SCIENCE 201 -- UNIT 2 -- THE DARWINIAN REVOLUTION

Outline for LECTURE 2 -- NATURAL SELECTION, EVIDENCE FOR EVOLUTION

I. INTRODUCTION

II. NATURAL SELECTION -- Darwin's MECHANISM of Evolution

A. Can be broken down into 5 FACTS and 3 CONCLUSIONS

FACT 1: HIGH REPRODUCTIVE POTENTIAL

FACT 2: CONSTANT POPULATION SIZE

FACT 3: NATURAL RESOURCES ARE LIMITED

CONCLUSION 1: STRUGGLE FOR EXISTANCE

FACT 4: VARIATION - the raw material of evolution

FACT 5: VARIATION IS HERITABLE

CONCLUSION 2: SURVIVAL OF THE FITTEST = **NATURAL SELECTION = DIFFERENTIAL SURVIVAL AND REPRODUCTION**

CONCLUTION 3: EVOLUTION

B. Examples of Evolution by Natural Selection -- examples: Gough Island mice; Antibiotic resistance in bacteria

III. EVIDENCE FOR EVOLUTION

A. Comparative Morphology and Comparative Anatomy (Morphos = form)

B. Fossils (Paleontology = study of fossils)
Explanations: 1) Catastrophism
2) Molds
3) To test human's faith or trick humans
4) Noah's Flood - Problems: Large extinct animals; stratigraphy
5) Evolution: stratigraphy; sequences; transitional forms- Ex. Archaeopteryx; extinction

C. Embryology

D. Geographic Distribution

E. Vestigial Structures

F. Domesticated animals and cultivated plants

G. Observed changes in nature (ex. Industrial Melanism) (i.e., evolution in action)

H. **Comparative Molecular Biology (ex. DNA) or Physiology or Biochemistry**

IV. Concept of INDEPENDENT Lines of Evidence

V. Summary of Darwin's Life