



blueprint

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**Secrets to a 99 percentile MCAT**

# Today's Info Session

- **Welcome to this Info Session!**
- **Introduction**
- **MCAT**
- **How to diagnose and treat weak areas**
- **How Can Blueprint Help?**
  - **Questions?**

**MCAT**  
Medical College  
Admission Test

# Introduction

**Hi, I'm Phil!**

- **MCAT Content writer**
- **Tutored and taught for 9+ years**
- **Attended University of Nebraska Medical Center as an MD/PhD student.**



# The MCAT:

## Difficulty

The MCAT is the hardest test most people have taken at this point of their life. It has to be difficult, because the competition is skilled.

Exam Overview		
Section	# of Questions	Time Allotted
Examinee Agreement		8 minutes
Tutorial (optional)		10 minutes
Chemical and Physical Foundations of Biological Systems	59	95 minutes
Break (optional)		10 minutes
Critical Analysis and Reasoning Skills	53	90 minutes
Mid-Exam Break (optional)		30 minutes
Biological and Biochemical Foundations of Living Systems	59	95 minutes
Break (optional)		10 minutes
Psychological, Social, and Biological Foundations of Behavior	59	95 minutes
Void Question		5 minutes
Satisfaction Survey (optional)		5 minutes
Total Content Time		6 hours   15 minutes
<b>Total "Seated" Time*</b>		<b>Approx. 7 hours   33 minutes</b>

*\*Total seated time does not include check-in time on arrival at the test center.*

- 2020 SUMMER MCAT -
- Science Sections: 48 questions / 76 min
- CARS : 48 questions/ 81 min
- 10 minute lunch break
- ~5 hours 45 minutes in total length

# Taking the MCAT

## **Prep intelligently**

I've worked with thousands of students and my advice for them usually starts the same but diverges later. Start with the highest yield materials

## **Diagnose & Treat**

The first step in moving forward is figuring out your weak areas.

# Tackling content

## Chemical and Physical Foundations

- 30% general chemistry
- 25% physics
- 25% biochemistry
- 15% organic chemistry
- 5% biology

## Bio and Biochemical Foundations

- 65% biology
- 25% biochemistry
- 5% organic chemistry
- 5% general chemistry

## Psychological and Sociological Foundations

- 65% psychology
- 30% sociology
- 5% biology

# “High-Yield”

**Warning: anything on the AAMC MCAT outline is fair game!**

**However, some topics are more likely to appear than others...**

Topic	Number of questions
Biology	45
Biochem	30
Physics	15
Gen Chem	20
Organic Chem	11
Psychology	38
Sociology	18
CARS	53
<b>Total</b>	<b>230</b>

Takeaways:

Biology and biochemistry are about 1/3 of the test!

You have more psychology questions than physics and chemistry combined.

Organic chemistry is about 5% of your questions.

# Diagnosing

Not just “I need to work on Physics”

Need to read between the lines

There can be several reasons to miss a question

- Story time: student came to me and reported that they bombed Physics on their test.

Tale of two students	
Chem Phys	123
CARS	128
Bio	122
Psych	126
Chem Phys	123
CARS	128
Bio	125
Psych	126

