

Appendix D: Detail of Exam Subjects and Topics

It's also important that students are knowledgeable in the individual topics covered under each of the subjects. See the following list of exam subjects and their individual topics.

BACE Knowledge Exam Subjects:

CELLS (10%)

- Cells (general)
- Cell Structures
- Organelles & Function

CHEMISTRY/BIOCHEMISTRY (36%)

- Bonds
- Cellular Respiration
- Chemistry, Molecules, & Macromolecules
- DNA Structure & Function
- Enzymes & Reactions
- Periodic Table
- Protein Structure & Function
- Reaction Rates
- Transcription
- Translation (Gene Expression)

GENETICS (5%)

- Genomics
- Mitosis & Chromosomes
- Meiosis
- Ploidy

LABORATORY SKILLS/APPLICATIONS (25%)

- Cell and Tissue Culture
- Correct Use of Decimals
- DNA Isolation
- Electrophoresis

- Microscopy
- pH
- Polymerase Chain Reaction (PCR)
- Recombinant DNA/Cloning
- Restriction Enzymes
- Scientific Notation
- Significant Figures
- Southern Blotting
- Transformation & Transfection
- Western Blotting & ELISA

RESEARCH & SCIENTIFIC METHOD (12%)

- Experimental Design
- Understanding Scientific Method
- Graphing

GENERAL TOPICS IN BIOTECHNOLOGY (12%)

- Applications
- Benefit to Society
- Biotech Careers
- Ethics
- History
- Immunology
- Manufacture of Biopharmaceutical Products
- Regulatory
- Workplace

BACE Practical Exam Subjects:

APPLIED MATHEMATICS IN BIOTECHNOLOGY (14%)

- Density
- Graphing
 - Beer's Law
 - Standard Curves
 - Axis Scaling and Limits
 - Plotting Data

BIOTECHNOLOGY SKILLS (50%)

- Autoclaving
- Culturing Organisms
- Aseptic/Sterile Technique
- Electrophoresis
- Liquid Measurement (Macro and Micro)
- pH
- Pipetting (Macro and Micro)
- Serial Dilutions

LABORATORY EQUIPMENT (12%)

- Identifying Glassware
- Proper Usage:
 - Electrophoresis Equipment
 - Spectrophotometer
 - Micropipettors
- Weighing/Using Balance

PREPARING SOLUTIONS (11%)

1. Proper Technique
2. Volume/Volume Calculations
3. Weight /Volume Calculations
4. Molarity Calculations
5. Dilutions

WORKPLACE SAFETY & BEHAVIOR (13%)

- Identifying Safety Symbols
- Laboratory Safety Protocols
- Understanding Safety Data Sheets (SDS)
- Personal Protective Equipment (PPE)
- Labeling Samples & Product