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## **AC 2011-552: A LEADERSHIP-FOCUSED ENGINEERING MANAGEMENT MASTER OF SCIENCE PROGRAM**

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Director, Engineering Management Programs Professor of the Practice

Mary Adams Viola is currently the Director of Engineering Management at Tufts Gordon Institute. She designs and delivers innovative courses in leadership development, with an emphasis on innovation and working across cultures. Prior to the Gordon Institute, Dr. Viola spent twenty years at Polaroid Corp. There, as Director of R&D, she was responsible for managing new technology platforms, requiring collaboration between other technology and manufacturing firms in Asia and the US.

Earlier, working with the Thomas Group, Inc. she was responsible for business process reengineering, which reduced the cycle time of the product development process in half and eliminated \$80M of inventory from the supply chain.

From 1990 to 1996, Dr. Viola was a plant manager for worldwide reagent manufacturing and photo-systems integration at Polaroid. This included operations in Massachusetts, the Netherlands and Scotland. During her tenure, she led the organization to reduce 'bad pictures' tenfold and was able to significantly reduce costs by leveraging technology across the operations. Prior to her role in manufacturing, Dr. Viola held numerous positions in R&D, which involved both internal technology development and technology transfer from Japan.

Dr. Viola studied chemical engineering and received her BS, MS and Ph.D. from Tufts University.

# **A Leadership-Focused Engineering Management Master of Science Program**

## **Abstract**

Engineers are currently underrepresented both as thought leaders and as actual leaders in corporations, government, and society at large. The complex, technology-rich problems we face today – sustainable development, infrastructure deterioration, and the re-industrialization of America’s economy, among others – will require innovative engineers who understand the broader context in which they operate and the wider consequences of the solutions they develop. This paper describes the basic philosophy, architecture, and pedagogy of a leadership-focused Master of Science in Engineering Management (MSEM) degree program at Tufts University.

## **Introduction**

The Tufts MSEM program has undergone continuous improvement since 1992, when the independent Gordon Institute became part of the university. The pre-Tufts version of the program began with a focus on technical and product development leadership and was offered in a boot-camp format. A sustainable and scalable model was subsequently developed while keeping the basic principles intact: an emphasis on ethics and leadership, a spirit of pragmatism, and a pedagogical approach that emphasizes both experiential and classroom learning. The program has experienced significant growth over the past 4 years, from 70 students in 2 cohorts in residence in 2007 to over 130 students in 4 cohorts today.

The program is primarily targeted at working professionals with a bachelor’s degree in engineering or applied science and several years of experience. Key features that differentiate the Tufts MSEM include a significant focus on imparting leadership knowledge and skills tailored to engineers in professional practice, an integrated, modular program architecture that allows for immediate application of classroom learning in the workplace, and an emphasis on experiential learning with both in-class activities and real, open-ended projects in technology-based organizations. Students enter the program as a cohort and participate with that cohort in a prescribed set of courses. There are no electives although students make take up to three courses in the various Tufts graduate schools (Engineering, Arts and Sciences, and the Fletcher School of Law and Diplomacy) at no additional cost.

This paper describes the MSEM program’s architecture and courses, our approach to leadership education, and the two out-of-classroom experiential learning activities: the summer Team Practicum, and the Individual Leadership Project that is the capstone of the program. A brief discussion of program outcomes and student assessments is included, as well as a short description of our efforts to adapt key elements of the MSEM program to the Tufts engineering undergraduate curriculum. Included, as appendices, are demographic data for students and industry representation as well as the objectives and outcomes for the leadership courses.

## MSEM Courses and Integrated Modular Architecture

The mission of the Tufts MSEM is to prepare practicing technical professionals to lead and innovate in the highly competitive global environment. The program focuses on student development in four areas: (1) technical skills, (2) business knowledge, (3) strategic thinking, and (4) leadership. Our belief is that competency in these areas is required by engineering leaders/managers for success in various engineering leadership roles in both large and small technology-based companies. We aim to strengthen the students' analytical, verbal, creative and emotional intelligences through a curriculum that includes six classroom-based courses and two significant workplace-based projects. Students progress through the program in a cohort; this contributes to an environment that allows students to learn from each other and to take risks that are essential to their development.

