
Project Oceanography Spring 2001

Table of Contents

Unit One–Antarctic Ecology

Program 1-Antarctic Ecology I	2
The Antarctic Region	2
Ice and Water as a Habitat.....	4
The Importance of Ice in Antarctica’s Ecology	5
Activity -Antarctic Adventure	7
Student Page -The Antarctic Ecosystem	9
Program 2- Antarctic Ecology II	10
Classification of Adaptations	11
Penguin Adaptations	12
Seal Adaptations	14
Activity -Antarctic Insulators.....	15
Activity -Antarctic Waterproofing.....	17
Student Page -Antarctic Adaptations	19
Vocabulary	20
References	23

Unit Two-Fisheries Management

Program-Stock Enhancements and Hatcheries	25
Stock Enhancement	25
Aquaculture	26
Red Drum Rearing at the Florida Saltwater Fish Hatchery	27
Activity -Fish Hatchery Model.....	30
Activity -Fish Hatchery Math	31
Student Page -Fishing for the Future	32
Vocabulary	33
References	34

Unit Three-Red Tide and Harmful Algal Blooms

Program-Toxic Algae	36
Harmful Algal Blooms	36
Florida Red Tide	37
Implications of Harmful Algal Blooms	38

Activity-Growing Algae	39
Activity-Algal Explosion	41
Student Page-Harmful Algal Blooms	43
Vocabulary	44
References	45

Unit Four-Brooker Creek Preserve

Program 1-The Brooker Creek Watershed Learning Project	50
Brooker Creek Overview	50
Importance of the Preserve in Maintaining Water Quality	51
How and Why the EDL Program was Developed	52
Activity-Watershed Comparisons	53
Student Page-The Brooker Creek Watershed	55
Program 2-The Brooker Creek Watershed Interactive Database	56
Parameters and Sensors at Brooker Creek	56
Introduction to Databases	57
Activity-Brooker Creek Data Graphing	59
Student Page-Brooker Creek Science	61
Vocabulary	62
References	64

Unit Five-Microsystems Technology

Program 1-Introduction to Microsystems	66
History of Micromachines	66
How Microchips are Made	68
Activity-Build an Edible Microchip	70
Student Page-Mechanical Toys	76
Program 2-Life at Small Scale	77
Micromachines	77
Nanotechnology	78
The Scanning Tunneling Microscope	78
Activity-Build a Miniature Machine	80
Student Page-MEMS and Nanotechnology	82
Program 3-How Does Microtechnology Affect Me?	83
Micromachines Helping Consumers	83
Micromachines Helping Researchers	84
Micromachines Helping Doctors	85
Micromachines Helping the World	85
Activity-Microsystems Vocabulary Builder	86
Activity-Future Micromachines' Commercial	88
Student Page-Microsystems in Review	89
Vocabulary	90
References	94

Unit 6-Detecting Coastal Change with Lasers

Program-Coastal Studies	96
Beach Morphology	96
LIDAR Technology	97
The Importance of Beach Morphology Studies	99
Activity-Coastal Beach Erosion	100
Student Page-Modern Coastal Studies	102
Vocabulary	103
References	104

Unit 7-Science Standards with Integrative Marine Science (SSWIMS)

Program-Squid	106
SSWIMS Overview	106
Squid as an Appropriate Standards Topic	106
Standards Alignment	107
Squid Classification and Anatomy	109
Activity-Squid Recipes	111
Activity-Squid Races	112
Activity-Squid Gyotaku	114
Student Page-Squid	117
Vocabulary	118
Media References	120
References	121