

## **Elective description: Personal Finance for Medical Students – MED 1034**

### **Course Directors**

TBD

### **Faculty Sponsor**

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### **Objectives**

This 12-hour course will expose students to the basics of personal finance with an emphasis on the topics that matter most for medical students. This class will introduce students to the basic mathematics and logic behind the finance industry and then quickly build upon this core knowledge to discuss applications of personal finance such as credit, loans, insurance, and investments. This class is structured such that it is both accessible to those without any prior background in finance and thorough enough that experienced students of finance will find the later topics engaging and entertaining.

### **Format**

The lectures for this elective will be primarily **online recordings** which students can view at their own pace and leisure. Each of the lectures are available for free online through the Khan Academy, but the organization of the materials is unique to this elective. **Selected topics will be presented in a formal classroom setting. To receive credit** for lecture material viewed online, students will need to **post three questions and answer three questions** in the online forum **for each block**. There are two exceptions to this rule. To receive credit for the first block, students must pass a 5 question quiz with at least a 60%. To receive credit for Block 7, students must submit a 500 word essay summarizing what they learned through the advanced application project and how they might use the information in the future. Credit for the formal classroom sessions will be given based on attendance.

To receive credit for the elective, three requirements must be met:

1. Students must Earn Credit for 10 hours of Content
2. Students must Complete a Final Project and Submit an Essay (Block 7: Advanced Application)
3. Students must Complete the RedCap Student Evaluation of the Course

**Grading will be Pass/Fail.**

### **Course Organization:**

## **Sample**

- I. Block
  - A. Topic
    1. Lecture Title (Length of Lecture)

## I. The Time Value of Money (1:46:25)

- A. Interest Basics (17:56)
  - 1. Introduction to Interest (9:55)
  - 2. Interest Part 2 (8:01)
- B. Compound Interest Basics (15:47)
  - 1. Introduction to Compound Interest (6:37)
  - 2. The Rule of 72 for Compound Interest (9:10)
- C. Continuously Compounded Interest and  $e$  (26:13)
  - 1.  $e$  & Compound Interest (11:37)
  - 2.  $e$  as a Limit (5:38)
  - 3. Formula for Continuously Compounding Interest (8:58)
- D. Present Value (46:29)
  - 1. Time Value of Money (8:16)
  - 2. Introduction to Present Value (10:19)
  - 3. Present Value 2 (10:11)
  - 4. Present Value 3 (7:41)
  - 5. Present Value 4 & Discounted Cash Flow (10:02)
- E. **Present Value Problem Set (5 Questions, Pass with a 60%)**

## II. Fundamentals of Debt & Credit (3:45:36)

- A. Banking & Money (2:03:17)
  - 1. Banking 1 (11:49)
  - 2. Banking 3: Fractional Reserve Banking (11:47)
  - 3. Banking 5: Introduction to Bank Notes (8:49)
  - 4. Banking 6: Bank Notes and Checks (11:01)
  - 5. Banking 9: More on Reserve Ratios (8:51)
  - 6. Banking 11: A Reserve Bank (11:27)
  - 7. Banking 12: Treasuries (11:18)
  - 8. Banking 13: Open Market Operations (12:27)
  - 9. Banking 15: More on the Federal Funds Rate (12:15)
  - 10. Banking 17: What Happened to the Gold? (10:12)
  - 11. The Discount Rate (13:21)
- B. Credit Cards & Loans (29:16)
  - 1. Annual Percentage Rate (APR) & Effective APR (7:11)
  - 2. Institutional Roles in Issuing and Processing Credit Cards (11:40)
  - 3. Payday Loans (10:25)
- C. Personal Bankruptcy (13:03)
- D. **Credit Unions, Fast Cash, and Understanding Your Credit Score (1 Hour Lecture by Eric Gustafson)**

