BSC 101
Fundamental Concepts in Biology

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BSC 101 – Fall 2007

• 3 Credit Hours
  – 2 hours lecture
  – 2 hours lab

• Enrollment – 1218

• Lecture sections – 4
  – 380
  – 216
  – 383
  – 239

• Lab sections –
  – 51
Gender Distribution

- I am a ___________ student.
  - Female  732  66.6%
  - Male    362  32.9%
Class Standings

- I am a ______________ student.
  - Freshman  876  79.7%
  - Sophomore  133  12.1%
  - Junior  49  4.5%
  - Senior  32  2.9%
  - Other  6  0.5%
Majors

• My major is in ________________.
  – Sciences (includes health sciences, technology, and nursing) 146 13.3%
  – Social Sciences 107 9.7%
  – Humanities or Fine Art 96 8.7%
  – Education 332 30.2%
  – Business or others 413 37.6%
ACT Scores

- My ACT score is ____________.
  - 31 and above  17  1.5%
  - 26 to 30  283  25.8%
  - 21 to 25  686  62.4%
  - 20 and below  100  9.1%
Grade Expectation

• I expect a grade of _____ in this class.
  – A 273 24.8% -- 22.8%*
  – B 543 49.4% -- 45.5%*
  – C 227 20.7% -- 19.5%*
  – D 19 1.7% -- 5.8%*
  – F 2 0.2% -- 6.4%*

• *Actual grade distribution
My level of effort in this course is __________.

- High 524 47.7%
- Medium 469 42.7%
- Low 66 6.0%
Effort versus Outcome

• My grade is ________ of the effort that I put into the course.
  – Highly reflective  258  23.5%
  – Reflective  637  58.0%
  – Not reflective  161  14.6%
Interest in Science Programming

• I _______ watch biology/science programs, such as NOVA, Nature, National Geographic, on television.
  – Regularly     80    7.3%
  – Frequently  241  21.9%
  – Rarely         521  47.4%
  – Never          254   23.1%
Interest in Science News

- I ________ read news on biology/science in newspaper and magazine.
  - Regularly  19  1.7%
  - Frequently  91  8.3%
  - Rarely     622  56.6%
  - Never      360  32.8%
Why taking college biology?

Your place in the universe as a unique, intelligent organism
Human Individuality
Your Individuality

- World population
  - 6.8 billion

- Humans ever lived
  - 110 billion

- Minimum odd for genetic identicalness
  - 1 in 70 trillion
Are you sexy?

- Sex determination
  - Biological processes
  - Genetic mechanisms
- Gender
  - Nature versus nurture
- Sexual attraction
  - Universal factors
  - Fertility signals
- Why sex?
  - Significance of sexual reproduction
Does Race Exist?

- Race versus ethnic differences
  - Biological variations
  - Cultural differences
- Human adaptations
  - Skin color
  - Facial features
  - Body types
  - Temperament
  - Abilities
Biological Basis of Emotion

- Mood disorders
- Depression
  - Normal
  - Clinical
- Bipolar
  - Manic phase
- Schizophrenia
- Alzheimer’s disease
- Autism
Why do you get hooked?

- Addiction
  - Cigarette
  - Alcohol
- Substance abuse
  - Heroin
  - Cocaine
  - Methamphetamine
- Love
Perception and Creativity

• Perception
  – Visual images
    • Eye
    • Brain structure and function

• Creativity
  – Imagination
  – Hallucination
    • Biochemistry
      – LSD
      – Psychedelic mushrooms
Commonality of Life

- Interconnectivity
  - Viruses
  - Bacteria
  - Fungi
  - Plants
  - Animals
- Common origin
- Diversity
Crocodile Hunting
Diversity

• Artificial Selection
  – Inbreeding
    • Agriculture
    • Livestock
    • Dogs
    • Cats

• Natural Selection
  – Evolutionary arms race
    • Predator vs prey
  – Cooperation