The six classroom-based courses are:

- Quantitative Methods;
- Project and Operations Management;
- Product and Process Development;
- Strategic Management;
- Engineering Leadership; and
- Humanistic Perspectives on Engineering Leadership.

Each course is broken into discrete modules. The courses and modules are shown in Figure 1.



Figure 1: MSEM courses and modules

In the practice of engineering, projects are carried out and problems are solved by the application of a variety of knowledge and skills simultaneously. The MSEM course architecture mimics this reality by phasing course modules to allow cross-module integration within a given semester and exposing students to the full breadth of the curriculum all through their two-year journey. The current program architecture is illustrated in Figure 2.

ACADEMIC YEAR 1 CLASSROOM LEARNING		SUMMER	ACADEMIC YEAR 2 CLASSROOM LEARNING	
SEMESTER 1 MODULES	SEMESTER 2 MODULES	TEAM PRACTICUM	SEMESTER 3 MODULES	SEMESTER 4 MODULES
New Product Development & Marketing	Data Analysis		Statistical Process Control	Design of Experiments
Financial & Managerial Accounting	Technology Strategy & Innovation		Process Management & Improvement	Experience Design Management
Project Management & Software Methodologies	Supply Chain Management		Systems Modeling & Simulation	Operations Management
Learning to Lead – 1	Business Strategy		Sustainability	Globalization & Multinational Strategies
	Ethics of Leadership		Fundamentals of Economics	Conflict Resolution
	Learning to Lead – 2		Art of Leadership	
			INDIVIDUAL LEADERSHIP PROJECT 6 – 9 MONTH PERIOD	

Figure 2: MSEM program architecture

As an example of the module integration, in Semester 1 students focus on a product development project emphasizing the cross-functional nature of this fundamental activity. They acquire knowledge and concepts of marketing and project management, and develop a plan and schedule for a new product in a semester-long team project. In order to assess the financial viability of their proposed product, they need financial accounting tools; they are learning those skills in another module being concurrently taught. In the Learning to Lead module, students learn the basics of leadership and teamwork and are given assignments to apply these new skills within their teams at both Tufts and in their workplace.

Modules from various courses are taught throughout the program. This reinforces the learning achieved early in the program as students proceed through the course of study. As an example, the Project and Operations Management course includes 2 modules taught in the first semester, 1 in the second semester, and 1 in the fourth semester. Although different instructors may teach modules in a particular course, the faculty enforces quality control; each course has a singular “course director”. Each semester, faculty members meet to discuss common projects, integration, and overlap of modules.

While somewhat complex, we believe that this integrated, modular course architecture provides a superior learning experience as compared to traditional approaches.

## **Leadership Curriculum**

While discussions as to whether leadership is an innate skill or can be learned are commonplace<sup>1</sup>, we have no doubt that students' leadership skills and characteristics can be significantly improved so that they will be more effective professionals.

The leadership curriculum consists of two courses: Engineering Leadership (EM260), and Humanistic Perspectives of Engineering Leadership (EM250). As shown in Figure 2, the Engineering Leadership course begins in the first semester with the "Learning to Lead 1" module. Two additional modules, "Learning to Lead 2" and "Conflict Management" are taught during the remainder of the program. The Learning to Lead course covers topics including teamwork, team creativity, giving and receiving feedback, speaking to inspire, systems thinking, creating change, influence without authority, working across cultures, and conflict management. The second course, Humanistic Perspectives on Engineering Leadership, which addresses ethics and moral reasoning, is taught in the second and third semesters and builds on the foundation provided in Learning to Lead. The objectives and outcomes of these courses are provided in the Appendix.

