



Building Financial Models with ChatGPT



Module 1: Introduction to AI-Assisted Financial Modeling

Finance students **Learning Objectives:**

- Understand how to leverage ChatGPT for financial modeling tasks
- Master effective prompting techniques for financial analysis
- Build practical financial models using AI assistance
- Develop critical evaluation skills for AI-generated financial content

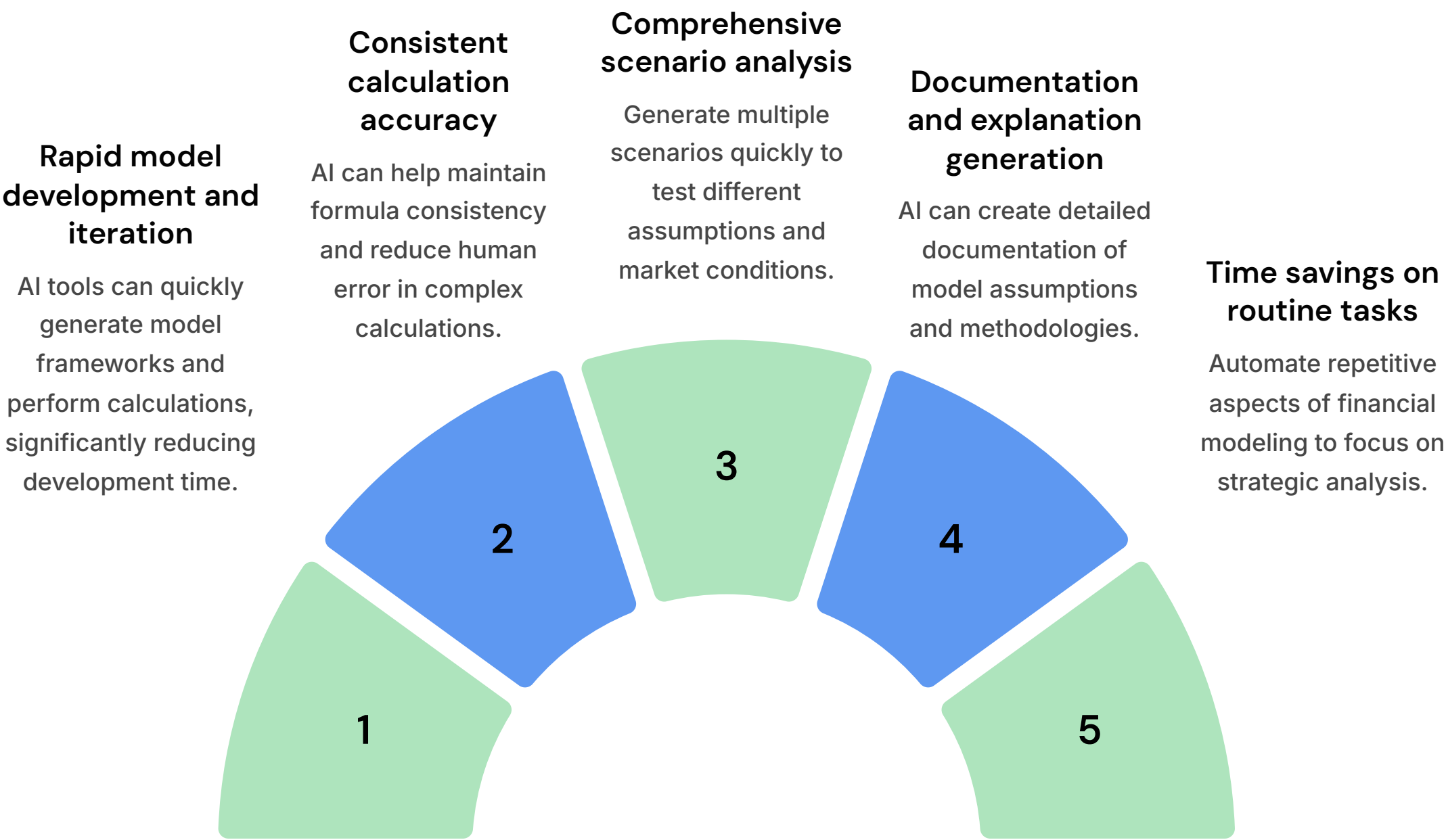
What is AI-Assisted Financial Modeling?

AI-assisted financial modeling involves using artificial intelligence tools like ChatGPT to:

- Generate model structures and frameworks
- Perform complex calculations and analysis
- Create financial projections and scenarios
- Automate repetitive modeling tasks
- Provide insights and recommendations

Benefits and Limitations

Benefits:



Limitations of AI-Assisted Financial Modeling



Requires domain expertise for validation

AI outputs must be verified by professionals with financial knowledge to ensure accuracy and relevance.



May lack industry-specific nuances

Generic AI models may not capture unique aspects of specific industries or business models without proper guidance.



