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I. INTRODUCTION

This Handbook for Marquette University Computational Sciences and MSST Program Graduate Students has been prepared to answer questions of both new and continuing graduate students and to remind all MSCS graduate students of the various rules, regulations and expectations relative to their programs. Not all questions of every graduate student can be answered here and, indeed, one purpose of this Handbook is to encourage students to ask questions early and often. Consult the Graduate School Bulletin, ask your fellow graduate students, ask your professors, ask any member and/or the Chairperson of the Graduate Committee (G.C.), or - ask the ultimate source of all information about Departmental goings-on, the Departmental secretaries.

Remember that this Handbook expands upon the specific details of the relationship between the individual student and the University, just as the Graduate School Bulletin defines the general terms of that relationship. Familiarize yourself with their contents!

Special Notes

In Fall 2009, Department begins a graduate program in computational sciences and ends programs in mathematics and computer science. Students admitted for the Fall are under the new programs, students admitted before that time will be completing the program in place at the time their program began (and the Handbook of that year). Also beginning in the Fall is a complete renumbering of all courses in the University. In general, the old 200 numbers are now in the 6000's and 100 numbers are in the 5000's. There have been some deletions, renaming, and new courses. Students in the MSST program (old name "SPSST") will see some minor changes due to these changes. The Graduate Bulletin is always the best place to find the most up-to-date information.

II. THE GRADUATE COMMITTEE

Activities and Responsibilities: The Graduate Committee consists of its Chairperson and at least three other faculty members. This committee is responsible for supervising all the graduate programs in the Department. The Committee evaluates applications and recommends the admission of new students. The Graduate Committee advises the Graduate School as to which individuals should be awarded Teaching Assistantships, Research Assistantships, or Tuition Scholarships. The Graduate Committee assigns to each incoming student a faculty advisor who, in consultation with the Graduate Committee, must approve the course of study. The Graduate Committee supervises the construction, administration and evaluation of Examinations (if any) in your program. The Committee is responsible for reviewing the academic performance of each graduate student in all the Department's programs at the end of each semester. Current membership of the Committee is always available in the Department Office.

III. THE MSCS GRADUATE PROGRAMS

A. **Degrees Offered:** The Department offers both the Master of Science and the Doctor of Philosophy degrees. The M.S. degree can be pursued through several specializations: Computational Sciences, Mathematics for Secondary School Teachers (MSST), or Computing. In addition, the MSCS Department offers the M.S. degree specialization in Bioinformatics jointly with the Medical College of Wisconsin. The Ph.D. is offered in Computational Sciences. Whenever discussing M.S. degree specializations, this Handbook will address the Computational Sciences and MSST specializations. For information on the Computing Program, please see the Graduate Bulletin listings under Computing and Bioinformatics. For Computing, you may also check out

<http://www.mscs.mu.edu/mscs/graduate/comp/index.html>

while for the Bioinformatics Program, please see:

<http://gp.bbc.mcw.edu/>

B. **Admission Requirements:** Admission to the master's program in computational sciences requires an undergraduate degree in mathematics, statistics, computer science, or a related field such as engineering or an area of science, with at least a minor (3 courses beyond calculus) in mathematics, and proficiency in a high-level computer language. Mathematics for secondary school teachers (MSST) applicants should hold, or be eligible to hold, a teaching certificate for secondary school mathematics. Admission to the doctoral program in computational sciences requires (in addition to the prerequisites for master's admission) demonstrated promise for original research. Evidence for promise for research might include, in addition to undergraduate and graduate records, copies of papers written or projects submitted and evaluations of participation in undergraduate or graduate research programs. For those students entering the Ph.D. program from the master's program, the thesis or essay will be considered as evidence of ability to search for and synthesize source materials relative to the intended field of doctoral research. It should be noted, however, that successful completion of a master's degree in no way guarantees admission into the doctoral program. A successful master's student must reapply formally for admission to the doctoral program!