**Electricity and Magnetism**

$$F = kQ_1Q_2 / r^2$$

$$F = qVB\sin\theta$$

$$F = iLB\sin\theta$$

$$V = IR$$

$$P = IV$$

$$R = \rho L / A$$

$$V_{rms} = V_{max} / \sqrt{2}$$

$$I_{rms} = I_{max} / \sqrt{2}$$

**Resistors in series:**

$$R_{tot} = R_1 + R_2 \dots$$

**Resistors in parallel:**

$$1/R_{tot} = 1/R_1 + 1/R_2 \dots$$

**Capacitors in series:**

$$1/C_{tot} = 1/C_1 + 1/C_2 \dots$$

**Capacitors in parallel:**

$$C_{tot} = C_1 + C_2 \dots$$

$$C = Q/V$$

$$\text{Energy} = (1/2)QV$$

$$F = qE$$

$$V = Ed$$

$$\text{Energy} = qEd$$

$$E = kQ/r^2$$

$$\text{Energy} = kQq/r$$

$$V = kQ/r$$

$$\Delta G = -nFE$$

$$E_{cell} = E_{cath} - E_{an}$$

**Waves**

$$v = f\lambda$$

$$T = 1/f$$

**Light**

$$n_1\sin\theta_1 = n_2\sin\theta_2$$

$$\sin\theta_c = n_2/n_1$$

$$E = hf$$

$$m = -d_i / d_o$$

$$P = 1/f$$

$$f = (1/2)r$$

$$n = c/v$$

$$1/f = 1/d_i + 1/d_o$$

**Sound**

$$d\beta = 10 \log(I/I_0)$$

$$L = n\lambda/2 \quad (n=1, 2, \dots)$$

$$L = n\lambda/4 \quad (n=1, 3, \dots)$$

$$f_{beat} = |f_1 - f_2|$$

$$f = f_e [v \pm v_a] / [v \pm v_s]$$

**Fluids**

$$\rho = m/V$$

$$P = F/A$$

$$P = P_{atm} + \rho g d$$

$$F_b = \rho g V$$

$$Q = Av$$

$$P + \rho g y + (1/2) \rho v^2 =$$

constant

**Gases**

$$PV = nRT$$

$$\text{Boyle: } PV = k$$

$$\text{Guy-Lussac: } P/T = k$$

$$\text{Charles: } V/T = k$$

$$\text{Avogadro: } n/V = k$$

$$R_1/R_2 = \sqrt{m_2/m_1}$$

$$P_A = X_A \times P_{tot}$$

**Solutions**

$$pH = pK_a + \log(A^-/HA)$$

$$M = \text{mol} / L$$

$$m = \text{mol} / \text{kg}$$

$$N = M \times \# \text{ of } H^+$$

$$pH = -\log[H^+]$$

$$M_i V_i = M_f V_f$$

$$\Pi = MRT$$

$$\Delta T_f = i k_f m$$

$$\Delta T_b = i k_b m$$

$$X_A = \text{mol}_A / \text{mol}_{tot}$$

**Thermo**

$$\Delta U = Q - W$$

$$\Delta U = (3/2)nRT$$

$$W = P\Delta V$$

$$Q = mc\Delta T$$

$$Q = mH_L$$

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta H_{rxn} = \Delta H_{prod} - \Delta H_{react}$$

**Kinematics**

$$v_f = v_o + at$$

$$d = v_o t + (1/2)at^2$$

$$v_f^2 = v_o^2 + 2ad$$

$$a_c = v^2 / r$$

$$F_c = mv^2 / r$$

$$v_x = v_o \cos\theta$$

$$v_y = v_o \sin\theta$$

**Mechanics**

$$F = ma$$

$$F_{a \text{ on } b} = -F_{b \text{ on } a}$$

$$F_{fric} = \mu F_N$$

$$F_g = GM_1 m_2 / r^2$$

$$F_g = mg$$

$$F = kx$$

$$\tau = rF\sin\theta$$

$$P = W/t$$

$$W = Fd\cos\theta$$

$$E_K = (1/2)mv^2$$

$$U = mgh$$

$$U = -GM_1 m_2 / r$$

**Inclined Plane**

$$F_{incline} = mg\sin\theta$$

$$F_N = mg\cos\theta$$

$$F_{fric} = \mu mg\cos\theta$$

# Chem/Phys

## 1. Content

Example:

Need to know what a fluid is

## 2. Calculations

Math errors

Know what equations to use

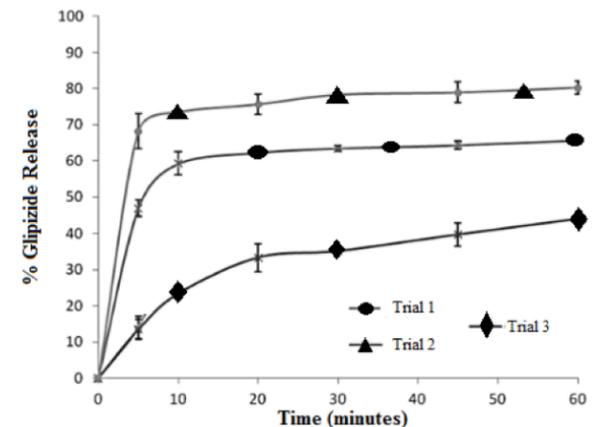
Know *when* to use what equation

## 3. Data interpretation

Lots of diagrams, tables of values ,

Takes practice

Drug to Polymer Ratio				
Drug	Bulk Density	Trial 1	Trial 2	Trial 3
Glipizide	0.2 g/mL	1:1	1:4	1:8
FDDS Polymer		gelucire	$\beta$ -cyclodextrin	Polaxemer-188
gelucire	0.6 g/mL			
$\beta$ -cyclodextrin	0.3 g/mL			
Polaxemer 188	0.1 g/mL			



