

Biotechnology – 2001 - 2002 – Semester One

Juanita High School

Instructor – Mary Glodowski

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Dates	Unit	Content	Skills/Labs
9/4 - 9/21	I – Introduction to Biotechnology	Common Applications Record Keeping Lab Safety Conversions Volumes Solutions/Dilutions Chromatography	Intro Pipette Lab Color Wheel Lab Prepare Solutions Serial Dilutions Size Exclusion Chromatography
9/24 – 10/5	II – Biotechnology Perspectives	Bioethics Current Issues in Biotechnology Agricultural Biotechnology Gene Therapy Human Genome Project Integrity & Honesty in Research Cloning Stem Cell Research	Ethical Decision Making in Science Case Studies
10/8 –10/26	III – DNA Science	DNA History DNA Structure & Chemistry Chromosome Arrangement Impact of Social Relationships on Scientific Research	DNA Spooling DNA Isolation – bacteria, plant, mammal Chromosome Spreads
10/29 – 11/23	IV – Microbiology	Structure of Bacteria Culture Protocols Plasmid DNA Transformation Restriction Enzymes Bacteriophages	Sterile Technique Bacterial Culturing Lab Flow Sheets Transformation Lab Plasmid Isolation
11/26 –12/14	V –Gel Electrophoresis	Electrophoresis Introduction to Forensics Restriction Analysis	Intro Gel Box Labs Restriction Digestion & Analysis of DNA Lab DNA Fingerprinting Lab Formal Lab Report
12/17 - 1/11	VI – GFP Studies & Drug Development	Transcription Control Operons Protein Isolation Purification Plasmid Isolation Spectrophometry Polyacrylamide Gel Electrophoresis Marketing Protocols and Bioethics	Rapid Transformation with pGLO GFP Protein Purification PAGE Spec Analysis FDA & Marketing
1/14 - 1/25	VII – Semester One Project & Final Exams	Student Biotech Research Project Presentations	Completion of independent studies & research

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1/28 – 2/15	I – Cancer	Cancer Background Genetics of Cancer Transformed Cells Biotechnology in Cancer Research	Normal vs. Transformed Cells Lab Detecting Cancer Lab HeLa Lab
2/25 – 3/7	II – Proteins	Protein Conformation Proteomics	Forensics Lab Fish Protein Lab Protein Content Lab
3/1	Student Biotech Expo 2001 – Shoreline Center		
3/11 – 4/5	III – PCR & Forensics	PCR Techniques Forensic Applications – Los Desaparecidos Mitochondrial DNA Identification of Allelic Variation	Alu PCR Lab Mitochondrial PCR Lab VNTR PCR Lab
4/8 – 4/26	IV – DNA Sequencing	Sequencing Techniques Human Genome Project Genomic Studies Data Banks Diagnostics	Sequencing Lab BLAST Search Patent Law and Ethics
4/29 –5/17	V – Genetic Engineering	Techniques of Genetic Engineering Restriction and Ligation Lac Operon	Recombinant Plasmids Cloning Sheep DNA DNA Hybridization Southern Blot
5/20 – 6/7	VI – Immunology	Development of the Immune System Immune Response Heterokaryon MABs HIV Background Emerging & Re-emerging Infectious Disease Ultra-Rapid Detection of Pathogens/Antibodies Orphan Drugs	ELISA Immunoassay Quantitative ELISA Western Blot Chagas Lab
6/10- 6/21	VII – Course Lab Practicum	Identification of Unknown Plasmid	Microbiology Techniques Transformation Plasmid Isolation DNA Restriction Digest & Analysis
Ongoing Careers Unit		Research Settings Biotechnology Career Options Grants and Funding Procedures Scholarship Information Short-, Mid-, Long-Term Career Objectives	Resumes Interviews Lab Skills Checklist Applications