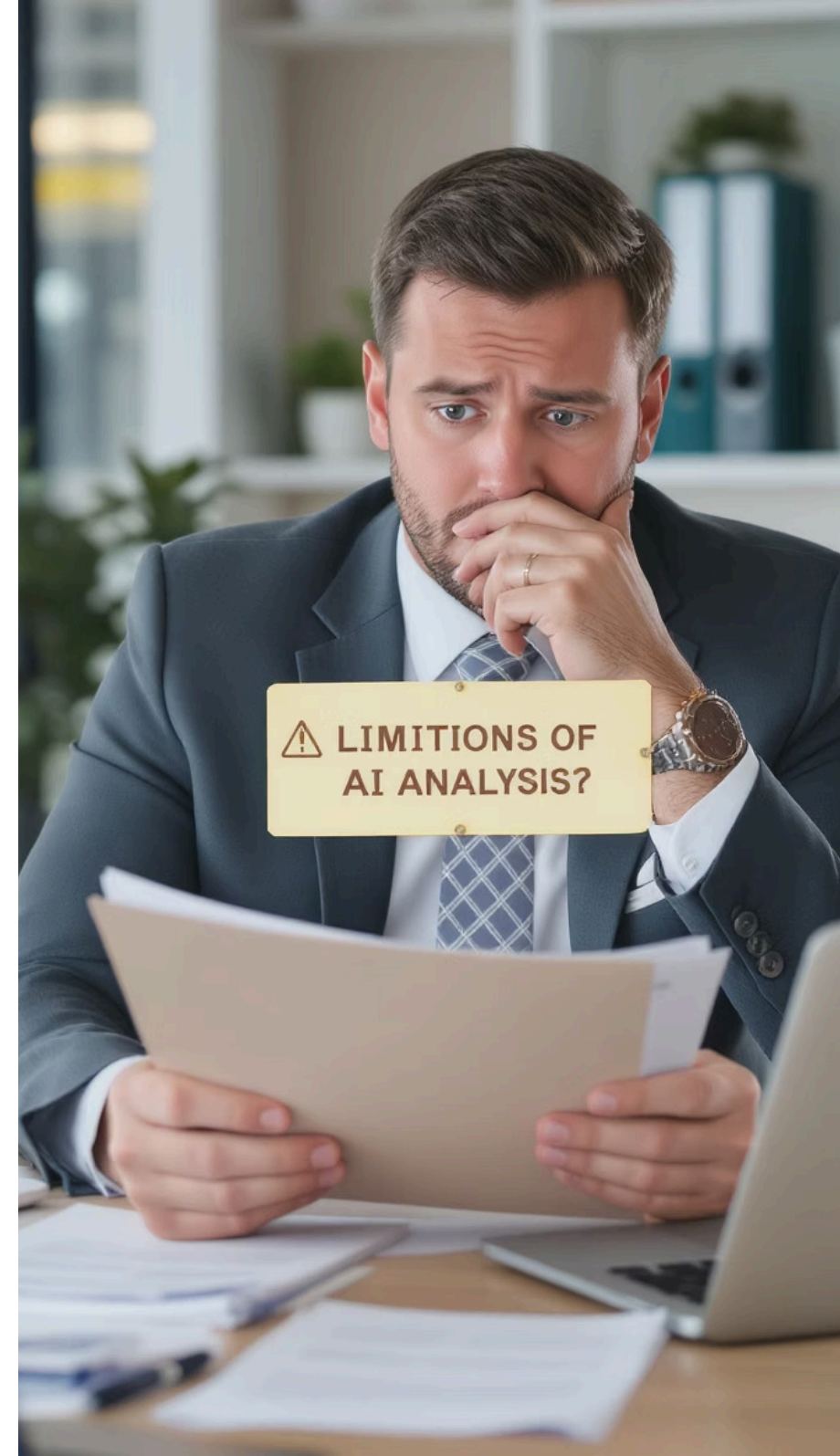
Needs human oversight for strategic decisions

AI can provide analysis but cannot replace human judgment for strategic financial decisions.



Potential for biased or incomplete analysis

AI may perpetuate biases in training data or miss critical factors without proper prompting.



**LIMITATIONS OF
AI ANALYSIS?**

Class Activity 1: Ice Breaker

Students to Try:

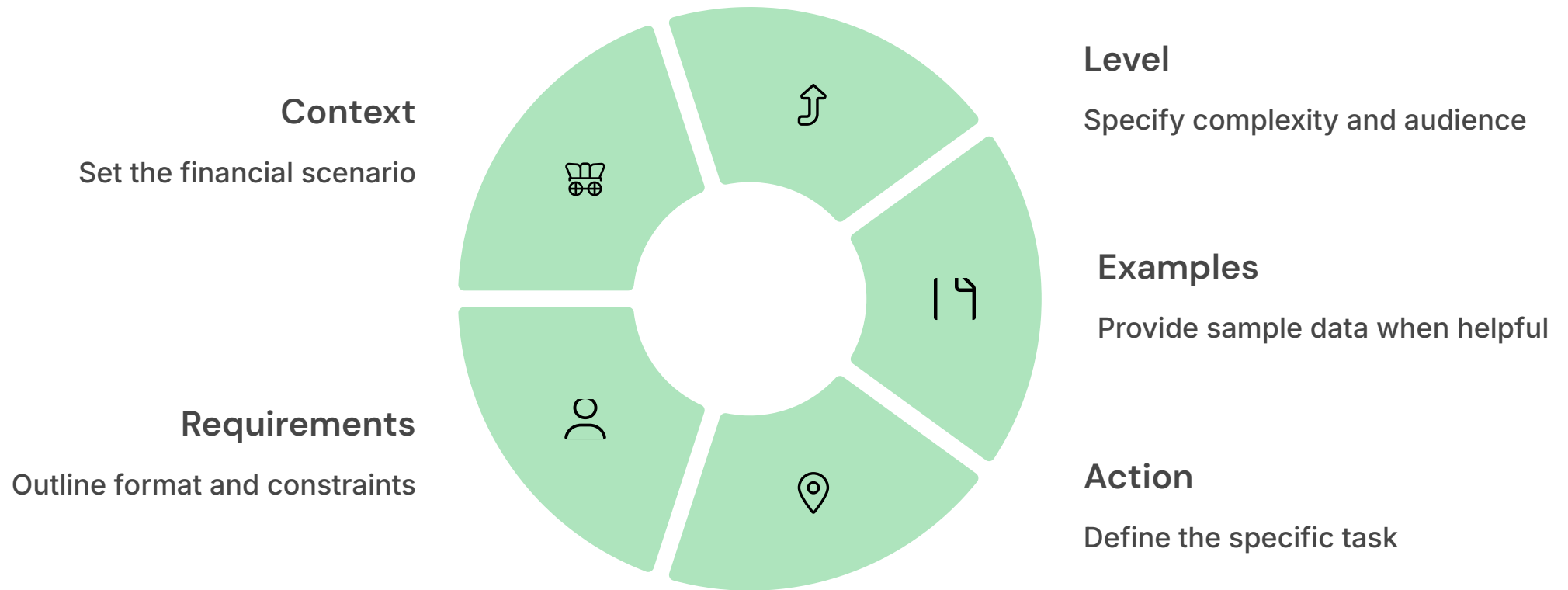
"I'm a finance student learning about financial modeling. Can you explain the key components of a basic DCF model in simple terms and tell me what information I would need to gather before building one?"