Our approach to teaching leadership is very pragmatic and begins in "Learning to Lead 1" with a focus on the understanding of self through the use of 'data' from various assessment instruments, including Myers-Briggs, Fundamental Interpersonal Relations Orientation-Behavior (FIRO-B), and 360-degree feedback. These assessments enable students to better understand their own tendencies and their impact on others. This is quite different from a more traditional approach involving the identification and discussion of core values<sup>2</sup>. This approach is deliberate and provides students with practical tools and concepts that they can quickly use to increase their effectiveness in both their class projects as well as their professional work. These early positive outcomes reinforce the value of the leadership training and also motivate students who are initially doubtful of the value.

In our view, teaching and learning leadership requires a focus on knowledge, skills, and attitude. In the Engineering Leadership modules, each skill is taught by providing an experiential exercise, the conceptual psychological underpinnings of the skill and an assignment that requires the application of the skill in the "real world". In some instances, this assignment involves an analysis of a case study. In other instances the assignment requires activities in their TGI or work teams. For example, the topic of influence without authority is initiated by a "buttermilk exercise" in which the developing leader needs to influence everyone on his or her team to drink real buttermilk that is provided. The post exercise debrief discussion inevitably discloses many creative approaches that each "leader" uses. The instructor then links these experiences with concepts of "currencies" developed by Bradford and Cohen in their seminal work on power and influence<sup>3</sup>. Finally each student is asked to develop an influence strategy for a situation at work. In the following class, the instructor invites a few selected students to share their stories for the class to discuss and critique.

One of the complicating factors in teaching leadership in contrast to teaching other engineering topics is that it requires development of emotional intelligence in addition to the development of the analytical and verbal intellect. Research has shown that emotional intelligence is a critical factor that differentiates an effective leader<sup>4, 5</sup>. While some level of emotional intelligence is innate<sup>6</sup>, it has been shown that it can also be developed and amplified<sup>7, 8</sup>. Learning emotional intelligence draws on neural processes that differ from those used for learning technical subjects; in recognition of this, our pedagogical approach emphasizes practicing of leadership skills in different settings and formats in a supportive, feedback-rich environment. As an example, in the context of giving and receiving feedback students are asked to role-play a scenario they select from their experience. The exercise is video recorded to allow students and instructors to comment on both the words and the body language that are employed and observed. This low-risk “practice” enables students to be more effective in the professional workplace.

Attitudes, values, and ethics are intrinsic to becoming an effective leader. Once a basic grounding in leadership knowledge and skills is gained in the first semester, a deeper exploration of the art and ethics of leadership is provided in the second and third semesters. The curriculum offers students a humanistic analysis of the nature of leadership and some of the moral issues that arise in a business or organizational context. Through novels, films, plays and short stories, students examine complexities and subtleties of responsible leadership.

In the module, “Ethics of Leadership – Moral Challenges and Personal Values”, students learn to identify situations with moral stakes, how such situations develop and how leaders think through these challenges. The module expands students’ abilities in analyze an ethical dilemma from various perspectives. They are challenged to deepen their moral discernment, and to gain clarity about their values and ethical boundaries. Films include “The Endurance-Shackleton’s Legendary Antarctic Expedition”, “A Man for All Seasons”, and “The Remains of the Day”. Readings include Sophocles’ “Antigone”, and Susan Glaspell’s “Trifles”. In the second module, “Art of Leadership – Influence, Empowerment and Responsibility” students explore the human dimensions of authentic, purpose-driven, empowering leadership and learn to extract deeper meanings out of the context of leadership situations (including issues of race, class, gender, etc.). They are challenged to take responsibility for their own development as leaders. Films include “12 Angry Men”, “The Contenders”, “Norma Rae”, “Amazing Grace”, and various readings from “The Leadership Moment: Nine True Stories of Triumph and Disaster and their Lessons for Us All”. By the end of the third semester, students are attuned to leadership concepts and are familiar and comfortable with the members of their cohort and the instructors; the ensuing class discussions are usually some of the most memorable elements of the program as reported by MSEM graduates.

