

CARNEGIE MELLON

CHEMICAL ENGINEERING

2013 – 2014

MASTERS STUDENT

HANDBOOK

TABLE OF CONTENTS

| | |
|--|-----------|
| 1. CHEMSA | 5 |
| 1A. MASTERS OFFICE SPACE | 5 |
| 2. ACADEMIC REQUIREMENTS | 5 |
| 2A. REGISTRATION REQUIREMENTS | 6 |
| 2A.1 Registering for the First Semester | 6 |
| 2B. ADVISORS | 6 |
| 2B.1 Project Advisor Selection | 6 |
| 2B.2 Role of the Advisor | 7 |
| 2B.3 Role of the Student | 7 |
| 2C. MAJOR PROGRAM REQUIREMENTS AND RULES OF TIMING | 7 |
| 2D. CHANGE OF ADVISOR OR DISMISSAL | 8 |
| 2E. COURSE AND QUALITY POINT (QPA) REQUIREMENTS | 8 |
| <i>Course and QPA Requirements for the MS Degree</i> | <i>10</i> |
| <i>Course and QPA Requirements for the MChE Degree</i> | <i>12</i> |
| <i>Course and QPA Requirements for the MChE-CPS degree</i> | <i>12</i> |
| <i>Course and QPA Requirements for the MS ChE/CPS Degree</i> | <i>13</i> |
| <i>Course and QPA Requirements for the MS CPS degree</i> | <i>14</i> |
| 2F. POLICY ON TRANSFER OF CREDIT FROM OTHER INSTITUTIONS | 14 |
| 2G. PROJECT REPORT | 14 |
| 2G.1 Project Approval | 15 |

| | | |
|-----------|---|-----------|
| 2H. | CHECKOUT PROCEDURE..... | 15 |
| 2I. | TRANSITIONS BETWEEN MS, PHD AND MChE PROGRAMS..... | 15 |
| 2I.1 | <i>Entering the PhD program after the MS or MChE.....</i> | 15 |
| 2I.2 | <i>Switching from MChE to MS.....</i> | 16 |
| 2J. | CHANGING ACADEMIC REQUIREMENTS AND POLICIES | 16 |
| 3. | PREPARATION OF THE REPORT | 17 |
| 3A. | FORMAT..... | 17 |
| 3B. | COPIES AND DEADLINE..... | 17 |
| 4. | FACILITIES & SERVICES..... | 18 |
| 4A. | HOURS | 18 |
| 4B. | SUPPLIES | 18 |
| 4C. | ADMINISTRATIVE ASSISTANTS | 18 |
| 4D. | EMERGENCIES..... | 18 |
| 4E. | KEYS | 18 |
| 4F. | COMPUTER SERVICES..... | 18 |
| 4G. | CHEMICAL ENGINEERING COMPUTER LABORATORIES..... | 19 |
| 4H. | WORK ORDERS | 20 |
| 4I. | TELEPHONES..... | 20 |
| 5. | SAFETY PROCEDURES | 20 |
| | <i>Particularly Hazardous Substances.....</i> | 22 |
| | <i>Working Alone</i> | 22 |
| | <i>Operating Machines and Equipment</i> | 22 |

| | |
|---|-----------|
| <i>Compressed Gas Cylinders</i> | 22 |
| <i>Chemical Waste Disposal</i> | 23 |
| 5A. SAFETY COMMITTEE | 24 |
| <i>Laboratory Guidelines</i> | 24 |
| <i>Emergency Information</i> | 25 |
| DEPARTMENT OF CHEMICAL ENGINEERING: SAFETY POLICY DOCUMENT | 25 |
| LABORATORY SAFETY GUIDELINES - DEPARTMENT OF CHEMICAL ENGINEERING | 26 |
| <i>Policies</i> | 26 |
| <i>Education</i> | 27 |
| <i>Inspection</i> | 28 |
| <i>Enforcement</i> | 28 |
| <i>Check-out</i> | 28 |
| <i>Laboratory Checkout Form</i> | 29 |
| 6. PURCHASING SUPPLIES | 30 |
| 7. LABORATORIES | 30 |
| 7A. PPG INDUSTRIES COLLOIDS, POLYMERS AND SURFACES LABORATORY | 30 |
| 7B. ROBERT R. ROTHFUS LABORATORY IN CHEMICAL ENGINEERING..... | 32 |
| 8. CONTACT INFORMATION | 32 |
| 9. CAMPUS FACILITIES | 33 |
| 9A. ATHLETIC FACILITIES | 33 |
| 9B. CLEANERS/LAUNDRY | 33 |
| 9C. CAMPUS DINING SERVICE | 34 |

| | | |
|------------|--|-----------|
| 9D. | HEALTH SERVICES | 34 |
| 9E. | LIBRARIES | 35 |
| 9F. | PARKING FACILITIES..... | 35 |
| 9G. | PUBLICATIONS..... | 35 |
| 9H. | STUDENT PHOTO I.D. | 35 |
| 10. | MISCELLANEOUS ISSUES | 35 |
| 10A. | POLICY ON "OUTSIDE" EMPLOYMENT | 35 |
| 10B. | POLICY ON THE AVAILABILITY OF SUMMER EMPLOYMENT | 36 |
| 10D. | CHEATING, PLAGIARISM, AND RESPONSIBLE CONDUCT OF RESEARCH..... | 36 |

1. CHEMSA

The Chemical Engineering Masters Student Association (CHEMSA) is an organization that represents all Masters Students in the department. All Students in a Masters Degree program are members of CHEMSA and the group elects officers to represent the organization. The officers will work with the Department Head and faculty to enhance the experience of students in the Masters programs.

1A. MASTERS OFFICE SPACE

All Masters Students have access to the Masters Office Suite on the A level of Doherty Hall (DH A103-A109). The space is accessed using your CMU ID; contact the ChE front office if you have problems accessing the space. The office suite includes lockers for students to store personal items, a kitchen area, a lounge to relax and socialize, work areas and a printing facility.

Locks for the lockers are assigned to new students. Please see Cindy Vicker for your lock. This should be returned to the ChE front office when you leave. Please do not pass your lock or the combination on to other students.

Please be conscientious in your use of the office suite. Keep the areas tidy and neat, respect other students and keep work areas quiet for study. If problems exist with the use or misuse of the space, please alert a CHEMSA officer or the Department staff.

2. ACADEMIC REQUIREMENTS

The Department of Chemical Engineering offers three basic graduate degrees: the Doctor of Philosophy (PhD), the Master of Science in Chemical Engineering (MS), and the Master of Chemical Engineering (MChE). The PhD degree requires original research and a thesis. The MS degree requires completion of an independent project and a project report that is approved by the advisor and co-signed by a second faculty member. The MChE degree is a coursework-only degree. Variations on these degrees are possible. For example, a degree program called MSCPS, which combines the basic requirements of the MS and courses in the CPS program, is an option.