This introductory activity helps students become familiar with asking ChatGPT finance-specific questions while learning fundamental concepts of Discounted Cash Flow modeling.



Students will share their responses with the class, comparing the different explanations provided by ChatGPT and discussing the quality and comprehensiveness of the information received.

Module 2: Effective Prompting Techniques for Finance



Prompt Engineering Best Practices

1. Be Specific About Financial Context

- Industry type and business model
- Time period and currency
- Relevant financial standards (GAAP, IFRS)
- Risk factors and assumptions

2. Request Step-by-Step Breakdowns

- Ask for methodology explanation
- Request assumption validation
- Seek alternative approaches

3. Include Error Checking

- Ask for assumption validation
- Request sensitivity analysis
- Seek potential pitfalls identification

Class Activity 2: Prompt Optimization

Poor Prompt Example:

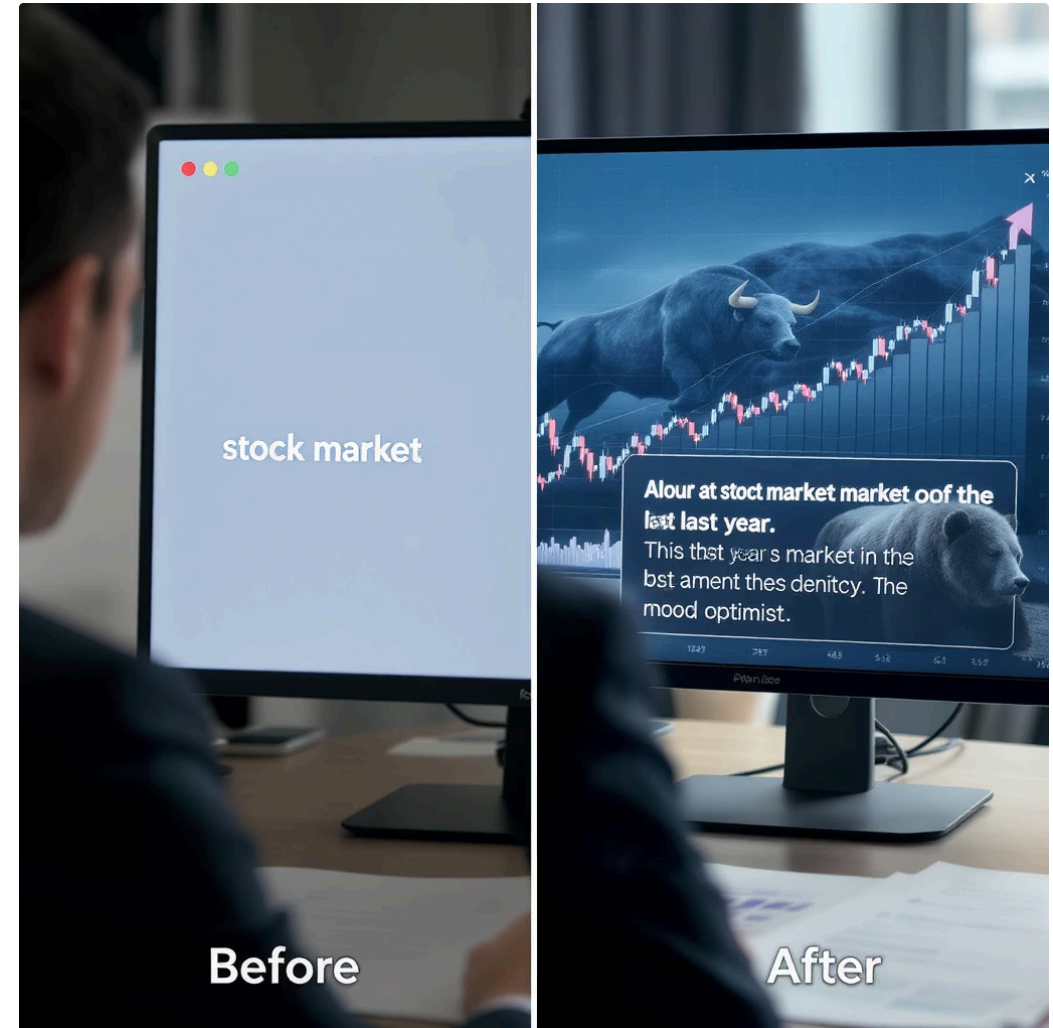
"Help me with a financial model"

Students Practice Improving This to:

"I need to build a 3-year DCF model for a SaaS startup with \$2M ARR growing at 30% annually. The company has 40% gross margins and is currently unprofitable but expects to reach profitability in Year 2. Can you help me structure the model components and identify the key assumptions I should focus on? Please provide the framework in Excel-friendly format."

