

Graduate Module — Pipeline Economics & Portfolio Management (GE 650)

The session-by-session teaching plan for GE 650. Follows the module contract in `modules/module-template.md`, extended to the 14-week graduate arc. The economics canon is always at concept altitude (doctrine/08); the arithmetic is graded, not the memorization. The funnel, the weighted pipeline, the B&P budget, and the gate ROI call are the skills this module exists to teach directly.

Audience: graduate students in the MS program. **Prerequisites:** GC 510 recommended (scoring, gates, competitive posture); GC 540 helpful for the cost side. **Readings:** the doctrine and literacy folders, plus the course reader on business-development finance and pursuit-portfolio management. **Case object:** Ravonics and real (closed) RFPs.

Session 1 — The pipeline as a numbers system

Learning objectives. By the end of this session, students can: (1) draw the business-development funnel — leads → qualified → bids → wins; (2) explain why upstream volume is not optional; (3) place the funnel on the doctrine pipeline (doctrine/03).

Session plan (75 min). - Open (5 min): “A firm that senses ten opportunities a year and a firm that senses two hundred — which wins more, and is that fair?” - Teach (25 min): doctrine/03 + the funnel canon. The funnel as the pipeline in numbers; the yield of each stage; volume as the substrate of every downstream number. - Apply (25 min): sketch Ravonics’s funnel from realistic counts — 200 sensed, 60 qualified, 24 bids, 6 wins — and compute each conversion. - Discuss (15 min): “Which stage is a small firm most tempted to skip, and what does skipping do to the numbers below it?” - Close (5 min): assignment.

Discussion prompts. 1. Why can no firm win its way to a healthy funnel from a thin top? 2. What does the *qualify* stage actually buy the numbers?

Homework / reading. Read doctrine/03. Deliverable: a one-page funnel diagram for Ravonics with conversion rates labeled and a one-sentence argument for why the top of the funnel matters.

Comprehension check. What are the four stages of the BD funnel? What is a conversion rate, and where does it live in the doctrine pipeline?

Session 2 — Conversion rates: where the funnel leaks

Learning objectives. By the end of this session, students can: (1) define conversion at each stage; (2) reason about benchmarks as context, not destiny;

(3) identify the stage with the greatest leverage.

Session plan (75 min). - Open (5 min): “What is a *good* conversion rate — and who says so?” - Teach (25 min): the conversion-rate canon at concept altitude. The three conversions — sensed→qualified, qualified→bid, bid→win. Illustrative industry ranges: roughly 25–35%, 35–50%, and 20–30%. Why the only benchmark that matters is your own measured history (doctrine/10). - Apply (25 min): from a fixed lead flow, compute the bids and wins a firm produces under three conversion scenarios, and state where the biggest gain is. - Discuss (15 min): “If you could improve exactly one conversion, which one, and how would you know it moved?” - Close (5 min): assignment.

Discussion prompts. 1. Why is an industry benchmark dangerous as a target? 2. Why is qualification such a high-leverage stage?

Homework / reading. Read doctrine/10. Deliverable: a conversion-rate analysis for Ravonics across three scenarios, each with a stated lever.

Comprehension check. What are the three conversion rates in the funnel? Why is your own measured history a better benchmark than an industry number?

Session 3 — The weighted pipeline

Learning objectives. By the end of this session, students can: (1) compute the expected value of a single pursuit ($pWin \times value$); (2) sum a weighted pipeline; (3) distinguish weighted value from committed value.

Session plan (75 min). - Open (5 min): “A list of opportunities is not a forecast. What turns one into the other?” - Teach (25 min): doctrine/05 + the weighted-pipeline canon at concept altitude. Expected value per pursuit; the weighted pipeline as the sum of expected value; the gap between *weighted* value and *committed* value. - Apply (25 min): the weighted-pipeline exercise — six Ravonics pursuits, compute each EV, sum the pipeline, rank the pursuits. - Discuss (15 min): “When is the weighted pipeline an over-promise, and when is it an under-promise?” - Close (5 min): assignment.

Discussion prompts. 1. What does a weighted pipeline tell you that the raw list cannot? 2. Where does the weighted pipeline lie, and who is responsible for keeping it honest?

Homework / reading. Read doctrine/05. Deliverable: a weighted-pipeline table for six pursuits with per-pursuit EV and the pipeline total.

