

LECTURE 12

# AI-Powered Global Stock Investment Competition

**Starting Capital:** €1,000 (imaginary)

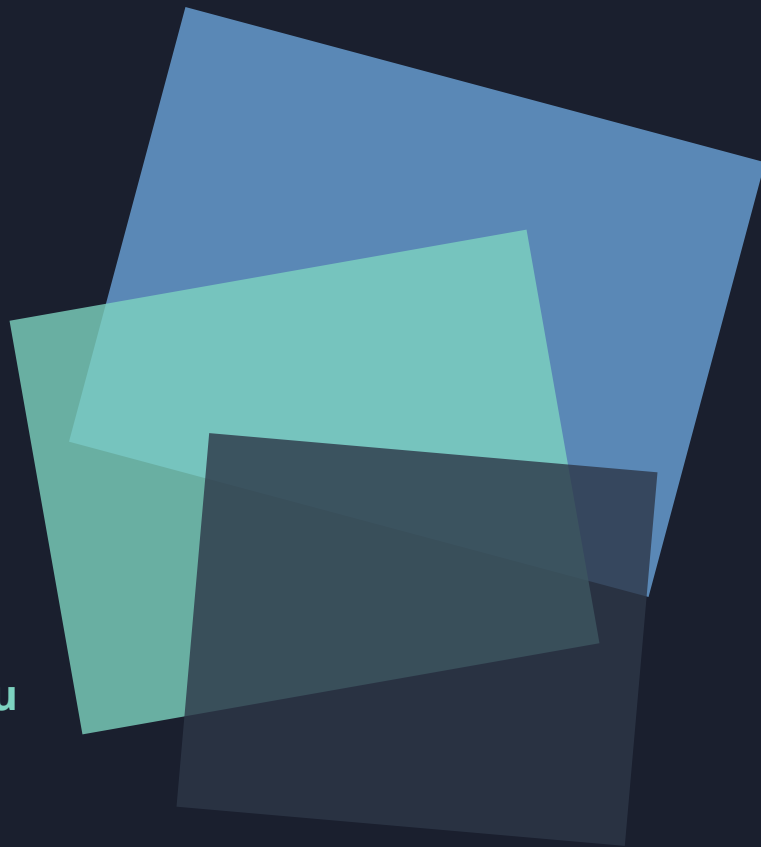
**Duration:** 3 weeks (Oct 24 - Nov 14, 2025)

**Same Teams**

**Markets:** 6 global regions

**The Twist: Use ANY AI Tools You Want... If You Can Document Them**

*Inteligencia Artificial Generativa y Creatividad*



# Why This Competition?

## Portfolio-Ready Artifact

✓ Demonstrate prompt engineering

✓ Show multi-agent system design

✓ Prove validation discipline

✓ Build real financial analysis skills

# Competition Philosophy

"Use ANY AI Tools... Document EVERYTHING"

## Why This Approach?

- Multi-agent systems are the future of AI work
- We want to see your **architecture** , not restrict your tools
- Documentation = transparency = trust = ethics

This is not a "no automation" competition.

# 6 Global Markets Available

## EU **OPTION A: European Markets**

DAX, CAC40, IBEX35, FTSE100, AEX

Siemens, LVMH, Iberdrola, BP, ASML

## US **OPTION B: US Markets**

NYSE, NASDAQ

Apple, Microsoft, Tesla, NVIDIA, JPMorgan

## HK **OPTION C: Hong Kong Exchange**

HKEX

Tencent, Alibaba, HSBC, China Mobile

## AU **OPTION D: Australian Securities Exchange**

ASX

BHP, Commonwealth Bank, CSL, Fortescue

## JP **OPTION E: Tokyo Stock Exchange**

TSE

Toyota, Sony, SoftBank, Keyence, Mitsubishi

## **OPTION F: Global ETFs**

Diversified exposure

VWCE, EQQQ, IWDA, CSPX

# Portfolio Allocation Rules

## Pick Your Strategy:

Option	Primary Market	Secondary Markets	ETF Allocation
A	70% Europe	20% any other region	10% global ETFs
B	50% Europe	30% US	20% any mix
C	40% Europe	40% Asia (HK/JP/AU)	20% US + ETFs

**Must hold 5-15 positions**

(diversification required)