Group Exercise:

Students work in pairs to transform basic prompts into CLEAR framework prompts.



Module 3: Building Core Financial Models

3.1 DCF (Discounted Cash Flow) Models

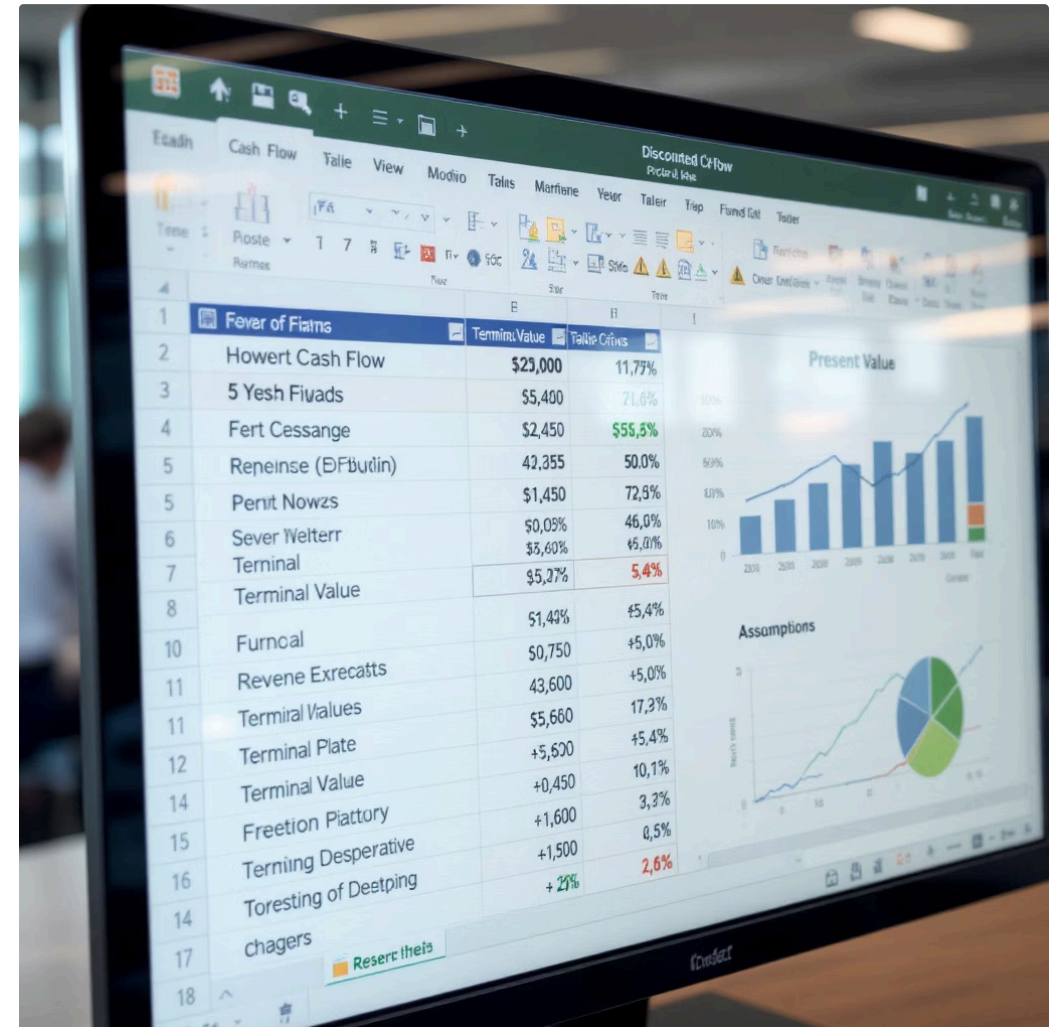
Foundational Prompt:

"I'm building a DCF model for [Company/Industry]. Here are my key assumptions:

- ☐ Revenue growth: [X%] annually
- ☐ EBITDA margin: [Y%]
- ☐ CapEx as % of revenue: [Z%]
- ☐ Working capital needs: [Details]
- ☐ Tax rate: [Rate]
- ☐ WACC: [Cost of capital]

Please help me structure a 5-year DCF model with:

- Revenue projections
- Operating expense forecasts
- Free cash flow calculations
- Terminal value estimation
- Present value calculations Show me the Excel formulas I would need for each component."



