BUILDING YOUR CAREER: BUSINESS AND INNOVATION EDUCATIONAL OPPORTUNITIES AT UVA

DOUG GARLAND

SYSTEMS & INFORMATION ENGINEERING

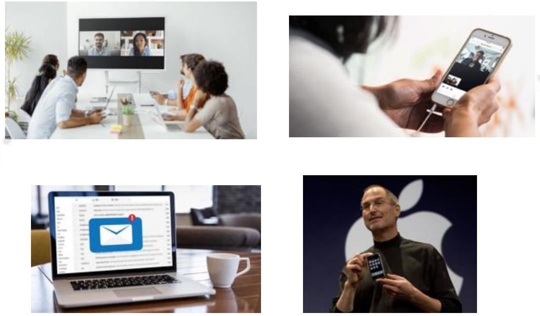
ENTREPRENEURSHIP, INNOVATION, AND BUSINESS

FALL 2025

UVA ENGINEERING

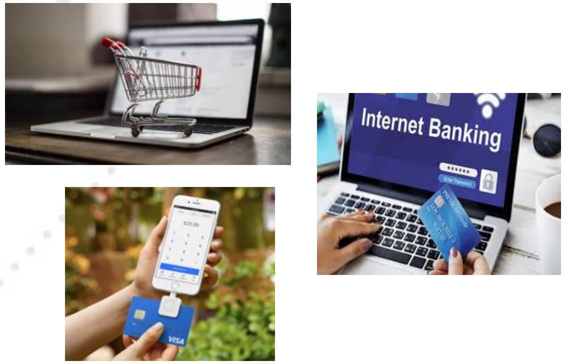
There are so many ways new ventures leveraged technological innovations to improve our world and create value.

Improving our health health and quality of life



Keeping us in touch

Getting us to where we need to go



Increasing ways to conduct commerce

Improving the supply and diversity of food

Making our homes more livable and energy efficient

…and many more

McKinsey & Company on Technology

“Technology continues to be a primary catalyst for change in the world.”

“We expect changes will accelerate and intensify in the years to come”

“What impresses us more than anything else is the massive effect that technology will have on every sector.”

2023 Survey of leading CEOs – Trends Have the biggest impact on their companies:

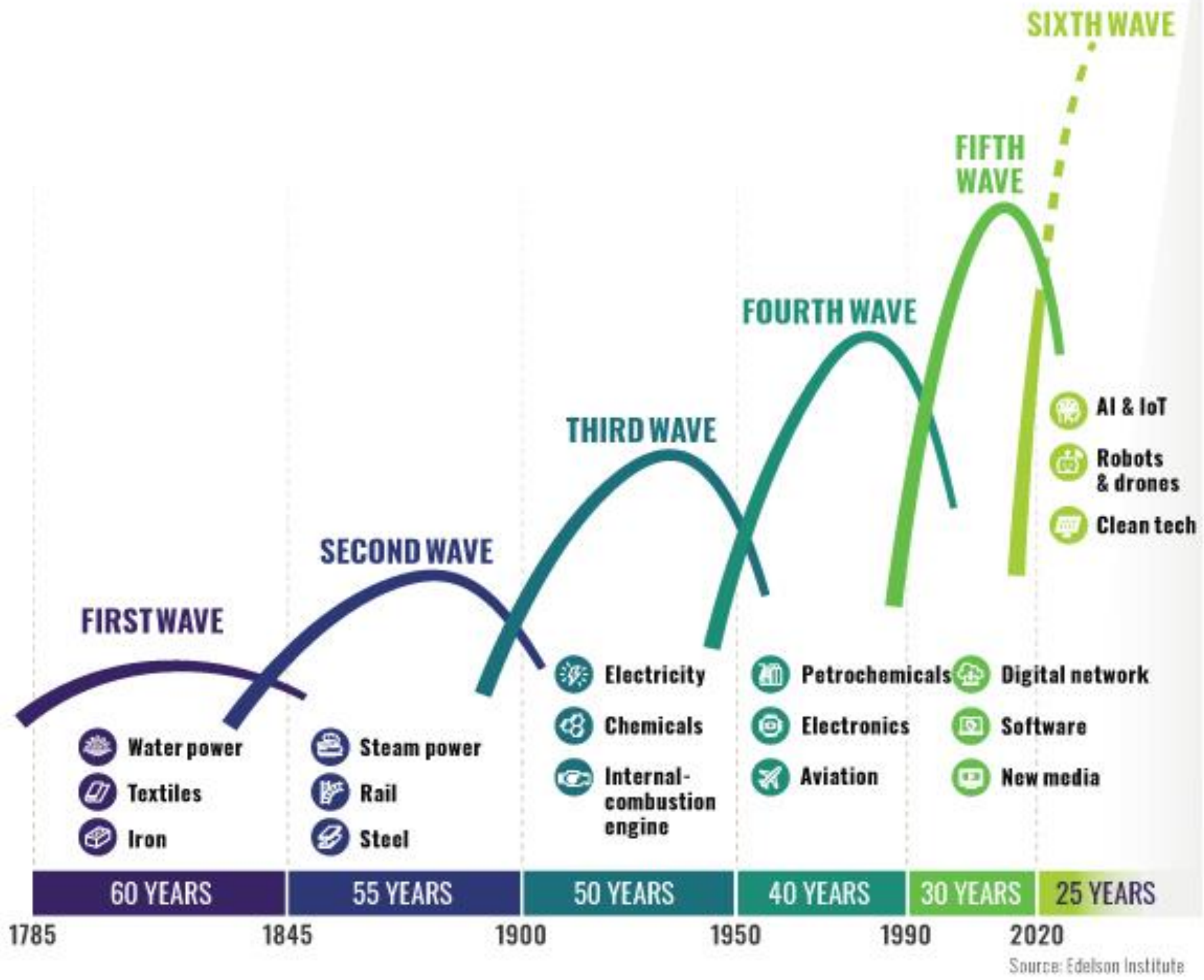
#1 Rise of disruptive digital technologies

