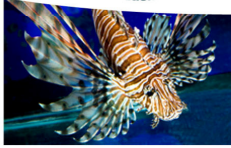




zoo school



COURSE OUTLINE 2012

Course Title:	Biology
Course Code:	SBI3U
Grade:	11
Course Type:	University Preparation
Credit Value:	1.0
Prerequisite:	Science, Grade 10, Academic (SNC2D)
Department:	Science
Course Developer:	Toronto Zoo
Development Date:	2010
Curriculum Policy Document:	Science, The Ontario Curriculum, Grades 11 and 12, 2008 (revised)

A Day in the Life of Zoo School

The following is an example of a typical day at Zoo School. Please note each day will be different and timings/activities will vary.

Example Lesson: Meiotic Division

09:00 - 09:30	- Review of homework, introduction to today's topic
09:30 - 10:30	- Interactive lesson in the classroom
10:30 - 12:00	- "Genetics Tour" – meet the Curator of Reproductive Programs
12:00 - 12:30	- Lunch
12:30 - 13:30	- Practical lesson – observing meiosis under the microscope
13:30 - 14:30	- Visit the cheetah – discussion about conservation genetics
14:30 - 15:30	- Back in the classroom to recap today's lesson and complete assignment(s)

Reference to the Ontario Curriculum:

A. Scientific Investigation skills and career exploration A2.1. **C. Evolution** C1.1, C1.2, C2.1, C3.2, C3.4. **D. Genetic processes** D1.2, D2.2, D3.1, D3.2, D3.5.

***Please note:** The Zoo School educator will be available to offer additional support to students/parents by appointment.*

Course Description

Through interactive lessons, behind-the-scenes tours, and discussions with Zoo staff, students will not only learn the complexities of biological systems, but will see them in practice at the Toronto Zoo. Students will study theory and conduct investigations in the areas of diversity of living things; evolution; genetic processes; the structure and function of animals; and the anatomy, growth, and function of plants. The course focuses on the theoretical aspects of the topics under study and helps students refine their skills related to scientific investigation. Students will also have an opportunity to meet several Zoo staff to understand the scope of careers that the study of biology can lead to.