Advanced DCF Prompt

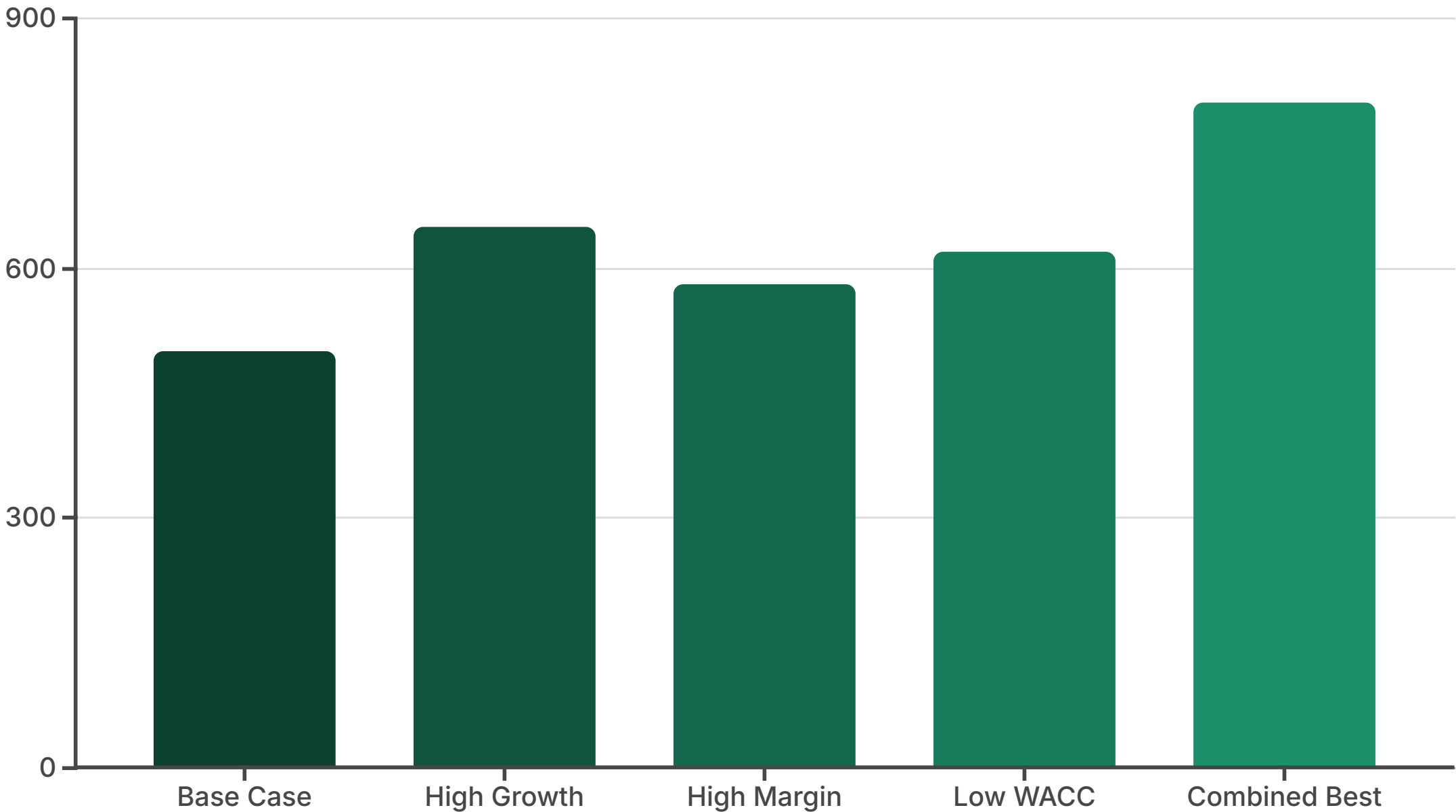
"Create a sensitivity analysis for my DCF model testing:

- Revenue growth rates: 15%, 20%, 25%, 30%
- EBITDA margins: 35%, 40%, 45%
- WACC: 8%, 10%, 12%

Present the results in a data table format and explain which variables have the highest impact on valuation."

This advanced prompt helps students understand how to create comprehensive sensitivity analyses to test the robustness of their DCF models under different scenarios.

