

**Boston University College of  
Engineering**


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Kenneth R. Lutchen  
Dean



**MEMORANDUM**

TO: Sue Kennedy, Assist. Provost  
Robert Volk, UCCCD Chair

FROM: Kenneth Lutchen, Dean, College of Engineering 

RE: Responses to MEng Stage II Questions

DATE: September 22, 2010

Thank you for the opportunity to clarify our Stage II proposals for MEng degrees. Each of the points raised by the committee is addressed below:

- *What is the nature of the relationship of the distance education component with the various MEng programs? Is this just specific to Manufacturing and Mechanical Engineering?*

All courses offered through our distance education component have a corresponding traditional classroom. The only difference is that the distance education courses are taught in special classrooms that allow synchronous attendance by students in remote locations. Classes can also be viewed in an asynchronous mode by either the distance learning students or the traditional classroom students.

All of the MEng programs will be offered as regular on-campus programs. While a subset of courses in some of these programs will also be available via our distance learning facility, the MEng programs are not being created specifically for a Distance Learning goal or mission in the college per se. Currently, several Manufacturing, Mechanical, and Material Science and Engineering courses are taught through the distance learning program. At some point in the future we will likely assess if or how to expand the course offering to include topics in electrical, computer, and biomedical engineering as the demand arises. Below is a list of the courses currently offered through our distance learning program.

Course	Title
ME411	Operations Research (Formerly MN409 Operations Research)
ME502	Intellectual Assets (Formerly MN505 Intellectual Assets)
ME/MS50 7	Process Modeling and Control (Formerly MN507 Process Modeling and Control)
ME 510	Production Systems Analysis (Formerly MN510 Production Systems Analysis)
ME517	Product Development (Formerly MN513 Product Development)
ME514	Simulation (Formerly MN514 Simulation)
ME518	Product Quality (Formerly MN518 Product Quality)
ME520	Acoustics I
ME525	Technology Ventures (Formerly MN522 Technology Ventures)
ME/MS52 6	Simulation of Physical Processes (Formerly MN526 Simulation of Physical Processes)
ME/MS53 4	Materials Technology for Microelectronics (Formerly MN534 Materials Technology for Microelectronics)
ME/MS53 5	Green Manufacturing (Formerly MN535 Green Manufacturing)
ME543	Sustainable Power Systems
ME550	Product Supply Chain Design (Formerly MN550 Product Supply Chain Design)
ME/MS55 5	MEMS: Fabrication and Materials (Formerly MN555 MEMS: Fabrication and Materials)
ME560	Precision Machine Design and Instrumentation (Formerly MN560 Precision Machine Design and Instrumentation)
MS/EC573	Solar Energy Systems

ME579	Microelectronic Device Manufacturing (Formerly MN579 Microelectronic Device Manufacturing)
ME583	Product Management (Formerly MN583 Product Management)
ME584	Manufacturing Strategy (Formerly MN580 Manufacturing Strategy)
ME/SE765	Production System Design (Formerly MN765 Production Systems Design)
ME778	Micro-machined Transducers (Formerly MN777 Micro-machined Transducers)

- *Please provide more detail on the ENG management courses.*

Below is the listing of ENG management courses. These courses have existed for well over a decade now and were formally only associated with our Manufacturing Engineering program. They address the intersection of technology and product creation.

#### **ENG ME 502 - Intellectual Assets: Creation, Protection, and Commercialization**

This course provides students with the knowledge and tools necessary to create, protect, and commercialize engineering and scientific intellectual assets. Students will first make use of creativity tools to attack posed engineering problems, then turn to means for protecting their solutions. Rapidly growing areas that are affecting nearly all businesses (e.g., software and the internet) as well as "high-tech" areas including microelectronics, communications, and bioengineering will be emphasized. Extensive patent searches and analysis will be carried out to develop skills for quickly ascertaining the protected technical content of patents, and for recognizing what intellectual property (IP) should be and can be protected. Legal aspects for protecting creative ideas will be studied at a level appropriate for engineers to interact easily and smoothly during their technical careers with IP lawyers. Various business models for the commercialization of intellectual assets will be analyzed. Extensive class exercises and projects will explore in depth all three of these important areas of IP, with emphasis on key contributions during engineering and scientific research and development activities. (Formerly [ENG MN 505](#)) [ 4 cr.]