Unit Descriptions

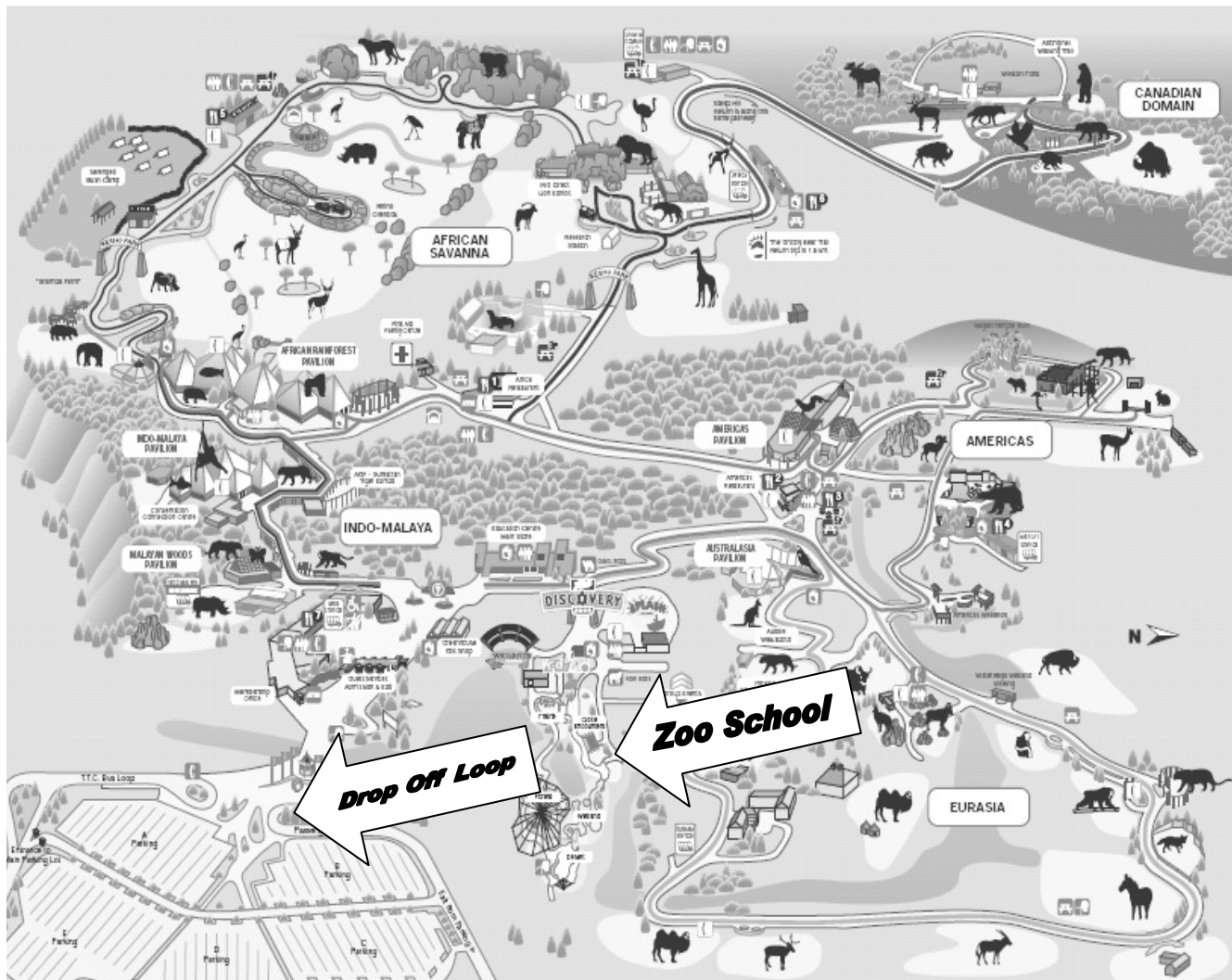
Unit	Unit description	Time
Unit A	<p style="text-align: center;"><u>Scientific Investigation Skills and Career Exploration</u></p> <p>Overall Expectations:</p> <ul style="list-style-type: none"> • A1. demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analysing and interpreting, and communicating); • A2. identify and describe careers related to the fields of science under study, and describe the contributions of scientists, including Canadians, to those fields. <p>At the Zoo Students will:</p> <ul style="list-style-type: none"> • Use their investigation skills to examine scientific theory, throughout units B-F. • Get the opportunity to meet and question various Zoo staff to discuss their career choices. 	10 hours
Unit B	<p style="text-align: center;"><u>Diversity of Living Things</u></p> <p>Overall Expectations:</p> <ul style="list-style-type: none"> • B1. analyse the effects of various human activities on the diversity of living things; • B2. investigate, through laboratory and/or field activities or through simulations, the principles of scientific classification, using appropriate sampling and classification techniques; • B3. demonstrate an understanding of the diversity of living 	21 hours

	<p>organisms in terms of the principles of taxonomy and phylogeny.</p> <p>At the Zoo Students will:</p> <ul style="list-style-type: none"> • Visit examples of endangered animals in the Zoo collection, and analyse the effects of various human activities on the diversity of living things. • Investigate, through laboratory and Zoo site activities, the principles of scientific classification, using appropriate sampling and classification techniques. • Investigate the vast array of animals at the Zoo to gain an understanding of the diversity of living organisms in terms of the principles of taxonomy and phylogeny. 	
<p>Unit C</p>	<p style="text-align: center;"><u>Evolution</u></p> <p>Overall Expectations:</p> <ul style="list-style-type: none"> • C1. analyse the economic and environmental advantages and disadvantages of an artificial selection technology, and evaluate the impact of environmental changes on natural selection and endangered species; • C2. investigate evolutionary processes, and analyse scientific evidence that supports the theory of evolution; • C3. demonstrate an understanding of the theory of evolution, the evidence that supports it, and some of the mechanisms by which it occurs. <p>At the Zoo students will:</p> <ul style="list-style-type: none"> • Analyse the economic and environmental advantages and disadvantages of artificial selection technology, and evaluate the impact of environmental changes on natural selection and endangered species. • Investigate evolutionary processes, and analyse scientific evidence and Zoo animal characteristics that support the theory of evolution. 	<p style="text-align: center;">19 hours</p>
<p>Unit D</p>	<p style="text-align: center;"><u>Genetic Processes</u></p> <p>Overall Expectations:</p> <ul style="list-style-type: none"> • D1. evaluate the importance of some recent contributions to our knowledge of genetic processes, and analyse social and ethical implications of genetic and genomic research; • D2. investigate genetic processes, including those that occur during meiosis, and analyse data to solve basic genetics problems involving monohybrid and dihybrid crosses; • D3. demonstrate an understanding of concepts, processes, and technologies related to the transmission of hereditary characteristics. <p>At the Zoo students will:</p>	<p style="text-align: center;">19 hours</p>