DCF Sensitivity Analysis

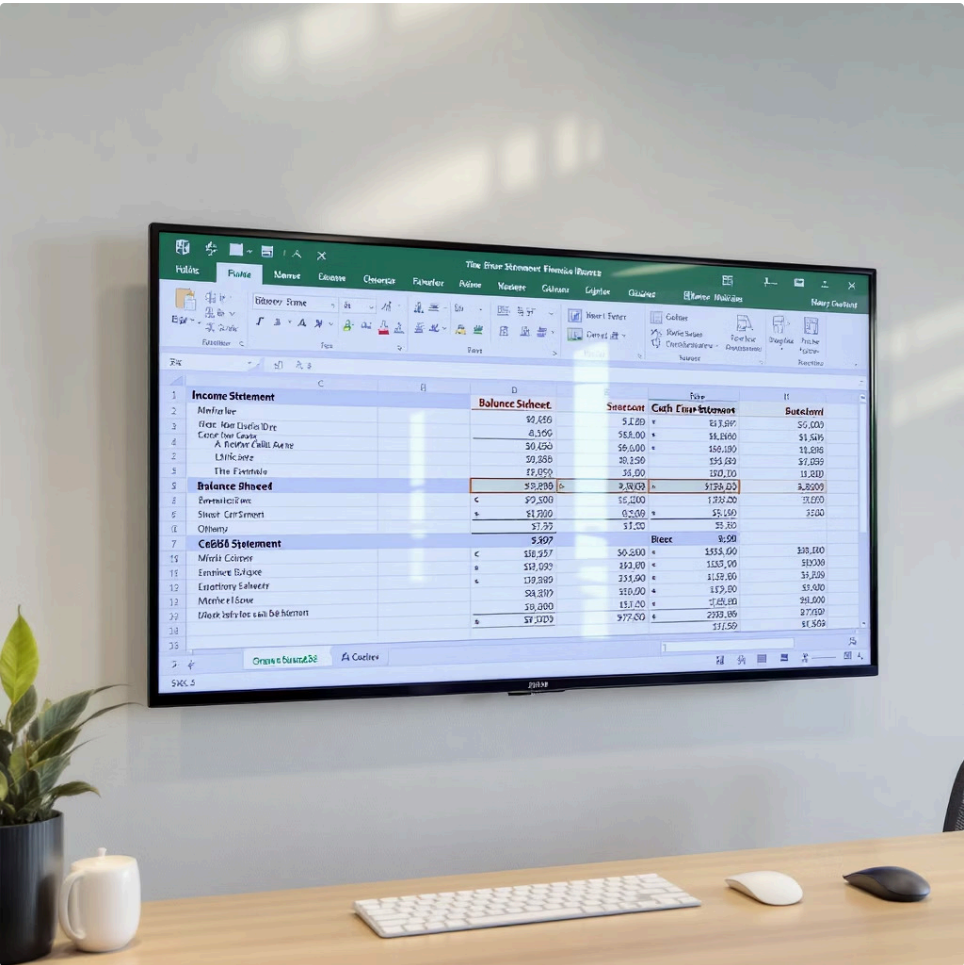


3.2 Three-Statement Financial Models & 3.3 LBO Models

Integration Prompt:

"Help me build an integrated 3-statement model for a retail company. I need to understand how to:

- 1. Link revenue growth assumptions to all three statements
 - 2. Model working capital changes and their cash flow impact
 - 3. Calculate debt capacity and interest expense
 - 4. Ensure the balance sheet balances
 - 5. Create proper circular references for cash and debt
- Provide step-by-step instructions with Excel formulas."



LBO Structure Prompt:

"I'm modeling an LBO transaction with these parameters:

- ☐ Purchase price: \$500M
- ☐ Debt financing: 6x EBITDA
- ☐ Equity contribution: Remainder
- ☐ Current EBITDA: \$60M
- ☐ Expected EBITDA growth: 8% annually
- ☐ Debt paydown: 50% of excess cash flow
- ☐ Exit multiple: 12x EBITDA
- ☐ Hold period: 5 years

Help me structure the returns analysis including:

- 1. Sources and uses of funds
- 2. Debt schedule with different tranches
- 3. Cash flow waterfall
- 4. IRR and multiple calculations
- 5. Sensitivity analysis on exit multiples"

Class Activity 3: Model Building Challenge

Scenario:

Students receive a case study about "TechFlow Solutions"
- a B2B software company

Student Prompt to Use:

"TechFlow Solutions is a B2B software company with:

- ☐ Current ARR: \$5M
- ☐ Monthly churn rate: 2%
- ☐ Average deal size: \$50K annually
- ☐ Sales team: 10 reps, each closing 2 deals/month
- ☐ Gross margin: 85%
- ☐ Current monthly burn rate: \$400K

I need to build a model showing:

- Revenue projections for 3 years
- Customer acquisition and churn dynamics
- Sales team scaling requirements
- Cash flow and funding needs
- Unit economics (LTV/CAC ratio) Please provide the modeling framework and key formulas."



Module 4: Specialized Financial Analysis

4.1 Ratio Analysis and Benchmarking

1.8	0.6	15%	35%
Current Ratio	Debt-to-Equity	ROE	Gross Margin
Measures short-term liquidity	Indicates financial leverage	Return on shareholder investment	Profitability after COGS

Comprehensive Analysis Prompt:

"Analyze the financial health of a company with these metrics:

☐ Current Ratio: 1.8

☐ Quick Ratio: 1.2

☐ Debt-to-Equity: 0.6

☐ ROE: 15%

☐ ROA: 8%

☐ Gross Margin: 35%

☐ Operating Margin: 12%

☐ Interest Coverage: 8x

Compare these to industry benchmarks for retail companies and identify:

- Strengths and weaknesses
- Potential red flags
- Areas for improvement
- Peer comparison insights
- Trend analysis recommendations"

4.2 Options Pricing and Risk Management

Options Model Prompt:

"Help me build a Black-Scholes options pricing model with:

☐ Stock price: \$100

☐ Strike price: \$105

☐ Time to expiration: 90 days

☐ Risk-free rate: 3%

☐ Volatility: 25%

I need:

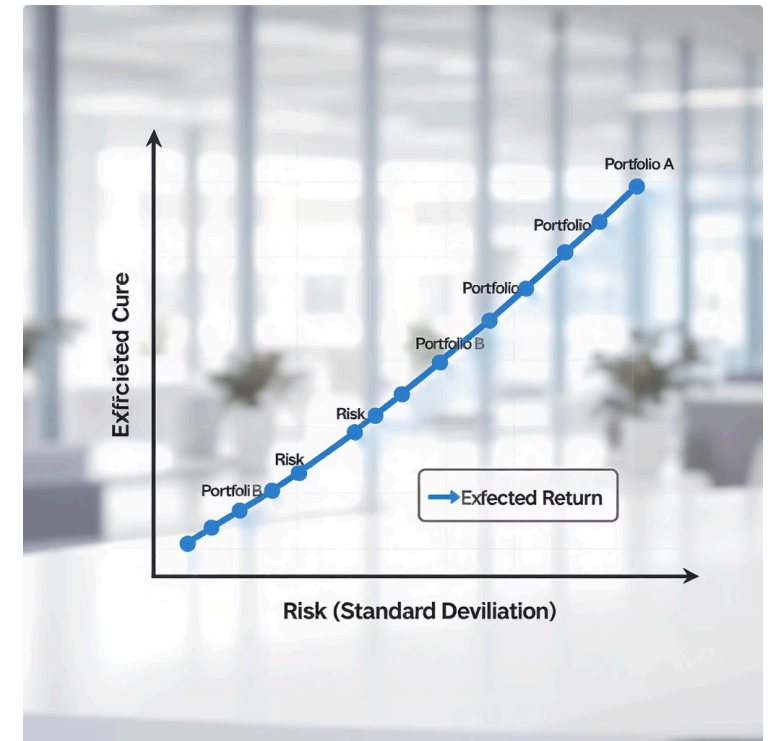
- Call and put option prices
- Greeks calculations (Delta, Gamma, Theta, Vega)
- Sensitivity analysis for different volatility assumptions
- Excel implementation with formulas
- Risk management implications"