C. The Master's Programs

1. **Computational Sciences:** This specialization is designed to accommodate the student seeking either a master's or eventually a doctoral degree. Individuals in this program must complete a minimum of 30 semester hours of course work. The program requires completion of the 18 semester hour computational sciences core (MSCS 6010, MSCS 6020, MSCS 6030, MSCS 6040, MSCS 6050, and MSCS 6060). For a complete list of the requirements, see the Graduate Bulletin.
2. **Mathematics for Secondary School Teachers (MSST):** The MSST is a flexible specialization which is highly individualized to the needs of the student. It is designed for teachers with at least two years of secondary school teaching

experience, who wish to pursue graduate work in mathematics to enhance their teaching, but who do not anticipate continuation of graduate study in mathematics beyond the master's level. The Program emphasizes breadth of knowledge in a variety of mathematical areas and their relationships to each other and to the teaching of mathematics at the secondary level. A minimum of 30 semester hours is required, including the History of Mathematical Ideas (MSCS 5300), and one of the Seminars in Mathematical Curriculum Development and Material (MSCS 6953 or 6954).

3. **Course of Study:** In all master's program, the student must follow a course of study prepared in cooperation with the student's advisor and approved by the Graduate Committee. The Department Office has "Graduate Student Program" forms for this purpose. The green copy must be completed at the beginning of the student's studies, is kept in the Department files and must be updated regularly, with the Graduate Committee's approval. The white copy is for the student's records. There are two options available: Plan A (Thesis) or Plan B (Essay). Under Plan A, a thesis and 24 semester hours (8 courses) are required. At least 12 of those course work semester hours must be taken at the strictly graduate (6000) level. Under Plan B, 30 semester hours (usually 10 courses) and a non-credit essay are required. Under this Plan, at least 15 hours of the 30 semester hours must be at the 6000 level. The required essay should reflect the student's ability to synthesize source materials relating to a particular area of research or professional practice. An oral presentation of the essay is required. **Students will automatically enter under Plan B (non-thesis) and will need to negotiate with their advisors and the Graduate Committee if they wish to transfer to Plan A (thesis).** This transfer is accomplished by filling out the change of plan form available in the Graduate School and obtaining the required signatures of approval.
4. **Master's Thesis (Plan A):** The thesis must be an original contribution to the discipline for which six hours of credit are normally given. The student in due time (normally in the last half of the third semester) should ask a faculty member to serve as thesis advisor. The thesis advisor need not be the academic advisor. After adequate planning the student should submit the outline of the thesis on the proper form (available in the Graduate School office) to the thesis advisor who, if he or she approves it, will submit it to the Departmental Chairperson for approval and forwarding to the Dean of Graduate School. The Graduate School office will inform the student that the outline has been fully approved and a thesis committee appointed. After submitting the outline and obtaining approval, the student registers for thesis credit (MSCS 6999) at the next registration period. Details concerning thesis format requirements can be obtained from the Graduate School. Before the thesis is typed in final form, it is required that it be submitted in a readable form to all members of the thesis committee for their constructive criticism several weeks before the defense. After successful defense and required changes made, an electronic copy of the completed master's thesis must be submitted online, on or before the deadline listed in the Academic Calendar.

Although the student holds the copyright of the thesis, the thesis is considered a public document by Marquette University and may be placed in the Marquette University library, used by students and faculty, or otherwise released to the public.

5. **Master's Essay (Plan B):** In the second year of master's study, usually at the beginning of the fourth semester, the student should select a topic of interest and ask a faculty member to serve as essay advisor. The essay advisor need not be the academic advisor. The student and essay advisor should agree upon a time frame so that the essay can be submitted to the advisor well in advance of the Graduate School deadline for submission (consult the Graduate School Bulletin!), allowing time for corrections and/or revisions. The essay should be approximately 20 typed pages long. It must be well-written, free of spelling and grammatical errors, with carefully drawn illustrations (where appropriate). The level of presentation should be accessible to other graduate students in the subject area. The essay may, but need not, incorporate original research (i.e., your own new results). It must, however, synthesize the results of the current literature (at least 5 sources) in its subject area, and it must be original work (i.e., **free of plagiarism; plagiarism includes submitting as one's own the ideas or work of another, regardless of whether that information is used verbatim or in paraphrased form**). Essays must be acceptable to the department in style and composition. Formatting of essays is at the discretion of the department. *Thesis Directives*, found at www.marquette.edu/grad/forms_index.shtml, may be used as a guide. Citation of articles and books and other matters of style should conform to a style consistent with publications in the area of the essay. When the advisor approves the final version of the essay, the student should request a copy of the "Essay Approval Form" from the Department Office, obtain the signatures of the essay advisor and Chairperson of the Graduate Committee, and then submit an original copy of the essay and a *Master's Thesis/Essay/Professional Project/Publication Approval Form* with appropriate signatures must be submitted to the Graduate School office on or before the date listed in the Academic Calendar. The university or its departments retain final approved copies of essays for use by the public as reference or instructional materials.