# Bio

## 1. Content

Need to know what ADH is

## 2. Jargon

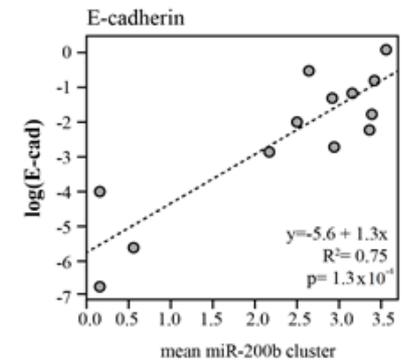
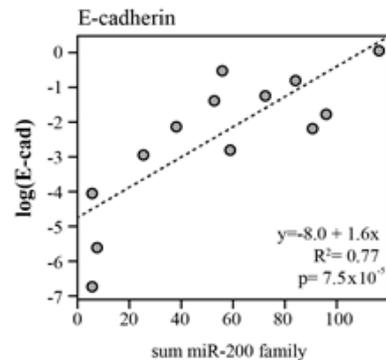
Particularly rough in Bio

## 3. Data interpretation

More graphs & stats

Need to be comfortable with experiments

“Studies have demonstrated that the miR-200 family inhibits EMT by negatively regulating the transcription factors ZEB1 and ZEB2. Studies have also shown that the tumor suppressor protein E-cadherin regulates EMT through its role in cell adhesion and maintenance of cell polarity. Experiments were conducted to assess whether miR-200 family expression correlates with the epithelial phenotype in PDAC cell lines...”



# Psych/Soc

## 1. Content

### Heavy vocab

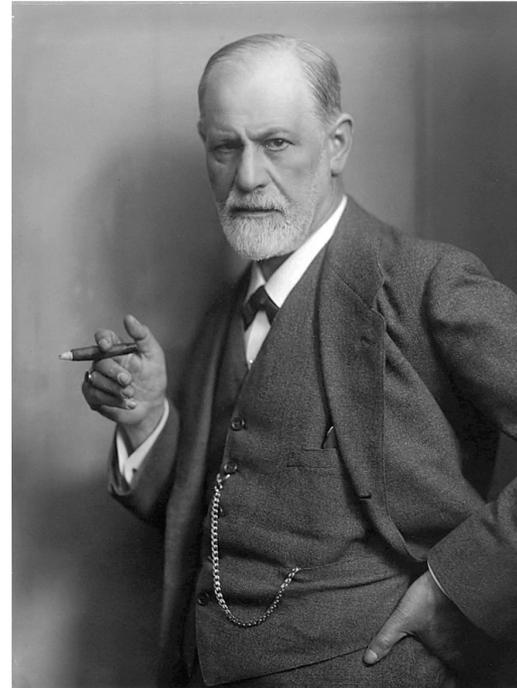
- ▶ schizoid personality disorder
- ▶ schizotypal personality disorder
- ▶ schizophreniform disorder
- ▶ schizophrenia

## 2. Experimental design

- ▶ Ethics, variables, biases

## 3. Fatigue

- ▶ Mental limits



# CARS

CARS is an ENTIRELY different Beast.

**Test of skill rather than knowledge, and there is only 4 reasons to miss a question!**

1. **Timing**
2. **Passage**
3. **Question**
4. **Answers**

# CARS

## Question types.

18. Those who defend anthroposophy rely on each of the following EXCEPT:

19. Had Steiner's writings never addressed the concept of evolution, which one of the following would likely have occurred?

# Things to think about

- **Content**

LOTS of stuff you need to know

- **Strategy**

Strategy is important in every area, but **ESPECIALLY** in CARS.

- **Timing / endurance**

Many students are exhausted by the time they get to the **Psych** section.

# How many FLs should you take?

- **MYTH:** The more practice FLs you take, the better.
- In reality – thorough review is most important!
- # of FLs should vary based on prep timeline, endurance, etc.
  - “Typical” student: takes 7-8 FLs
  - If you have endurance of timing problems: take more
  - If you’re confident/crunched for time: 4-5 may be enough!
- Remaining FLs can be taken as separate sections

# Finally : remember to take breaks!

- Breaks are absolutely essential to staying at your best throughout your prep.
- How should a break be spent?
  - Exercising; keeping a normal routine
  - Catching up with other obligations (and even having fun)
  - **NOT thinking about the MCAT!**
- For longer prep plans, set aside 1 day for a break per week
- For shorter timelines, set aside 1 half-day per week



Q&A