A cheetah consuming a gazelle
Termite Mount
Cycles

- Cycle of Life
  - Birth
  - Growth
  - Reproduction
  - Aging
  - Death
- Reproductive cycles
  - Menstrual cycle
- Diurnal cycles
  - Circadian rhythm
- Seasonal cycles
Earth’s Seasons Explained
Environment for Life

- Energy
  - Solar energy
- Climate
  - Precipitation
  - Temperature
  - Pressure
- Gravity
- Solar System
  - Origin
  - Formation

Sun

Solar Eclipse

Mars
Chemistry of Life

• Chemical processes of life
  – Enzymes
  – Organic molecules
  – Carbon-based life
  – Food web

• Energy transformation
  – Photosynthesis
  – Growth
    • Building life
  – Behavior
Extraterrestrial Life

• Space Exploration
  – Apollo Moon landing
  – Mars Exploration Rovers
  – Voyager spacecrafts

• Possible life forms
  – Simple life
  – Intelligent life
    • SETI
Four Course Components

Your individuality

Your intelligence

Your biological nature

Your physical entities

Your place in the universe as a unique intelligent organism
Attitudes Toward Biology/Science

• Before taking this course, my attitude toward biology/science is ____________.
  – Highly positive  87  7.9%
  – Positive        394 35.9% - 44%
  – Indifferent     431 39.2%
  – Negative        149 13.6%
  – Highly negative 35  3.2%

• After taking this course, my attitude toward biology/science is ____________.
  – Highly positive 122 11.1%
  – Positive        546 49.7% - 60.8%
  – Indifferent     322 29.3%
  – Negative        81  7.4%
  – Highly negative 25  2.3%
Relevance of Biology/Science

• Before taking this course, I find biology/science to be __________ in my life.
  – Highly relevant 91 8.3%
  – Relevant 575 52.3% - 60.6%
  – Indifferent 344 31.3%
  – Irrelevant 85 7.7%

• After taking this course, I find biology/science to be __________ in my life.
  – Highly relevant 329 29.9%
  – Relevant 601 54.7% - 85.6%
  – Indifferent 143 13.0%
  – Irrelevant 21 1.9%
Biology/Science on Society

- My understanding on the impact of biology/science on the society and culture has ______________ after taking this course.
  - Changed significantly  217  19.7%
  - Changed              722  65.7%
  - Remained unchanged   156  14.2%
Understanding of Science News

- My ability to understand biological/scientific issues in the news has ______________ after taking this course.
  - Significantly improved 173  15.7%
  - Improved 652  59.3%
  - Remained the same 271  24.7%
Understanding of Evolution

• My understanding of evolution has ____________ after taking this course.
  – Significantly improved      223   20.3%
  – Improved                   566   51.5%
  – Remained the same          304   27.7%
Describe one piece of information that you have learned in this course to be most significant to you. Explain the reasons.

- *Your place in the universe as a unique, intelligent organism*
  - Individuality – 141
  - Intelligence – 59
  - Organism – 38
  - Universe – 60

- The other responses that did not fit the above categories were:
  - All – 12
  - No Comments – 38
The one piece of information that has been the most significant to me is individuality. It was amazing how different we are compared to every one else in the world. I believe the 1 in 70 trillion will actually mean something to me from now on. I also think that because the universe is so never ending that even then individuality will play a significant role because there are others like us out there.
The most significant piece of information I learned about in Bio 101 would have to be the lectures involving addiction and disorders. I found these incredibly fascinating as I could relate what I learned back to personal family experiences. By learning in depth about the causes and effects of drugs and diseases on your body, it gave me a reason to have hope for people I know or to at least help.
Comments on Organisms

• The Darwin’s hawk moth, there is actually a flower that hides its nectar so far down the moth had to adapt and change by making a tongue long enough to reach the nectar. But also very interesting is the fact the moth help the flower reproducing the two species are working together in perfect harmony.
Comments on Universe

• The whole universe section is extremely fascinating to me. From space exploration theories to the big bang theory. I'm completely captivated. This section has helped me understand who I am as a person and where I fit in this universe. I'm super excited to see what the next few years will be like with the space missions/exploration. I'm really pumped for the Voyager mission!!
Textbook for the Course

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