2A. REGISTRATION REQUIREMENTS

2A.1 REGISTERING FOR THE FIRST SEMESTER

All incoming MS and MChE students are required to take **four** courses of nine units or more in their first semester. They must also register for the safety course. Thus MS students should register for a minimum of 39 units in the first semester (includes at least one core course) and a maximum of 51 units. This normal load comprises four courses and the safety course.

2B. ADVISORS

Professor Susana Steppan will be the *academic* advisor of all MS and MChE students. After the first semester, MS students will have a Project Advisor, but Professor Steppan will continue to provide academic advice to all masters students.

Each MS student must have one or more official Project Advisor(s) to graduate. The Department of Chemical Engineering is committed to making the best possible Advisor/Student match, to establish standards and timetables for equitable treatment of students, and to serve as an objective point of reference for both the student and the advisor when called upon to resolve disputes. Disputes between advisors and students should be brought to the attention of the Department Head in person when either party feels that reference to a third party is necessary. (See sections 2.C.4 and 2.D) Such notice will begin the process of resolution of the dispute. See also the CIT Grievance policy for additional information.

2B.1 PROJECT ADVISOR SELECTION

The Project Advisor selection process accounts for student preferences, for project availability, and for other general department requirements. During the first semester in residence, each new student must attend the presentations and project discussions organized by the department. New students should attend the ChEGSA Symposium to learn about related projects directed by the prospective advisors.

MS students will provide the Department Head with a preference for working on a project within three out of the six research groups and will specify a preference for an experimental, theoretical, or computational experience. These preferences must be sent to the Department Head by the end of final exams in the Fall Semester. The Department Head will match MS students with advisors by the beginning of the Spring Semester.

2B.2 ROLE OF THE ADVISOR

The role of the Project Advisor is complex and can vary from student to student, but at least two characteristics can be identified: mentor and evaluator. The Project Advisor is responsible for defining a project, for evaluating the student's progress, and for jointly working with the student toward a successful outcome.

The Advisor continually determines whether or not the student is making satisfactory progress, as mentioned in section 2.C.4.

2B.3 ROLE OF THE STUDENT

The Student, under the guidance of the Project Advisor, should make progress on the defined project and learn to communicate results to the Project Advisor. A goal of the project is to provide the Student with a deeper knowledge of one specialization of Chemical Engineering; therefore, the Student should learn to understand and apply the literature, terminology and techniques of that area. The project is independent, so the Student must develop a sense of their own progress and be able to discuss this progress and results with others working in the area.

2C. MAJOR PROGRAM REQUIREMENTS AND RULES OF TIMING

1. Students must complete coursework as outlined in section 2E. An average of B or better must be maintained.
2. MS students will complete a minimum of four full-time semesters. The first semester will focus on coursework and project selection. The following three semesters will focus on project completion, report preparation and completion of required coursework. Note that the summer is considered a semester. Students entering in the Fall semester should complete their degree by December (Fall – Spring – Summer – Fall) while Students entering in the Spring should complete their degree by May (Spring – Summer – Fall – Spring). Projects are designed for this duration.
3. Any substantial changes to the published program requirements must be approved by the MS Committee. Petitions to the Committee must be made in writing by the student. Send an e-mail to the Committee Chair describing the change being requested and the reasons. The Committee will consider changes and accept or reject the petition. If unsure, the student should check with the Committee or their Academic Advisor about the need for a petition.

4. In general, all students are subject to continual review of their progress by their Project Advisor who is responsible for determining whether each student's progress is satisfactory or not. If the Project Advisor determines at any time that the student is not making satisfactory progress and believes that the situation might lead to disassociation with the Student, the Advisor must provide written notification of such a determination to the Student and to the Department Head at the earliest appropriate moment. The letter should include:

- A statement of the shortcomings that led to a determination of unsatisfactory progress.
- Specification of what changes must occur to resume satisfactory progress.
- A time period (minimum one month) during which the student will be regarded as being on probation.

If the Advisor still regards the progress as unsatisfactory after the end of probation, the provisions for Change of Advisor or Dismissal (section 2D) are activated.

2D. CHANGE OF ADVISOR OR DISMISSAL

It is the responsibility of both Project Advisor and Student to seek accommodations of differences in good faith. Under extremely negative circumstances, either the Student or the Advisor may petition the Department Head to oversee the resolution of the problem. If none can be achieved, the Department Head will ordinarily direct the student to discussions with potential new advisors to see if a better match can be made. The student may seek a new Advisor, but the Department of Chemical Engineering is not obligated to find a new Advisor for the student. If a new match is found, the Student might be requested to document work already performed before making the switch; the timing and circumstances of the switch will be made on a case-by-case basis. If no new match is found, the Department Head will advise the student of his/her dismissal from the graduate program as of a specified date. These cases are rare.

Any student who feels unfairly treated may consult the CIT Grievance policy for further appeal.

2E. COURSE AND QUALITY POINT (QPA) REQUIREMENTS

Course work is an important part of all of the Masters programs. Graduate level courses at CMU are rigorous and intense and students should consider the depth and expectations as they choose courses. Both the MS and MChE have a common technical core of four courses. This core is required and students should prioritize these courses. All Masters degree programs have an elective component with requirements described below. Students should take advantage of the huge

selection of graduate and technical courses available at CMU and develop a curriculum that fits their needs and skills.

Some requirements of all courses taken:

- A student must receive a letter grade in a course to count that course toward meeting the numerical unit requirements for any degree. Courses issuing Pass/Fail grades will not count toward degree requirements.
- In the forthcoming sections about degree requirements, the basic rule is that the student must maintain a B average with some additional requirements concerning performance in graduate courses. Note that the B average applies to courses that the student intends, or must use, for satisfying degree requirements. Transcripts show all courses and grades and might not reflect perfectly whether the student is satisfying the QPA requirement in the courses required for the degree. A student can check with their Academic Advisor if there is any doubt about progress toward satisfying degree requirements and QPA requirements.
- If a course is repeated, the higher grade is used in the calculation of the QPA in order to determine whether the student has satisfied degree requirements.
- The College of Engineering now requires that student transcripts report withdrawals from courses after the withdrawal deadline. A student's transcript will record a **W** for any course where the student withdraws from the course after the official deadline to drop.
- **Definitions**

Graduate: Any course having a designation 06-Nxx, where $N \geq 6$ except for the TA course 06-799A and graduate seminar 06-800. These courses are not graded and therefore cannot be counted toward the unit requirement.

Masters Core: The goal is to provide the student with a deeper understanding of the fundamentals of chemical engineering with a focus on problem-solving and mathematical modeling through the use of advanced *computational* tools. The core curriculum is designed to enhance the skills of Bachelors-level chemical engineers so that they are able to model and solve more complex and realistic scenarios; this is achieved through a combination of course content and the significant use of advanced computational tools. The four (4) course core will be the same for *all* Masters Students. The courses are designed so that a student with a BS in chemical engineering has the

necessary background but will be challenged by more complex, nonlinear and coupled engineering problems and will learn how to effectively use advanced computational tools to solve these problems.