Largest Companies by Market Capitalization – Tech Dominates

Rank	Name	Market Cap	Price	Today	Price (30 days)	Country
1	NVIDIA NVDA	$4.380 T	$179.62	▼ 1.09%		USA
2	Microsoft MSFT	$3.770 T	$507.28	▲ 0.11%		USA
3	Apple AAPL	$3.431 T	$231.26	▲ 0.33%		USA
4	Alphabet (Google) GOOG	$2.554 T	$211.65	▲ 1.65%		USA
5	Amazon AMZN	$2.471 T	$231.75	▲ 1.15%		USA
6	Meta Platforms (Facebook) META	$1.883 T	$749.94	▲ 0.34%		USA
7	Broadcom AVGO	$1.449 T	$308.23	▲ 2.64%		USA
8	Tesla TSLA	$1.112 T	$344.85	▼ 1.36%		USA
9	Berkshire Hathaway BRK-B	$1.074 T	$497.85	▲ 0.43%		USA
10	JPMorgan Chase JPM	$824.93 B	$300.00	▲ 0.24%		USA

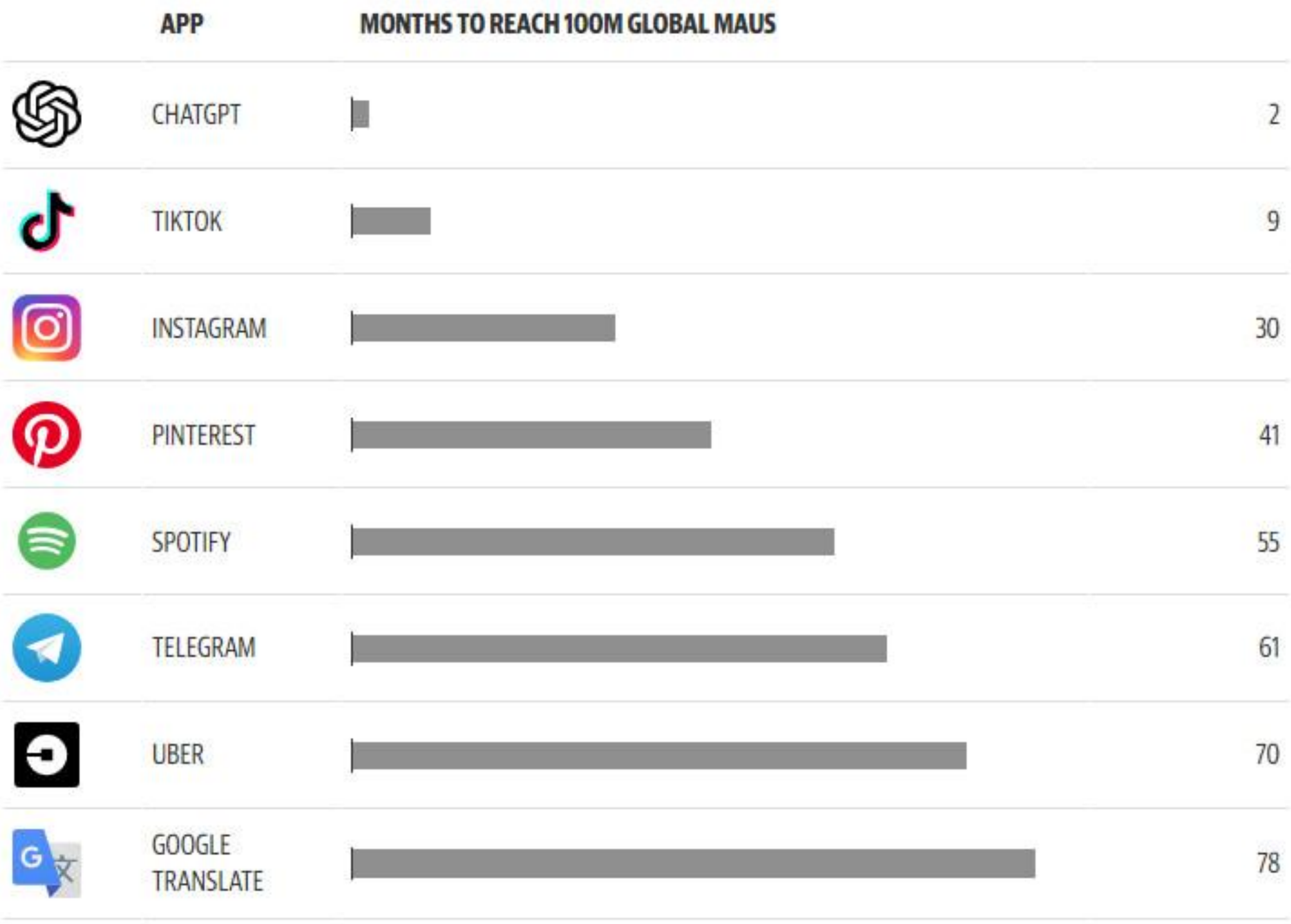
Market cap on Aug 28 2025

WAVES OF INNOVATION

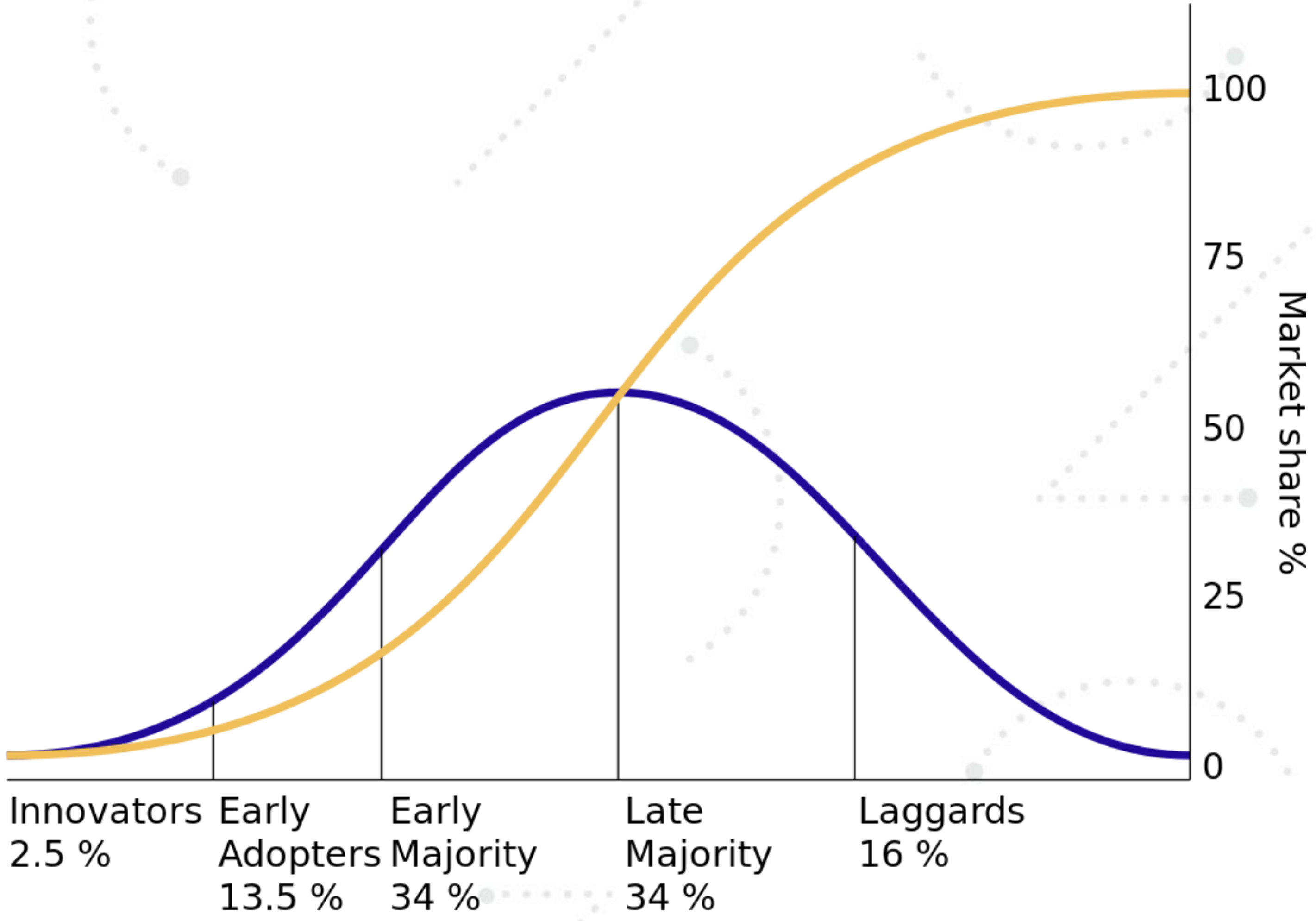


(Joseph Schumpeter, noted economist)

HOW LONG IT TOOK TOP APPS TO HIT 100M MONTHLY USERS



Diffusion of Innovations – Catch the Steep Part of the "S Curve"



By Rogers Everett - Based on Rogers, E. (1962) Diffusion of innovations. Free Press, London, NY, USA., Public Domain (wikimedia)

Engineering and Technology

Plus

Business and Innovation

Equals

Impact

Business and Entrepreneurship Educational Options for UVA Undergrads

- **Engineering Business Minor (EBM)**
  - ➢ Anchored by the EBM Integrated Sequence
- **General Business Minor (McIntire)**
