



## **MARINE MAMMAL BIOLOGY (BIOL 398)**

**Dr. Kristi West**

TEXTBOOK: "Biology of Marine Mammals"  
Edited by: John E. Reynolds and Sentiel Rommel  
1999

### **GRADE DISTRIBUTION:**

Final Exam – 30%  
Midterm Exam – 30%  
Group Projects – 15%  
Quizzes – 10%  
Field trip reports – 5%  
Class Participation – 10%

### **COURSE DESCRIPTION:**

Broad coverage of functional morphology, physiological adaptations, sensory systems, energetics, reproduction, acoustics, behavior, distribution, and feeding ecology. Environmental contaminants and other threats to marine mammal population biology. Includes field trips and group projects.

### **COURSE OVERVIEW:**

Students will be exposed to an overview of the marine mammal science field and gain both a local and global perspective on marine mammal population characteristics. Students will learn comparative physiology and specialized marine mammal adaptations necessary for an aquatic existence. Marine mammal significance and role within the marine ecosystem will be covered. Students will discuss marine conservation issues, means for testing and assessing environmental impacts and practical steps for knowledge application. Students will learn literature search techniques, data analyses skills and basic statistical applications through the group project component. Current research topics and interest areas in marine mammal science will also be covered.

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Examinations 1-5 – 50%

Group Projects – 10%

Class Participation – 10%

Week 1: (January 10<sup>th</sup> – 14<sup>th</sup>)

Characteristics of marine mammals

Groups of marine mammals: Order Carnivora, Order Cetacea, Order Sirenia

Week 2: (January 17<sup>th</sup> – 21<sup>st</sup>)

Marine Mammal Anatomy and Physiology: Organ systems with reference to thermoregulation, drag reduction, buoyancy control, and locomotion

Integument, Musculoskeletal and Respiratory Systems

Week 3: (January 24<sup>th</sup> – 28<sup>th</sup>)

Marine Mammal Organ Systems continued

Cardiovascular, Reproductive, Urinary and Nervous Systems

**EXAM #1 – January 27<sup>th</sup>**

Week 4: (January 31<sup>st</sup> – February 4<sup>th</sup>) Dr. Charles Littnan

Extreme Physiological Adaptations to living in water

Diving adaptations: oxygen availability, bradycardia, selective ischemia, blood viscosity, decompression sickness, and hypoxic tolerance

Week 5: (February 7<sup>th</sup> – February 11<sup>th</sup>) Dr. Charles Littnan

Extreme Physiological Adaptations to living in water continued

Navigation, Thermoregulation and Polar environments

Week 6: (February 14<sup>th</sup> – 18<sup>th</sup>)

Sensory Systems: mammal sound production, hearing mechanisms, noise trauma

Week 7: (February 21<sup>st</sup> – 25<sup>th</sup>)

Vision, chemoreception, tactile stimulation, magnetic detection

**EXAM #2 – February 24<sup>th</sup>**

Week 8 ( February 28<sup>th</sup> – March 4<sup>th</sup>)

Marine Mammal Energetics

Energy budgets, maintenance, growth and reproduction, field metabolic rates

Week 9 (March 7<sup>th</sup> – 11<sup>th</sup>)

Foraging ecology: methods for studying diets in marine mammals, foraging tactics, predator/prey relationships

Week 10 (March 14<sup>th</sup> – March 18<sup>th</sup>)

Reproduction

Order Carnivora: Cycling, male and female reproductive tract, seasonality

**EXAM #3 – March 17<sup>th</sup>**

SPRING BREAK

Week 11: (March 28<sup>th</sup> – April 1<sup>st</sup>)

Reproduction

Order Cetacea: Cycling, male and female reproductive tract, seasonality

Week 12 (April 4<sup>th</sup> – April 8<sup>th</sup>)

Reproduction

Order Sirenia: Cycling, male and female reproductive tract, seasonality

Week 13 (April 11<sup>th</sup> – April 15<sup>th</sup>)

Distributional ecology

Methods for studying marine mammal distributions, seasonality, and key habitats

Week 14 (April 18<sup>th</sup> – April 22<sup>nd</sup>)

**EXAM #4 – April 19<sup>th</sup>**

Population Biology

Abundance, population structure, population dynamics

Week 15 (April 25<sup>th</sup> – April 29<sup>th</sup>)

Marine Mammal Threats

Environmental contaminants

Week 16 (May 2<sup>nd</sup> – May 6<sup>th</sup>)

Marine Mammal Threats

Incidental catch, whaling, strandings and conservation efforts

**EXAM #5 – May 6<sup>th</sup>**

Final Examination Week:

Comprehensive Final Exam

\*\* Fieldtrips will be scheduled as time permits