To place our approach to leadership education in perspective, students in the Tufts MSEM program spend about 30% of their classroom hours on leadership coursework. This is higher than many other engineering management programs where leadership is often offered as an elective (Cornell and Stanford) or is taught in seminar format without credit (Duke) or not at all (Northwestern). Dartmouth has a required Professional Skills Course that targets career self-assessment, ethics, interpersonal and communication skills. MIT’s System Design and Management program requires a course in the Human Side of Technology, which focuses on

skills such as negotiating, cross-cultural communication and teamwork and students are also offered a number of leadership electives.

### Project-Based Experiential Learning

A primary feature of the Tufts MSEM is an emphasis on learning-through-application. Formal classroom work includes both individual and semester-long team assignments focused on realistic engineering leadership projects. While this in-class work is central to our approach, application of the students’ growing knowledge and skills in the *real* – not just *realistic* - business environment provides an important opportunity for students to further develop and demonstrate mastery of the MSEM subject matter. Two different project activities address this real-world experiential learning.

The first is the Team Practicum, which occupies 8 – 12 weeks between the second and third semesters (the summer between the first and second year). The Practicum is essentially a consulting assignment carried out by teams of 4 or 5 students in a cooperating company or other organization. Students are urged to participate in projects outside of the industry in which they are currently employed; this provides an expanded perspective on the challenges faced by diverse technology-based organizations.

Students select projects from a set of potential assignments assembled by the faculty. These assignments address real problems faced by partner companies, and can range from a strategic assessment of new opportunities to analysis and problem-solving assignments in product development or process improvement. The teams meet with their project sponsors as true consultants; they take direction from the “customer” but establish their own internal working organization and process. Faculty advisors are assigned to each team. These advisors play a largely mentoring role to ensure that the projects stay on track and truly benefit the sponsoring organization. The projects culminate in a formal presentation (with written report) to the partner company.

Examples of recent Team Practicum projects are presented in Table 1 below.

Sponsoring Company	Project
<i>Arrow International</i>	<i>Market and intellectual property analysis for a new biomedical device</i>
<i>Astra-Zeneca</i>	<i>Lean manufacturing implementation at a Massachusetts facility</i>
<i>E-Ink</i>	<i>Market research for electronic paper displays to be used in the University environment</i>
<i>Intel</i>	<i>Intellectual property re-use</i>
<i>Raytheon</i>	<i>Development of strategy alternatives for the global defense markets</i>
<i>Wyeth</i>	<i>Supply chain improvements</i>

Table 1: *Team Practicum projects*

In addition to the Practicum, involving a team of MSEM students and a corporate client, the Individual Leadership Project (ILP) is structured to enable each student to lead an initiative in their workplace to demonstrate their newly acquired knowledge and skills to themselves, their company sponsors and their faculty advisor. Specifically, the project chosen must demonstrate leadership and technical, management and communications skills learned during the course of the program. The nature of the projects vary significantly; in every case, however, the faculty advisor ensures that the project challenges the individual student beyond the ordinary scope and level of the student’s typical work assignments. Topics could include strategy development, process improvement, technical research, or product development. In most cases the student has a reasonably sized team carrying out the work.

An ILP committee consisting of at least two faculty members as well as the project sponsor reviews progress and grades the ILP. Students are required to submit and have approved a formal proposal and several interim reports, before a final presentation and submittal of a written project report. The ILP is an individual’s thesis-equivalent capstone experience and is typically 6 – 9 months in duration, contributing 30% of the degree credits.

Some examples of recent ILP topics are shown in Table 2 below.

Sponsoring Company	Project
<i>Draper Laboratory</i>	<i>Feasibility demonstration for advanced CMOS imaging for mobile applications</i>
<i>GE Aviation</i>	<i>Management of a team, including contractors, to improve processes related to the prediction of the reliability of military jet engines</i>
<i>Genzyme</i>	<i>Risk assessment at flagship manufacturing plant</i>
<i>MITRE</i>	<i>Development of a proposal for the modification of the business strategy of this defense contractor</i>
<i>Nypro</i>	<i>Design and implementation of a new technology development process</i>

Table 2: *Example ILP projects*

While the ILP experience is valuable in and of itself, students frequently comment (and faculty observe) that these projects tend to have high visibility within their companies and allow students to interact with managers significantly higher in the hierarchy than they normally would expect – leading to an immediate return on their investment in the MSEM.

