Handbook of Ph.D. Program

Gustaf H. Carlson School of Chemistry and Biochemistry

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Information and Requirements for Graduate Students in Chemistry

Frequently, new graduate students come to the Chemistry Department with only a vague idea of what the graduate program is all about and what is expected of them. This information sheet is designed to inform the entering graduate student of department requirements for the degree of Doctor of Philosophy in roughly the order the student will encounter these requirements.

The department offers the degree of Doctor of Philosophy with specialization in several fields of chemistry including biochemistry, inorganic, organic, physical, computational, and materials chemistry. Owing to the small size of the department, emphasis is placed on tailoring programs of study to suit the need and desires of the individual graduate student. However, there are certain requirements which must be met by all graduate students, and these are outlined below.

GENERAL REQUIREMENTS

A. Qualifying Exams (Placement Exams) Part I:

All entering graduate students must pass placement examinations (by obtaining at least the 50^{th} percentile) in any four of the five major areas of chemistry (analytical, biochemistry, inorganic, organic and physical). The purpose of these exams is to determine the student's general level of competence and background in chemistry. On the basis of the student's performance in these exams, he or she may proceed directly to graduate courses or may be required to attend remedial undergraduate courses.

Students who fail to pass four of the five examinations will be required to retake the failed examinations at the end of the first semester, and, again, at the end of the second semester should it be necessary. The exams are scheduled at the beginning of the academic year, January and May. Students who fail to pass three out of five exams by their second try are not eligible to continue in the Ph.D. program. Students who fail to pass four of the five exams by the end of the second semester are not eligible to continue in the Ph.D. program.

B. Research Director and Faculty Advisory Committee

The single most important part of the graduate program in Chemistry is the research experience. The student will perform his or her graduate research under the aegis of a Research Advisor whom the student will choose from the available faculty. Students may choose a Research Advisor who is a tenure-track, adjunct, or affiliate member of the faculty. Since this is a very important decision, the student should put a great deal of time and thought into it. During the first/second semester, the student is expected to visit faculty members with whom he/she may be interested in working. The student can then make an informed decision based on discussions with the various faculty members concerning their research and their fellow students. Students should visit with a minimum of <u>three</u> members of the faculty before making their decision. Normally, students will decide upon a research director after the first semester or during the second semester. Students should be aware that due to space limitations they may not be able to

work with their first choice of research advisor and thus should seriously consider all faculty when interviewing.

Students may change advisors at any time, but doing so after having started research usually will lead to a delay in graduating.

Soon after the choice of advisor is made, the student and research advisor will then choose two or three other faculty members to serve with the research advisor as the student's Faculty Advisory Committee. This committee is responsible for overseeing important decisions concerning the student's graduate program. It will meet annually to review progress, write the student's Secondary Qualifying Exam (more below) and sit in review of the student's Research Proposal and Dissertation (more below). One member of the committee may be from outside the Carlson School of Chemistry and Biochemistry.

C. Formal Course Work

All students will take CHEM 389 (including the library module) AND a minimum of five other courses toward completion of their degree (be aware that individual research advisors may require additional course work). Each student must take at least one course from three of the four topical categories listed on the attached sheet (Physical/Computational, Spectroscopy/Analytical, Organic/Inorganic, and Biochemistry).

A graduate student may be required to attend remedial undergraduate classes at the discretion of the faculty based on the student's performance in the initial Qualifying Examinations. Until the graduate student chooses a research director, the Graduate Admissions Coordinator and the Graduate Studies Committee will serve as temporary advisors and will aid the student in selecting a program of study. A grade of B- is the minimum passing grade to obtain course credit in the graduate curriculum. Students who achieve unacceptable grades (less than B- or withdrawal from a course) in two courses before obtaining credit for the five course minimum **will** be removed from the Ph.D. program.