D. The Doctoral Program

1. **The Ph.D. Degree:** The degree of Doctor of Philosophy in Computational Sciences is conferred upon recognition that a significant original research project has been successfully completed. The major criterion for deciding whether a candidate's research merits the Ph.D. degree is the judgment that all or part of the doctoral dissertation would be acceptable for publication by a journal in the area of research.
2. **Residency Requirement:** The residency requirement is designed to immerse doctoral students in the campus community of scholars. It must be satisfied in the

department in which the student is seeking a doctoral degree. The residency requirement is met when a student completes nine credits of course work, or its equivalent per term, for two terms within an 18-month period, or alternatively, completes at least 6 credits of course work, or its equivalent per term, for three terms within an 18-month period. Plans for the residency must be included on the *Doctoral Program Planning Form*. The credit load necessary to meet the six- or nine-credit requirement may be met by course work alone or course work in conjunction with dissertation credits (departmental seminars will be sufficient to satisfy the course work requirement).

3. **Course of Study:** On entering the program, each student is assigned an academic advisor by the Graduate Committee and, with the advisor's assistance, must prepare a program of study for his/her first two years. This program recorded on the Department's "Graduate Student Program" form, available from the office (see Section C.3 above). This plan of study is to guide the student's program through the completion of the Comprehensive Examination.

Upon completion of the comprehensive examination, a doctoral student must then complete a program of study designed to see the student through completion of the program. This program of study should be defined, in cooperation with an advisor, on a *Doctoral Program Planning Form* and approved by the department's Graduate Committee. The total program, exclusive of dissertation, will contain a minimum of 45 credit hours of approved course work beyond the bachelor's degree, including the 18-credit computational sciences core, which consists of MSCS 6010-MSCS 6060, and at least 2 credits of MSCS 6090 (research methods/ professional development). Approved programs of study will normally include 6 credits of courses outside the department and no more than 12 credits in undergraduate courses. Twelve hours of dissertation credits are also required.

4. **The Doctoral Committee:** The student's Doctoral Committee is formed as soon as possible after successful completion of the basic course work and the Comprehensive Examination; by which time the student should be sure as to the area in which he/she will do research. It will be the student's responsibility to choose, with the advisor's help and the guidance of the Graduate Committee, the potential members of the Doctoral Committee. The Committee, consisting of five members, at least three of whom are on the MSCS Faculty. Participating faculty from outside the Department can also serve on the committee, and in some cases, direct dissertations. The Doctoral Committee is formally appointed by the Chairperson of the Department after consultation with the Graduate and Executive Committees. The Doctoral Committee is a departmental body whose members will normally serve as the student's Qualifying Examination Committee and Dissertation Committee and will conduct the student's Defense of Dissertation, all on behalf of the Graduate School. The Chairperson of the Doctoral Committee normally serves as the student's Dissertation Advisor.

5. **Language Requirements:** No foreign language is required.

6. **Examinations**

a. **Comprehensive Examination:** This is an examination based on the computational sciences core. It is to test the student's ability to integrate this core material and solve problems of some difficulty. This exam is given by the Graduate Committee at least twice each year. A doctoral student is expected to complete the core courses within the first two years of study, and to take the comprehensive examination at the first opportunity after their completion. A student who enters the program with the necessary core courses is expected to take the comprehensive exam at the first available time it is offered. If unsuccessful in a first attempt, a student may sit for this exam one additional time.

b. **Qualifying Examination:** This is an oral examination, administered by the student's Doctoral Committee. It is used to determine whether the student is adequately prepared to begin research for the dissertation. Questions in the Qualifying Examination may be wide-ranging, dealing with topics of general background and background in the intended field of study. Most of the examination, however, will center on a dissertation proposal – an outline of proposed dissertation research.

c. **Advancement to Candidacy:** Advancement to candidacy for the doctoral degree is considered after successful completion of the comprehensive examination, completion of all course work and residency specified in the *Doctoral Program Planning Form*, and successful completion of the qualifying examination.

d. **Defense of Dissertation (Final Oral Examination):** When the student approaches the completion of his/her dissertation, arrangements should be made for an oral dissertation defense. An official program announcing the defense is then prepared by the student and the department and published by the Graduate School. The proposed program must be submitted to the Graduate School at least four weeks before the date of the defense. The defense of the dissertation will be conducted by at least five qualified faculty members, at least three of whom are on the candidate's Doctoral Committee. A successful defense of the dissertation constitutes the final requirement for a doctoral degree and makes the candidate eligible for the official conferral of the degree.