Comprehension check. What is the expected value of a pursuit? What does the weighted pipeline sum, and what does it not promise?

Session 4 — Pursuit-portfolio forecasting

Learning objectives. By the end of this session, students can: (1) estimate expected wins from a bid slate; (2) state the range around the average; (3) build a portfolio forecast with a realistic spread.

Session plan (75 min). - Open (5 min): “Six bids at an average win rate of forty percent: how many will you win?” - Teach (25 min): the forecasting canon at concept altitude. Expected wins as the sum of pWins; the spread around the average; uncorrelated bets and the diversification of risk; the forecast as a range, not a number. - Apply (25 min): forecast Ravonics’s year — expected wins, the low and high ends of the range, and the revenue band at each end. - Discuss (15 min): “Why do leaders keep misreading a portfolio forecast as a promise?” - Close (5 min): assignment.

Discussion prompts. 1. How do you communicate a range to a board that wants a number? 2. What makes two pursuits genuinely independent bets?

Homework / reading. Read doctrine/05 and doctrine/07. Deliverable: a one-year portfolio forecast for Ravonics with expected wins, a stated range, and the revenue band.

Comprehension check. How do you compute expected wins from a bid slate? Why is the range as important as the average?

Session 5 — Bid-and-proposal spend math

Learning objectives. By the end of this session, students can: (1) define the bid-and-proposal (B&P) budget; (2) compute spend against expected value; (3) set a per-pursuit spend cap.

Session plan (75 min). - Open (5 min): “How much should a firm spend to win a million-dollar contract?” - Teach (25 min): doctrine/04 + the B&P canon at concept altitude. B&P as an investment pool; per-pursuit spend; the two ratio disciplines — spend as a share of expected value, and B&P as a share of revenue. Illustrative per-pursuit cap: roughly 3–5% of expected value. - Apply (25 min): the spend exercise — for each pursuit in the weighted pipeline, set a B&P cap and decide which pursuits are over budget at a realistic proposal cost. - Discuss (15 min): “When is the cheapest proposal the most expensive one?” - Close (5 min): assignment.

Discussion prompts. 1. What does a per-pursuit cap force you to confront before the adrenaline hits? 2. How does the B&P pool get rationed across a year?

Homework / reading. Read doctrine/04. Deliverable: a B&P budget sheet for the Ravonics portfolio with a cap and a rationale per pursuit.

Comprehension check. What is B&P, and what does it buy? How do you set a per-pursuit spend cap, and what does exceeding it mean?

Session 6 — Gate ROI discipline

Learning objectives. By the end of this session, students can: (1) treat each gate as an investment checkpoint; (2) compute cost-to-proceed against remaining expected value; (3) make a proceed / revise / withdraw call.

Session plan (75 min). - Open (5 min): “You have already spent \$25,000 on a pursuit that is now falling apart. Spend more?” - Teach (25 min): doctrine/04 + the gate-ROI canon at concept altitude. Sunk cost as irrelevant; forward-looking expected value as the only number; the gate as the place the spend is re-justified; the kill as a professional outcome. - Apply (25 min): the gate exercise — for one pursuit, at each gate recompute EV, state the spend-to-proceed, and make the call. - Discuss (15 min): “What makes a kill decision a professional outcome rather than a failure?” - Close (5 min): assignment.

Discussion prompts. 1. What is the difference between a sunk cost and a forward-looking commitment? 2. Why does the discipline depend on the criteria being written before the gate, not at it?

Homework / reading. Read doctrine/04. Deliverable: a gate-by-gate ROI sheet for one pursuit with a recorded decision at each gate.

Comprehension check. What is the sunk-cost trap, and why is sunk cost irrelevant to a go/kill decision? What does a gate ROI check compute?

Session 7 — The economics of the win rate

Learning objectives. By the end of this session, students can: (1) decompose pursuit performance into win rate $\times$ volume $\times$ value $\times$ margin; (2) explain why win rate alone is a misleading KPI; (3) compute which lever moves profit most.

Session plan (75 min). - Open (5 min): “Which is healthier: a 40% win rate on ten bids, or a 20% win rate on thirty?” - Teach (25 min): the win-rate economics canon at concept altitude. Revenue = bids $\times$ win rate $\times$ average value; profit = revenue $\times$ margin. The two-firm worked example (below). - Apply (25 min): recompute the worked example with different margins and volumes; identify the biggest lever. - Discuss (15 min): “Why do firms fixate on win rate when volume and margin move more money?” - Close (5 min): assignment.

