1. **Microbial Growth**
   Chapter 6
2. **6.1 Binary Fission**
   - Growth
     - Increase # of cells
3. **6.5 Growth**
   - Generation time
     - Doubling time
4.
   - Exponential growth
5. **6.7 Growth Cycle**
   - Batch culture
     - Lag phase
     - Exponential phase
     - Stationary phase
     - Death phase
   -
6. **6.8 Chemostat**
   - Controls
     - Growth rate
     - Population density
     -
     - Dilution rate
     - Concentration of limiting nutrient
7. **6.9 & 10 Counts**
   - Total cell count
     - Microscopic
   - Viable count
     - Colony
     - Diluting cells
8. **6.11 Indirect counts**
   - Turbidity
     - Cloudy appearance
     - spectrophotometer
9. **6.12 Temperature**
   - Cardinal temperatures
10.
    - Temperature classes
11. **6.15 Growth at high/low pH**
    - Low pH
      - Acidophiles
    - High ph
      - Alkaliphiles
12. **6.16 Osmotic effects**
    - Water activity
      - Vapor pressure of air in equilibrium with solution to vapor pressure of pure water
      - Range 0-1
13. **6.17 Oxygen**
    - Aerobes

This is only a guideline topics discussed in-class as well as the assigned pages from the text and supplemental material may also be on the exam.

- Can grow at full oxygen tensions (21%)
- Respire oxygen in their metabolism

- Anaerobes
  - Aerotolerant
    - Grow with oxygen present but do not use it
  - Obligate anaerobes
    - Inhibited or killed by oxygen
  -

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- Growth and oxygen concentration
  - Thioglycolate broth
    - Agar
    - Resazurin
      - Pink when oxidized

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- Exam I
  - Aprox 70 pts
    - 50 pts multiple choice & T/F
    - 20 pts short answer
    -
    - You may use one 3x5 notecard