

Name: _____

Period: _____

Doing Engineering: Introductory Note to Students and Parents/Guardians

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A useful perspective for this course is to view it as an investment in yourself to develop skills which can have both immediate and on-going benefits. You can use the skills and mental processes learned here to improve your college essay applications, decision making, interpersonal relations and creative endeavors.

You do not have to be interested in science or engineering to do well and reap on-going benefits from this course. You do have to be willing to learn and use your mind in different ways and do the work however.

Skills: The skills in this course include a variety of problem solving methods, the analysis of ambiguous situations, researching information, risk management, decision making, group interactions, mental estimations, critical analysis of information. Developing mental flexibility (from pragmatic analysis to intuitive understanding) is really a key to long term success.

Such skills can be learned only by doing them. Reading and studying alone is not sufficient. In this course, these skills are experienced by application of science that has been learned in the high school classes to projects. These are Newton's Laws (Water Rockets and Bridges) and Thermal Chemistry (Precision Heating).

There is always concern that science has been forgotten. There will be a review of the relevant concepts prior to the introduction of each project.

The math required for the course is primarily computational. However, accuracy in doing the calculations is critical since errors have consequences in the design.

The material for this course has been reviewed and enthusiastically commented upon by a number of practicing engineers.

Instructor/Availability: I will be at BHSEC on class days and will be available to meet with you upon request. Simply let me know after class or by e-mail. In the majority of cases, I can get you back on track in just a few minutes. If you feel you are getting lost or behind, see me early before the situation is dire. Most people wait too long. I check e-mails on the days I am not present.

I have spent the majority of my 25 year industrial career in the pharmaceutical industry in Chemical Engineering Process Research and Development. As an example, for those familiar with asthma, my group was responsible and developed the process for making the world's supply of Singulair. The project involved devising a process that began with making gram quantities and ended producing ton quantities.

I have also taught for 5 years in the Chemical Engineering Department at Polytechnic in Brooklyn (now part of NYU) and was on the full-time faculty, teaching Chemistry, at BHSEC for 5 years. I now have an adjunct position and am here in the Fall term.

Homework must be submitted on the due date. I will evaluate the work, record the submission evaluation and adjust my comments about my observations in the next class. This approach is different from numerically grading each assignment and is intended to focus on resolving problem areas. **Level of Effort** on the homework assignments has been an effective barometer for long term performance.

Grades: The assessments gain more weight as the course progresses. The individual responsibility of the projects increases with each project. It is important to keep working on a day by day, assignment to assignment basis. Individuals

progress and at their own rate. I really encourage students to see me individually since this is an efficient way to diagnose and underlying issues and suggest changes.

Some people struggle for a while and catch on dramatically toward the end. Others are satisfied with their initial level and coast, eventually being passed by. For example, one student struggled was below the class average for the first two exams and the first two projects, but continued to work and got the highest grade on the final and a B+. Another got an A- at mid-term, fell behind on the next 7 assessments, and finished with a C+.

What is most important at mid-term is the level of effort and the comments to improve. (Incidentally, the “midterm” grade is only 20% of the total). The final grades are on a comparison to previous years performances, not a forced distribution.

Text: The text is used as a primary teaching source. Since I wrote it, it is very focused on the key points and has a high information density compared to most books used in school. Assignments should be read more than once and studied to learn. Mark passages or write down questions you have during your individual study. It is crucial to come to class prepared. Concepts will be clarified in class discussion. Each student will receive their own copy and are encouraged to make notes in the book during the class. For many, this replaces the standard notebook. Bring the book with you for each class.

Commitment: Each year, some are enrolled in the course with reservation or because they have no other science options. In the same term, some really enjoy the class and others suffer. It is important to know which category you are in.

Circle one of the boxes below, have your parents add their signature and e-mail address and return on the next class day.

All in	In with concerns (List below)	Reluctantly in with no other options	Out
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Parent/Guardian Signature

Parent/Guardian e-mail