

How to be iap@MITMechE

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Lecture 3
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Series' Overview

How to be
MITMechE

- January 07, 2002
 - Paths
- January 14, 2002
 - Career Options
- Today
 - On the Job
- January 28, 2002
 - Panel Discussion

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Today's Overview

How to be
MITMechE

- Questions?
- Major Comparison
- 1st Day on the Job
- Job Timeline
- @ Work
- School vs. Work

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Major Comparison

How to be
MITMechE

- Aerospace Engineering
 - Design/test aerodynamic devices
 - Design/develop structural systems
- Chemical Engineering
 - Process control
 - Process development
- Civil Engineering
 - Design structures; bridges, etc.

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Major Comparison

How to be
MITMechE

- Electrical Engineering
 - Computer/circuit design
 - Motor design
 - Programming
- Materials Engineering
 - Develop new compounds, e.g., plastics
 - Test new compounds
 - Work on design teams suggesting materials

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Major Comparison

How to be
MITMechE

- Nuclear Engineering
 - Work with nuclear energy
- Ocean Engineering
 - Does not engineer oceans :)
 - Design/build ships, submarines
 - Develop torpedoes
- Check out web.mit.edu/academics.html for more information

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1st Day on the Job

1st Day on the Job

- Hours
 - Fixed versus flexible
 - Be on time (or early!)
 - Ask!
- Dress Code
 - Written versus unwritten code
 - Dress appropriately
 - On the plant floor versus in an office
 - Safety is important
 - Ask!

1st Day on the Job

- Take good notes
- Try to remember names and faces
- Ask for help when needed

First impressions are very important!

Job Timeline

Job Timeline

- Let's use a relative scale of 1 to 5
 - 1 is entry level, 5 is tech specialist
 - Different from company to company
- Annual reviews are common
- Probationary period is common
 - Typically 6 to 12 months long
 - Not a bad thing
 - Protects company
 - Protects you

Entry Level (Level 1)

- Entry level engineering position (1)
 - BSME with no co-op experience
 - Probably one year before promotion
 - Responsibilities:
 - Engineering drawing management
 - Component level specifications
 - Existing products

Entry Level (Level 2)

How to be
MITMechE

- Entry level engineering position (2)
 - MSME with no co-op experience
 - BSME with co-op experience
 - Probably two - five years before promotion
 - Responsibilities:
 - Engineering drawing management
 - Component level specifications
 - Future products, e.g., a R & D position
 - Get the magic “5 Years” experience

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Engineer (Level 3)

How to be
MITMechE

- Full fledged engineering position (3)
 - Ph.D. with little experience
 - MSME with co-op experience
 - BSME with several years experience
 - Probably eight or more years before promotion
 - Responsibilities:
 - System level specifications
 - Systems design
 - Systems integration
 - Future products, e.g., a R & D position
 - Lead a small team

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Advanced (Level 4)

How to be
MITMechE

- Advanced engineering position (4)
 - MSME probably a requirement
 - Ph.D. with work experience
 - Probably eight or more years before promotion
 - Most people probably retire from this level
 - Responsibilities:
 - Multiple systems level specifications
 - Systems integration
 - Future products, e.g., a R & D position
 - Has other engineers as direct reports

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Expert (Level 5)

How to be
MITMechE

- Advanced engineering position (5)
 - MSME probably a requirement
 - Ph.D. a plus
 - Probably retire from this level
 - Responsibilities:
 - Looks at "Big Picture"
 - Has other engineers as direct reports
 - More power with bigger budget

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Job Timeline - Summary

How to be
MITMechE

Level->	1	2	3	4	5
Degree Required	BSME	BSME	BSME	MSME	MSME
Degree a Plus		MSME	MSME	Ph.D.	Ph.D
Years There	0 - 2	2 - 5	8 - 15	8 - ?	?
Direct Reports?	no	no	maybe	yes	yes

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@ Work

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Employee Types

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- Union vs. Non-union
 - Union guidelines
 - Unions are typically for repetitive task jobs
- Salary vs. Hourly
 - Hourly employees fill out a time card
 - More is usually expected from salaried employees

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Crisis!

How to be
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- Overtime (extra hours of work)
 - Manufacturing situations do have emergencies
 - Design deadlines are a reality
 - Salary employees are sometimes expected to work overtime without compensation

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Performance

How to be
MITMechE

- Annual reviews
 - Plan job objectives (assignments) for upcoming year
 - Your input is important
 - Your bosses support is also important
 - Review previous year's performance
 - What you did vs. your objectives
 - Not always clear cut
 - "Grades" are usually not given!

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Performance

How to be
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- It is up to you to track your objectives
 - Keep a running list (bring it to your review)
 - Keep your supervisor informed
- Budget your time accordingly
 - Co-workers will ask for your time
 - Distractions do occur
- Budget your expenses
 - Everyone likes to save money
- Be visible
 - Your supervisor should know what you are doing
 - Your supervisor's supervisor should know too

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Human Interaction

How to be
MITMechE

- Interacting with humans is unavoidable
 - Co-workers
 - Supervisors
 - Employees
 - Suppliers
 - Customers
 - Consultants
 - Public relations

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Human Interaction

How to be
MITMechE

- Importance cannot be overstressed
- Help others (when you can)
- Be...
 - Honest
 - Courteous
 - Friendly
 - Etc.
- Remember the Golden Rule
 - Treat others as you want to be treated

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School vs. Work

Grades

- No grade report
 - Ask your supervisor “How am I doing?”
 - Get feedback from co-workers
- Mistakes usually equal learning
- Not as clear as 90 = A, 80 = B, etc.

Assignments (Objectives)

- Assignments are often open ended
 - No “right” answer
 - No solution set exists
- No homework...
 - ...except in crisis times!
- Due dates are more flexible
- There is no semester break
 - Your work will be waiting for you

GPA

How to be
MITMechE

- Does the value of a GPA matter on the job?
 - Yes
 - A good GPA will help get you an interview
 - It represents more than intelligence
 - Dependability, Reliability, Work ethic, etc.
 - Helps a graduate school application
 - No
 - People do not often ask about your GPA at work
 - Your hard work will eclipse a poor GPA
 - Emphasize your "specialty" classes and the strong GPA of them

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GPA – A Deeper Look

How to be
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- What's the difference?
 - Not much between an A and a B
 - A lot between an A and a D (or F)
 - A lot between all C's and one or two
- Can you explain a poor GPA?
 - A particularly tough semester (overload)
 - Sickness
 - Working while in school
- May divide GPA into overall & major

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Classroom Knowledge

How to be
MITMechE

- Will I use what I learned @ MIT on the job?
 - Most definitely...
 - Problem solving, responsibility, people skills
 - Probably...
 - Knowledge from your "specialty"
 - Probably not...
 - Performing quadruple integrations
- But wait, there is always grad school!
 - You will need everything you learned, plus some

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