D. Teaching Requirements

All graduate students are required to serve as teaching assistants for a minimum of two semesters. Teaching assignments are not necessarily made with the student's research interests in mind. Normally, all first-year students serve as teaching assistants. YOUR TA DUTIES HAVE THE HIGHEST PRIORITY ON YOUR LIST OF RESPONSIBILITIES! These duties include, but not limited to, supervising laboratory sections and grading lab reports and may also include grading quizzes from the appropriate lecture section, as well as proctoring. The exact nature of your duties will be determined by the faculty member in charge of the course(s) to which you are assigned. As soon as you are aware of your assignment, you should see the appropriate faculty member about responsibilities and scheduling of TA meetings. You are expected to be present at any time necessary to fulfill all your TA duties, thus you should not schedule absences during the school semesters.

Specific expectations:

1. You are expected to be teachers, not simply babysitters. When in the laboratory, you should circulate amongst the students asking questions, checking technique, preparation, etc…

2. All TAs are required to attend safety training by the safety officer every year. You are responsible for the safety of your students, and need to be familiar with good safety practices relevant to your duties.

3. If you are assigned to grade lab reports, you are expected to return the graded lab reports to the students before their next lab reports are due so that the students can receive feedbacks from their previous lab report.

Life is not fair! We cannot make the workload equal for all students and still maintain consistency within each class. We will do the best we can. Senior students will receive some preference, where possible. If you get a heavy load some semesters, work hard. If you get a light one, be grateful.

E. Seminars

There are two Chemistry Seminar programs at Clark University. The first consists of talks presented by outside speakers. The outside speakers are invited lecturers from other Universities and Industry who are experts in a particular field of research. Graduate student participate in this seminar program on three occasions: all students are required to present a 20 minute seminar on a topic other than their current research in their second year, and fifty minute seminars are presented as part of the research proposal and final dissertation defenses.

The second seminar program is an informal monthly meeting of all faculty and graduate students where three or four students (or sometimes faculty) present 10-12 minute summaries of their own research and answer questions. Students will give talks twice a year in this program.

Attendance at all seminars is mandatory! Exceptions on a case-by-case basis will be seldom granted and may be made by the Seminar Coordinator only.

F. Qualifying Exam: Part II

This is an examination that is at a significantly more sophisticated level than the initial Qualifiers, but it covers material related to the student's major field of study. It is intended to test the student's understanding of advanced material in their chosen area of research and their understanding of the application of the material learned in their courses. It is normally taken after most of the course work is completed, typically at the end of the second year.

Problems from the recent scientific literature may be expected to appear in this examination and thus the student should make a point of keeping up on the scientific journals in their major field.

The exam (which may be offered over several days in a period of not more than two weeks) is written by the members of the student's Faculty Advisory Committee and the format of the questions is up to the individual faculty member. However, some months in advance of the exam, students should ask each faculty member of the committee to let them know the general subject area of the questions to be expected and the format of the test (e.g., open/closed book; time allotted for the exam). Students who fail this examination may be retested once, if the student's Advisor and Committee deem it appropriate. You should not count on getting a retest. In addition, the committee may also request an oral exam if the written exam is not passed. Students who fail to pass this exam will be removed from the Ph.D. program.

G. Preliminary Examination (Research Proposal)

The preliminary examination consists of a written original research proposal by the student, an open departmental seminar to present the proposal, and an oral defense of that proposal before the student's Faculty Advisory Committee. No limitations are placed on the area from which the problem can be drawn, save that it may not be related to the student's own research. The proposal should normally completed by the end of the fourth year, and must be completed at least one year before the final dissertation is defended. It can only be attempted after the Qualifying Exam Part II is passed.

A student chooses the topic by him/herself but must get the topic approved by the faculty advisor to receive approval of the topic before writing is attempted. The written proposal should be submitted to the Committee at least two weeks prior to the oral defense. The student may wish to arrange a "Mock-Defense" before a "Committee" of fellow graduate student's as a means to prepare.