### III. Home, Auto, and Student Loans (5:14:49)

#### A. Student Loans (1 Hour Lecture by Mr. Charles Kettlewell)

#### B. Auto Loans (1 Hour Lecture by Eric Gustafson)

#### C. Home Loans (3:14:49)

1. Home Equity and Personal Balance Sheets (28:33)
  - a) *Introduction to Balance Sheets (9:53)*
  - b) *More on Balance Sheets and Equity (10:04)*
  - c) *Home Equity Loans (8:36)*
2. Renting vs. Buying a Home (45:40)
  - a) *Renting vs. Buying a Home 1 (11:37)*
  - b) *Renting vs. Buying a Home 2 (9:39)*
  - c) *Renting vs. Buying a Home 2 (Part 2) (9:08)*
  - d) *Renting vs. Buying a Home (Detailed Analysis) (15:16)*
3. Mortgages (1:19:29)
  - a) *Introduction to Mortgage Loans (18:17)*
  - b) *Mortgage Interest Rates (14:17)*
  - c) *Short Sale Basics (6:33)*
  - d) *Adjustable Rate Mortgages (11:42)*
  - e) *Hybrid ARM (4:57)*
  - f) *Balloon Payment Mortgage (6:08)*
  - g) *Example: Geometric Series to Figure out Mortgage Payments (17:35)*
4. Home Buying Process (41:07)
  - a) *Title and Deeds in Real Estate (9:05)*
  - b) *Title Insurance (6:28)*
  - c) *Making an Offer on a Home (8:27)*
  - d) *Escrow (10:33)*
  - e) *Types of Escrow in Real Estate (6:34)*

### IV. Insurance: How Much and Which Kind? (2:43:14)

#### A. Life Insurance (43:14)

1. Term and Whole Life Insurance Policies (14:40)
2. Term and Whole Life Insurance Policies 2 (2:36)
3. Term Life Insurance and Death Probability (4:21)
4. Term and Whole Life Insurance Policies (14:40)
5. Term and Whole Life Insurance Policies 2 (2:36)
6. Term Life Insurance and Death Probability (4:21)

#### B. Health, Disability, and Long-Term Care Insurance (1 Hour Lecture by Eric Gustafson)

#### C. Car, Home, and Catastrophe Insurance (1 Hour Lecture by Eric Gustafson)

## V. Two Things to Count On: Taxes & Inflation (4:16:30)

### A. Personal Taxes (57:10)

1. Basics of U.S. Income Tax Rate Schedule (4:07)
2. Tax Deductions Introduction (3:29)
3. Alternative Minimum Tax (AMT) Overview (3:44)
4. Alternative Minimum Tax (3:54)
5. Estate Tax Introduction (10:56)
6. Tax Brackets and Progressive Taxation (4:14)
7. Calculating Federal Taxes and Take Home Pay (6:35)
8. Calculating State Taxes and Take Home Pay (6:29)
9. Marriage Penalty (10:04)
10. Married Taxes Classification (3:38)

### B. Inflation (2:04:27)

1. Inflation Basics (31:27)
  - a) *Inflation Overview (9:00)*
  - b) *What is Inflation (3:29)*
  - c) *Inflation Data (3:29)*
  - d) *Consumer Price Index (CPI) (15:29)*
2. Inflation Scenarios (9:50)
  - a) *Moderate Inflation in a Good Economy (2:54)*
  - b) *Stagflation (2:55)*
  - c) *Hyperinflation (4:01)*
3. Real and Nominal Return (9:43)
  - a) *Real and Nominal Return (3:10)*
  - b) *Calculating Real Return in Last Year Dollars (2:49)*
  - c) *Relationship between Nominal Returns, Real Returns, and Inflation (3:44)*
4. Capacity Utilization and Inflation (1:13:27)
  - a) *Economics of a Cupcake Factory (11:12)*
  - b) *Cupcake Economics 2 (11:37)*
  - c) *Cupcake Economics 3 (12:58)*
  - d) *Inflation, Deflation, and Capacity Utilization (12:31)*
  - e) *Inflation, Deflation, and Capacity Utilization 2 (11:49)*
  - f) *Inflation, Deflation, and Capacity Utilization 3: Obama Stimulus Plan (13:20)*

### C. Deflation (14:53)

1. Deflation (3:30)
2. Velocity of Money Rather Than Quantity of Money Driving Prices (3:30)
3. Deflation Despite an Increase in Money Supply (4:03)
4. Deflationary Spiral (3:50)