# Trading Restrictions

## The Rules:



**No Shorting** (long positions only - no short-selling)



**No Options** (no calls, no puts)



**No Leverage** (1:1 cash only)



**Stocks + ETFs ONLY** (no derivatives, futures, or other instruments)



**3-Day Hold Minimum** (once you buy, hold for  $\geq 3$  days before selling)

# AI Tools You Can Use

## LLM Chat Interfaces

- ChatGPT (Free/Plus)
- Claude.ai (Free/Pro)
- **Gemini Advanced** (your student license!)
- Perplexity, Microsoft Copilot

## AI Agents & Automation

- LangChain (multi-agent workflows)
- AutoGPT, n8n (automation)
- Custom Python scripts (AI-generated)

## Data & Research

- Yahoo Finance, Google Finance APIs
- Python libs: `yfinance`, `pandas-datareader`
- AI-powered screeners

**The Only Rule**

**DOCUMENT EVERYTHING**

# Three Competition Tiers



## TIER 1: Manual Analyst

(Basic)

- Copy/paste prompts into ChatGPT/Claude/Gemini
- Manual verification of every output
- Human-driven trade decisions



## TIER 2: Coordinated Agents

(Intermediate)

- 2-5 specialized agents (researcher, risk analyst, validator)
- Orchestrated workflow (LangChain, custom Python)
- Documented agent handoffs



## TIER 3: Automated System

(Advanced)

- Fully automated pipeline (data → analysis → decision → log)
- Multi-model validation (Gemini vs ChatGPT)
- Real-time monitoring + alerts
- Requires architecture diagram



# What You Must Document

## 1. AI Architecture (25 points)

- Agent roles & responsibilities
- Model choices (Gemini, GPT-4, Claude) + rationale
- Validation chain (how you check outputs)
- Flowchart or architecture diagram

## 2. Prompt Library (15 points)

- Every prompt used (copy/paste actual text)
- Context + constraints + output format
- Token usage tracking
- Iteration notes (what failed, what worked)

# What You Must Document (continued)

## 3. Validation Log (20 points)

- How you checked for hallucinations
- Cross-model verification steps
- Manual fact-checking process
- Data source citations

Documentation quality counts for 60 points total (25 + 15 + 20)

# 3-Week Timeline

## Week 1: Launch & Initial Trades

Oct 24-30

**TODAY (Fri Oct 24):** Competition launches, form teams

**Weekend:** Research markets, design AI system, draft thesis

**DUE Tue Oct 29, 9 AM:** Investment Thesis (4 pages)

**Tuesday in class:** Present thesis, execute first trades

**IMPORTANT:** Upload every trade screenshot to Teams immediately!

## Week 2: Portfolio Management

Oct 31 - Nov 6

**DUE Tue Nov 4, 9 AM:** Mid-Competition Update (2 pages)

**Tuesday in class:** 5-min mid-competition presentations

Monitor positions daily, adjust strategy (max 1 trade/day)

**Continue uploading all trades to Teams within 5 minutes**

## Week 3: Final Week & Presentations

Nov 7-14

**DUE Tue Nov 12, 9 AM:** Final Presentation + Documentation

**Tuesday in class:** 7-min final presentations

**Friday Nov 14:** Awards ceremony! 🎉

# Deliverable 1 - Investment Thesis

**DUE: Tuesday, October 29, 2025 (4 pages)**

## Required Sections:

### 1. Portfolio Strategy (1 page)

Market allocation (which regions, why) • Risk appetite (conservative vs aggressive) • Target return + acceptable drawdown

### 2. AI Workflow Design (1.5 pages)

Agent architecture (diagram required) • Prompt strategy (with examples) • Validation protocol

### 3. Initial Stock Picks (1 page)

5-15 positions with rationale • AI-generated insights (with receipts)

### 4. Risk Management Plan (0.5 pages)

Diversification rules • Stop-loss triggers

# Deliverable 2 - Daily Trade Log

Updated Daily Throughout Competition

## Required Columns:

Date • Action • Ticker • Shares • Price (€) • Fee • Total Cost • Position Value • AI Model Used • Prompt Summary • Validation Method

## Plus:

- **Daily Portfolio Snapshot:** Total value, cash remaining, % gain/loss
- **Market Events Log:** News that affected decisions
- **AI Performance Notes:** What hallucinations caught, what worked
- **Teams Upload Links:** Link to every Teams screenshot post