Students will be judged on: the choice of research problem and its originality and importance, their mastery of the chemical principles and experimental techniques used, the clarity of the proposal, and their ability to defend their reasoning and expectations.

The problem selected should not be so broad that it would require more than three years of time to complete the "actual work." Neither should it be a "one-experiment" proposal. The written proposal is limited to 25 pages and must follow the format as required by typical grant funding agencies such as NSF or NIH. Detailed instructions are available on a separate sheet. The problem must be an original idea (i.e., not previously published or attempted by anyone), should be described in sufficient detail to make it clear to the reader while still being concise, and must include an appropriate bibliography and a budget.

Students who do not successfully defend their research proposal may be/granted one additional attempt at the discretion of their Research Advisor and Faculty Advisory Committee.

Passing the Preliminary Examination constitutes admission to candidacy.

Ph.D. candidates who have completed their coursework, the Part II Qualifying Exam, and passed their Research Proposal will be awarded an M.A. Note that university regulations specify as

minimum of one additional year after admission to candidacy, thus students are advised not to delay too long after passing the Part II qualifier before doing the Research Proposal.

H. Dissertation

All Ph.D. candidates must submit an acceptable dissertation based on the student's original research. A complete dissertation is presented to the student's Faculty Advisory Committee at least two weeks prior to the scheduled defense and is defended before that committee at the student's final oral examination following a public seminar given to the entire department. At that time the committee may approve the written document, the oral defense, both, or neither. Students may be required to re-defend their dissertation, especially if extensive revision of the written document is required.

It is to the student's advantage to work closely with his/her Committee prior to the defense. In this manner, many problems may be solved in advance or prevented entirely.

I. Time line

The Graduate Studies Committee has generated a suggested time line for completion of the various degree requirements. These are not hard rules (with the exception of the preliminary qualifying exams), but we strongly recommend that you try to follow them so that you may complete your degree in a reasonable (4-5 years) period of time. Please be aware that students will not receive any financial support after six years of support, whether from university or external funds.

Requirement	Suggested Completion Time (in semesters)
Preliminary Qualifying Exams	End of 2nd semester
Select Advisor/begin research	As early as possible; typically during the second semester
All Required Course Work	By the end of 4th semester
Qualifying Exam: Part II	At the end of 4th Semester

Preliminary Exam (research proposal) Definitely before the end of 8th Semester.

J. Terminal master's degree

A candidate who terminates his/her Ph.D. program may obtain a terminal master's degree at the discretion of the department on the contingent of having a research advisor. The requirements are: 1) the candidate must pass at least three out of five qualifying examinations, American Chemical Society examinations designed to test proficiency in the basic fields of chemistry, 2) complete four courses in chemistry or biochemistry, at least one of which must be outside the students' chosen field of research, 3) attend all departmental seminars and present research

updates, 4) complete at least one year teaching apprenticeship and 5) submit an acceptable thesis based on original research and orally defend it before a departmental committee.

SEMINARS

Revised Jan. 2017

SECOND YEAR SEMINARS

1) These will be given by all second year students near the beginning of their third semester.

2) The seminar shall be on a topic that is different to the student's research, although it may be related. The topic must be of the student's own choosing, but students should consult with their research mentor for advice on whether the topic is appropriate. Then the topic for the seminar must be approved by **the seminar coordinator,** at least **3 months** prior the seminar date.

3) Students will prepare a written paper on the topic of approximately 6000 words (12-15 pages) excluding references and figures (no more than 12 of each), which is due 2 weeks prior to the seminar date. These papers are to be written in appropriate scientific style and in proper English. References should be in a standard format of some major journal.

4) Seminars will be presented in a "technical meeting" format; 20 minute talk and 5 minutes for questions.

5) Students who are presenting a seminar in a given semester will receive a **letter grade** based upon the combination of the grade given for their written paper and their oral presentation, equally weighted. The paper will be graded by two faculty members with knowledge of the general topic area. The presentation will be graded by all faculty in attendance.