- 06-623: (12 units) *Mathematical Modeling of Chemical Engineering Processes*
- 06-625: (12 units) *Chemical and Reactive Systems*
- 06-663: (12 units) *Analysis and Modeling of Transport Phenomena*
- 06-665: (12 units) *Process Systems Modeling*

Outside Technical: A technical course having substantial engineering or scientific content offered by a different department and having a course number of the form xx-Mxx, where $M \geq 2$.

Breadth/Depth/Skill: Practically any course at the sophomore level or above (xx-Mxx where $M \geq 2$). This specification includes humanities, economics, statistics, business, management, communications as well as science and engineering. Physical Education courses do not qualify. Check with your Academic Advisor if there is doubt about the appropriateness of any course. This category is designed to give MChE students flexibility in directing their education to meet their career goals.

Safety: Our department is committed to safety awareness. As of the Fall 2006 semester, we require that all graduate students take the Chemical Engineering safety course, 06-608.

COURSE AND QPA REQUIREMENTS FOR THE MS DEGREE

Students seeking the M.S. degree must complete a minimum of 24 units of research work and 72 units of coursework having the following distribution:

- | | |
|---|--|
| 4 | Masters Core courses |
| 1 | Graduate (at least 9 units) |
| 1 | Graduate or Outside Technical (at least 9 units) |
| 1 | Safety Course (06-608) |

Students must also complete an independent project and submit a satisfactory project report. The report must be read and approved by two readers, at least one being a chemical engineering faculty member. For students interested in preparing and completing a MS thesis, this is possible. This must be discussed with the project advisor and approved (by the Project Advisor *and* the MS Committee) by the end of the second semester in the program. The additional reporting onerous of a thesis and the expectation of an original research contribution will result in additional time for completion of the degree, most probably

an additional semester. MS Thesis does not require a committee, but must be signed by the research advisor and the Department Head in the case of the MS Thesis. There are no minimum or maximum page limits for the PhD or MS Thesis. Specific details of presentation should be consistent with those recommended by the American Chemical Society (ACS) in The ACS Style Guide: A Manual for Authors and Editors (Section III). The Guide is available from the department. It contains complete guidelines for tables, figures, references, etc. Follow the rules about thesis preparation standards at http://www.cit.cmu.edu/current_students/graduates/thesis_dissertation_policies.html.

Notes:

- An average grade of "B" and no grade lower than "C" are required for the mandatory units of course work (exclusive of research), with no more than one unbalanced "C" among the 48 units of core courses.
- "Satisfactory progress" in course work means that the normal full-time course load is carried, and a "B" average or better is maintained each semester.
- The graduate seminar cannot be counted toward these unit requirements.
- When the course units do not sum to 48 in any semester, MS students should register for sufficient 06-700 MS research units to make the total 48.
- This distribution of courses might not fulfill the minimum 72 units of course work if the student elects to take some 9-unit courses. MS students should consult with their Project Advisor to decide on the best way to fulfill the 72-unit requirement.
- A student must receive a letter grade in a course to count that course toward meeting the numerical unit requirements for any degree. Courses issuing Pass/Fail grades will not count to degree requirements.
- The MS program is full time until all degree requirements are satisfied; students must register for at least 36 units per semester. (The 96 unit requirement is a minimum number of units. Students always have research credits well beyond the formal 24 credits allocated for research.) The only exception to this rule is the following: Students who have been in full time status for a minimum of four semesters, counting the summer as a semester, and who have completed the Project Report with all necessary signatures before the beginning of the next semester, may

petition the MS Committee for permission to take a reduced course load in their final semester in order to satisfy any remaining course requirements. Note, however, that the department is required to report to the Office of International Education when an international student has completed all requirements for a degree.

COURSE AND QPA REQUIREMENTS FOR THE MChE DEGREE

Students electing the coursework option must complete 96 units of coursework having the following distribution:

- 4 Masters Core courses
- 1 Graduate or Outside Technical (at least 9 units)
- X Breadth/Depth/Skill courses totaling 36 units
- 1 Safety (06-608)

- The department will accept up to 24 units of course credit from other schools. Only one course from another school can replace a Core course. The MS Committee must approve all transferred credits. These courses must not have been counted toward any of the student's prior degrees.
- Graduate seminar cannot be counted toward unit requirements.
- Students in the MChE program must finish with an overall "B" average with no more than one unbalanced "C" among the Masters core courses. No grade lower than "C" is acceptable.
- A student must receive a letter grade in a course to count that course toward meeting the numerical unit requirements for any degree. Courses issuing Pass/Fail grades will not count to degree requirements.
- There is no minimum course requirement per semester; this degree can be a full time or part time goal. If part time, the degree requirements must be satisfied within five years from the end of the semester during which the first course that counts toward the degree is completed.

COURSE AND QPA REQUIREMENTS FOR THE MChE-CPS DEGREE

The Department of Chemical Engineering offers a special degree combining coursework experience in the core of Chemical Engineering and coursework in the Colloids, Polymers and Surfaces

program. Students electing this option must complete 105 units including the following minimum coursework:

- 4 Masters Core courses
- 1 06-705 Advanced Chemical Engineering Thermodynamics
- 1 06-607 Phys Chem. Colloids and Surfaces
- 1 06-609 Phys Chem. Macromolecules
- 1 39-801 Colloids and Surfaces Laboratory
- 1 39-802 Laboratory in Polymers
- 1 06-608 Safety course

Students in the MChE - CPS program must finish with an overall “B” average with no more than one unbalanced “C” among the core graduate courses. No grade lower than “C” is acceptable.

COURSE AND QPA REQUIREMENTS FOR THE MS CHE/CPS DEGREE

Students seeking the MS ChE/CPS degree must complete the following courses:

- 4 Masters Core courses
- 1 06-705 Advanced Chemical Engineering Thermodynamics
- 1 06-607 Phys Chem. Colloids and Surfaces
- 1 06-609 Phys Chem. Macromolecules
- 1 39-801 Colloids and Surfaces Laboratory
- 1 39-802 Laboratory in Polymers
- 1 06-608 Safety Course

Requirements for QPA and the independent project are the same as those for the MS in Chemical Engineering previously listed.

Students should contact Professor Annette Jacobson, Director of the CPS Program for advising with regard to CPS courses.

COURSE AND QPA REQUIREMENTS FOR THE MS CPS DEGREE

The Carnegie Institute of Technology and Mellon College of Science jointly offer an interdisciplinary MS degree in the Colloids, Polymers and Surfaces. Students electing this option must complete 96 units including the following minimum coursework:

- 1 06-705 Advanced Chemical Engineering Thermodynamics
- or 09-611 Chemical Thermodynamics (mini)/ 09-603 Math Analysis for Chemistry (mini)
- 1 06-607 Phys Chem. Colloids and Surfaces
- 1 06-609 Phys Chem. Macromolecules
- 1 39-801 Colloids and Surfaces Laboratory
- 1 39-802 Laboratory in Polymers
- 1 06-608 Safety course, recommended

Students may elect to do an independent project (and submit a satisfactory written report) and/or other advanced technical electives with approval of CPS Program Director to complete the 96 unit minimum requirement. Students in this program are advised by Professor Annette Jacobson, Director of the CPS Program. Students in the MS CPS program must finish with an overall “B” average. No grade lower than “C” is acceptable.