# Trade Verification - Teams Upload Required

**⚠️ CRITICAL: Every Trade Must Be Posted to Microsoft Teams**

## The Process (Takes 2 minutes):

1. Take screenshot of Yahoo Finance showing stock price, date, time
2. Upload to Teams IMMEDIATELY (within 5 minutes) - Channel: `#stock-competition-trades`
3. Teams timestamp = official trade time (cannot be edited/deleted)
4. Update your Trade Log with link to Teams post

## Why This Matters:

- Prevents backdating trades after seeing price changes
- Creates transparent, permanent audit trail
- Instructor can verify all trades in real-time
- All teams see each other's trades (fairness)

# Deliverable 3 - Mid-Competition Update

**DUE: Tuesday, November 4, 2025 (2 pages)**

## Required Sections:

### 1. Performance Review (0.5 pages)

- Current portfolio value vs starting €1,000
- Best/worst performers
- Trades executed so far (remember: 1 per day max, 3-day hold)

### 2. AI System Learnings (1 page)

- What surprised you about LLM outputs?
- Validation gaps discovered
- Adjustments made to agent architecture

### 3. Revised Strategy (0.5 pages)

- What you'll do differently in final week
- Pick mitigation adjustments

# Deliverable 4 - Final Presentation

**DUE: Friday, November 14, 2025 (15 min + 5 min Q&A)**

## Slide Deck Must Include:

### 1. Opening

Team, final portfolio value, % return

### 2. AI Architecture Overview

Diagram + model choices

### 3. Investment Strategy

What you bet on and why

### 4. Trade Highlights

Best/worst trades with AI decision trail

### 5. Validation Case Study

One hallucination caught + correction

### 6. Prompt Showcase

2-3 effective prompts with outputs

### 7. Lessons Learned

What worked, what failed

### 8. Ethics Reflection

Lecture 11 connection (bias, accountability, high-stakes AI)



# Scoring Rubric (100 Points)



## Portfolio Performance (30 points)

- Absolute return (15 pts): 1st=15, 2nd=12, 3rd=10, 4th-5th=8, 6th+=5
- Risk-adjusted return (10 pts): Sharpe ratio calculation
- Trade efficiency (5 pts): Max gain per trade executed



## Documentation Quality (25 points)

- AI architecture clarity (10 pts)
- Prompt library completeness (8 pts)
- Validation rigor (7 pts)



## Risk Management (15 points)

- Diversification adherence (5 pts)
- Position sizing discipline (5 pts)
- Drawdown management (5 pts)



## Validation & Integrity (15 points)

- Hallucination detection examples (8 pts)
- Cross-model verification (7 pts)



## Presentation Quality (15 points)

- Clarity + visuals (8 pts)
- Ethics reflection (7 pts)

# Tier Bonuses

## Bonus Points for Advanced Tiers:



### Tier 2 (Coordinated Agents): +10 points

- If you document 2+ specialized agents
- With clear handoff protocols
- And validation checkpoints



### Tier 3 (Automated System): +15 points

- If you build fully automated pipeline
- With real-time monitoring
- And architecture diagram
- Plus multi-model validation (Gemini vs ChatGPT)

# Sample AI Workflow (Tier 2 Example)

## AGENT 1: Market Researcher (Gemini Advanced)

**Prompt:** "Analyze ASML earnings report Q3 2025. Extract key risks."

**Output:** 5 bullet points + sentiment score



## AGENT 2: Fact Validator (ChatGPT-4)

**Prompt:** "Verify these ASML claims against Yahoo Finance data."

**Cross-check:** Revenue numbers, guidance ranges



## AGENT 3: Portfolio Decision (Claude)

**Prompt:** "Given validated ASML data + current portfolio, recommend action."

**Output:** BUY 10 shares at €850, rationale provided



 **HUMAN OVERRIDE: Final approval by team lead**



 **TRADE EXECUTED + LOGGED**

# Common Pitfalls to Avoid

## ✗ Hallucination Hell

LLMs invent stock prices, earnings dates, analyst ratings

**Fix:** Always cross-check with Yahoo Finance, Google Finance

## ✗ Over-Trading / Impulsive Decisions

You only get 1 trade per day, and you're stuck with it for 3 days minimum

**Fix:** Set conviction threshold (only act on high-confidence signals)

## ✗ Undocumented Prompts

"I think we asked Gemini something..." won't earn points

**Fix:** Copy/paste EVERY prompt into your log immediately

## ✗ No Validation

Trusting first output without challenge

**Fix:** Mandatory "What could be wrong?" follow-up question

## ✗ Ignoring Fees

# Connection to Lecture 11 Ethics

This Competition Tests Everything We Discussed:



## Algorithmic Accountability

- When your AI picks a losing stock, who's responsible?
- How do you audit the decision trail?