## Program Results

Throughout the history of the program, students have been asked to complete surveys to rate the quality of instruction and the relevance of the subjects covered. The survey results have been used to improve the quality of the program. An alumni survey in 2009 provided an informal, unscientific snapshot of the results of the program, including observations such as:

- 45% of respondents reported that they were promoted while still enrolled, with 95% receiving promotions within 2 years of graduation;
- Nearly 40% report an annualized salary increase of 20% over the first several years after graduation;
- 96% of graduates report that their leadership skills have improved as a direct result of the program;
- Over 95% were able to leverage their new skills to become “better managers and motivators”.

Obviously, this type of data cannot be used to seriously assess the results of the MSEM. Accordingly, in 2010 a rigorous, formal assessment program was inaugurated. The elements of this program include:

1. A formal set of *objectives* and *outcomes*, in the spirit of ABET accreditation requirements;
2. Continuing detailed course evaluations for both module and instructor assessment and continuous improvement;
3. A set of surveys comprising a longitudinal study of program outcomes, at 0, 2, and 5 years after graduation for both students and, where possible, their employers; and
4. Long-term tracking surveys of alumni of the program (of which there are now approximately 500).

The results will be reported when sufficient and significant data is available.

## Application to the Undergraduate Curriculum

In 2009, the Tufts School of Engineering completely updated the engineering management courses offered to undergraduates. Two new courses were added: “Engineering Leadership” and “Management of Innovation”. These complemented the existing courses “Technical and Managerial Communications” and the introductory course “Engineering Management”. Undergraduate students may earn a minor in Engineering Management by enrolling in these four courses and an elective from a prescribed list of options.

The Engineering Leadership course required the most significant development even though the topics are to those in the graduate courses. Undergraduates have limited engineering work experiences (at most 2 summer internships) and hence the context and application of the newly acquired skills and knowledge needed to be shifted. These students do not identify with the same examples and case studies that the MSEM graduate students resonate with. Instead,

undergraduate students the students find application of the principles of leadership and ethics taught in the class in their extracurricular activities. Students are encouraged to apply their learning to their team projects in other engineering courses, including their capstone projects. Enrollment in the leadership class is limited to 20 juniors or seniors. More than a third of the students take this course to fulfill their ethics requirement.

The leadership course begins with foundation concepts but also includes reading and exercises on personality and emotional intelligence to promote the understanding of self and others. While these exercises do not include a 360-degree evaluation (as in the MSEM program), all students still create leadership development goals for the semester. Each student has a coaching session with the professor to clarify their goals and a strategy for reaching those goals. Equally important is the attention paid to the classroom environment. Before each class the chairs are configured into a semi-circle. Norms are established and the instructor emphasizes self-disclosure as a means of developing an environment of trust. Students are challenged to move outside of their comfort zone in several in-class exercises. These include two inspirational speeches and a feedback role-play exercise, which are video recorded and evaluated using a media markup tool.

The overall rating of the course in the fall of 2010 was 4.6/5. The most significant comment was from one of the students using the course to fulfill their ethics requirements: *“I actually came into this class with a negative attitude and left now considering it as one of the most valuable. I felt I learned a lot about the tools required to lead effectively and the moral logic and approaches to reasoning. More importantly I learned about how to evaluate myself.”*

## Conclusion

At Tufts, we believe that engineering leadership is essential for meeting the increasingly complex and technology-based challenges in companies and society at large. This paper has provided an overview of our leadership-based Master of Science in Engineering Management degree program that responds to this requirement and its extension to our undergraduate programs.