4.3 Portfolio Optimization

Portfolio Analysis Prompt:

"I have a portfolio of 5 stocks with the following annual returns and correlations: [Provide sample data] Help me:

- Calculate portfolio expected return and risk
- Find the optimal portfolio weights using Modern Portfolio Theory
- Create an efficient frontier analysis
- Recommend rebalancing strategies
- Assess diversification benefits Show the mathematical formulations and Excel implementation."



Class Activity 4: Specialization Deep Dive (10 minutes)

Students choose one specialization area and work through a detailed prompt. They then present their approach to the class.



Ratio Analysis

Analyze company financial health through key performance indicators and industry benchmarks



Options Pricing

Build Black-Scholes models to value derivatives and understand risk parameters



Portfolio Theory

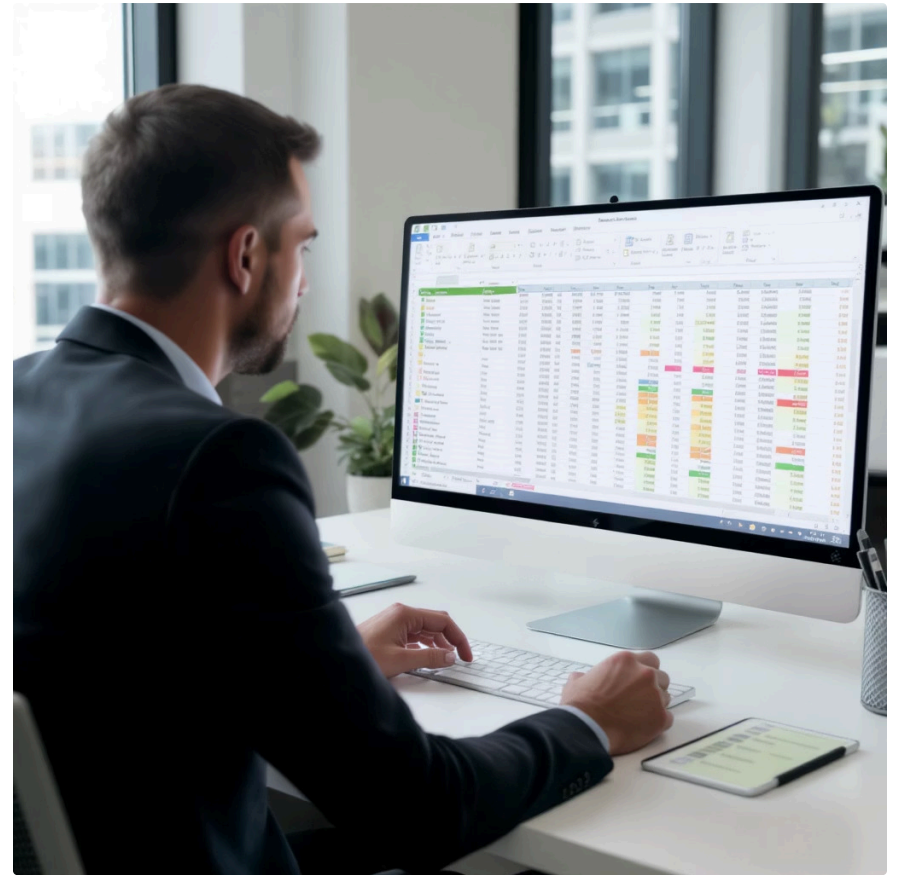
Optimize investment allocations using Modern Portfolio Theory and efficient frontier analysis

5.2 Model Validation and Error Checking

Validation Prompt:

"Review my financial model for potential errors and inconsistencies. Check for:

- 1. Mathematical accuracy in formulas
 - 2. Circular reference issues
 - 3. Unit consistency (thousands vs millions)
 - 4. Date and period alignment
 - 5. Assumption reasonableness
 - 6. Missing error checks
 - 7. Scenario logic consistency
 - 8. Balance sheet balancing
 - 9. Cash flow statement accuracy
 - 10. Sensitivity analysis completeness
- Provide a checklist format with specific items to verify."



5.3 Documentation and Presentation

Documentation Prompt:

"Help me create comprehensive documentation for my financial model including:

- 1. Executive summary of key findings
 - 2. Assumption summary with sources
 - 3. Methodology explanation
 - 4. Key risks and limitations
 - 5. Sensitivity analysis results
 - 6. Model user guide
 - 7. Quality assurance checklist
 - 8. Version control log
- Format this as a professional memo suitable for senior management review."

Module 6: Practical Workshop and Troubleshooting

Common Challenges and Solutions

Debugging Prompt:

"My financial model isn't working correctly. The issues I'm seeing are: [Student describes specific problems] Help me troubleshoot by:

- 1. Identifying likely root causes
- 2. Providing step-by-step debugging approach
- 3. Suggesting prevention strategies
- 4. Recommending model structure improvements
- 5. Creating validation checks to prevent future issues"

Class Activity 5: Rapid Fire Problem Solving

Students work in teams with different model challenges:

1 Team 1 Challenge

"My DCF model shows negative enterprise value. The company is profitable and growing. What could be wrong with my model structure or assumptions?"