GENERAL

Students will register for one and only one seminar course each semester. If they are presenting a second-year seminar during that semester, they should register for **one credit**; if they are not presenting a second-year seminar in that semester then they should register for **1/4 credits**.

Students who are not presenting seminars in a given semester will be graded **pass/fail** based on their attendance (this means **on time)** and on their short research presentations each semester. More than two absences/lates will result in a failing grade. Permission to miss seminar must be obtained from the seminar coordinator in advance (except for emergencies).

RESEARCH TALKS

Each semester all students will present a short 10-12 minute seminar on their research results. There should be a brief introduction summarizing the general objectives of the research project and providing enough background to make the talk understandable to the audience. The main part of the talk should be on specific experiments and results obtained since the last talk. The audience is encouraged to ask questions and offer advice following the presentation.

Turnbull's Guide to Seminar Presentations:

As a result of a recent conference where there were a number of truly excellent talks and … let's just say, some that did not fit in that category, I provide below some observations on what makes for a good seminar presentation, and more specifically, what does not. Some of these suggestions apply more to conferences than individual seminars, or presentations in class, etc… but they are still generally adaptable.

I – Time

a) Don't complain about the time slot you were given. You know ahead of time how long the slot is and when it is. Plan accordingly.

b) Do not abuse your audience. You know what your time slot is and whether that is expected to include questions or not. It is rude to fill the entire time and not allow time for questions (which hopefully the session chairman will not allow if you are out of time), and extremely rude to run over your time slot into the next persons.

c) At the same time, be sure to fill the time slot. If you have a 20 minute talk (including questions) you should talk for 17-18 minutes. Talking for only 15, or 12, means you didn't really have much to say.

II – Presentation

a) Do not read your slides to the audience. They can read. Occasionally, to emphasize a point, this may be useful but in general it is not. When you get to your summary/conclusions/whatever at the end, don't read what you have written on the slide. Put up only the main ideas, and then you fill in the details with your comments.

b) The same is true for titles – if the title is on the slide, the audience can read it, you don't have to. Besides, they can read faster than you can talk. You may use phrases such as "We are interested in the (fill in general area of research) and I would like to present our results on (fill in something more specific)."

c) Slide contents – don't put it up if you are not going to talk about it. Extraneous information only distracts the audience and detracts from your talk.

d) For heaven's sake, Look At The Audience! There is nothing wrong with referring to your slides to remind yourself what you were going to say, or what you want to say next, or when you are pointing at something on the slide, but you should not give the presentation to the screen. Look around – don't just speak to one person, or one side of the room.

e) Do not flip backwards and forwards through your slides while making your presentation. If you need to use the same slide twice, make another copy and put it in the correct place. Flipping back and forth kills the flow, and confuses the audience (and frequently, the speaker).

f) You should not have to skip stuff because "I see that I'm running out of time…" That simply means that you did not prepare well (unless you were interrupted frequently with questions).

g) If there are details that you do not want to cover, but may need in case of questions, put that information on a slide at the end of your presentation (after the 'official' last slide). It's there is if you need it, but you didn't have to say "Oh, ignore all this" during your presentation.

h) PowerPoint (no, I'm not selling it, it is just the currently most used program), has a zillion fancy options. DON'T get carried away with glitz – it detracts from content. You don't want the audience to remember the way your slides zoomed in and out rather than what was on the slides.

i) Pronunciation! If you don't know how to pronounce a word, don't tell the world! Ask someone ahead of time.
j) Language – know your audience. If you are at an international conference, remember that everyone does not have the same facility with the language as you do. Speak slowly and carefully, avoid slang terms, etc…
k) Don't make your slides so complex that the audience can't find the information you are discussing – make another slide!