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## Appendix 1: Leadership Course Objectives and Outcomes

### **EM 250 Humanistic Perspectives on Engineering Leadership**

#### **I. Overall Course Description**

This course offers students a humanistic analysis of the nature of leadership and some of the moral issues that arise in a business or organizational context. Through novels, films, plays and short stories, students examine complexities and subtleties of responsible leadership. The ability to lead begins with the process of self-discovery. In this class “learning” means more than just acquiring information, it also means elevating self awareness and discovering one’s authentic self. It requires learning as well as un-learning and re-learning. The course is delivered in two modules over two semesters. Total contact hours are twelve 3 hour classes.

#### **II. Module 1: Ethics of Leadership: Moral Challenges and Personal Values**

In this module students learn what constitutes a situation with moral or ethical stakes, how such situations develop and how leaders think through these challenges. The module expands students’ abilities in analyzing a situation from multiple perspectives. They are challenged to deepen their moral discernment, and to gain clarity about their values and ethical boundaries.

##### Module Objectives

- Increase students’ understanding of moral issues and their ability to assess these issues through ethical standards and analysis.
- Enable moral analysis in a more systematic, coherent way.
- Encourage reflection on students’ own moral values, rules or guidelines.
- Facilitate development of students’ own definition of moral leadership and how it can be translated into action.
- Elevate self-awareness and to expand students’ abilities in ‘perspective-taking’.
- Develop reflection skills for professional and personal growth.

##### Module Learning Outcomes

As a result of this module students will:

- Understand how moral leadership is different from leadership in general.
- Be able to recognize and analyze different types of moral challenges.
- Know how to address and reason through moral issues; how moral reasoning is different from reasoning in general.
- Be familiar with several moral theories and how they can be used as tools in moral decision-making process.
- Increase their self-awareness and desire to understand the broader world we live in.
- Better understand their beliefs, ethical views and predispositions as well as their ‘way of knowing’.
- Learn the value of self-reflection and improve their skills in reflective writing.

### **III. Module 2: Art of Leadership: Influence, Empowerment, and Responsibility**

In this module students explore the humanistic dimensions of an authentic, purpose-driven, meaningful, empowering leadership and learn to extract deeper meanings out of the context of leadership situations (including issues of race, class, gender, etc.). They are challenged to confront their assumptions, examine their worldview, and take responsibility for their own development as leaders.

#### Module Objectives:

- Encourage students to take an interdisciplinary approach to the study of leadership.
- Promote dialogue about the effect of context and environment on decisions and behaviors that are involved in leadership.
- Provide an opportunity for students to explore the similarities and differences between their own choices as leaders and those of literary characters and historic figures.
- Promote reflection on questions of meaning and students' life philosophy.

#### Module Learning Outcomes:

As a result of this module students will:

- Explore how leadership begins with self-knowledge and self-empowerment
- Refine their communications skills, particularly group process and listening skills
- Apply the insights and lessons learned from the novels, films and short stories to their own lives and work
- Assess their own strengths and weaknesses as effective leaders in their specific spheres of influence
- Become aware of their assumptions about leadership and the human experience based on race, class, gender, religion, age etc.
- Deepen their understanding of those factors which shape the human condition.
- Identify and critique the factors that have shaped their worldview

## **EM 260 Engineering Leadership**

### **Overall Course Description:**

This course focuses on the development of knowledge and practical skills that empower engineers to serve as leaders. The course consists of three modules that are delivered in the first, second and fourth semesters. Each module includes six 3 hour classes.

### **I. Module 1: Learning to Lead 1**

This course facilitates the development of self-awareness and interpersonal skills, which are essential for engineering leaders to master. The course begins with an assessment of each student's leadership and management skills through a 360 degree evaluation, that allows each individual to receive feedback from their peers, direct reports and superiors. Based on this assessment, the students develop individual goals and receive coaching from TGI faculty throughout the year.

