Dental Admission Test (DAT)

Duke Pre-Dental Society
What we’ll be covering

1. What is the DAT?
2. What topics are covered on the DAT?
3. What are the best resources to use when preparing?
4. Should I self-study or take a Kaplan course?
5. How/when do I start?
Dental Admission Test (DAT)

- 4 Hour 15 Minute Computer-Based Exam
- Four Sections

Scores Range from 0 - 30
  - National Average For Sections: ~17 - 18
  - Competitive Scores: 20+
Survey of Natural Sciences

- 100 questions in 90 minutes
- Subjects
  - Biology (40 questions)
  - General Chemistry (30 questions)
  - Organic Chemistry (30 questions)
Biology

- What is Covered

**Biology (40)**

*Cell and Molecular Biology* - origin of life, cell metabolism (including photosynthesis/enzymology, cellular processes, thermodynamics, organelle structure and function, mitosis/meiosis, cell structure, and experimental cell biology)

*Diversity of Life: Biological Organization and Relationship of Major Taxa* (Six-Kingdom, Three-Domain System) – plantae, animalia, protista, fungi, eubacteria (bacteria), archae, etc.

*Structure and Function of Systems* - integumentary, skeletal, muscular, circulatory, immunological, digestive, respiratory, urinary, nervous/senses, endocrine, reproductive, etc.

*Developmental Biology* - fertilization, descriptive embryology, developmental mechanisms, and experimental embryology

*Genetics* - molecular genetics, human genetics, classical genetics, chromosomal genetics, and genetic technology

*Evolution, Ecology, and Behavior* - natural selection, population genetics/speciation, cladistics, population and community ecology, ecosystems, and animal behavior (including social behavior).
Biology

- Classes to take (Duke)

- Resources
  - AP Biology Books (Cliffs, Princeton Review, etc.)
  - Schaum’s
  - Examkracker’s MCAT Biology
  - Kaplan Biology for Overview
  - Campbell’s Biology Textbook
General Chemistry

- What is Covered?

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**General Chemistry (30)**

**Stoichiometry and General Concepts** - percent composition, empirical formulae, balancing equations, moles and molecular formulas, molar mass, density, and calculations from balanced equations

**Gases** - kinetic molecular theory of gases, Dalton's, Boyle's, Charles's, and ideal gas law

**Liquids and Solids** - intermolecular forces, phase changes, vapor pressure, structures, polarity, and properties

**Solutions** - polarity, properties (colligative, non-colligative), forces, and concentration calculations

**Acids and Bases** - pH, strength, Brønsted-Lowry reactions, and calculations

**Chemical Equilibria** - molecular, acid/base, precipitation, calculations, and Le Chatelier's principle
General Chemistry

- Thermodynamics and Thermochemistry - laws of thermodynamics, Hess’s law, spontaneity, enthalpies and entropies, and heat transfer

- Chemical Kinetics - rate laws, activation energy, and half-life

- Oxidation-Reduction Reactions - balancing equations, determination of oxidation numbers, electrochemical calculations, and electrochemical concepts and terminology

- Atomic and Molecular Structure - electron configuration, orbital types, Lewis-Dot diagrams, atomic theory, quantum theory, molecular geometry, bond types, and sub-atomic particles

- Periodic Properties - representative elements, transition elements, periodic trends, and descriptive chemistry

- Nuclear Reactions - balancing equations, binding energy, decay processes, particles, and terminology

- Laboratory - basic techniques, equipment, error analysis, safety, and data analysis
General Chemistry

- Classes to take (Duke)
  - Chem 31L

- Resources
  - Kaplan DAT Book
  - Schaum’s
  - Examkracker’s MCAT General Chemistry
  - AP Chemistry
  - Zuhmdahl’s Chemical Principles for Reference
Organic Chemistry

- What is Covered?

**Organic Chemistry (30)**

*Mechanisms: Energetics, and Structure* - elimination, addition, free radical, substitution mechanisms, and other

*Chemical and Physical Properties of Molecules* - spectroscopy ($^1$H NMR, $^{13}$C NMR, infrared, and multi-spectra), structure (polarity, intermolecular forces (solubility, melting.boiling point, etc.), and laboratory theory and techniques (i.e. TLC, separations, etc.)