## Bias Detection

- Does your LLM favor US tech stocks due to training data?
- Are emerging markets under-represented in recommendations?



## Validation Culture

- Finance = high stakes; you MUST verify outputs
- One hallucination can lose €1,000 (imaginary... but still)



## Transparency vs Black Boxes

- Can you explain every trade to a regulator?
- Your documentation = your audit trail

# Resources & Support

## Documentation Templates:

- Investment Thesis template (Google Doc)
- Daily Trade Log spreadsheet (pre-formatted)
- Prompt Library template (markdown)
- Architecture diagram examples (Miro/Figma)

## Technical Resources:

- Python starter notebook (yfinance + pandas setup)
- Gemini Advanced prompts for stock analysis
- LangChain multi-agent tutorial
- Validation checklist (hallucination detection)

## Support:

- **Office Hours:** Friday sessions for prompt debugging
- **Slack Channel:** #ai-stock-competition (peer Q&A)

# Safety & Disclaimers

## **CRITICAL REMINDERS:**

1. This is IMAGINARY money (€1,000 is fake)
2. Do NOT invest real money based on LLM outputs
3. LLMs hallucinate financial data regularly
4. This is an educational exercise in AI validation, not investment advice
5. Past performance ≠ future results (even for AI models)

## **Regulatory Context:**

- Real algorithmic trading requires licenses (MiFID II, SEC compliance)
- AI-generated advice = unregulated in most jurisdictions
- Professional investors use validated, audited models

## **Learning Goals:**

- Understand AI limitations in high-stakes domains
- Practice validation discipline
- Build ethical AI deployment habits

# FAQ Rapid Fire

## **Q: Can we use paid tools (ChatGPT Plus, Claude Pro)?**

A: Yes, but not required. Free tiers + Gemini Advanced (student) are sufficient.

## **Q: What if our AI suggests illegal trades (shorting, leverage)?**

A: Reject them. Document the suggestion as a "safety catch" in your validation log.

## **Q: Can we collaborate with other teams?**

A: No. Sharing prompts/strategies = academic dishonesty.

## **Q: Can I make multiple trades in one day?**

A: No. Max 1 trade per day forces strategic thinking.

## **Q: Can I sell a stock immediately after buying?**

A: No. 3-day minimum hold prevents day trading.

## **Q: Do I really need to upload screenshots to Teams?**

A: YES. Teams timestamp is the official trade time. No Teams post = invalid trade.

## **Q: Do we need real-time data?**



# Competition Launch Checklist

## Before You Leave Today:

- ☐ Form your team (3-4 students)
- ☐ Register team name via Google Form (link in LMS)
- ☐ Verify Gemini Advanced access (student license)
- ☐ Join Teams channel: `#stock-competition-trades`
- ☐ Clone course GitHub repo (starter templates)
- ☐ Read full Student Guide (AI\_Stock\_Competition\_Student\_Guide.md)

## By Tuesday, October 29, 9 AM:

- ☐ Submit Investment Thesis (4 pages)
- ☐ Set up Daily Trade Log (spreadsheet/database)
- ☐ Make initial trades (3-7 positions)
- ☐ **Upload ALL trade screenshots to Teams within 5 min of taking them**
- ☐ Test your AI workflow (at least 3 prompts logged)

# Final Inspiration

## Why This Matters:

- **Finance meets reality:** This is where AI hype meets high-stakes validation
- **You're building skills employers want:** Multi-agent orchestration, prompt engineering, validation discipline
- **You'll have a portfolio piece:** "I built an AI trading system and documented every decision"



## Rewards for Top 3 Teams:

- 1. **+5% extra credit** toward final grade

*"The best AI system is the one you can explain."*



# Competition Launches NOW

3 Weeks • €1,000 (Imaginary) • Unlimited AI Tools

## Next Steps:

TODAY: Form teams, register, read guide

WEEKEND: Design AI system, draft thesis

TUESDAY OCT 29, 9 AM: Submit thesis + make first trades

## Questions?

*"The best AI system is the one you can explain to a regulator."*