- Entrepreneurship Minor (McIntire)
  - ➢ **Technology Entrepreneurship Concentration (E-School)**
- Multiple courses

And/Or

Post Graduation

- MBA
- On-the-job
- Management

The Engineering Business Minor curriculm focuses on business fundamentals, innovation, product development, markets, and professional skills.

- ✓ Reflects the importance innovation and product development play in technology-centric businesses.
- ✓ Incorporates input from accomplished alumni, recent graduates, and faculty.
- ✓ Differs from the McIntire General Business Minor by focusing on product and business development.
- ✓ Allows for incorporation of discipline-specific electives focused on the application of engineering skills and knowledge.

Students completing the new UVA Engineering Business Minor will focus on specific key learning objectives.

Engineering Business Minor Key Learning Objectives

- ✓ Develop an understanding of company structures, how functions work together to serve customers, and differences between early-stage ventures and established large companies.
- ✓ Be able to comprehend and create financial statements and evaluate businesses via basic financial analyses.
- ✓ Learn how to apply techniques to identify unmet customer needs, evaluate market opportunities, and define compelling value propositions.
- ✓ Acquire an understanding of product development and business building frameworks and learn how to apply them to achieve product-market fit.
- ✓ Appreciate the role innovation plays in business and learn how to look for and develop opportunities to leverage technology to create value.
- ✓ Build professional soft skills in communications, self awareness, teamwork, and continuous learning.

The revised Engineering Business Minor anchors on a 3-course “Integrated Sequence” and combines business fundamentals and innovation concepts.

Engineering Business Integrated Sequence
9 credits
(Required for EBM)

EBUS 1800 Business Fundamentals → EBUS 2830 Innovation & New Ventures → EBUS 4810 New Product Development

Add 6 credits from list of 25 approved electives

+ Course 1 + Course 2

Key criteria for approved electives:

- ✓ Consistent with EBM learning objectives
- ✓ Directly relevant to working in technology and engineering industries
- ✓ Complementary to required courses

More info here: https://engineering.virginia.edu/undergraduate-study/future-undergrads/special-academic-programs/business-and-entrepreneurship-programs

August 2025

The revised set of requirements will leverage three existing courses that have been updated and improved over previous years.