In the classroom, the students are introduced to the basic concepts about leadership, management and team-work. Specific topics covered in Learning to Lead I include: personality types (Myers-Briggs Type Indicator assessment); giving and receiving feedback; best practices in forming and maintaining teams; communicating to inspire; and influencing without authority. The uniqueness of this course is within the teaching methodology, which has been developed to accelerate the advance of interpersonal competencies.

### Module Objectives

- Provide students with an opportunity to develop knowledge, skills and mindset for effective leadership and teamwork.

### Module Learning Outcomes

As a result of this module students will:

- Recognize and evaluate effective leadership and management.
- Create a vision/intention of their personal expression of leadership.
- Develop a personal action plan and be able to evaluate their progress and revise plans as required.
- Learn the principles of launching teams.
- Understand and be able to apply the MBTI tool to analyze team dynamics and examine the causes of team dysfunctions.
- Understand the role of a leader in fostering creativity in an organization/team.
- Develop active listening skills and ability to read and interpret body language.
- Be able to effectively give and receive feedback.
- Understand the difference between inquiry and advocacy, and be able to strike the effective balance in situations.
- Learn to develop and deliver “stories” that engage and inspire the audience.

- Learn how to use the concept of “systems thinking” as a methodology for solving chronic organizational issues and as a decision-making framework.

### **III. Module 2: Learning to Lead 2**

This module continues to build on the foundations established in Learning to Lead 1. Topics include: interpersonal relations and needs, fostering creativity and innovation in an organization, influencing without authority, making decisions, creating organizational change, working across cultures, visioning and communicating to inspire.

#### Module Objectives

- Building on the foundation built in Learning to Lead 1, provide opportunities to expand and sharpen management and leadership behaviors.

#### Learning Outcomes

As a result of this module students will:

- Be aware of the types of interpersonal needs and recognize that their needs are not necessarily shared by others.
- Be aware of how cultural differences (issues of race, gender, ethnic origin, age, functional discipline, etc.) influence behavior and how to navigate through differences to achieve organizational goals.
- Understand how to create shared visions and how to communicate them to inspire stakeholders
- Be able to analyze team dynamics and develop intervention strategies to lead team to high performance.
- Develop and implement influence strategies to achieve management objectives including organizational change.
- Evaluate and improve leadership behavior vis-à-vis fostering team creativity and innovation in their organization.
- Use storytelling to motivate and inspire teams and stakeholders.
- Demonstrate individual leadership skill development based on development goals.

### **III. Module 3: Conflict Resolution, Negotiation & Mediation**

In this module students learn how conflict arises and how it can be effectively managed through resolution, negotiation and mediation. Role-playing and class demonstrations are used to enhance development of the dispute settlement skills and mediation techniques.

#### Module Objectives

- Provide conceptual frameworks for understanding conflicts, causes of conflict, sources of power, etc.
- Explore theoretical and practical approaches to conflict within organizational setting.
- Examine beliefs, attitudes and behaviors related to conflict.
- Provide opportunities to practice basic skills of conflict resolution, negotiations and mediation.

Learning Outcomes:

As a result of this module students will:

- Be able to identify causes for conflicts.
- Differentiate between power sources.
- Practice productive communication skills and learn how to empower oneself..
- Become aware of the impact of cross-cultural differences on negotiation.
- Develop skills for de-escalating conflicts
- Engage in integrative (win-win) conflict behaviors
- Acquire techniques for mediating conflicts as managers

## Appendix 2: Student and Industry Demographics

	2010 Incoming Class	Previous 5-year Average
Enrollment	68	43
Weekend Program	34	37
Evening Program	34	N/A
Average Age (yrs)	30	31
Age Range (yrs)	21-56	-
Average Work Experience (yrs)	7	7
Median Work Experience (yrs)	5	5
% of Women	21	26
% of International students	7	N/A

