2009 - 2010

EMTM
TWENTY YEARS OF LEADERSHIP IN TECHNOLOGY AND INNOVATION MANAGEMENT

AN MSE FROM PENN ENGINEERING
CO-SPONSORED BY THE WHARTON SCHOOL
UNIVERSITY OF PENNSYLVANIA

Penn University of Pennsylvania
The Challenge

“How do you align business strategy with smart technology and management decisions … in a high-speed, high-cost, high-risk environment?”

No one can have all the answers when the state of the art is a moving target …
The Solution

“It’s about asking the right questions.”

Building on the strengths of Penn Engineering and Wharton, EMTM develops managers into leaders who can:

• Integrate multiple technologies
• Direct multidisciplinary technical teams
• Transform technological innovations into commercial success
Technology + Business >> EMTM
A dynamic interaction

- Designed for working executives in technology-intensive enterprises from diverse industries
- Created in 1988 with corporate input and support
- Based in Penn Engineering; co-sponsored by Wharton since 1998
- More than 800 alumni & 130 students
Curriculum Design

• Technology principles & emerging trends across multiple fields (IT, Telecom, Biopharm, Nanotech, Energy…)
• Management foundations & business strategy
• Entrepreneurial perspectives
• Leadership & collaboration

… a catalyst for insight and innovation
# Integrated Curriculum

**Technology + business: focus on innovation**

<table>
<thead>
<tr>
<th></th>
<th>10 courses</th>
<th>Management &amp; technology foundations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technology Electives</strong></td>
<td>6 courses</td>
<td>Specialized ‘tracks’ or exposure across technology areas</td>
</tr>
<tr>
<td><strong>Open Electives</strong></td>
<td>4 courses</td>
<td>Chosen from management and technology electives</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20 courses</td>
<td><strong>Plus option for additional electives</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emerging Technologies Seminar (ETS)</th>
<th>1st-year Requirement</th>
<th>90-minute lunch or evening sessions with faculty from different subject areas</th>
</tr>
</thead>
</table>

An MSE from [Penn Engineering](https://www.engineering.upenn.edu) and Co-Sponsored by [Wharton](https://www.wharton.upenn.edu).
Core Courses

Foundations & Techniques
- Accounting
- Corporate Finance
- Decision Models
- Management of Technological Innovation
- Managerial Economics
- Marketing Strategies
- Operations Management
- Organizational Behavior and Design
- Statistics
- Strategic Management

Emerging Technologies Seminar (ETS)
Technology Electives & Clusters

IT & Telecommunications
- Data Mining
- Enterprise Software Development
- Human Computer Interaction
- IT Security & Privacy
- IT Strategy
- Software Engineering
- Telecom – Intro Networking
- Telecom – Adv Networking
- 4G Wireless Networks

Biopharm & Biotechnology
- Business & Biotechnology
- Medical Devices
- Drug Discovery
- Intro to Biotech & Bionanotech
- Medicine & Biotechnology

Other Technology & Operations
- R&D Management
- Robotics

Nanotech & Materials Science
- Advanced Materials
- Dynamics of the Semiconductor Industry
- Nanotechnology
- Photonics

Energy Sustainability & The Environment
- Energy Policy
- Energy Technologies
Management Electives

Finance
• Case Studies in Corp Finance
• Computational Finance
• Mergers & Acquisitions
• Real Options Analysis

Marketing
• Models & Tools for Marketing Tactics & Strategy
• Applied Probability Models in Marketing

Operations & Information Mgmt
• Creating Value Thru Technology
• Product Design & Development
• Supply Chain Management

Innovation / Entrepreneurship
• Legal Aspects of Entrepreneurship
• New Venture Initiation
• Private Equity & Venture Funding
• Strategic Mgmt of Innovation
• Strategic Mgmt of IP
• Technology Entrepreneurship

Leadership & Teamwork
• Foundations of Leadership
• Negotiations
• Total Leadership
2009–2010 ETS Cycle:

First Term

• The Lessons of Obama’s New Media Juggernaut (Jascha Franklin-Hodge, Blue State Digital)
• Scenario Planning (Scott Snyder, Decision Strategies International)
• Strategic Behavior in Social Networks (Michael Kearns, Penn)
• The Way of Innovation – Unlocking Breakthrough growth (Kaihhan Krippendorff)
Emerging Technologies Seminar
(Prior year’s sample listing…)

• New Competitive Paradigms for a World of Constant Volatility:
  Rapid Recognition, Rapid Response
• Defining the Role of Innovation
• Applying Digital Media
• This is Not Your Grandfather’s Outsourcing Strategy
• IT: Managing consumer Info tech Devices and Software for Your Enterprise
## An EMTM Weekend

<table>
<thead>
<tr>
<th></th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breakfast</strong></td>
<td>Breakfast at hotel</td>
<td>Breakfast at hotel</td>
</tr>
<tr>
<td><strong>3-hour class w/ break</strong></td>
<td>Class – Drug Discovery</td>
<td>Class – Intro. to New Venture Initiation</td>
</tr>
<tr>
<td><strong>1.5-hour lunch</strong></td>
<td>Lunch on campus</td>
<td>Lunch on campus (ETS or Speaker Seminar)</td>
</tr>
<tr>
<td><strong>3-hour class w/ break</strong></td>
<td>Class – Models &amp; Tools for Marketing Tactics &amp; Strategy</td>
<td>Class – Foundations of Leadership</td>
</tr>
<tr>
<td><strong>Break / team projects</strong></td>
<td></td>
<td>Depart @ 4:00</td>
</tr>
<tr>
<td><strong>(ETS or Speaker Seminar)</strong></td>
<td>“Electric Power Grid Emerging Technologies”</td>
<td></td>
</tr>
<tr>
<td><strong>Arrive Thurs eve (Team work)</strong></td>
<td>(ETS or Speaker Seminar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Beyond the Classroom…
optional program opportunities