EBUS 1800 Business Fundamentals	EBUS 2830 Innovation & New Ventures	EBUS 4810 New Product Development
This course introduces students to key business topics relevant to high technology companies. Students will learn how to understand and interpret financial statements and frame financial decisions, including building a business case. The course will explore typical organizational structures and the roles of business functions. Students will be introduced to business models and other concepts in marketing and business strategy.	An introduction to concepts innovators use to solve problems and create value by addressing unmet needs. Learn how to identify and evaluate opportunities and use proven entrepreneurial frameworks to create new products and businesses for companies of all sizes. Through class activities, projects, and presentations you will learn how storytelling, teamwork, and leadership skills are essential for starting, funding, and building your business.	Students will learn the fundamentals of product management. Topics include identifying unmet needs, understanding markets, implementing product development frameworks and processes, building businesses, and working with multi-functional teams. The application of these concepts to different phases of the product lifecycle will be explored. Students will build technical, professional, and soft skills necessary for success in product management.

Note: In general, substitutions are not allowed for any one of the three EBM required core courses.

Electives for the Engineering Business Minor fall into the following categories.

EBUS Courses

- Engineering Business and Tech Entrepreneurship
- All catalog-listed EBUS courses are approved electives
- Courses taught depend in instructor availability

COMM Classes

- Selected classes, directly applicable to Engineering Business, that meet the EBM's elective criteria and are open to non-COMM students

SEAS Tech Electives

- Selected departmental courses that are closely related to product development and key business capabilities.
- Courses may also satisfy technical elective requirements, helping students with accessibility of the minor.

Other Classes

- Selected classes that meet the EBM's elective criteria

⇒ The list is often expanding. Check the webpage: https://engineering.virginia.edu/undergraduate-study/future-undergrads/special-academic-programs/business-and-entrepreneurship-programs

August 2025

EBM students will be able to choose from the following approved electives:

All EBUS – most recent offerings:
EBUS 2730 Engineers & the Art of the Deal
EBUS 2840 Entrepreneurial Finance
EBUS 2850 Government & Entrepreneurship
EBUS 2890 Driving Business Growth Through Innovation: Past to Present
EBUS 3570 Special Topics in Eng Business: Leadership in the Tech Sector
EBUS 4580 Special Topics in Eng Entrprnrship: Innovation Garage

Selected COMM courses
COMM 2600 Leadership Across Disciplines
COMM 3200 Project & Product Management
COMM 3230 Managing Innovation
COMM 3410 Commercial Law I
COMM 3845 Foundations in Int'l Business
COMM 3880 Global Sustainability
COMM 4822 Investing in Sustainable Future
ENTP 1010 Intro to Entrepreneurship

Selected SEAS Departmental Electives
APMA 3150 From Data to Knowledge
BME 3030 Innovation & Design in Medicine
CE 2030 Mgt of Eng & Constr Project
CE 3010 Project Business Planning
CS 4260 Internet Scale Applications
ENGR 4880 Business & Tech Leadership in Engr
MAE 4502 The Business of Engineering
SYS 2/3054 Systems Case Studies (Int'l)
SYS 4000 Financial Aspects of Engineering
SYS 4044 Engr Economic Systems

Other Electives
ECON 2010 Prin of Econ: Microeconomics

- Course offerings are dependent on instructor availability.
- Plan is to expand SEAS departmental electives, as available and appropriate.
- Elective list will evolve over time.

Current info here: https://engineering.virginia.edu/undergraduate-study/future-undergrads/special-academic-programs/business-and-entrepreneurship-programs

August 2025

Students will be admitted to the Engineering Business Minor (EBM) via a lightweight application process.

- Two application cycles:
  - Fall ‘25: Early October, 2^{nd}-4^{th} years only
  - Winter/Spring ‘26: Expected in February/March around first year major declaration timing, all years eligible
- The EBM application will require:
  - Student identification information
  - Student GPA, primarily to verify good academic standing
  - A brief statement on interest in pursuing the EBM
  - An acknowledgement by the student that they are confident that they can complete the curriculum before their planned graduation date (there will be no restrictions on student year)
- Students can take relevant courses before being admitted.
- Students should start the minor by taking EBUS 1800.

Students can also consider the McIntire General Business Minor and Entrepreneurship Minor, the latter of which includes a tech concentration offered in partnership with the Engineering School.