7. **Formal Deadlines:** Students intending to pursue a Ph.D. are expected to complete the following requirements within the stipulated period:

- a. **Comprehensive Examinations:** Students in the doctoral program must attempt these examinations within two years of beginning their graduate studies in this department, and must complete them within two and one half years of beginning their studies.
- b. **Doctoral Committee:** All students must submit the names of the proposed members of the Doctoral Committee (Section D.4, above) to the Graduate Committee within one semester of completion of the Preliminary Examination.
- c. **Doctoral Planning:** All students must submit the Doctoral Program Planning Form (Section D.3, above) to the Graduate School within one month of approval of the Doctoral Committee.
- d. **Qualifying Examination:** All students must attempt the Qualifying Examination within one year of completion of the Preliminary Examination. Students are urged to consult the Doctoral Committee at the time of its formation and thereafter, to ascertain the Committee's expectations for that examination.

Failure to meet any of these deadlines can result in the suspension of financial aid and/or removal from the program, except in extenuating circumstances.

- 8. **The Ph.D. Dissertation:** The dissertation is the primary degree requirement and must make a significant contribution to knowledge. After advancement to candidacy, normally during the first semester in which dissertation credits are taken, the student must submit a dissertation outline to the dissertation advisor on the proper form (*Outline for Dissertation, Thesis, Professional Project or Essay* form -- available in the Graduate School Office). If approved by the advisor, the outline will be submitted for approval to the Department Chairperson who then forwards the outline to the Dean of the Graduate School. On this outline form is also a list of the members of the Dissertation Committee, which consists of at least three members of the Doctoral Committee. If the outline is approved by the Dean of the Graduate School, it will be returned to the Chairperson of the Doctoral Committee and the student will be informed by the Graduate School Office that it has been approved. When the student begins research for the dissertation, each member of the Doctoral Committee offers direction. Usually, however, the student works most closely with the dissertation advisor who, as such, normally serves as Chairperson of the Doctoral Committee. For dissertation deadlines the student should consult the academic calendar in the Graduate School Bulletin, and the Chairperson of the Graduate Committee. For the required proper format of the Ph.D. dissertation as well as other requirements of the Graduate School relative to

the submission of the dissertation, the dissertation defense program, the public defense of dissertation, the final form for the dissertation, application for graduation, and microfilming of the dissertation, the student should get, from the Graduate School Office, reasonably soon after his/her advancement to candidacy, a copy of the Graduate School publication, "Dissertation Directives". At the conclusion of the student's work, the Dissertation Committee evaluates the dissertation, possibly seeking the opinion of specialists outside of the Department to assist in making a judgment. When the dissertation is approved by each member of the Doctoral Committee, it is submitted to the Graduate School.

9. **Dissertation Credits:** The student should register for dissertation credits (MSCS 8999) only after Advancement to Candidacy. A student must register for a total of twelve dissertation credits. This can be done at one time or over several semesters before graduation.

E. Course Load

1. **Maximum:** A graduate student may register for no more than 13 credit hours during any one semester or 7 credit hours during a summer session.
2. **Graduate Assistants:** Assistants may register for no more than 10 credits in a semester.
3. **Foreign Language Reading Course:** A student may register for a foreign language reading course (ESLP 6021) in excess of the limits noted above without requiring special permission of the Dean of the Graduate School.
4. **Full-time Status:** A student taking 7 credit hours (regular semester), 4 credit hours (summer session), or registered for full-time continuous enrollment (see section G below) is considered to be a full-time student. Carefully note that audits are NOT counted in computing hours for full-time or part-time status. A student, who must maintain full-time status, say for visa or loan requirements, needs to consider this fact before withdrawing from a course or switching to audit.