III – Pointers
a) It is a POINTER, not a WAVER!!! If you have something to which you wish to direct the attention of the audience, point at it. Do not wave the pointer around the slide vaguely. It does not make anything clear, and it will make the audience seasick after a while.
b) If you have a combined laser pointer/remote control, make sure you know which button is which and don't confuse them – when you change the slide instead of pointing at something on the slide it wastes time and confuses the audience.

IV – Content
a) Say more about less; be sure of a clear, take-home message. The idea of the seminar is to teach people what you have learned through your work, not to try to convince people how much work you have done. Be sure to cover the material you choose to cover in sufficient detail that the audience understands what you have done, how you have done it, and what you have learned. This is a much better presentation and the audience will remember a lot of what you said (rather than just remembering that you said a lot).
b) Related to the above: take your time. Provide the necessary background, then the results, then 'What does it mean'.
c) Don't spend time talking about things that the audience does not need. This means both 1) don't spend lots of time talking about trivial things the audience should already understand, and 2) don't spend lots of time on some lengthy derivation when talking to a general audience – they don't understand, and the experts in the audience will ask you during the questions if they are interested.
d) When you are at a conference, and sometimes a symposium, note your position in the schedule. If you are the third person to talk about hydrogen absorption by porous matrices you can be sure that the prior speakers will have covered most (if not all) of the basics. Be prepared just in case they didn't, but don't bore your audience by telling it to them for the fourth time.
e) Present your findings as they are – don't embellish. The point is to educate, not to brag. If the work really is 'that good' the audience will figure it out on their own, and if it isn't, you just look silly claiming it is.
f) If you feel that you must provide an outline of your talk (personally, I'm not a big fan), don't spend more time talking about what you are going to say than you do actually saying it. I saw one 15 minute presentation where the speaker spent 3 minutes going over their outline!
g) You should be talking about your recent results. Don't talk about material you have already put in print except as background, or if you need it for context of the new material. If you have been asked to present a review talk, this clearly does not apply.
h) Use your slides as the necessary memory jog so you don't end up reading your talk. One phrase on a slide reminds you what you wanted to say (you may also want to be sure that specific numbers or such are on the slide so you don't have to remember those).

You may have other things that you have observed over the years which you would like to add to this list, and I would appreciate receiving a copy of them as well so I can improve on these suggestions.

Creating Figures and Slides
Carlson School of Chemistry & Biochemistry, Clark University
2017

Scope

This document is a guide for the Carlson School of Chemistry & Biochemistry's expectations regarding the use of figures in written documents and presentations that are created for a department-wide audience. Specific examples to which these apply include graduate theses, undergraduate theses, graduate research proposals, and graduate literature reviews. Written documents and presentations done in classroom settings or within an individual research group are under the discretion of the professor.

Overall Goals

The major goal of creating a written document or giving a presentation is to tell a story. This story should be one you created, not simply a recreation or retelling of someone else's story. Whether the story is about your own work or about literature, it should show that you understand the material thoroughly and that you can put the material and its context together in a well organized and well thought out manner. Using figures and slides is a good way to supplement your story and help you tell it. As with the written portion of your document, figures and slides should be components that you designed and created to help you tell your story, not simply recreations of someone else's figures. Each figure and all the content within a figure should serve a specific purpose, not just fill space without adding meaningful content to your story. Learning to create useful figures is an important skill.

Fair-Use Copyright & Legal Requirements

Figures, like written documents, are protected by copyright and plagiarism rules. The "fair use" rules provide some exceptions. Although these rules are somewhat open to interpretations, some general themes can be seen. The purpose and intent of the use is important. Non-profit, educational, or scholarly uses favor fair use, but this is not sufficient to cover all material. Transformative uses, meaning using the content for a new purpose or in a new context favors fair use. The type of content is also important. Using facts and data, especially minimally-sized small pieces taken from a larger work, favors fair use. In contrast, summaries of large amounts of work or artistic renderings are less likely to be allowed under fair use.