2F. POLICY ON TRANSFER OF CREDIT FROM OTHER INSTITUTIONS

Up to 24 units (two courses) of graduate work completed at other universities, with a grade point average of 3.0 or better, may be transferred from another academic institution provided that such course work is part of the graduate program leading to the degree sought. Such transfer credit is not granted prior to admission to the graduate program and must be approved by the department after the student has satisfactorily completed at least 36 units of graduate courses at Carnegie Mellon. These courses must not have been counted toward any other prior degrees. The Department Head and College of Engineering administration must approve the transfer. Students should complete a Transfer Credit Request form and provide all required attachments for their request to be considered. The CIT Transfer policies and the Transfer Credit Request form can be viewed here: http://www.cit.cmu.edu/current_students/graduates/policies.html.

2G. PROJECT REPORT

The independent project is an important part of the MS experience and is a requirement for the MS degree. The final step to graduation is acceptance of the Project Report. Since it is an official record of work and achievements, there are special guidelines for its preparation. These issues are described in Section 4.

2G.1 PROJECT APPROVAL

The approval of the Project Report mainly falls on the Advisor. The preparation, evaluation and completion of the report should be performed by the Student with input and advice from the Advisor. The report will be approved by two people with credentials appropriate to evaluate the content; at least one of these must be a faculty member in the Department of Chemical Engineering. The Project Advisor must approve and sign the report.

2H. CHECKOUT PROCEDURE

There is a packet of information regarding checkout procedures and thesis information that each student must obtain from Cindy before the final thesis or project submission. One of the most important forms is the lab safety checkout. The aim of the checkout is to make sure that waste has been disposed and chemicals are properly labeled and stored. See Section 5 and the **Department of Chemical Engineering Safety Policy** manual for the safety form and details.

2I. TRANSITIONS BETWEEN MS, PHD AND MChE PROGRAMS

2I.1 ENTERING THE PHD PROGRAM AFTER THE MS OR MChE

A student who is in the MS or MChE program, and who has his or her own guaranteed support for a minimum of four years from the proposed date of admission to the PhD program, may apply at any time for admission into the PhD program by sending a written request to the current graduate recruiter, who will admit the student or decline admission. The Department Head typically will assign the student to an advisor reflecting the preferences of the student and the interest of the advisor.

A student who is in the MS or MChE program, and who is requesting support for work toward the PhD, must apply for admission to the PhD program according to the regular recruitment policy. There are two deadlines for application, October 15 and January 15 of each year. The Department Head will make the final decision about admission in the case of students applying by the October 15 deadline; the decision will be based on the recommendation of the graduate recruiter and the availability of funding for the project. In this case, the student can enter the PhD program as soon as the MS coursework and thesis have been completed. In the case where the student has filed by the January 15 deadline, the graduate recruiter will make the decision about admission by the 15th of April. In this case, however, the student should expect to enter the PhD program and begin to receive support in September of the same year or after the completion of the MS degree, whichever is later.

In all cases, the student does not have to re-take the GRE or any language test but must complete a new application form and request that three CMU faculty provide recommendations. These documents, along with a letter of transmittal, must be sent to the graduate recruiter for that year. Acceptance into the program will depend on both qualifications and availability of financial support; the student will be admitted or not on those bases. Just as with newly entering students, there will be no guarantee of a particular advisor. The Department Head will assign the student to an advisor.

Two important points:

1. The student must complete the MS or MChE as a full time student before entering the PhD program. Note that the formal 96 unit requirement is a minimum in all cases. Research units reflect the student's activity in pursuit of the MS or PhD; it is typical that a student's transcript will record many more research units than the 24 required for the MS degree, for example.
2. Students must be officially accepted into the doctoral program in order to take the Qualifying Exam in August of each year.

2I.2 SWITCHING FROM MChE TO MS

A student in the MChE program who desires to be assigned to a project can petition the Chair of the Masters Committee to switch to the MS program, but the change is not automatic. The switch depends both on the approval of the Chair of the Masters Committee and the availability of a project. If the Chair of the Masters Committee approves and a project is available, the Department Head will assign the student to an Advisor. The student should realize that this switch will increase the time to completion of the degree from 9 months to 15 months or more. Since the department normally does not provide financial support for Masters candidates, the student must have his/her own support for the extended period.

2J. CHANGING ACADEMIC REQUIREMENTS AND POLICIES

In the relentless pursuit of excellence, the Department changes its requirements from time to time. The Chemical Engineering Department uses a "grandfather" policy with regard to these changes; that is, every student has the right to graduate under the policies in effect at the time of entry into the graduate program or to graduate under the policy in force at the time of receiving the degree.

3. PREPARATION OF THE REPORT

3A. FORMAT

The report should be well written and organized; specific details of presentation should be consistent with those recommended by the American Chemical Society (ACS) in *The ACS Style Guide: A Manual for Authors and Editors*. The Guide is available from the department. The report should summarize the motivation, approach, results, and conclusions of the project work. Forty (40) pages is the upper limit for the project report including the body, references, appendices, figures and tables. The document must be typed in 12-point font with no less than one-inch margins and no more than four lines per inch.

The front page of the report should include the title, student name and spaces for signatures. This page does not need to be counted in the 40 page limit.

3B. COPIES AND DEADLINE

The Project Report will be in electronic format and all formatting and preparation should be performed with this in mind. A single document should be turned in as a pdf. Students should verify that all figures, equations and formatting are correct in the final document. The naming convention of the document should be: `Last name_First name_Semester-year.pdf`

The Semester and year are those of graduation. For example, for a student completing their degree in December of 2013: `steppan_susana_F13.pdf` while for a student completing their degree in May of 2015: `walker_lynn_S15.pdf`

Instructions for the submission of these documents will be provided and project reports will be archived on departmental servers. Students should be sure to provide their project advisor with all data, analysis and files used to generate the report.

Project reports are due by 5pm on the last day of classes of the semester of graduation. If all of the paperwork is not turned in on time, the student must register for the following semester. All students must be registered for at least five units the semester of graduation.

4. FACILITIES & SERVICES

4A. HOURS

The Department office in Doherty Hall 1107 is open 8:30-12:00, 1:00-5:00, Monday through Friday.

4B. SUPPLIES

Office supplies are not provided for your use, but the Bookstore carries a wide selection and is conveniently located in the University Center.

4C. ADMINISTRATIVE ASSISTANTS

No administrative services are provided for graduate students.

4D. EMERGENCIES

The University Security Office is equipped to deal with all emergencies or to obtain the aid needed. It is open 24 hours a day. Call 8-2323.

4E. KEYS

Most spaces are accessed by card key and should not require keys. However, if you are assigned a key for some space, these must be signed out following department procedures and returned before graduation. Do not under any circumstances pass on keys to another student or lend them to anyone. You are responsible for the keys issued to you and a record is kept in your file until all keys are returned.