F. **Academic Review:** At the end of each semester, each student's progress is reviewed by the Graduate Committee and the Graduate School. Graduate students are expected to maintain a quality point average of at least 3.00. Doctoral students are also expected to adhere to the deadlines for completion of examinations etc (see Section D7 above). (In addition, Teaching Assistants are reviewed on the basis of the performance of their duties - see Section V). Unsatisfactory progress in one semester will result in a warning letter. Further unsatisfactory progress may result in being dropped from the Graduate School.

G. **Continuous Enrollment:** All degree graduate students must be continuously enrolled each semester in the academic year (except summer sessions) in order to

maintain graduate student status. Accordingly, all degree graduate students must enroll in either (1) advisor-approved course work, (2) thesis or dissertation credits, or (3) one of the continuation enrollment courses MSCS 9970 through MSCS 9999 as described in the Graduate Bulletin. Any student failing to enroll for one or more academic semesters must petition for readmission upon return and is assessed a readmission fee and fees for each semester missed. (See the Graduate School Bulletin for details.)

Should a student need to interrupt their graduate studies, they should consult the Graduate Bulletin for guidance on requesting a leave of absence.

- H. **Time Limitations:** A student must complete all requirements for a master's or doctoral degree within six years of initial registration in the program. Applications for extension must be made to the Graduate School, with the cooperation of the Graduate Committee.

- I. **Teaching and Learning Seminar:** All department graduate assistants are expected to attend this seminar; attendance is a condition of employment for TAs and RAs, unless waived. Each semester, topics related to teaching and/or the graduate program, are investigated, with contributions from faculty and "senior" students. A student taking a full-course load need not formally register for credit. But the seminar is a convenient way to maintain a full-time status for those taking two courses only, either by registering for the one credit or by attending as a condition of continuous enrollment (see Section G above). However students may register for only one credit in any academic year.

IV. THE FACULTY

The Faculty: As described in the preceding section, each graduate student in a Master's Degree program must choose a thesis advisor (Plan A) or an essay advisor (Plan B) who will supervise the student in the research and writing of the master's thesis or master's essay. Any of the faculty members may be approached with this request but the choice of the thesis or essay advisor must also be approved by the Graduate Committee. For those students who intend to continue past the Master's degree toward the Ph.D., it is strongly advised that the thesis or essay advisor be chosen from among those faculty members who could also serve, in the future, as the Ph.D. dissertation advisor.

When the doctoral student is reasonably sure as to the area of his/her research activities he/she will choose, with his/her advisor's help and the assistance of the Graduate Committee, the potential members of his/her Doctoral Committee.

A list of the MSCS faculty members and their research area and a list of their recent publications are available on the department web site at www.mscs.mu.edu. In addition, faculty from other departments who are participating in the computational sciences program will be listed.

V. GRADUATE ASSISTANTSHIPS

A. Types of Assistantships

1. **Teaching Assistants (TAs):** TAs function as classroom teachers, lab or quiz instructors, or instructional assistants - e.g. tutors, paper-graders, project helpers, etc. according to the needs of the Department and the qualifications and experience of the assistant.
2. **Research Assistants (RAs):** RAs assist the Department in conducting research and are expected to perform research-related activity assigned by the faculty member(s) with whom they work.
3. **Fellowships:** A small number of MSCS students are typically supported by Schmitt or Raynor Fellowships, awarded in a competition within the Graduate School, or by other awards. The Department may also award Earl W. Swokowski Fellowships for doctoral students in their last years of study, or for summer support. A student who holds a fellowship generally has no teaching assignment, and is expected to devote full-time effort to study and research. The Graduate School provides a limited number of Jobling Fellowships to the department to supplement TA's/RA's salaries. These Fellowships are awarded to exceptionally promising new students or to current TA/RAs based upon their performances of their duties.

B. Duties

1. **Departmental:** Assistants are expected to work an average of 20 hours per week for the Department. The nature of their duties, the distribution of their hours over the course of the semester, and their assignment to faculty are arranged at the beginning of each semester by the Assistant Chairperson in consultation with the Graduate Committee Chairperson. Normally, first or second year TAs serve as quiz section instructors - exam/project helpers in a large lecture course like Calculus (MATH 1450, 1451, 2450), Business Math (MATH 1390, 1400), Statistics (MATH 1700) or Introduction to Computer Science (COSC 1000, 1010, 1020). In the third year, after gaining some teaching experience, an assistant may be assigned his/her own one or two sections of a multi-sectioned lower division course. A Research Assistant's actual activities are outlined and supervised by the faculty person in charge of the particular research project. The work done by the RA must be directly associated with this research project.
2. **Priorities:** The Department is firm in its belief that an assistant's first and foremost responsibility is to his/her academic work - his/her studies. He/She is a graduate student first, a graduate assistant second! So that his/her 20 hour a week work load as an assistant (for which he/she receives the monetary stipend) should not interfere with his/her studies -- his/her academic endeavors (for which he/she is granted tuition remission) -- the University imposes certain restrictions as to the