Specific Examples

Data figures In order to discuss someone else's data and specific results, you should show their actual data, but in a way that incorporates it into your story. This data may take the form of a graph, an image, a precise structure, a spectrum, a chemical reaction, a data table, etc. To make your own figure or slide based on this data, you should take the minimum amount of their figure that contains the required data, and then integrate that data into your figure. Multiple parts of a figure (A, B, C, etc.) should not be copied as a single unit. All the content of your figure should match your story. There should not be any extra content left over from the original

figure or any numbers or labels etc. that are specific to the original document. The sizing and format of your figure or slides should be well planned and well matched to your document. Format, fonts, text sizing etc. should be consistent with your other figures or slides. Text and figure resolution should be readable, and titles and captions etc. should be consistent throughout your document. Each figure or subfigure should be called out at the appropriate time in the text of your document to indicate its relevance. The figure's caption should clearly indicate the original source. (In contrast, for manuscripts to be submitted for publication, you must obtain written permission from the copyright holder to use any copyrighted material.)

Summary Figures Unlike illustrations of data, summary figures are not something that you should be taking from someone else's document. For example, these types of figures might be used to overview the major points of a paper, summarize its main results, illustrate a major concept, provide a flow chart of a complex procedure, thought process, or multistep reaction sequence, or illustrate a complex biological system. Like a full paragraph of writing, these figures present and describe complex ideas. They take thought and organization to create and often involve some artistic or graphic content. Directly taking one of these figures from someone else's work is analogous to quoting an entire paragraph of text. It is missing the point of creating your own document. Similarly, redrawing your own version of one of these figures without changing the content for your own purpose would be similar to rewriting someone else's paragraph by just changing a couple of words. Even though the words are your own, the ideas and organization are still just copied. Instead, if you want to use a figure to help summarize and present a large amount of content, which is usually a good choice, you should strive to develop your own figure that helps you do this in a clear and effective manner and that is well matched to your purpose.

Registration Guide

Revised on Jan. 12th, 2017

For a graduate student in the Ph.D. program, the requirement is that you must register for 4 credits per semester. On rare occasions, with the department chair's approval, students may register for five courses.

All Ph.D. students should register for CHEM 380 (Research Seminar). If you do second year seminar, you should register 1 credit for CHEM380, otherwise, the seminar credit is ¼ credits. Note that you do NOT register for 1 credit for CHEM380 when you are presenting your research proposal because it is considered to be part of the Ph.D. preliminary examination.

All TAs paid off a TA Fellowship must register for 2 credits of CHEM 300 (Teaching). Students paid on an hourly wage of TA do not register for this.

If you are taking lecture courses, register for those under the appropriate 300 number. New first semester students should discuss their proposed courses with their advisor after the ACS placement exams have been graded.

Students doing research with a faculty member should register for from 1-3 credits of CHEM317 under the special course number corresponding to the member of the faculty you are doing research with. They will have to give you permission. The number of credits is normally adjusted so that the total for all credits is 4. For example, student A registers teaching for 2 credits and seminar for 0.25 credits, CHEM317 for 1.75 credits, in total 4 credits. Another example, student B registers teaching for 2 credits and CHEM317 for 1 credits and 1 credit for seminar because of the 2nd year seminar, in total 4 credits. Note that sometimes students doing research will not actually register for it, e.g., if you are a second year student giving a seminar, being a TA, and taking one course.

Helpful Hints about Graduate Life in Chemistry
(or rules and regulations that don't get written down)

The following is a list of policies governing a variety of everyday affairs in the life of a graduate student in the Department of Chemistry at Clark University. They do not appear in any particular order. This list should not be considered complete, only a helpful start in the area that a new student is likely to encounter problems and questions.

I. English

The official language of the Chemistry Department is English. Non-native (and native for that matter) speakers must become proficient at both written and spoken English. Your research proposals and dissertation must be in English and you must defend them both orally. The Writing Center can help you with major writing projects.