Workshops:
• Business Plan Competition
• Entrepreneurship Through Acquisition
• Project Management; Portfolio Management
• Communications – I
• Communications – II
• Energy Workshop (alternative energy sources)
More Beyond the Classroom…
optional program opportunities

Playing the Game
• People, Networks and Politics
• Career Workshops (series of four)
• Career Management: Mission, Strategy, Tactics & Success
• Leveraging your EMTM Degree in the Job Market
• Resume approaches and techniques
• Interviewing Skills
• Global Experience
• 20th Anniversary Series: Future Space: the Intersection of Technology and Social Science
GLOBAL IMMERSION
Shanghai & Beijing

Feb. ’08
China as the “Texas” of the world

A variety of company structures are possible:
- Branch offices (for liaison & coordination)
- Joint ventures (several flavors)
- Wholly-owned foreign enterprises (limitations)
- Chinese companies
- SOE’s (state owned enterprises)

Partners are needed to do business in China
- Cultivation of “guanxi” (system of reciprocal obligations)

Major challenge: attracting/retaining talent

Change is underway:
- Growth & pollution
- Rising middle-class
- Youth
Brazil

São Paulo & Rio de Janeiro – March 2009

Telecommunications
Automotive
Banking
Pharma
Beauty & Cosmetics
Petroleum & Oil Distribution
Mining
Iron & Steel
SINGAPORE – MARCH 2010
Schedule and Format …
designed for career professionals

Alternate weekends
• 9-month academic year: September – May
• Full-time (Friday & Saturday) can finish in 2 years
• Half-time (Saturday only) can finish in 3-4 years
• Can switch between full- and half-time

… options and flexibility
Who are EMTM Students?

Experienced and High-Potential
Strong Academic Capability
Diverse Industry Backgrounds
Geographic Range
High Motivation and Commitment

Preparing for higher levels of leadership in organizations where capitalizing on emerging technologies is key to success
Age Distribution (2009)

- < 30: 19%
- 30-35: 37%
- 35-40: 31%
- > 40: 13%
Educational Background (2009)

- One of the most credentialed classes

56% for BS Plus
10% for MBA
13% for PhD
Industry Diversity (2009)

- Consulting: 10%
- IT/Computers: 13%
- Health Care/Pharma: 12%
- Financial Services: 9%
- Public: 13%
- Telecom: 6%
- Other: 19%
- Aerospace/Def.: 10%
- Manufacturing: 8%
Geographical Range

- **PA** 45%
- **NJ/DE** 25%
- **DC, MD, VA** 11%
- **NY** 7%
- **Other** 12%
- ‘Other’ includes:
  - CA, FL, ID, IL, KS, MO, TX
  - …and Moscow!

An MSE from
Co-Sponsored by

[Logo: Penn Engineering]
[Logo: Wharton University of Pennsylvania]
The Right Fit?
Options at the University of Pennsylvania

<table>
<thead>
<tr>
<th></th>
<th>EMTM</th>
<th>EMBA</th>
<th>MS/MSE</th>
<th>MBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Goal</td>
<td>Leadership in tech-intensive unit or organ.</td>
<td>General business leadership</td>
<td>Technology expertise</td>
<td>General leadership + major</td>
</tr>
<tr>
<td>Management (Wharton faculty)</td>
<td>Core courses and mgmt electives</td>
<td>Extensive core and mgmt electives</td>
<td>NA</td>
<td>Full MBA curriculum</td>
</tr>
<tr>
<td>Technology (Penn Eng. faculty)</td>
<td>Course options across multiple technologies</td>
<td>NA</td>
<td>MSE in single technology</td>
<td>NA</td>
</tr>
<tr>
<td>Peer Students</td>
<td>Industry mix; Avg 10 yrs exp</td>
<td>Industry mix; Avg 10 yrs exp</td>
<td>From same discipline</td>
<td>Diverse pop. Avg 5 yrs exp</td>
</tr>
<tr>
<td>Schedule</td>
<td>Alt weekends 9 months; 2-4 years</td>
<td>Alt weekends year round; 2 years</td>
<td>Various schedules</td>
<td>Full-time 2 years</td>
</tr>
</tbody>
</table>
Sponsorship & Funding

Sponsorship
• 27% sponsored with full financial support from organization
• 40% ‘self-sponsored’ (financing program independently)
• 33% combine corporate support and personal funding

Investing in Your Education & Career
• Comprehensive program fee: includes tuition, books & materials, program lodging & meals
• Graduate Student Loan options through University of Pennsylvania Student Financial Services
Applying to EMTM

Qualifications
• Undergraduate degree or higher
• 5 or more years work experience
• GMAT or GRE within past 5 years*
• 2 professional recommendations
• Apply online: www.emtm.upenn.edu
• Application deadlines for Fall 2010
  • January 19 waiver request deadline (notification by February 19)
  • March 15 early deadline (notification by April 15)
  • May 17 final deadline (notification by June 17)

* Waivers may be requested by those with PhD or > 15 years professional work experience.
The Right Fit
Next Steps
• Contact EMTM Admissions Office @ 215-898-2897
• Arrange to Visit a Class
• Start Your Online Application @ http://www.emtm.upenn.edu
“It’s about asking the right questions …”