MBA Math Quantitative Skills Course Topics 24 LESSONS

Excel Spreadsheets 1 LESSON

Basic Excel worksheet techniques are covered in one lesson. Beginner and intermediate narrated lectures provide the Excel foundation that you will extend through the rest of the course. Later lessons illustrate basic functions implementing algebraic formulas and also the **built-in functions (e.g., FV, NPV, VAR, STDEV, CORREL, RSQ, NORMDIST)** that you will use most often in your MBA experience.

Microeconomics 3 LESSONS

Marginal analysis addresses the question of how much to produce to maximize profit, given specified costs and revenues. Problem statements and solutions involve either tables or formulas. You learn to distinguish among **marginal, total, and average** costs and revenues.

Supply and demand are the classic economics concept. You learn to create and interpret linear supply and demand to compute the **equilibrium point** that maximizes profit and the corresponding **consumer surplus.** You examine market segmentation, and use demand curves as part of marginal analysis.

MARGINAL ANALYSIS (2 LESSONS)
Tables and Formulas
Formulas and Calculus

SUPPLY AND DEMAND (1 LESSON)
Equilibrium
Consumer Surplus

Finance 🖉 6 LESSONS

Familiarity with **time value of money** concepts, formulas, and spreadsheet solution techniques should be considered a prerequisite for your MBA experience. Because everything else in financial math is built on this foundation of **shifting one cash payment at one time to its equivalent at another time,** you should be clear about this before you start classes.

Annuities and perpetuities are the simplest smooth patterns of cash flows over time.

Bonds are a mixture of annuities and future values.

Net present value allows you to convert an irregular set of cash flows back to the present to **compare one course of action with another**. Such problems appear throughout the MBA curriculum.

TIME VALUE OF MONEY (2 LESSONS)

Annual Compounding
    Present Value
    Rate
    Number of Periods
    Future Value

Sub-Annual Compounding
    Same as Annual plus:
    Periods per Year

ANNUITIES AND PERPETUITIES (2 LESSONS)
Constant
Growing

BOND BASICS (1 LESSON)
Zero Coupon
Coupon

NET PRESENT VALUE (1 LESSON)
Draw Cash Flows for Each Option
Build a Spreadsheet
Recommend Best Action

Accounting 📝7 LESSONS

Making sense of accounting requires a clear understanding of the three main financial statements and how these statements represent standard business transactions. The math is simple. The challenge lies in the logic, definitions, and conventions. Using Intel's financial statements as an example, you learn the basics about the **balance sheet, income statement, and statement of cash flows.**

After studying each financial statement separately, you then work on the **connections among the three statements** with a set of examples.

You use the **balance sheet equation and T accounts** to characterize standard business transactions in terms of offsetting **debits and credits.** Finally, you apply what you learned with T accounts to make appropriate **journal** entries.

BALANCE SHEET (2 LESSONS)
Assets
Liabilities
Equity
Balance Sheet Equation
Transactions

INCOME STATEMENT (1 LESSON)
Revenues
Expenses
Cash vs. Depreciation

STATEMENT OF CASH FLOWS (1 LESSON)
Operating Activities
Investing Activities
Financing Activities
Cash vs. Depreciation

STATEMENT CONNECTIONS (1 LESSON)

T ACCOUNTS AND BALANCE SHEET EQUATION (1 LESSON)
Balances
Debits
Credits
Transactions

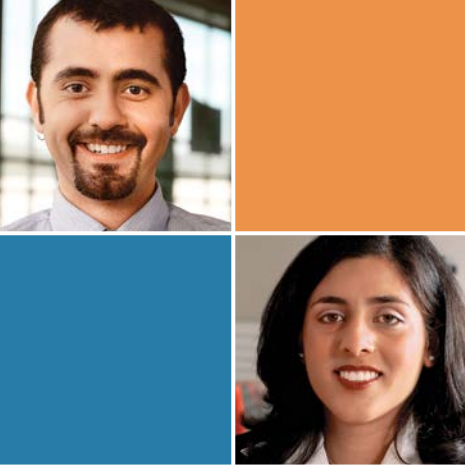| JOURNAL (1 LESSON) |
| --- |
| Journal Entry Template |
| Debits |
| Credits |
| Transactions |

Statistics and Probability 📝 **7** LESSONS

You start with **basic descriptive statistics,** which form the foundation. You then tackle statistics of **linear combinations**, focusing on stock portfolios as an example.

Tables and graphs summarize raw data. You need to know how to make them and work with **discrete probability distribution**.

Regression allows you to draw a **best-fit line** through a set of data points. You can do it visually or computationally. Both approaches are a snap using Excel.

The **normal "bell curve"** is the king of **continuous distributions.** You learn to work with continuous distributions in terms of **intervals rather than points.** Excel makes solutions a breeze but you may, depending on your MBA program, need to learn the z-table approach and its corresponding pictographs and conversions using the standard normal table.

Sampling and inference extend the normal distribution to the **Central Limit Theorem, confidence intervals and hypothesis testing.**

BASIC SUMMARY STATISTICS (1 LESSON)
Mean, Median, and Mode
Variance and Standard Deviation

LINEAR COMBINATIONS (e.g., Stock Portfolios) (1 LESSON)
Covariance and Correlation
Portfolio Statistics from Individual Stock Returns
Portfolio Statistics from Individual Stock Statistics

DISCRETE PROBABILITY DISTRIBUTIONS (1 LESSON)
Summarize Data as Table or Chart
Mean, Median, and Mode
Variance and Standard Deviation
Cumulative Distribution

LINEAR REGRESSION (1 LESSON)
Regression Line Equation
Prediction
Measure of Linearity

CONTINUOUS DISTRIBUTIONS (1 LESSON)
Uniform
Standard Normal
Normal

SAMPLING (1 LESSON)
Sample Statistics
Distribution of Sample Means
Central Limit Theorem

INFERENCE (1 LESSON)
Confidence Intervals
Hypothesis Testing

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