Worked example (illustrative). Firm A bids 10 pursuits at an average \$1M, wins 4 (40%), and earns an 8% margin: \$4M revenue, \$320K gross profit. Firm B bids 30 pursuits at an average \$2M, wins 6 (20%), and earns a 10% margin: \$12M revenue, \$1.2M gross profit. Firm B wins half as often — and produces

roughly three times the revenue and nearly four times the profit. Win rate is a health indicator; $\text{margin} \times \text{volume} \times \text{probability}$ is the business.

Discussion prompts. 1. When does chasing a higher win rate directly lower profit? 2. What would a firm have to give up to double its win rate — and would the trade be worth it?

Homework / reading. Read doctrine/05. Deliverable: a lever analysis comparing two pursuit strategies on revenue and profit, with the winning lever named.

Comprehension check. What four factors multiply into profit? Why can a lower win rate be more profitable than a higher one?

Session 8 — Margin and the value of a win

Learning objectives. By the end of this session, students can: (1) model gross margin on won work; (2) connect price posture to margin (doctrine/05); (3) trade win probability against margin.

Session plan (75 min). - Open (5 min): “A bid priced ten percent high loses some win probability. What does it buy?” - Teach (25 min): doctrine/05 + the margin canon at concept altitude. Revenue vs. contribution; price posture — aggressive, parity, premium — and the margin each sets; the win-margin trade. - Apply (25 min): the price-posture exercise — price one pursuit at three postures, compute win probability and margin for each, and choose. - Discuss (15 min): “When is a low-margin win worse than a no-bid?” - Close (5 min): assignment.

Worked example (illustrative). For a \$1M pursuit: an aggressive price near the floor wins more often but earns thin margin — \$950K, 55% pWin, 4% margin yields about \$21K of expected profit. A parity price — \$1.0M, 45% pWin, 8% margin — yields about \$36K. A premium price — \$1.08M, 30% pWin, 13% margin — yields about \$42K of expected profit. The premium posture has the *lowest* win rate and the *highest* expected profit. That is the economics of the win rate in miniature: probability is only one input.

Discussion prompts. 1. What has to be true about the evaluation for the premium posture to hold? 2. How does a best-value evaluation change the trade versus an LPTA one?

Homework / reading. Read doctrine/05. Deliverable: a price-posture analysis for one pursuit with the win-margin trade shown and a recommendation.

Comprehension check. What is margin, and how does price posture set it? What is the trade between win probability and margin per win?

Session 9 — Capacity and attention economics

Learning objectives. By the end of this session, students can: (1) model capture capacity as the binding constraint; (2) compute the opportunity cost of a pursuit; (3) build a balanced portfolio.

Session plan (75 min). - Open (5 min): “A five-person firm cannot staff five pursuits. What actually limits the portfolio?” - Teach (25 min): doctrine/04 + the capacity canon at concept altitude. Attention as a scarce resource; the cost of spreading thin; the safe / mid / long-shot balance. - Apply (25 min): capacity allocation for Ravonics — given a finite capacity budget and the six pursuits, allocate and defend the portfolio. - Discuss (15 min): “Which pursuit is the most expensive — the one you win, or the one that starves the others?” - Close (5 min): assignment.

Discussion prompts. 1. How do you price a pursuit’s opportunity cost into a go decision? 2. When does a portfolio need a deliberate long shot, and how much should it cost?

Homework / reading. Read doctrine/04 and the Ravonics case. Deliverable: a capacity-allocation plan for Ravonics with the opportunity cost of each pursuit stated.

Comprehension check. What is the real constraint on a pursuit portfolio? How do you value a pursuit’s opportunity cost?

Session 10 — Midterm

Learning objectives. By the end of this session, students demonstrate: (1) weighted-pipeline computation; (2) portfolio forecasting with a range; (3) B&P caps and gate decisions.

Session plan (75 min). - Open (5 min): exam logistics. - Exam (65 min): a portfolio is distributed. Students compute the weighted pipeline, forecast expected wins and the range, set B&P caps, and make three gate decisions. - Close (5 min): what to review for the second half.

Discussion prompts. n/a (examination).

Homework / reading. Review weeks 1–9. Deliverable: midterm submission.

Comprehension check. n/a.