Prereq: (Senior or graduate standing in an engineering or science discipline, or consent of instructor.)

[2 sections scheduled for Fall 2010](#)

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engineering and scientific research and development activities. (Formerly [ENG MN 505](#)) [ 4 cr.]

Prereq: (Senior or graduate standing in an engineering or science discipline, or consent of instructor.)  
[2 sections scheduled for Fall 2010](#)

#### **ENG ME 525 - Technology Ventures**

An introduction to the formation and management of technology-based enterprises for engineers and scientists. Modules include opportunity recognition and evaluation, gathering financial and human resources, and managing and harvesting ventures. Goals include an understanding of basic start-up finance and accounting, writing business plans, presenting venture ideas to industry experts, and venture leadership skills. Students become familiar with fundamental technical and engineering issues in a wide variety of high-tech industries, especially information technology, life sciences, biotechnology and telecommunications. Case studies, lectures, workshops, and projects are utilized. 4 cr.

Prereq: Senior or graduate standing in an engineering or science discipline, or consent of instructor.

#### **ENG ME 550 - Product Supply Chain Design**

Integrated design of systems to deliver quality products to customers. Lean manufacturing with hard automation. Worker empowerment with active learning. Creation of lean supply chains with control of logistics and information. Creating customer value in a world of excess capacity. Industry project required. (Formerly [ENG MN 550](#)) [ 4 cr.]

Prereq: [ENG ME 415](#); or consent of instructor.

#### **ENG ME 583 - Product Management**

Planning and execution of the process of bringing new tangible and intangible products to market. Review of the new product development process. Establishment of the new product specification. Setting of financial expectations. Formation and dynamics of the product implementation team. Organization of the new product introduction project including matrixed management and financial control. Contingency planning and risk management. Taught through case-based discussions, lectures, and readings. (Formerly [ENG MN 583](#)) [ 4 cr.]

Prereq: Graduate standing or consent of instructor.

#### **ENG ME 584 - Manufacturing Strategy**

Strategic decision-making for technical people in manufacturing companies. Provides practice in applying financial, organizational, and operational concepts through analysis and discussion of case situations. Topics include process alternatives and their implications; interactions among product design, process design, worker skill and worker motivation; supplier relationships; interfaces with marketing and finance; introduction of new technology; capacity planning; and competitive analysis. Taught principally by in-class discussion plus guest lectures. (Formerly [ENG MN 580](#)) [ 4 cr.]

#### **ENG ME 703 - Managerial Cost Accounting**

This course provides an overview of accounting measures important to manufacturing operations for both engineers and managers. It begins with a summary of accounting fundamentals, including financial reporting and performance measurement. Topics include cost accounting management for job-order, hybrid, and just-in-time operations; activity based costing and management; measuring and managing spoilage; capacity cost; and analysis of new technology investments. (Formerly [ENGMN703](#)) [ 2 cr.]

- *There are a significant number of courses listed as offered "at least every other year." Are there enough core courses for students who will truly complete in one year?*

- *One of the proposals (Electrical, Computer, and Photonics) indicates that the program can be completed in 18 months. Is there a reason this differs from the others which indicated possible completion in a year?*

The MEng in Electrical, Computer, or Photonics can be completed in one year similar to all of the MEng proposed degrees. As above, in any one year there are more than enough core and electives to insure this, but not every one of them is offered every year. Hence, if a student desired to include a specific elective course for part of his/her MEng that was not offered over particular 12 month period, the would have to wait an additional semester (to go to 18 months maximum). But we anticipate this to be a very small fraction of the students.

*Can the resource needs be clarified? There is reference to possible additional faculty and staff lines in the future. Does this potential resource need address the entire suite of MEng programs?*

The potential need for additional resources does address the entire suite of MEng programs. Initially, we do not foresee any need for additional resources. However, if our MEng programs become popular, additional resources will be required. Should the number of students rise to the point where additional sections must be added, the College will use some of the revenue to hire additional faculty (i.e., we will not need new resources from the central administration). At the point where the registration, advising, and administrative support become insufficient, we will again use some of the revenue to hire additional staff. From its inception the MEng programs will be self supporting for any additional required resources.

Many thanks for your assistance and consideration of this matter.