4F. COMPUTER SERVICES

Each student is assigned an Andrew account automatically from the university's computing services. Additionally, each student is assigned an account in Chemical Engineering.

Chemical Engineering Computer Services maintains the Computer Laboratories and other Department computer resources including, but not limited to, file, print, and web servers. End-user

support is available for all Chemical Engineering faculty, researchers, staff, and students. If you have any questions about computing here in the Department please visit the Chemical Engineering Computing webpage at <http://www.cheme.cmu.edu/facilities/computing/>, or contact the computing staff. All help requests should be sent to the helpdesk email accounts:

cc66.general@gmail.com,

cc66.software@gmail.com,

cc66.hardware@gmail.com.

The Chemical Engineering Computer Consultants are available weekdays from 8:00am to 6:00pm. Please call email the helpdesk, cc66.general@gmail.com, or stop by DH A225. If you have an urgent request or cannot access email, you may contact the computing office by telephone at extension 8-7993. In emergency situations, the Director of computing is available 24/7 at extension 8-5437

Additional information regarding computing in the department is available at:

<http://www.cheme.cmu.edu/facilities/computing>

4G. CHEMICAL ENGINEERING COMPUTER LABORATORIES

The Main Computer Laboratory is located in DH A226 and may be used by all faculty, researchers, staff, and students in the Chemical Engineering Department. Undergraduate students who have declared a major in Chemical Engineering are the primary users. All users must abide by the general usage policies posted inside the Computer Laboratory and on the web site given below.

The Computer Laboratory is a two-room collaborative work space. The main room consists of 22 PCs with one available for instructional purposes. Basic multimedia services are available. The smaller room is equipped with 8 PCs, a black and white printer, color printer, and color scanner.

Additionally, six public access computers, a black/white printer, and a color printer are available in the undergrad lounge (DH2103). The computers in DH2103 should be reserved for undergrad use, or grad use while assisting in undergraduate education.

In order to use any of the computer labs you must have a valid account in the Chemical Engineering Department. Chemical Engineering faculty and staff may reserve either part of the Computer Laboratory. Please see the reservation policy posted on the door and on the web site given below. More specific information can be found at <http://www.cheme.cmu.edu/facilities/computing>

4H. WORK ORDERS

Facility Maintenance requests for Doherty Hall are handled by Julie Tilton, the Chemical Engineering Facility Coordinator. Please contact Julie by email (jrtilton@andrew.cmu.edu) or phone x8-9537 if you have a work request. If there is an emergency repair after hours, call the Service Response Center directly at 8-2910 or Security at 8-2323. Emergencies include any loss of utilities, leaks and elevator entrapments. The Service Response center will accept emergency requests from students. All other requests must be handled through the facility coordinator.

If you are cleaning out offices or lab space and have larger items, such as furniture, microwaves, or boxes of materials to discard, you must contact the departmental contact in advance and provide an Oracle string to be charged for these special trash pick-up services. Large items will not be picked up during the regular cleaning schedule.

4I. TELEPHONES

Personal telephone calls should not be made from departmental phones

5. SAFETY PROCEDURES

The Chemical Engineering Department takes safety practices very seriously. The safety practices concerning the handling of laboratory glassware and chemicals, the use of safety glasses and respiratory and fire hazards as set forth in the American Chemical Society publication, "Safety in Academic Chemistry Laboratories," are applicable to all Chemical Engineering laboratories and a copy is available at the door of each laboratory. The department, as a reference and reminder for safety practices, has designed a safety manual called the *Department of Chemical Engineering Safety Policy, which is included in the following section*. Included at the back of the manual is a Safe Laboratory checkout list. Students are required to have a safety inspection prior to graduation. A complete and authorized safety checkout list must be turned in to Shannon along with other graduation papers before the student is considered to have graduated.

What follows is a brief summary of Safety Practices and Procedures.

Upon entering a laboratory, students should familiarize themselves with the safety features available in case of emergency:

1. The location of fire extinguishers, their type and method of operation and fire escape routes.
2. The location of emergency eyewash fountains and safety showers.
3. The location of the nearest telephone. To report a fire or obtain help in other emergencies call Security, ext. 8-2323.

If you feel that additional safety equipment is needed, or if the existing equipment is not working properly, talk to a member of the safety committee (Sec. 7A) about acquisition or replacement of the safety items.

The following safe practices should be observed in the laboratory:

1. Wear proper eye protection. **Safety glasses must be worn in laboratories at all times.** If a faculty member identifies a student in violation of this policy, a warning will be issued and the student will be barred from the laboratory for one week. Repeated violations can result in dismissal from the program.
2. Keep all chemicals away from heat and sunlight.
3. Keep all chemicals and materials out of sinks and drain lines. Disposal of chemicals through sinks can only be authorized by Environmental Health and Safety (EH&S). Check chemical waste disposal manual for listing of authorized chemicals.
4. Good housekeeping is essential for safety and efficiency.
5. Label all bottles and containers. Review the Chemical Hygiene Plan to determine what labeling is required for bottles and chemicals. The plan can be found online at <http://www.cmu.edu/ehs/chemical/index.html>.

PARTICULARLY HAZARDOUS SUBSTANCES

There are some chemicals which are considered particularly hazardous due to their reactivity, toxicity, reproductive effects or carcinogen potential. The list of these Particularly Hazardous Substances (PHS) can be found here <http://www.cmu.edu/ehs/chemical/cmuphstable.pdf>. Handling of PHSs requires filling out special forms before use, which is available at the EHS website <http://www.cmu.edu/ehs/chemical/forms.html>. Also, ordering PHS requires purchase orders; PHS can never be ordered on P-cards.

WORKING ALONE

Working in a laboratory alone is hazardous. Working alone outside the hours of 7am. to 10pm, Monday through Friday is not permitted unless you have completed a “Laboratory Work Alone Exemption Form” found at this link: <http://www.cmu.edu/ehs/chemical/forms.html>. It is not suggested that you work alone at any time on hazardous processes, and you **must** either arrange with an associate to check with you frequently or arrange a periodic check by Security, (ext. 8-2323). Not only will this help in dealing with emergency experimental situations, it will also help discourage potential assailants.

OPERATING MACHINES AND EQUIPMENT

You must receive instruction in operating machinery or equipment by the P.I. or the senior lab technician/researcher. Do not use equipment without the permission of the person responsible for the laboratory. When working around moving machinery, secure hair and loose clothing (ties, sleeves, etc.)

COMPRESSED GAS CYLINDERS

Except when gas cylinders are being moved, they **must** be securely fastened with an approved strap or chain to prevent falling. If a cylinder should fall over and the valve breaks, **the cylinder can become a dangerous, jet-propelled projectile**. A leaking gas cylinder in an enclosed space is a suffocation hazard.

- Cylinders of compressed gas **must not** be placed near sources of heat.
- Do not use pipe wrenches on cylinder valves.
- All valves should be closed tightly on cylinders that are not being used.