2 Team 2 Challenge

"My 3-statement model balance sheet won't balance. I've checked the obvious connections but still have a \$50M difference. Walk me through a systematic debugging approach."

3 Team 3 Challenge

"My LBO model shows a 45% IRR which seems too high. The company is solid but not exceptional. Help me identify what might be inflating my returns calculation."

Summary and Best Practices

Key Takeaways

Do's:

- Always validate AI-generated calculations manually
- Use specific, detailed prompts with clear context
- Request multiple approaches for complex problems
- Ask for assumption verification and sensitivity analysis
- Iterate and refine models based on feedback

Don'ts:

- Blindly trust AI outputs without verification
- Use vague or ambiguous prompts
- Skip the critical thinking and analysis phase
- Ignore industry-specific considerations
- Forget to document assumptions and methodology

Professional Development Path

Next Steps for Students:

Practice with real company data

Apply AI-assisted modeling techniques to actual financial statements from public companies.

Build a portfolio of model templates

Create a library of reusable financial models for different scenarios and industries.

Stay updated on AI tool capabilities

Follow developments in AI financial tools and continuously improve prompting techniques.

Develop critical evaluation skills

Strengthen ability to assess AI outputs for accuracy, relevance, and completeness.

Focus on strategic interpretation of results

Move beyond technical modeling to derive meaningful business insights from financial analysis.

Homework Assignment

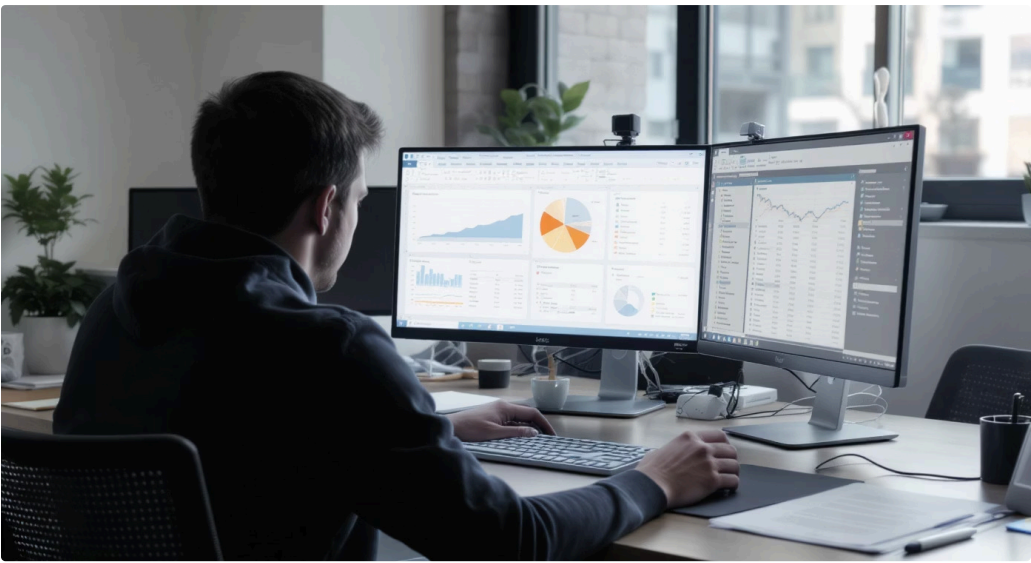
Individual Project:

Choose a publicly traded company in your area of interest. Using ChatGPT assistance, build a comprehensive financial model including:

1. Data Collection: Gather 3 years of historical financial data
2. Model Building: Create a 3-statement integrated model with 3-year projections
3. Valuation: Perform DCF analysis with sensitivity testing
4. Documentation: Write a 2-page investment thesis based on your model

Deliverables:

- Excel model with clear assumptions and calculations
- Written analysis with methodology explanation
- Presentation slides summarizing key findings
- Reflection on AI tool usage and limitations encountered



Evaluation Criteria:

- Model accuracy and structure (40%)
- Analysis quality and insights (30%)
- Effective use of AI assistance (20%)
- Professional presentation (10%)

Additional Resources

Recommended ChatGPT Follow-up Prompts

	For Continued Learning:	For Industry Application:	For Career Development:
	"I'm a finance student who just completed a class on AI-assisted financial modeling. What are the next 5 skills or concepts I should focus on to become proficient in this area? Please provide specific learning objectives and practice exercises for each."	"How do financial modeling approaches differ across industries like [healthcare/technology/real estate/retail]? What specific considerations should I keep in mind when modeling companies in [chosen industry]?"	"What are the most valued financial modeling skills in today's job market? How can I demonstrate proficiency in AI-assisted modeling to potential employers?"

Excel Formula Reference for AI-Generated Models

Students should always verify these key formulas:

- NPV: [=NPV (discount rate, cash flow range) + initial investment
- IRR: (=IRR(cash_flow_range_including_initial))
- XNPV: = XNPV(discount rate, values, dates)
- PMT: [=PMT(rate, nper, pv)]
- FV: (=FV(rate, nper, pmt, pv)

Quality Control Checklist

Before finalizing any AI-assisted model:

- All formulas link to assumption cells
- Balance sheet balances in all periods
- Cash flow statement reconciles to balance sheet changes
- All assumptions are documented with sources
- Sensitivity analysis covers key variables
- Model includes error checking mechanisms
- Results pass basic reasonableness tests
- Documentation explains methodology clearly