- General Business Minor
  - Students must start with COMM 1800.
  - Following completion of COMM 1800 and two of the four 1.5 credit core courses, students can declare the minor (no application process).
  - The approved elective list includes four EBUS courses.
  - More info can be found here: https://www.commerce.virginia.edu/minors/general-business

- Entrepreneurship Minor
  - Three concentration areas: 1) Technology, 2) Innovation in Business, 3) Social
  - Concentration areas are defined by taking one core course and one capstone course.
  - Students must take or be enrolled in ENTP 1010 to apply to the minor.
  - The application process usually opens in November and closes in February.
  - More info can be found here: https://www.commerce.virginia.edu/minors/entrepreneurship

General Business Minor – 15 credits

COMM 1800 Foundations Of Commerce	→	CGBM 2XXX* 1.5 cr Core Course 1	CGBM 2XXX* 1.5 cr Core Course 2

(Prereqs for admission to minor)

Declare Minor →

CGBM 2XXX* 1.5 cr Core Course 3	CGBM 2XXX* 1.5 cr Core Course 4

\+ Elective 1 (3 credits) + Elective 2 (3 credits)

(electives can be taken at any time)

Required CGBM Courses	Electives*
• CGBM 2110 Financial **Accounting** • CGBM 2210 **Digital Skills** for the Workplace • CGBM 2310 **Marketing** Principles: Goods, Services, and Brands • CGBM 2710 Making **Financial** Decisions	• Currently 36 approved electives • Elective criteria ✓ Taken for grade ✓ Conveys foundational knowledge ✓ Employs professional skills ✓ Applied learning experience

*Current info can be found here: https://www.commerce.virginia.edu/minors/general-business

August 2025

Entrepreneurship Minor – Technology Concentration – 15 credits

Prereq (3 credits)

ENTP 1010 Startup: Intro to Entrepreneurship

Required (6 credits)

Core: EBUS 2830 Innovation and New Ventures

Capstone: EBUS 4580* Special Topics in Entrepreneurship: Innovation Garage or COMM 4681 Entrepreneurship Track Capstone (with tech-based project)

+ Elective 1

+ Elective 2

Electives (6 credits, can be taken at any time)

- Currently 37 Approved electives for any concentration
  - EBUS electives on the elective list:

EBUS 1800 Business Fundamentals
EBUS 2730 Engineers & the Art of the Deal
EBUS 2840 Entrepreneurial Finance
EBUS 2850 Government and Entrepreneurship
EBUS 2890 Driving Business Growth Through Innovation
EBUS 4810 New Product Development
BME 3030 Design and Innovation in Medicine
SYS 3501 Special Topics in Systems & Info Engineering

* Will likely become a new permanent course: EBUS 4700 Innovation Garage

Current info can be found here: https://www.commerce.virginia.edu/minors/entrepreneurship

August 2025

General Business Minor (15 credits)	New Engineering Business Minor (15 credits)	Entrepreneurship Minor – Tech Concentration (15 credits)
3 credits COMM 1800 Foundations of Commerce	3 credits EBUS 1800 Business Fundamentals	3 credits ENTP 1010 Intro to Entrepreneurship
6 credits (4 x 1.5 credits) CGBM 2110 Accounting for Business CGBM 2210 Digital Skills for Workplace CGBM 2310 Marketing Principles CGBM 2710 Making Financial Decisions	6 credits (2 x 3 credits) EBUS 2830 Innovation & New Ventures EBUS 4810 New Product Development	6 credits (2 x 3 credits) EBUS 2830 Innovation & New Ventures Capstone: EBUS 4580* Spec Topics: Innovation Garage <u>or</u> COMM 4681 Entrepreneurship Capstone * may be listed as EBUS 4700
6 credits 36 approved courses	6 credits (2 x 3 credits) 25 approved courses	6 credits (2 x 3 credits) 37 approved courses
McIntire	**Engineering School**	**McIntire + E-School for Tech Track**

August 2025

The Engineering Business Integrated Sequence also provides a path for multiple learning paths, depending on student interest and schedule flexibility.

Engineering Business Integrated Sequence (9 credits)

EBUS 1800 Business Fundamentals → EBUS 2830 Innovation & New Ventures → EBUS 4810 New Product Development

Exit with Business Knowledge | + Innovation Skills | + Product Dev Skills

Take one or all three courses

OR

Add two courses and earn EBM

+ Two approved electives => Engineering Business Minor

Note: Students who complete the Engineering Business Integrated Sequence can choose to add ENTP 1010 Intro to Entrepreneurship and a Tech Concentration capstone class to earn the Entrepreneurship Minor.