	<ul style="list-style-type: none"> • Evaluate the importance of some recent contributions to our knowledge of genetic processes, and how these can be used in Zoo breeding programs. • Analyse social and ethical implications of genetic and genomic research. • Investigate genetic processes, including those that occur during meiosis, and analyse data to solve basic genetics problems involving monohybrid and dihybrid crosses. • Demonstrate an understanding of concepts, processes, and technologies related to the transmission of hereditary characteristics. 	
<p>Unit E</p>	<p style="text-align: center;"><u>Animals: Structure and Function</u></p> <p>Overall Expectations:</p> <ul style="list-style-type: none"> • E1. analyse the relationships between changing societal needs, technological advances, and our understanding of internal systems of humans; • E2. investigate, through laboratory inquiry or computer simulation, the functional responses of the respiratory and circulatory systems of animals, and the relationships between their respiratory, circulatory, and digestive systems; • E3. demonstrate an understanding of animal anatomy and physiology, and describe disorders of the respiratory, circulatory, and digestive systems. <p>At the Zoo students will:</p> <ul style="list-style-type: none"> • Investigate, through laboratory inquiry the functional responses of the respiratory and circulatory systems of animals, and the relationships between their respiratory, circulatory, and digestive systems. • Demonstrate an understanding of animal anatomy and physiology, and describe disorders of the respiratory, circulatory, and digestive systems. 	<p style="text-align: center;">19 hours</p>
<p>Unit F</p>	<p style="text-align: center;"><u>Plants: Anatomy, Growth, and Function</u></p> <p>Overall Expectations:</p> <ul style="list-style-type: none"> • F1. evaluate the importance of sustainable use of plants to Canadian society and other cultures; • F2. investigate the structures and functions of plant tissues, and factors affecting plant growth; • F3. demonstrate an understanding of the diversity of vascular plants, including their structures, internal transport systems, and their role in maintaining biodiversity. <p>At the Zoo students will:</p> <ul style="list-style-type: none"> • Investigate plants found on the Zoo site's Aboriginal Trail and evaluate the importance of sustainable use of plants to Canadian society and other cultures. • Using the Zoo Horticulture Centre investigate the structures and 	<p style="text-align: center;">19 hours</p>

	<p>functions of plant tissues, and factors affecting plant growth.</p> <ul style="list-style-type: none"> Through observing plants in different geographical Zoo exhibits demonstrate an understanding of the diversity of vascular plants, including their structures, internal transport systems, and their role in maintaining biodiversity. 	
	Mid term Exam	1 hour
	Final Exam	2 hours
	Total	110 hours

Zoo School Location



Zoo School will be located in the Education Portable

Student Drop Off/Pick Up

Zoo School operates between the hours of 9:00 am and 3:30 pm. On the first day of Zoo School the class teacher will come to meet the students at the *Passenger Drop Off Loop* situated at the front of the Zoo. On subsequent days students will be expected to make their own way to the classroom, and arrive no later than 8:55 am. Students will need to check in with Guest Services located at the front gate to be provided admission. Photo I.D. will be required for admission. At the end of the day students will make their own way out of the Zoo. If they are being picked up they should be met at the *Passenger Drop Off Loop*. Students driving their own vehicles will be provided with a parking pass each day.

Learning Strategies at Zoo School

Zoo School takes an experiential approach to learning. We pride ourselves in offering engaging, dynamic lessons, with a hands-on approach. Our teaching tools will include Zoo Staff discussions, behind-the-scenes tours, debates, practical investigations, research, class discussions, and individual and group assignments.

Evaluation

Student performance will be continually assessed throughout the course including individual assignments, group assignments, end of unit quizzes, and a final exam.

The categories of knowledge and skills are described as follows:

Knowledge and Understanding. Subject-specific content acquired in each course (knowledge), and the comprehension of its meaning and significance (understanding).

