be sure to contact your instructor and ask what they will require from you as verification for each absence. An unexcused absence is anything NOT verified by the instructor prior to the absence or the next class day following the absence.

NOTE: Any exceptions to the above attendance policy (e.g. timetable conflicts, work-related issues) must be approved in writing by the Department Chair prior to the beginning of the course.

It is the students' responsibility to know their own absentee record.

Normal hours are 8:30 a.m. to 6:30 p.m., with potential for evening courses, exams or extended field trips. Students are expected to be available for classes during these times.

Course Units/Topics

Course Units/Calendar Note: Order of instruction may vary and each topic may run over more than one lecture.

Lectures: Fisheries

1. External and internal anatomy of fishes - basic structure and function
2. Taxonomy and classification of fishes - introduction
3. Identification, distribution and biology of Salmonids in Alberta and Saskatchewan
4. Identification, distribution and biology of warm water sport fishes in Alberta and Saskatchewan
5. Classification, identification and biology of families of fishes found in Canada

Lectures: Wildlife

Lectures will emphasize the identification, classification, anatomy, physiology, biology, natural history and distribution of the terrestrial vertebrates inhabiting the Prairie Provinces.

6. Amphibians & Reptiles (Herptiles):
   - Amphibian natural history
   - Comparative visual identification of Bufonidae, Hylidae, Pelobatidae and Ranidae
   - Identification of Anura (frogs and toads) by calls
7. Hoofed Mammals (deer, cows, goats, pigs and sheep)
   - The natural history of hoofed mammals
   - Comparative visual identification of Antilocapridae, Bovidae, Cervidae and Suidae

8. Carnivores
    - The natural history of carnivores (bears, cats, dogs, raccoons, skunks and weasels)
    - Comparative visual identification of Canidae, Felidae, Procyonidae, Mephitidae, Mustelidae & Ursidae
9. Lagomorphs (hares, pika's and rabbits)
    - The natural history of lagomorphs
    - Comparative visual identification of Leporidae and Ochotonidae
10. Rodents
    - Biology, Ecology and Natural History
    - Comparative visual identification of Castoridae, Erethizontidae, Geomyidae, Heteromyidae, Muridae, Sciuridae and Zapodidae
11. Shrews
    - Biology, Ecology and Natural History
    - Comparative visual identification of Sorcidae

Laboratory Units:

The exact order of labs may vary and the list may be modified at any time to accommodate alternative learning opportunities.

Fisheries Labs

1. Fish anatomy
2. Salmonid identification
3. Warm water sport fish identification
4. Electrofishing theory and techniques
5. Working around water safety training, with emphasis on electrofishing
6. Pleasure Craft Operator card - certification
7. Lab exam

Wildlife Labs

1. Comparative identification of amphibians and reptiles by calls and from specimens.
2. Survey methods and conservation programs for amphibians.
3. Comparative identification of mammals from specimens including skulls, mounts and hides.
4. Introduction to anatomy (dissection), physiology, necropsy and voucher specimen preparation.
5. Lab exam (identification using specimens).

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