If you require gas cylinders for your research, they can be ordered through the department business office (see Gas Cylinders, Section 8H). Cylinders are normally delivered to your laboratory. If not, you will be notified and they may be delivered to an area on the Wean Hall loading dock (get key to freight elevator from Larry Hayhurst). In order to transport these cylinders back to your laboratory, use the special carts designed for this purpose. These carts are kept in the machine shop and can be obtained by asking any of the shop personnel. Fasten the cylinder in the cart with the chain. While actually moving the cylinders or while they are stored in your laboratory, make sure that the cylinder cap that protects the valve is firmly secured in place. NEVER move a cylinder with a pressure regulator installed on it. Remove the regulator and put the safety cap on the cylinder before releasing it from its safety mooring. All valves should be closed tightly on cylinders that are not being used.

CHEMICAL WASTE DISPOSAL

All chemicals must be stored in the laboratories until removed. The Environmental Health and Safety (EH&S) group at CMU offers **CURBSIDE PICKUP OR TRANSFER**. This is an extremely convenient and cheerful service that makes it easy to dispose of both chemical waste and chemicals still in the jar but no longer being used. The department requires the use of this service to remove chemical waste from the laboratory. The department strongly recommends that when a chemical is no longer going to be used, that it be removed from the lab with this service rather than storing it indefinitely. To access the service, please go to <http://www.cmu.edu/ehs/chemical/waste/index.html>. Likewise, if you need to have chemicals moved from one lab to another, this can be arranged. You will need to label all separate items. The tags and wires are available in the graduate student lounge on the A level. Advice on handling of waste, containers, etc. can be obtained from EH&S at the above website or by dialing extension 8-8182. When you call, please clearly state your name, department, and the nature of the problem; this will expedite handling of your question.

A special problem occurring frequently in our department is that of unidentified chemicals in unmarked containers. If you find such a situation in your laboratory, it should be corrected immediately.

Graduate students are responsible for disposal or proper storage of all chemicals they have been using. Each student must complete a checkout form signed by the advisor before leaving or graduating. If the advisor is unavailable for an extended time, a member of the Safety Committee

can also perform the inspection. See the *Department of Chemical Engineering Safety Policy* manual for details.

5A. SAFETY COMMITTEE

MEMBERS: Bob Tilton, Kris Dahl and Paul Sides.

The Safety Committee serves only an advisory role. As such, the members rely heavily on the comments, questions and concerns of individuals within the department. It should be clearly understood that the individuals involved in research are primarily responsible for the existence of safety equipment in research laboratories and that all activities associated with research projects are safely conducted.

LABORATORY GUIDELINES

Each faculty member involved in research appoints a graduate student as a research group representative. The representative helps to inform the committee about existing situations in each of the faculty member's laboratories. The representative should ensure that each laboratory under his/her jurisdiction meets the following guidelines.

- Each area must have at least one recently inspected (less than 12 months) fire extinguisher. Check the inspection record label on each extinguisher.
- All gas cylinders **must** be secured in a stable manner.
- Emergency numbers where the lab occupants and the lab supervisor can be reached outside working hours should be posted inside the laboratory.
- Each area must have a first aid kit.
- Areas in which flammable gases are used must have posted "No Smoking" and "Flammable Gas" signs on all doors and walls near the apparatus. There should be no smoking in any lab or area adjacent to a lab regardless of the type of materials present.
- Evacuation directions must be posted near each door.
- Each laboratory will make the American Chemical Society publication, *Safety in Academic Chemical Laboratories* available to all workers in the

laboratory, as well as CMU's *Chemical Hygiene Plan* and *Guidelines for Hazardous Waste Disposal*.

- Each phone should be labeled the campus emergency number ext. 8-2323 (police, fire, ambulance).
- The Safety Committee will provide each group representative with an inspection checklist; the completed lists are reviewed and then kept on file. Inspections must be performed monthly.

EMERGENCY INFORMATION

Sometimes experimental equipment needs to run unattended. If an emergency situation develops in a laboratory while the laboratory personnel are not present, a method of contacting the parties involved is required. The telephone numbers of the laboratory supervisor and personnel, plus any other pertinent information regarding the operation and shutdown of equipment, **must** be posted inside the laboratory. This will assist campus security, faculty and students in dealing with any situation.

Equipment for which failures can result in a fire, spill of material, explosion, or flood must be attended at all times or provision made for periodic inspections. No equipment should be left unchecked for longer than 8 hours.

DEPARTMENT OF CHEMICAL ENGINEERING: SAFETY POLICY DOCUMENT

The Department of Chemical Engineering fully endorses Carnegie Mellon University's Chemical Hygiene Plan (CHP) as the document that defines its laboratory safety policy. This policy is to be adhered to by all members of the faculty and staff and by graduate and undergraduate students. The plan can be found at <http://www.cmu.edu/ehs/chemical/index.html>.

The issues that are of particular importance to the chemical engineering laboratories and that must be emphasized are:

1. The use of protective eyewear at all times in the laboratories. Repeated violations of this most basic precaution are grounds for dismissal.
2. The maintenance of a current set of MSDS sheets for all chemicals being used or stored in a laboratory.

3. The maintenance of a set of written Standard Operating Procedures (SOP) for all operations that are performed on a routine basis.
4. The maintenance of a set of standard CMU data sheets for all Particularly Hazardous Substances (PHS) that are being used or stored in a laboratory. For guidance see <http://www.cmu.edu/ehs/chemical/program-management/phs.html>.
5. Prior to graduation all students will complete a laboratory checkout form documenting the fact that they have disposed of or stored all chemicals used during their research, repaired or documented all equipment problems, and made adequate copies of all laboratory notebooks and digitally stored data. If a student used other labs, such as the CPS Lab, s/he must fill out a form for each additional lab.

Emergency and Information Contacts

1. Police / Emergency Services - **8-2323**
2. Environmental Health & Safety (Chemicals) - **8-8182**
3. Environmental Health & Safety (Radiation) - **8-7502**
4. Environmental Health & Safety Web page - <http://www.cmu.edu/ehs/>

LABORATORY SAFETY GUIDELINES - DEPARTMENT OF CHEMICAL ENGINEERING

The Department of Chemical Engineering laboratories operate under the safety guidelines and policies described in Carnegie Mellon University's Chemical Hygiene Plan (CHP, a link to the CHP can be found at <http://www.cmu.edu/ehs/chemical/index.html>). In addition, the following guidelines describe the policies of the department and the expectations of all students, faculty, and staff working in laboratory environments.

POLICIES

1. **Eye protection** shall be worn at all times by persons actively performing experiments in the laboratories or working in the laboratories in spaces that are in line-of-sight with experimental work areas. Individuals working at desks that are protected by partitions from the experimental areas of the lab need not wear safety glasses although they are encouraged to do so and must have safety glasses available.

Individuals working with lasers shall wear laser safety goggles appropriate for that laser frequency and power.