Thinking and Investigation. The use of critical and creative thinking skills and inquiry, research, and problem-solving skills and/or processes.

Communication. The conveying of meaning through various forms.

Application. The use of knowledge and skills to make connections within and between various contexts.

Teachers will ensure that student work is assessed and/or evaluated in a balanced manner with respect to the four categories, and that achievement of particular expectations is considered within the appropriate categories.

Final Grade

The percentage grade represents the quality of the student's overall achievement of the expectations of the course and reflects the corresponding level of achievement described in The Ontario Curriculum Grades 11 and 12 Achievement Chart for Science.

A credit is granted for this course if the student's final grade is 50% or higher. The final grade for this course will be determined as follows:

- 70% of the grade will be based on the student's performance throughout the course including, individual assignments, group assignments, class participation, and end of unit quizzes.
- 30% of the grade will be based upon a final examination.

Achievement Chart		
Percentage Grade Range	Achievement Level	Summary Description
80–100%	Level 4	A very high to outstanding level of achievement. Achievement is <i>above</i> the provincial standard.
70–79%	Level 3	A high level of achievement. Achievement is <i>at</i> the provincial standard.
60–69%	Level 2	A moderate level of achievement. Achievement is <i>below, but approaching</i> , the provincial standard.
50–59%	Level 1	A passable level of achievement. Achievement is <i>below</i> the provincial standard.
below 50%	Level R	Insufficient achievement of curriculum expectations. A credit will not be granted.

Daily Requirements

Students must provide:

- **Nut free** packed lunch/snacks
- Pens/pencils
- Appropriate indoor/outdoor clothing and footwear
- Sunscreen
- Sunglasses
- A hat
- Photo ID

Zoo School Policies and Procedures

Attendance Policy

Zoo School recognizes that regular student attendance and punctuality are essential to student achievement and will communicate with parents/guardians regarding attendance issues.

It is essential that students meet the minimum number of instructional hours to successfully complete the course. Students will be expected to complete additional assignments for missed classes.

Zoo School will do its best to accommodate any students who have to be absent from class for a valid reason. If students are absent from class to an extent where it is deemed that they will be unable to complete all of the necessary course content, as set out by the Ministry of Education, a credit may not be granted.

Disclosure Policy

Students will complete a mid-term examination at the end of the second week of Zoo School. Upon receiving their grade students will have the option to drop the course, however no refund will be available. Dropping the course at this stage would result in no record of this course appearing on their Ontario Student Transcript. For all students continuing after this point Zoo School is required to disclose student's performance and final grade on their Ontario Student Transcript.

Student Absence or Late Reporting Procedure

Each absence or late arrival results in a lost learning opportunity which may not be regained. Parents/guardians are requested to call (416-392-5944) or provide a written explanation to the Zoo School office for all student absences or late arrivals.

Homework Policy

Homework is an essential part of Zoo School. Students are expected to review their daily notes regularly and complete any assigned homework tasks. The major unit assignments comprise a major component of the final mark and completion of these assignments is necessary to be successful in Zoo School.

Academic Honesty Policy

Academic honesty is taken very seriously at Zoo School. The Zoo School plagiarism policy can be found at:

<http://www.torontozoo.ca/EducationAndCamps/ZooSchool.asp>

Accountability for Student Achievement

Zoo School's policy on Accountability for Student Achievement can be found at:
<http://www.torontozoo.ca/EducationAndCamps/ZooSchool.asp>

Late Assignment Policy

It is the responsibility of Zoo School students to complete and hand in assignments by the due date provided by the teacher. A copy of Zoo School's policy on Late and Missed Assignment Policy can be found at:
<http://www.torontozoo.ca/EducationAndCamps/ZooSchool.asp>

Course Policies and Procedures:

- Before the course begins students requiring an accommodation, having an I.E.P., or learning disability must inform Zoo School so adequate arrangements can be made.
- Toronto Zoo reserves the right to cancel or change any program due to insufficient registration.
- Prices are subject to change.

Contact Information:

Email:	ZooSchool@torontozoo.ca
School Office:	416-392-5944
Address:	Attn: Education Branch Toronto Zoo, 361A Old Finch Avenue, Scarborough, ON M1B 5K7
Teacher:	Nia Gibson
Principals:	Heather House Steve Jones