course load an assistant may carry. (See Section 4 below). Thus, each assistant has dual responsibilities in his/her assistantship. Clearly, the TA has a responsibility to his/her students to do the best teaching job possible for them; the RA likewise should not neglect his/her duties toward his/her research project. On the other hand, the assistant must be very careful not to allow enthusiasm for teaching or project work to adversely affect academics. If an assistant notices that this assistantship work load is too time consuming, he/she must discuss this with his/her supervising faculty member and/or the Graduate Committee Chairperson. Adjustments can be made!

3. **Evaluation of Performance:** Each Teaching Assistant will receive a written evaluation of his/her performance at the end of each semester, to be placed in the student's departmental file. Satisfactory performance is a requirement for continued financial support; in addition, this evaluation will form a part of the student's Academic Review (see Section III.F). Assistants teaching their own classes will be reviewed by the Graduate Committee and as a part of the Teaching and Learning Seminar, as well as through the use of student evaluations. Those assisting faculty in their duties will be evaluated by the supervising faculty member.
4. **Course Load Restrictions:** Graduate assistants normally carry 9 credit hours (3 classes) per semester. If a student needs to take more than 10 credit hours, a request must be submitted to the Dean of the Graduate School (pre-approved by the Graduate Committee Chairperson.) **Note**, however, that the terms of the assistantship provide for a maximum of 18 credits of tuition scholarship for the academic year. Any additional tuition credits are the financial responsibility of the assistant. See Section III.I for the effect of this limit on the Teaching and Learning Seminar.

C. Length, Renewal, Termination

1. **Length of Appointment:** Normally, graduate assistants are appointed on a nine-month basis and are paid on a ten-month basis -- i.e. they receive ten stipend checks for nine months' work. The Department (via the Graduate Committee Chairperson) will inform the assistant if any duties are expected during regular University recesses. The possibilities for additional duties and additional financial recompense during recess periods (e.g. Summer Sessions) are limited. Therefore, graduate assistants who intend to remain on campus for the summer should try to budget their ten pay checks to take care of living expenses during the two off-months. Students may discuss the possibilities for summer work with the Graduate Committee. **Note** that, according to Graduate School regulations, graduate assistants are not allowed to accept additional employment for pay during the nine-month term of their assistantship appointment.
2. **Renewal of Assistantships:** Graduate assistantships are NOT renewed automatically. Current assistants may either reapply through the Graduate School

or notify the Graduate Committee Chairperson, in writing, of their wish to be considered for renewal. Students who wish to transfer from the master's program to the doctoral program must formally apply through the Graduate School. Graduate assistants who are students in a master's degree program and who do not intend to continue on toward a Ph.D. should not anticipate more than one renewal of their assistantship appointment. All applications for renewal will be considered by the Graduate Committee along with those from new applicants.

3. **Termination of Appointments**

- a. **Voluntary Resignation:** Assistants should realize that our department relies heavily upon their services for the entire academic year and that a mid-term resignation leaves us in a real bind. However, if it becomes absolutely necessary to resign an assistantship, the following must be done: (i) discuss the resignation with the Department Chairperson **well in advance**, and (ii) submit a signed letter of resignation to the Graduate School with the reasons for resignation explained and the exact date of resignation specified. The letter must be countersigned by the Department Chairperson. The assistant's ID card must accompany the letter of resignation.
- b. **Involuntary Termination:** An assistant will be retained only if he/she is doing acceptable work and is meeting his/her obligation to the Department and the University in an acceptable manner. This includes satisfactory academic progress (see above). Assistantships may be terminated upon recommendation by the Department. The Department Chairperson is obliged to inform an assistant that there is danger of termination as soon as it becomes evident that his/her performance is unsatisfactory in any way. A student may appeal to the Dean of the Graduate School any departmental termination recommendation but only after he/she has first brought his/her appeal to the Departmental Graduate Committee.