2. **Materials safety data sheets (MSDS)** must be maintained for all chemicals being used or stored in a laboratory. These should be located somewhere near the entrance to the lab and should be clearly marked as MSDS in case emergency personnel need them. Any person using a chemical is responsible for reading the MSDS and being aware of the safety issues associated with the use of that substance.
3. **Food and drink** shall not be stored, prepared, or consumed in the laboratories. The only exceptions to this are for persons working at desks that are separated from laboratory work areas by partitions.
4. **Emergency contact phone numbers** of all personnel working in the lab and of the professor or staff member with primary responsibility for the lab shall be posted on the door to each lab.
5. **New experiments or new apparatus** being built in the labs will be brought to the attention of the safety committee, who will review the safety issues and the SOP (see next item) associated with that experiment.
6. **Standard operating procedures (SOP)** shall be maintained for all procedures in the laboratory that are performed on a regular basis. These should describe the procedure and the potential hazards associated with that procedure. All personnel performing that procedure are responsible for having read the SOP.
7. **Shutdown procedures** for all apparatus normally left running will be written and posted on the apparatus for emergency personnel.

EDUCATION

The department will offer a safety-training course (06-608, Safety Issues in Science and Engineering Practice) during each academic year. All graduate students, postdocs, and all undergraduates participating in undergraduate experimental research projects are expected to take or audit this course. In addition, they are expected to be aware of the contents of the Chemical Hygiene Plan pertinent to their work and to be aware of the contents of the MSDS sheets for chemicals that they are using. Undergraduates or others who have not taken or audited 06-608 will need to attend, at a minimum, the Laboratory Safety and Hazardous Waste Generation training session by Environmental Health and Safety (for information see <http://www.cmu.edu/ehs/chemical/training.html>); the only exception is for lab students who have successfully

completed Carnegie Mellon Course 09-221, Laboratory 1: Introduction to Chemical Analysis. It has been determined that the safety and environmental elements of this course meet the OSHA requirements.

INSPECTION

The departmental safety committee will conduct full inspections of all the laboratories once each year in order to ensure that equipment is being properly maintained and that safe procedures are in practice. In addition there will be several impromptu safety inspections throughout the year in which Environmental Health and Safety personnel will be asked to visit some of the labs in order to evaluate safety practices.

ENFORCEMENT

Personnel working in the laboratories who are found to be using unsafe practices will be reprimanded by a letter from the department head (copied to their advisor) and prohibited from working in the labs for a period of one week. Repeated violations may result in immediate dismissal from the graduate program.

CHECK-OUT

Personnel leaving the department will be responsible for disposal or storage of all chemicals that they have been using. In addition they are expected to make sure that all instrumentation is left in working order and that the laboratory areas are left orderly. Copies of lab notebooks and electronic copies of all data should be made and given to the advisor in a form that is useful. In the case of graduate students, the following checkout form must be completed and signed by the advisor before the department head signs the thesis. In the case of undergraduates, grades for research will not be assigned until the lab checkout has been completed.

Safety Committee: Kris Dahl
Paul Sides
Bob Tilton

LABORATORY CHECKOUT FORM

Department of Chemical Engineering Laboratory Checkout Form

Student Name: _____
Date of Graduation: _____

Student and Advisor: Please identify laboratory sites used and check as appropriate, then fill in the requested information and obtain signature(s). Where not relevant, indicate N/A.

_____ Advisor's Lab Space
_____ CPS Lab
_____ Rothfus Lab
_____ Other Lab(s) _____

Laboratory Site #1 (Bldg/Rm) _____

Date of exit inspection: _____

_____ Lab is clean and ready for use by the next person
_____ Office is clean and ready for use by the next person
_____ The computer is ready for the next person; administrator or other passwords are available
_____ Chemicals are stored or disposed properly
_____ Equipment is properly organized and its condition is known
_____ Data and notebooks are properly stored.

Please sign below ONLY if all appropriate inspection points are acceptable. All chemicals must be labeled, properly stored, or disposed.

_____ Date
Lab Supervisor/Advisor

If lab is NOT acceptable please write actions to be taken and date of re-inspection:

Actions:

Date of re-inspection:

6. PURCHASING SUPPLIES

The purchasing of all supplies by members of the Chemical Engineering department is coordinated through the department. All purchases must be properly recorded in the University's purchasing system. Please contact your Advisor for approval to make purchases for your project. A PhD student in the group will advise on the practical issues and procedures for making these purchases.

7. LABORATORIES

7A. PPG INDUSTRIES COLLOIDS, POLYMERS AND SURFACES LABORATORY

The Colloids, Polymers and Surfaces (CPS) Program is an interdisciplinary effort of the Chemical Engineering, Chemistry and Physics departments under the direction of Professor Annette Jacobson. The PPG Industries Colloids, Polymers and Surfaces Laboratory operated under this program contains equipment for measuring numerous physical and chemical properties that are important in the characterization of fine particles, macromolecules and interfaces. The primary function of the lab (located in DH 3200/3207) is educational, providing a full year of laboratory instruction and experience at the graduate level, as well as a year of training for undergraduates enrolled in the CPS minor. In addition, training in techniques of polymer characterization provided by the PPG CPS Lab is required of undergraduate Chemistry majors pursuing the polymer option and of all Chemistry graduate students who plan to do a thesis in the polymers area. Priority in the use of the Lab is therefore given to these educational functions. However, the instruments in the laboratory are available to graduate students and faculty for research. If your thesis entails experimentation of the sort that the PPG CPS Lab affords, your advisor will send you to see Professor Annette Jacobson, Mrs. Rosemary Frollini, Associate Director and Lab Manager or Professor Susana Stepan, Assistant Director and Assistant Lab Manager, for help in gaining access to the available equipment and in obtaining whatever instruction you may require.

Access to the 3200 lab is by card reader only. Students who have completed the required training can request access by contacting Rosemary Frollini.

PPG Industries CPS Laboratory

User Regulations

1. All instrument users must be trained by authorized personnel. Students are not permitted to train others in their research group without permission of CPS staff.
2. You must bring your own glassware, chemicals and supplies, including gloves and paper towels. Please clean up your workspace before you leave the lab.
3. Do not leave anything behind in the lab or it will be discarded. Please remove whatever you brought when you leave. The exception is chemical waste which must remain where it is generated. Please bring an appropriately labeled container. A completed waste tag must be attached, listing contents and responsible party.
4. MSDS sheets must be brought to the lab for each chemical that you are using.

All containers and samples brought into the lab must be labeled with chemical contents and your full name. Anything not in compliance will be removed.

5. Instrument log books must be signed before using the instrument and after completing use.
6. Some instruments have Yahoo calendars for scheduling use time. Please check for availability and schedule your usage. If you are not on the instrument's schedule, you may be asked to leave by CPS staff if another student has signed up. You may schedule up to 48 consecutive hours on an instrument. At the end of your scheduled time, if no one else has reserved the instrument, you may schedule an additional 48 hours.
7. Data should not be stored on CPS Lab computers longer than a few weeks. Make arrangements to retrieve your data ASAP. All data will be purged by CPS staff at the end of each semester.
8. **No instrument, equipment, or supplies may be removed from the CPS labs.**
9. No instrument may be left running unattended. Plan to remain in the lab for the duration of your work. Exceptions are only by permission of the CPS staff. Instruments left unattended will be shut down by CPS staff.
10. The lab is available strictly for use of the instruments there -- other lab work should be done in the space allotted by your advisor.