### D. Tax Forms to Know (1 Hour Lecture by Eric Gustafson)

## VI. Investment Opportunities & Strategies (5:11:47)

- A. Investment & Consumption (1:12:32)
  - 1. Risk and Reward Introduction (11:38)
  - 2. Human Capital (5:56)
  - 3. Return on Capital (9:49)
  - 4. Investment vs. Consumption 1 (9:50)
  - 5. Investment vs. Consumption 2 (10:12)
  - 6. Wealth Destruction 1 (10:40)
  - 7. Wealth Destruction 2 (10:39)
  - 8. Back-Of-Envelope Office Space Conundrum (3:48)
- B. Stocks (17:36)
  - 1. What it Means to Buy a Company's Stock (13:46)
  - 2. Stock Dilution (3:50)
- C. Bonds (57:17)
  - 1. Bonds vs. Stocks (9:20)
  - 2. Corporate Debt vs. Traditional Mortgages (4:55)
  - 3. Introduction to Bonds (8:41)
  - 4. Introduction to the Yield Curve (9:56)
  - 5. Relationship between Bond Prices and Interest Rates (13:15)
  - 6. Treasury Bond Prices and Yields (3:46)
  - 7. Annual Interest Varying with Maturity (3:09)
  - 8. The Yield Curve (4:15)
- D. Funds (1:05:31)
  - 1. Mutual Funds and ETFs (31:22)
    - a) *Open-Ended Mutual Fund 1 (4:01)*
    - b) *Open-Ended Mutual Fund 2: Redemptions (5:48)*
    - c) *Closed-End Mutual Fund (4:51)*
    - d) *Exchange Traded Funds (ETFs) (5:01)*
    - e) *Ponzi Schemes (11:41)*
  - 2. Hedge Funds (34:09)
    - a) *Hedge Funds Intro (3:31)*
    - b) *Hedge Fund Structure and Fees (6:51)*
    - c) *Are Hedge Funds Bad? (7:49)*
    - d) *Hedge Funds, Venture Capital, and Private Equity (2:53)*
    - e) *Hedge Fund Strategies: Long-short 1 (3:34)*
    - f) *Hedge Fund Strategies: Long-short 2 (4:30)*
    - g) *Hedge Fund Strategies: Merger Arbitrage (5:01)*
- E. Individual Retirement Accounts (IRAs) and 401(k)s (38:51)
  - a) *Traditional IRAs (13:23)*
  - b) *Roth IRAs (16:29)*
  - c) *401(k)s (8:59)*

**F. Diversification: Assets and Risks (1 Hour Lecture by Eric Gustafson)**

- a) *What is a Market?*
  - (1) Stock Markets
  - (2) Bond Markets
  - (3) Futures Markets
- b) *Seniority of Liability of Bonds, Preferred Stocks, and Standard-Issue Stocks*
- c) *Expected Return on Assets*
  - (1) Stocks
  - (2) Bonds
    - (a) JNK
  - (3) Treasuries
- d) *The Greek Alphabet of Investing*

**VII. Practical Applications (Choose One)**

**A. 2008 Bank Crisis (4:23:25)**

- 1. 2008 Bank Bailout (3:06:51)
  - a) *Bailout 1: Liquidity vs. Solvency (11:25)*
  - b) *Bailout 2: Book Value (10:51)*
  - c) *Bailout 3: Book Value vs. Market Value (10:32)*
  - d) *Bailout 4: Mark-To-Model vs Mark-To-Market (11:23)*
  - e) *Bailout 5: Paying off the Debt (10:50)*
  - f) *Bailout 6: Getting an Equity Infusion (12:01)*
  - g) *Bailout 7: Bank Goes Into Bankruptcy (10:24)*
  - h) *Bailout 8: Systemic Risk (11:52)*
  - i) *Bailout 9: Paulson's Plan (11:05)*
  - j) *Bailout 10: Moral Hazard (12:06)*
  - k) *Bailout 11: Why these CDOs Could be Worth Nothing (10:44)*
  - l) *Bailout 12: Lone Star Transaction (10:27)*
  - m) *Bailout 13: Does the Bailout Have a Chance of Working? (10:58)*
  - n) *Bailout 14: A Possible Solution (12:21)*
  - o) *Bailout 15: More on the Solution (10:08)*
  - p) *CNN: Understanding the Crisis (14:35)*
- 2. The Geithner Plan (1:16:34)
  - a) *Geithner Plan 1 (14:02)*
  - b) *Geithner Plan 2 (12:28)*
  - c) *Geithner Plan 3 (12:24)*
  - d) *Geithner Plan 4 (13:22)*
  - e) *Geithner Plan 5 (14:00)*
  - f) *Geithner Plan 6: A Better Solution (10:18)*