D. **Benefits**

1. **Stipends:** Graduate teaching and research assistantships are available for the academic year. The 2009-2010 stipends range from \$13,200 to \$14,765 for 20 hours per week of service over a nine-month period. Stipends are paid in ten installments with the first payment being made the last working day in August, and the last one at the end of May of the following year. Checks are to be picked up in the Department Office on the last working day of the month. Present policy does not allow advance checks to be issued. Assistants who leave the University before the last working day of the month may arrange with the Department Secretary to forward their final pay checks.
2. **Tuition Scholarships:** Graduate assistantships normally pay for 9 credits of tuition in each of the fall and spring semester. At \$865 per credit, this is an important part of the benefit of having an assistantship. Unused assistantship tuition

credits are not automatically extended into the next term or summer sessions. Consult with the Graduate School if you wish to use, or carry over, tuition credits to another academic term.

- E. **Health Insurance:** Graduate students who receive full assistantships (defined as 18-credit per year tuition scholarships with minimum stipends of \$13,200) who have also received award offers stating they are eligible for university-paid health insurance, qualify to have their entire annual premium paid by the university. The same is true of Fellowship holders. Consult the Graduate School for details on coverage on options.
1. **Social Security Numbers:** To ensure receiving stipends you must apply for a social security number immediately. It sometimes takes two to three weeks to receive a number. After obtaining your social security number, report it to the MSCS Department Office Assistant before the 15th day of the month. You may apply for a social security number at either of the following locations or by calling the toll free #800-772-1213:

Downtown Office

310 W. Wisconsin Avenue – Suite 260

Hours: 9 - 4:00 (Mon. - Fri.)

Milwaukee West Office

3716 W. Wisconsin Avenue

Hours: 9 - 4:00 (Mon. - Fri.)

- → Recent changes in the governing laws are likely to delay the issuance of a social security number. Marquette University will provide a voucher that can be cashed at the Bursar Office (1618 W. Wells). The vouchers will be sent with the payroll for each pay period.
2. **Taxes:** The Graduate Assistantship **stipend**, being given in exchange for services, is sometimes TAXABLE as income. However, there are exceptions to this including residents of certain US states. Please consult with the Graduate School or a personal tax advisor.

Qualified tuition, i.e. tuition and related expenses like books, supplies and equipment, being based upon past academic performance, is tax exempt. Thus, the 18 credit **tuition scholarship** portion of the Assistantship is not taxable as income.

In order that income taxes may be properly withheld from the stipend checks, W-4 Forms must be filled out by all new TA/RAs. (International students will have the W-4 form as part of their paper work.) Students from some countries may have tax treaty exemption from state and federal taxes. **All international students must**

complete the forms each calendar year. The forms are available in the MSCS Department or in the Payroll Department, Room 175, Straz Tower.

- F. **Eligibility Certification:** The Immigration Law of 1986 requires that an employer certify the eligibility under the law for all new employees (even American citizens) to hold a job. This is accomplished by inspecting documents and filling out the I-9 form. This law applies to all graduate assistants. The Graduate School will handle certification for all TAs and RAs. Assistants may take care of the I-9 form at the Graduate School Office. Prior to completing the I-9 form, F-1 visa students must also present a statement from the Campus International Programs Office confirming that they are in status.

G. **Offices, Supplies, Equipment**

1. **Offices:** Each TA/RA will be assigned an office space in CU 357, on the third floor of Cudahy Hall. Assistants should pick up their room assignments at the beginning of the term from the Department Office.

Due to previous thefts of textbooks and other university property, and complaints of excessive noise, assistants' offices are to be used strictly for student contacts or personal studying. Extra curricular activities and social contacts should take place elsewhere.

2. **Keys:** Keys are issued by the Department Office. **These are not to be loaned out or duplicated.** At the end of your graduate program, please return the keys to the department Secretary; DO NOT hand them to a new incoming graduate student. **There is a \$25.00 security deposit check for each key issued, if the key is lost or not returned, the Department will use the deposit for the locksmith's service charge.**
3. **Mail:** There will be no acceptance of outgoing personal mail for any graduate student in the Department Office. There is a TA/RA mailbox located in the TA office for incoming mail. Assistant's are responsible for checking for their mail.
4. **Telephone:** There is only one telephone in CU 357 (414-288-5422) being shared by all assistants located there. Please, no non-essential personal calls (in or out) on this extension. We ask that **long distance phone calls** be made from your apartment/residence or cell phone. In that way there will be no misunderstanding as to who made them and for what purpose. Long distance calls (personal) are prohibited from being made by graduate students from any department phones.
5. **Equipment, Supplies:** A copier is located in CU 336. With the exception of paper, all other supplies -- pens, pencils, grade books to be used by TAs for their teaching duties -- are supplied by the Department Office (CU 340). A