Making the Right Choice for You

UVA McINTIRE
General Business Minor

UVA ENGINEERING
Engineering Business Minor

UVA McINTIRE
Entrepreneurship Minor

UVA ENGINEERING
Technology Concentration

UVA | FRANK BATTEN SCHOOL of LEADERSHIP and PUBLIC POLICY
Social Concentration

Positioning of the EBM versus the McIntire GBM

UVA ENGINEERING
Engineering Business Minor

- ✓ Focused on product development, business building, and engineering management
- ✓ Tailored to engineering student curriculum and skills
- ✓ Allows for electives that are appropriate only for engineering students

=> Best for students interested in engineering, product management, and working in technology-centric businesses

=> Can also be an option for students interested in technical consulting or advising tech businesses

UVA McINTIRE
General Business Minor

- ✓ Provides general business foundational business knowledge
- ✓ Structured to accommodate students from the full array of schools and majors
- ✓ Elective list is maintained by McIntire

=> Best for students broadly interested in business and careers that include banking, general consulting, and non-technical industries

=> Can also be an option for students interested in technology-based businesses

Positioning of the EBM versus the McIntire Entrepreneurship Minor

UVA ENGINEERING
Engineering Business Minor

- ✓ Focused on product development, business building, and engineering management
- ✓ Tailored to engineering student curriculum and skills
- ✓ Allows for electives that are appropriate only for engineering students

=> Best for students interested in engineering, product management, and working in technology-centric businesses

=> Can also be an option for students interested in intrapreneurship and startups

UVA McINTIRE
Entrepreneurship Minor

- ✓ Focused on skills required to found a company with some coverage of corporate innovation
- ✓ Requires completion of an entrepreneurship capstone course
- ✓ Elective list is maintained by McIntire

=> Best for students who are interested in founding a startup (now or later)

=> Can also be an option for students interested in intrapreneurship

University of Virginia Entrepreneurship Ecosystem

University of Virginia | ENGINEERING

Entrepreneurship Minor/Tech

TECH ENTREPRENEURS IN ACTION:

DISTINGUISHED SPEAKER SERIES

VentureForward

- funding, mentoring -

UVA McINTIRE

Entrepreneurship Minor

Galant Center for Innovation and Entrepreneurship

UVA | FRANK BATTEN SCHOOL of LEADERSHIP and PUBLIC POLICY

Entrepreneurship Minor/Social

DARDEN SCHOOL of BUSINESS

Batten Institute

i.Lab Incubator

THE FOUNDRY

Workshops, Mentoring Community

Entrepreneurship Cup

UVA | Licensing & Ventures Group

UVA LVG Seed Fund

NSF | I-CORPS NSF Innovation Corps

UVA INNOVATES

UVA's platform to catalyze innovation and entrepreneurship

THE FOUNDRY

Shape Your Path

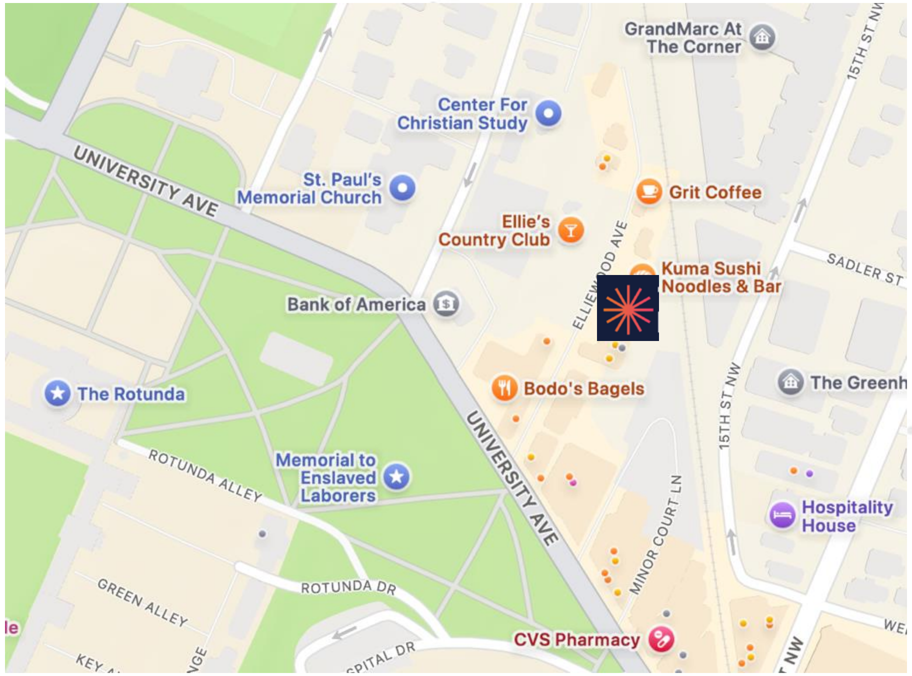
Chart Your Course → From first spark to full flame. Map your entrepreneurial journey with expert guides.

