

DL 480 — Capstone: Build an ORBITAL

The final assessment of the Bachelor's program. You will take a real, published, closed solicitation and produce the full pursuit package — compliance reading, ORBITAL, score, bid/no-bid recommendation, and the gates that govern the pursuit — then defend it, then do the post-mortem against the actual award. This course extends the shared capstone brief in `course/capstone-build-an-orbital.md` with the undergraduate program's specific requirements.

Course number: DL 480 · **Credit hours:** 3 · **Term:** 14 weeks · **Audience:** senior undergraduates · **Prerequisites:** DL 210, DL 220, and two upper-division electives · **Tier:** capstone (Year 4, Spring) · **Texts:** this repository — the full doctrine, the literacy maps, and the Ravonics case · **Tools:** none required beyond paper, a whiteboard, or a spreadsheet. Stack-free by design (doctrine/08).

The shared brief

This capstone is built on the repository's shared capstone, `course/capstone-build-an-orbital.md`. Read that brief first; it defines the five deliverables every capstone must produce:

1. **Solicitation mastery** — the compliance matrix and the strategy reading.
2. **The ORBITAL** — the seven-axis structure, with real content.
3. **The score and the bid/no-bid call** — pWin, value, composite, and the call.
4. **Governance and gates** — the gates the pursuit would cross, with criteria and owners.
5. **The presentation** — 15 minutes, defended against a skeptical panel.

This undergraduate extension adds the requirements, the timeline, and the post-mortem that make it a fitting close to a four-year degree.

The undergraduate additions

Beyond the shared brief, the undergraduate capstone requires:

A. A written gate charter, in advance. Before you build the ORBITAL, you write the criteria for every gate the pursuit will cross — bid/no-bid, threshold, review, readiness. The criteria come first, exactly as the doctrine demands (doctrine/04). Your final score and call are then judged against the criteria you wrote in Week 3, not the ones you would write after you know the answer.

B. A pricing position. Where the shared brief asks for a value estimate, the undergraduate capstone requires the full price-to-win frame from DL 220: cost floor, competitive range, evaluation posture, and a recommended price with a basis of estimate for the largest line items. The pricing volume is one page, stack-free, and the arithmetic is shown.

C. A teaming and vehicle note. One page on the structural questions from DL 303: what shape of contract, what vehicle, what teaming posture, and what floors the team must respect. This feeds the ORBITAL’s transport and logistics axes.

D. A data-grounded score. The pWin must be argued factor-by-factor with evidence, and at least two of the factor scores must cite public data (a past award, an incumbent record, a forecast). One un-sourced pWin factor costs the score points — the data discipline of DL 304 applies.

E. A portfolio frame. One page placing this pursuit in a three-opportunity portfolio for the company (Ravonics by default), with the capacity budget and the allocation. The capstone is judged not just as one pursuit but as a portfolio decision.

F. The post-mortem (graded). The shared brief makes the post-mortem optional-but-encouraged. In the undergraduate capstone it is graded: after your presentation, you look up the actual award — who won, for how much, why that might have happened — and update your pWin factors with what you learned. This is the learning loop (*doctrine/03*, stage 9) made visible, and it is the moment the degree becomes a career skill.

Teams

Teams of 3–4, each member owning at least one deliverable (compliance, ORBITAL, score/pricing, gates/portfolio). The team presents together; the defense is individual — each member defends their own slice.

The 14-week timeline

Week	Milestone	Deliverable
1	Program-level kickoff: the capstone, the shared brief, the rubric.	Team formed; solicitation shortlist
2	Choose your solicitation (instructor approval). Confirm it is closed.	Solicitation chosen; team roles assigned
3	Write the gate charter — the criteria in advance.	Gate charter (graded, criteria before the work)
4	Compliance pass: every “shall.”	Compliance matrix draft
5	Strategy reading: what the agency cares about.	Strategy reading draft

Week	Milestone	Deliverable
6	ORBITAL draft: all seven axes with sourced content.	ORBITAL draft
7	Midpoint workshop: gate charter + ORBITAL reviewed by instructor.	Revised ORBITAL
8	Score: pWin factor-by-factor with data-grounded evidence.	Score draft
9	Value and price-to-win: floor, competitive range, recommended price, BOE.	Pricing position draft
10	Gates and governance: every gate, criteria, owner; the portfolio frame.	Gates + portfolio draft
11	Teaming and vehicle note; integration of all pieces.	Full draft package
12	Color-team workshop — the class runs a pink/red pass on each team's package.	Color-team findings log
13	Final revisions; dry-run of the presentation.	Review-ready package
14	Presentation and defense; post-mortem.	Final package + post-mortem

Assessment and rubric

The shared capstone rubric ([course/assessments-and-rubric.md](#), Layer 3) governs, with the undergraduate additions weighted in:

Dimension	Points	What the undergraduate extension adds
Solicitation mastery	20	Compliance matrix at full coverage; strategy reading

Dimension	Points	What the undergraduate extension adds
ORBITAL quality	25	All seven axes sourced; the teaming-and-vehicle note feeds transport/logistics
Score and bid/no-bid	20	Data-grounded pWin; full price-to-win position with BOE
Governance and gates	15	The gate charter written in advance; the portfolio frame
Presentation and defense	20	Individual defense of each member's slice
Post-mortem	<i>(bonus, +0 to +10, capped at 100)</i>	Actual award found; pWin factors updated; lesson stated

Policies worth stating plainly

- **Stack-free.** You may use paper, a whiteboard, a spreadsheet, or a word processor. Your deliverable may never depend on a specific product or system. If your presentation requires a particular piece of software, you have missed the point of the degree (doctrine/08).
- **Real documents, safe exercises.** Your solicitation is real, published, and closed. Nothing you produce bears on a live competition.
- **Criteria before the call.** The gate charter is graded in Week 3, before the work. Your final call is judged against the criteria you wrote, not the criteria you wish you had.
- **Academic integrity.** Do not fabricate evidence, invent a past-performance record, or misstate an award. The post-mortem is graded on honest comparison, not on being right.

The capstone in one sentence

Four years of doctrine, documents, and discipline converge in one package: a real solicitation, a defensible ORBITAL, a data-grounded score and price, a gate charter written in advance, a portfolio call — and, after the defense, the honest post-mortem that turns the degree into a career skill.