- B. Currency Effects: China, Greece, and Bitcoin, Oh My! (4:21:16)
  - 1. Foreign Exchange and Trade (1:31:33)
    - a) *Currency Exchange Introduction (12:03)*
    - b) *Currency Effect on Trade (14:19)*
    - c) *Currency Effect on Trade Review (10:05)*
    - d) *Pegging the Yuan (6:51)*
    - e) *Chinese Central Bank Buying Treasuries (12:09)*
    - f) *American-Chinese Debt Loop (15:26)*
    - g) *Debt Loops: Rationale and Effects (12:23)*
    - h) *China Keeps Peg, but Diversifies Holdings (4:15)*
    - i) *Carry Trade Basics (4:02)*
  - 2. Chinese Currency & U.S. Debt (34:39)
    - a) *Floating Exchange Resolving Trade Imbalance (4:05)*
    - b) *China Pegs to Dollar to Keep Trade Imbalance (3:00)*
    - c) *China Buys U.S. Bonds (2:50)*
    - d) *Review of China / U.S. Currency Situation (2:35)*
    - e) *Data on Chinese  $M_1$  Increase in 2010 (3:11)*
    - f) *Data on Chinese Foreign Assets Increase in 2010 (3:40)*
    - g) *Data on Chinese / U.S. Balance of Payments (4:16)*
    - h) *Chinese Inflation (3:21)*
    - i) *Floating Exchange Effect on China (3:25)*
    - j) *Floating Exchange Effect on U.S. (4:16)*
  - 3. Greek Debt Crisis (34:02)
    - a) *Greek Debt Recession & Austerity (6:59)*
    - b) *Greek Financial Crisis (10:35)*
    - c) *How and Why Greece would Leave the Euro (8:20)*
    - d) *Why Europe is Worried about Greece (8:08)*
  - 4. Bitcoin (1:41:02)
    - a) *Bitcoin: What is it? (9:07)*
    - b) *Bitcoin: Overview (11:01)*
    - c) *Bitcoin: Cryptographic Hash Functions (10:13)*
    - d) *Bitcoin: Digital Signatures (9:47)*
    - e) *Bitcoin: Transaction Records (11:31)*
    - f) *Bitcoin: Proof of Work (10:31)*
    - g) *Bitcoin: Transaction Block Chains (11:24)*
    - h) *Bitcoin: The Money Supply (12:13)*
    - i) *Bitcoin: The Security of Transaction Block Chains (15:15)*

### C. Strategies & Metrics (3:44:16)

1. Unemployment (25:47)
  - a) *Unemployment 1 (12:52)*
  - b) *Unemployment Rate Primer (v2) (9:46)*
  - c) *Simple Analysis of Cost Per Job Saved From Stimulus (3:09)*
2. Shorting Stock (44:18)
  - a) *Basic Shorting (3:28)*
  - b) *Shorting Stock 1 (9:31)*
  - c) *Shorting Stock 2 (8:42)*
  - d) *Shorting Stock 2 (8:42)*
  - e) *Is Short Selling Bad? (13:55)*
3. Corporate Metrics and Valuation (2:34:11)
  - a) *Price and Market Capitalization (11:55)*
  - b) *Introduction to the Income Statement (15:26)*
  - c) *Earnings and Earnings Per Share (EPS) (10:14)*
  - d) *Introduction to the Price to Earnings Ratio (P/E) (14:46)*
  - e) *P/E Discussion (15:33)*
  - f) *Return on Assets (ROA) Discussion 1 (10:30)*
  - g) *Return on Assets (ROA) Discussion 2 (10:16)*
  - h) *Depreciation (12:32)*
  - i) *Amortization (7:45)*
  - j) *P/E Conundrum (13:40)*
  - k) *Enterprise Value (17:28)*
  - l) *Earnings Before Interest, Taxes, Depreciation and Amortization (EBITA) (14:06)*
4. **Greek, Graphs, and Good Timing (1 Hour Lecture by Eric Gustafson)**
  - a) *Include Discussion of Useful Websites*

### D. Advanced Investment Derivatives (3:38:12)

1. Futures (1:08:59)
  - a) *Forward Contract Introduction (3:10)*
  - b) *Futures Introduction (3:28)*
  - c) *Motivation for the Futures Exchange (2:40)*
  - d) *Futures Margin Mechanics (3:38)*
  - e) *Verifying Hedge with Futures Margin Mechanics (3:47)*
  - f) *Futures and Forward Curves (3:18)*
  - g) *Contango from the Trader's Perspective (4:06)*
  - h) *Severe Contango Generally Bearish (2:27)*
  - i) *Backwardation: Bullish or Bearish? (3:25)*
  - j) *Futures Curves 2 (3:51)*
  - k) *Contango (4:10)*
  - l) *Backwardation (3:56)*
  - m) *Contango and Backwardation Review (3:44)*
  - n) *Upper Bound on a Forward Settlement Price (4:16)*