Power Up → Forge ahead with battle-tested resources and tools in our library.

Connect & Create → Get fired up with mentors who've mastered the craft of building ventures.

Join the Movement → Experience events that ignite creativity and forge lasting connections.

Spark Inspiration → Stories from founders who turned their spark into something extraordinary.



innovates.virigina.edu/foundry

UVA Entrepreneurship Cup 2025

UVA's premier student entrepreneurship competition with $100,000 in prizes

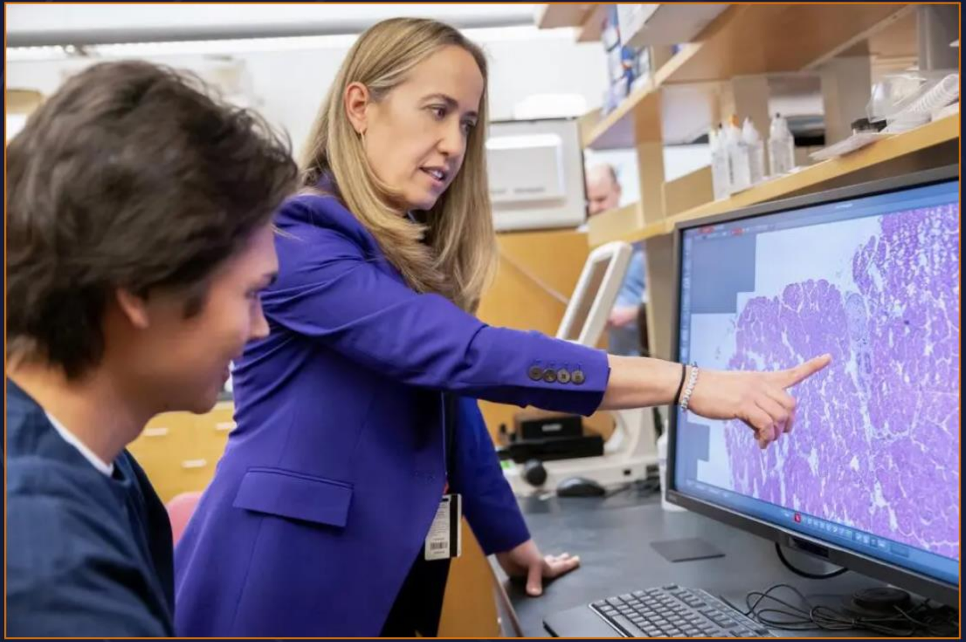
Concept Phase		Launch Phase
• **4 Tracks**: B2C, B2B, Health, Social • Foundry access, mentors, and in-kind perks	**20 Finalists** • $100K in in-kind prizes • Expert mentors • Professional services	• One Track • **$100K in cash prizes** • Open to all undergrad and grad students
Applications: Oct 6-22 Semi-Finals: October 25	**Finals: October 28**	Applications: Mar 1 '26 Finals: April 15 '26

THE FOUNDRY

https://www.uvafoundry.com/entrepreneurship-cup

VentureForward at UVA Engineering

Develop the skills and find the resources you need to become an entrepreneur.



- $1000 grants to develop your idea
- Not a competition, focused on developing skills
- Fall Application cycle: September 8 – October 13
- Winter/spring cohort opens in January 2026

https://engineering.virginia.edu/offices-programs/ventureforward

i.Lab Incubator

- Three Phase Program
  - (U)nderstand: focused on venture readiness
  - (V)alidate: 10-week summer program
  - (A)ccelerate: follow-on support in fall
- Benefits
  - Non-dilutive grant
  - Mentorship
  - Coworking space
  - Entrepreneurship programming, including founder speakers and UVA faculty and practitioner-led workshops

Networking

Whatever you pursue, remember:

"Nothing great was ever achieved without enthusiasm"

- Ralph Waldo Emerson