11. Misuse and/or damage to an instrument will result in loss of privilege to use the CPS Labs. Your advisor will be responsible for the cost of the repair.
12. In scheduling use of the lab equipment, use for the CPS Lab courses is given priority. Researchers are not permitted to be in the lab during scheduled CPS classes.
13. Safety glasses must be worn at all times while in the lab. No opened-toed shoes are permitted.
14. Absolutely, no food or drink is permitted in the lab.

Failure to abide by the rules will result in loss of access to the lab and its equipment.

7B. ROBERT R. ROTHFUS LABORATORY IN CHEMICAL ENGINEERING

The undergraduate lab maintains a wide array of analytic equipment, instrumentation, and laboratory hardware such as fittings, tubing, and other sundry parts. These may be used or borrowed by PhD students in urgent cases, upon prior arrangement. Long-term usage of equipment may be feasible in special cases. Cubed iced, filtered and DI water, and some chemicals may be similarly available in the Lubrizol Lab, located within DH A100. Access to these facilities can be arranged by contacting Matt Cline at mc86@andrew.cmu.edu or at x8-2818.

8. CONTACT INFORMATION

| <u>What</u> | <u>Whom to See</u> | <u>Room</u> | <u>Ext.</u> |
|---|---------------------------------|--------------------|------------------|
| Admissions (Graduate) | Todd Przybycien Cindy Vicker | DH 3109 DH 1101 | 8-3857 8-1566 |
| AIChE | Jim Miller | DH A207A | 8-9517 |
| Copying/Transparencies | Janet Latini | DH 1107 | 8-2230 |
| Computer Accounts | Justin Dawber | DH A225 | 8-7993 |
| Masters Degree Requirements and Registration | Susana Steppan | DH 3101 | 8-2226 |

| | | | |
|---------------------------------------|-------------------------------|----------|--------|
| Departmental Programs and Courses | Cindy Vicker | DH 1101 | 8-1566 |
| Electives | Project Advisor | | |
| CPS and MS-CPS Degree Requirements | Annette Jacobson | DH 3102B | 8-2244 |
| Maintenance | Julie Tilton | DH 1208 | 8-9537 |
| Purchasing | Julie Tilton | DH 1208 | 8-9537 |
| Safety | Safety Committee Kris Dahl | DH A222 | 8-9609 |

9. **CAMPUS FACILITIES**

9A. **ATHLETIC FACILITIES**

You are welcome to use the athletic and recreational facilities in the gymnasium and University Center, including the swimming pool, handball courts, weight room, golf room and main gym, as well as the tennis courts. These facilities may be used during scheduled periods when they are not in use for instructional purposes. You may be asked to show your I.D. card to identify yourself as a student or to obtain a permit. There is a charge for use of some facilities.

9B. **CLEANERS/LAUNDRY**

The laundry facility is open 24 hours a day, with validated CMU ID. An attendant is on duty Monday through Friday, 8:00 a.m. to 4:30 p.m. It is located in Margaret Morrison Plaza 4 (phone 8-8878).

9C. CAMPUS DINING SERVICE

CMU Dining Services provide meals at reasonable prices in several locations. Complete menus are posted at each location. Hours of operation may be verified by calling 8-2139 or by checking <http://www.cmu.edu/dining>. Some of the locations include:

- University Center
- Resnik Hall
- Food carts are also scattered around campus, including Wean Hall, Porter Hall, Newell-Simon Hall, Hamburg Hall, and Mellon Institute.

You will find vending machines for snacks and candy located in various buildings across the campus.

9D. HEALTH SERVICES

- **Health Office (x2157)**

The Health Office is located on the first floor of E Tower in Morewood Gardens (Room 144). It is open from 8:00 a.m. until 7:00 p.m. Monday, Tuesday, & Thursday; Wednesday 10:00am – 7:00pm; Friday 8:00 - 5:00 and Saturday from 11:00am until 3:00pm. The services normally expected of a family physician are provided. Gynecological services are available by appointment only.

If an emergency occurs during hours when Health Services is closed, call the after-hours physician on-call service at 412-268-2157 (Identify yourself as a Carnegie Mellon student.) Also, call campus police for transport at 412-268-2323 (on campus, 8-2323)

- **Insurance**

All students are required to have medical insurance. The Associate Dean of Student Affairs, (WH 301) extension 8-2075, has complete information.

9E. LIBRARIES

Students are invited to use the collections in Hunt Library and the Engineering & Science Library. In addition to a large collection of books, the libraries also contain current and past issues of magazines, newspapers, manuals, encyclopedias and many other reference materials. Circulating material may be borrowed by presenting your I.D. card. Each library has a reserve book room for books designated by a professor as assigned reading in his/her class.

9F. PARKING FACILITIES

A charge is made for use of parking spaces by meter or by permit. Parking tags and key cards (for lots requiring them) are obtained from the Parking Office in the East Campus Garage. Fines are given for meter, general and hazard violations. Many of the local streets near the campus have parking limited to residents.

9G. PUBLICATIONS

The following regular CMU communications are available at the information desk in the University Center.

Tartan - The CMU student weekly publication that reflects student thought, highlights campus activities such as athletic schedules and scores, lectures, seminars and meetings, concerts and art exhibits, and other information.

Campus Calendar - A weekly listing of current campus events (plays, concerts, recitals, seminars, etc.) and local events of special interest to the academic community.

9H. STUDENT PHOTO I.D.

Student I.D.s are necessary for many university services including use of athletic facilities, purchasing meal plans, special events, etc.

10. MISCELLANEOUS ISSUES

10A. POLICY ON "OUTSIDE" EMPLOYMENT

The possibility exists that a student might be approached to consult on a project for an entity outside the university and be offered a fee for services in addition to the stipend. The Department strictly

forbids such arrangements while the student is registered full time and pursuing a degree. The student is expected to devote his/her time and energy to timely completion of the degree.

10B. POLICY ON THE AVAILABILITY OF SUMMER EMPLOYMENT

The duration of Masters degree programs is defined by the department, the MChE requires a minimum of two semesters while the MS requires one semester of full time coursework followed by three semesters of project work (these three semesters will likely include a summer semester and some coursework will be concurrent). Students are free to pursue internships or other opportunities during the summer to enhance their degree experience, however, this will require a student to spend an additional semester on campus to complete the project work.

10D. CHEATING, PLAGIARISM, AND RESPONSIBLE CONDUCT OF RESEARCH

The Department will take strong action consistent with CMU policies against any student who engages in cheating or plagiarism in courses or in research. The web link to the University policy on Cheating and Plagiarism is <http://www.cmu.edu/policies/documents/Cheating.html>.

The Department of Chemical Engineering embraces requirements for education in Responsible Conduct in Research. All researchers must take the available online course and pass it. New graduate students will take this training and fulfill this requirement as part of the 06-608 Safety course. The website for this training is

<http://www.cmu.edu/osp/regulatory-compliance/research-ethics.html#Online>