Table A1: *Student demographics, 2010*

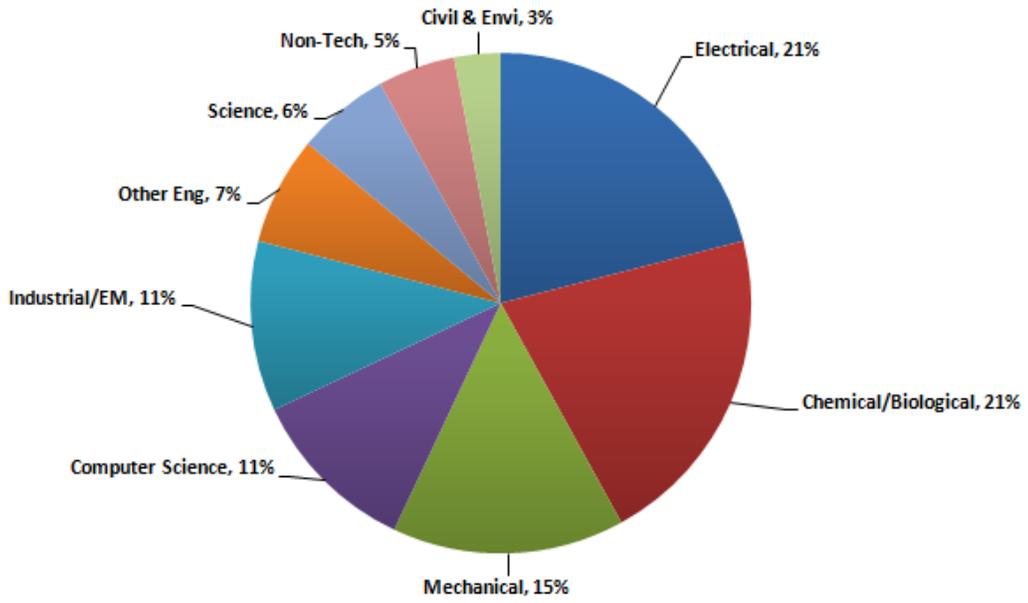


Figure A1: *Student educational backgrounds*

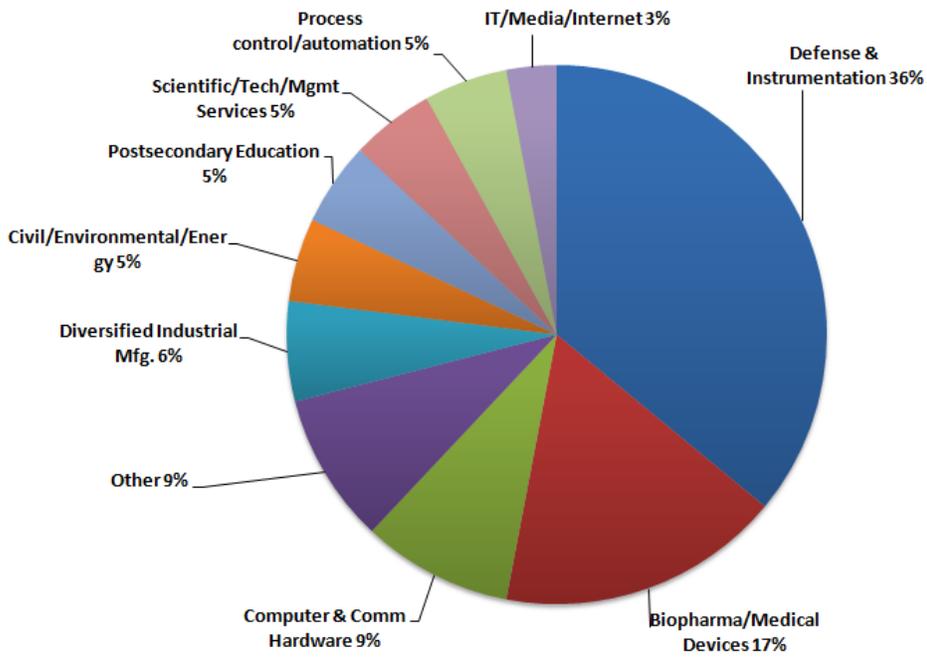


Figure A2: *Industry representation*