Session 11 — Reading a pipeline report like a CFO

Learning objectives. By the end of this session, students can: (1) build a pipeline dashboard; (2) distinguish signal from noise; (3) name the three numbers

to watch weekly.

Session plan (75 min). - Open (5 min): “You are handed the monthly pipeline report. What jumps out at you?” - Teach (25 min): the pipeline-metrics canon at concept altitude. Funnel counts, conversion rates, weighted pipeline, B&P burn, hit rate, margin; the leading-versus-lagging split; how a pipeline number gets cooked and how to catch it. - Apply (25 min): build the dashboard for Ravonics from the term’s numbers. - Discuss (15 min): “Which metric lies most often, and how do you catch it?” - Close (5 min): assignment.

Discussion prompts. 1. Which three numbers would you watch weekly, and why those three? 2. What does a rising weighted pipeline with a flat win rate actually tell you?

Homework / reading. Review the term’s numbers. Deliverable: a one-page pipeline dashboard for Ravonics with three named watch-metrics.

Comprehension check. What are the leading and lagging metrics of a pursuit machine? How do you spot a pipeline number that has been made to look better than reality?

Session 12 — Sensitivity and scenario planning

Learning objectives. By the end of this session, students can: (1) run what-if on pWin, value, and win rate; (2) find the fragile assumptions; (3) build a best / base / worst forecast.

Session plan (75 min). - Open (5 min): “Which assumption, if it slipped, would sink the year?” - Teach (25 min): the scenario canon at concept altitude. The tornado of assumptions — pWin, value, schedule, win rate; best / base / worst; the fragile input and the hedge. - Apply (25 min): run the scenarios on the Ravonics forecast; name the fragile assumptions and a hedge for each. - Discuss (15 min): “How does a scenario exercise change the decision, not just the spreadsheet?” - Close (5 min): assignment.

Discussion prompts. 1. What makes an assumption *fragile* rather than merely uncertain? 2. How do you hedge a fragile pWin without abandoning the pursuit?

Homework / reading. Review doctrine/05. Deliverable: a best / base / worst forecast for the Ravonics portfolio with fragile assumptions and hedges.

Comprehension check. What is a fragile assumption? How does a scenario exercise change a decision rather than just producing more numbers?

Session 13 — The pursuit operating plan

Learning objectives. By the end of this session, students can: (1) assemble an annual pursuit operating plan; (2) allocate B&P and capacity across the year; (3) connect the plan to the gate calendar.

Session plan (75 min). - Open (5 min): “If you had \$200,000 of B&P budget and four people, what would next year look like?” - Teach (25 min): synthesis of the module’s arithmetic into an operating plan — target slate, B&P allocation, capacity, the gate calendar, the forecast. - Apply (25 min): build Ravonics’s pursuit operating plan for one year. - Discuss (15 min): “What makes an operating plan a discipline rather than a spreadsheet?” - Close (5 min): assignment.

Discussion prompts. 1. What does the gate calendar add to a budget spreadsheet? 2. How do you reconcile a plan that cannot fund every pursuit you want?

Homework / reading. Review the module’s arithmetic. Deliverable: a one-page pursuit operating plan for Ravonics — target slate, B&P, capacity, gate calendar, forecast.

Comprehension check. What does a pursuit operating plan contain? Where do gates appear in it, and why there?

Session 14 — Synthesis

Learning objectives. By the end of this session, students can: (1) integrate funnel, forecast, spend, and gate disciplines; (2) defend a pursuit portfolio to a board; (3) connect pipeline economics to the degree and the capstone.

Session plan (75 min). - Open (5 min): “The funnel is the machine. The arithmetic is the honesty. The gate is the courage.” - Teach (15 min): course synthesis. - Apply (35 min): panel defense — each team defends next year’s Ravonics pursuit operating plan to a board of investors; the board interrogates the arithmetic and the assumptions. - Discuss (15 min): “What will you run differently after this course?” - Close (5 min): bridge to GE 640 (proposal management), GE 610 (negotiations), and the capstone.

Discussion prompts. 1. What is the most common economic failure in business development? 2. How does pipeline economics connect to proposal management and to negotiation?

Homework / reading. Course synthesis. Deliverable: final memo, “My pursuit-portfolio doctrine.”

Comprehension check. How do funnel, forecast, spend, and gates form one discipline? What is the one idea you will carry forward?