*Stereochemistry (structure evaluation)* - chirality, isomer relationships, and conformations

*Nomenclature* - IUPAC rules and functional groups in molecules

*Individual Reactions of the Major Functional Groups and Combinations of Reactions to Synthesize Compounds* - alkene/alkyne, aromatic, substitution/elimination, aldehyde/ketone, carboxylic acids and derivatives, and other For each area listed above, the following sub-areas apply: general, one-step, and multi-step.

*Acid-Base Chemistry* - ranking acidity/basicity (structure analysis and pH/pKa data analysis), and prediction of products and equilibria

*Aromatics and Bonding* - concept of aromaticity, resonance, atomic/molecular orbitals, hybridization, and bond angles/lengths.
Organic Chemistry

- Classes to take (Duke)
  - Chem 151L, Chem 152L
- Resources
  - Kaplan DAT Book
  - Examkracker’s MCAT Organic Chemistry
  - DATDestroyer
  - Loudon’s Organic Chemistry Textbook for Reference
Perceptual Abilities Test (PAT)

- 90 questions in 60 minutes
- Six Subtests (15 questions each)
  - Apertures
  - View Recognition
  - Angle Discrimination
  - Paper Folding
  - Cube Counting
  - 3D Form Development
Apertures
View Recognition

Choose the correct TOP VIEW.

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Angle Discrimination

31. Figure 1: Angle Discrimination
(A) 2 - 1 - 3 - 4
(B) 2 - 1 - 4 - 3
(C) 1 - 2 - 3 - 4
(D) 2 - 4 - 3 - 1

32. Figure 2: Angle Discrimination
(A) 2 - 4 - 1 - 3
(B) 4 - 3 - 2 - 1
(C) 1 - 2 - 3 - 4
(D) 3 - 2 - 1 - 4
Paper Folding

46

47
62. In Figure A, how many cubes have two of their exposed sides painted?

A. 1 cube
B. 2 cubes
C. 3 cubes
D. 4 cubes
E. 5 cubes

63. In Figure A, how many cubes have three of their exposed sides painted?

A. 1 cube
B. 2 cubes
C. 3 cubes
D. 4 cubes
E. 5 cubes
3D Form Development

76.

77.
Perceptual Abilities Test (PAT)

- Resources
  - Crack DAT PAT
  - TopScore
  - DAT Achiever
  - Practice problems from any written DAT prep books
Reading Comprehension

- 50 questions in 60 minutes
- Three reading passages on scientific topics
- Reading Comprehension Strategies:
  - Just Do It
  - Search and Destroy
  - Do Two and Gamble on Third
- How to Prepare:
  - Read scientific journals like Science or Nature online
  - Take Practice RC tests on the computer (DAT Achiever, TopScore)
Quantitative Reasoning

- 40 questions in 45 minutes
- Calculator Available
- What is Covered?

Mathematical Problems - Algebra (equations and expressions, inequalities, exponential notation, absolute value, ratios and proportions, and graphical analysis); Numerical calculations (fractions and decimals, percentages, approximations, and scientific notation); Conversions (temperature, time, weight, and distance); Probability and Statistics; Geometry; and Trigonometry

Applied Mathematics (Word) Problems

- Resources
  - Barron’s SAT II Math
  - Kaplan DAT
  - Crack DAT Math
Other Resources

- Full Length Exams!
  - DAT Avengers
  - Topscore
  - Kaplan DAT Book & CD
  - Barron’s DAT
  - ADA Sample Test

- More Practice Questions
  - DAT Destroyer
  - Crack DAT PAT

- Kaplan DAT course
Self-Study or Kaplan?

- Are you disciplined?
- Can you study consistently on your own schedule?
- Do you learn more efficiently by yourself?
- If you answered no to any/all of these questions, then consider taking a Kaplan course.
Study tips

- Start at LEAST 2 months prior!
- Find your study zone
- Space out your material
  - One subject at a time (at first)
- Focus on the sciences
- Take lots of practice exams
- Read, test, review
Example Study Schedule (2 months)

- Week 1-2: review biology
- Week 3: review gen chem, skim bio
- Week 4: review orgo, skim gen chem/bio
- Week 5: review mostly orgo, math, skim gen chem/bio
  - Start PAT practice
  - Take your first practice DAT exam
Example Study Schedule (2 months)

- Week 6: skim all study material
  - Take 2 practice exams; test and review
- Week 7-8: TEST TEST TEST TEST
Thanks for listening!
Any Questions?