II. Working Outside the Department

Students who hold either a teaching assistantship or a research assistantship may not hold jobs outside of the Chemistry Department. Your assistantship is considered a full time position. Students who feel that they are exceptional cases may petition the Department Chair, but don't hold your breath.

III. Telephones

The departmental telephones are not available for personal use. This includes the taking of messages by the office staff. Emergencies are obviously an exception, but we do not consider the sudden availability of concert tickets to be an emergency. You may not make long-distance calls from university phones unless approved by your mentor for research-related purposes.

IV. Hours

You are here to receive a degree and although you receive a stipend, this is intended as support for living costs and not a salary, so you don't get to work regular hours. Being a graduate student is not a 9 to 5, five-day-a-week job. You are expected to be here often during evenings and also on at least one day during most weekends, as necessary to get your work done. Stipends are good only for five years, and you should expect to work hard enough to finish within that time.

V. Vacations

It is expected that you will take some time off during the calendar year. For the most part, when you take vacation and how long you are away is between you and your research director, but as a general rule you should not take more than three weeks total per year. Most university holidays are considered to be holidays for undergraduate students, not graduate students, so if you take off for spring or fall break that counts towards your annual vacation time. If you want to return

home overseas for a long vacation you should clear this with your research director before you buy the tickets. You should be aware of the following:

a. Faculty frown on students being absent from class.
b. Faculty fly into a rage when TA's are absent from duties (be sure to check your TA assignment prior to scheduling vacation time, especially if your intended absence is near the beginning of a semester).
c. The department will find better uses for part of your stipend if you take an excessive amount of time off (more than three weeks per year).

VI. Seminars

Your attendance at all departmental seminars is mandatory, including seminars given on unusual days or hours or during the summer months. Exceptions may be made by the Seminar Coordinator only!

VII. Graduate Lounge

It is our intent that S325 (graduate student lounge) will provide a place for students to gather, eat, and socialize. We also encourage the use of the room for the discussion of science. On occasion, the department will claim the room for such things as department meetings (as few as possible), research meetings, and defenses (frequently dependent on you). We encourage you to use the lounge as a place to eat meals when you are in the building. It is much safer than eating in the labs; eating and drinking in all labs where chemicals are present is prohibited.

VIII. Photocopying/Printing

The photocopier in room S134 can be used for teaching and research only. The printer in research labs are intended for research only. If you need to print anything for your course work or personal use, you should use your OneCard to print on University owned printers, such as those in the Science Library and Goddard Library.

IX. Computers

It is recommended that you purchase your own laptop computer. Be sure to back up your files on a regular basis in case of trouble. Most research labs also have shared computers that you may use unless they are required to run an instrument. If you have any questions regarding their use, consult with the faculty member in charge of that computer. Computers used to run instruments have their files deleted on a regular basis to provide storage space for users. If you want to keep these files for the long term, save them to your own computer.

X. Security

Be careful that you lock your research lab when you are not present since the department is readily accessible from the street and many things have been stolen in the past, especially during

the summer. Laptops, purses, and wallets can be removed in a few seconds and are at greatest risk of being stolen. You should not lend your department keys to any person.

XI. Selecting a Research Director

Of all the things you will do during your graduate career, selecting your research director is the most important. You should take your time and consider your decision very carefully. The exact qualities of "the perfect research director" and research project vary from student to student, but two characteristics fall on almost everyone's list. The work must be interesting to you and the research director must be someone with whom you can get along.

The departmental web page gives descriptions of faculty research interests. Before you decide on a director, you should make appointments to talk on an individual basis with a minimum of three faculty whose work interests you. Only then should you consider selecting a research director. In general, you should decide sometime between the beginning and the middle of the second semester.

After you select a research director, you and he/she will select at least two other faculty members you would like to be on your research advisory committee. You then should ask these people whether they are willing to serve on your committee, being aware that some may say no as they are already on too many others. You will meet with your committee at least once a year, but are encouraged to keep all members up to date on your research progress and contact them for advice whenever the need arises.