new assistant can find out how to properly utilize equipment and these supplies by consulting with fellow assistants or the Department Secretaries. TAs and RAs may use the Department Xerox machine only in connection with their teaching and research duties. TAs and RAs may use the computer equipment in CU 310. **Office supplies (including paper), fax machine, etc. are not intended for personal use. Consult with the Department Office regarding personal use of university supplies and equipment.**

6. **Textbooks and Calculators:** Textbooks and calculators needed for a TA's teaching assignment are issued by the Department Secretary. There is a form to be filled out when calculators are assigned to you. Such books and calculators must be returned at the end of each semester. You are responsible for your calculator and textbooks! If your calculator is lost or stolen, you must report it immediately to the Department Secretary for Public Safety Reporting.

VI. INTERNATIONAL STUDENTS

1. **Campus International Programs:** Non-immigrant foreign-born students should report to the Office of International Education (Alumni Memorial Union, room 425, telephone 414-288-7289) as soon as they arrive on campus. This office is the main source of information and assistance for international students and, by stopping there first, the foreign student will save time and trouble settling into the routine at Marquette. Note: F-1 visa graduate assistants must present a statement from the Office of Campus International Programs confirming that they are in status along with the Employment Eligibility Verification (Form I-9).
2. **Post 9/11:** Immigration regulations continue to change. For up-to-date information, please consult with the Office of Campus International Programs.
3. **Course Loads:** Every foreign student admitted on a student visa must register for a full-time course load (7 or more credit hours per semester) or full-time continuous enrollment.
4. **Language Difficulties:** Foreign students in MSCS graduate programs have presented a TOEFL-iBT (Internet-based Test of English as a Foreign Language) score of at least 90. Supposedly this score indicates minimum language proficiency to carry a full-time academic load. Unfortunately, passing the TOEFL does not necessarily indicate that the student has the required proficiency in the English language -- especially with respect to listening comprehension and speaking/pronunciation. Fluency in these areas is an absolute necessity, not only for the graduate student's academic success (our programs involve many seminars, colloquia, oral exams, in which participation involves, primarily, the spoken word) but also for our TAs to properly carry out their assistantship duties and responsibilities. Our Department receives complaints from students, who claim that they cannot understand the TA because he or she speaks too softly, or too rapidly, or with a heavy accent, or that the TA does not help them because he or she cannot understand the questions they ask. Although many of these student complaints are unjustified, we must pay attention to them. It is the graduate student's responsibility to correct any language deficiencies he or she may have. Here are some suggestions:
 - a. All new foreign students' language skills should have been evaluated by the Office of Campus International Programs during the week of orientation. New foreign students should seriously consider taking one or more ESL (English as a Second Language) courses during both fall and spring semesters, even if this is not required on the basis of the evaluation at the end of the August orientation program for foreign teaching assistants.
 - b. Check early and often with the Chairperson of the Graduate Committee concerning the development of your English language skills. Seek his/her advice and assistance, as well as that of your other professors and your fellow graduate students.

- c. As a student, contribute to the discussions in your classes. Ask questions when you do not understand what the lecturer has said or when you would like clarification or further explanation. Answer questions addressed to you or the class by the instructor or by fellow students. **DO NOT** remain mute to avoid being embarrassed by your less-than-perfect oral English. (Your professors will be quite sympathetic to your language problems; many have been in similar situations themselves in the past.)

- d. Participate actively in the Teaching and Learning Seminar.

VII. ACADEMIC DISHONESTY

To remain a credible and viable institution, Marquette University must uphold the highest standards of personal conduct and professionalism. In particular this means that, from the outset, our graduate students are expected to adhere to the strictest code of academic honesty.

It is not feasible to enumerate all possible instances of academic dishonesty, but any such enumeration would include: downloading code or materials from the web and submitting it as your work, cheating on examinations or class projects in various ways, improperly obtaining examination questions, plagiarizing the work of others, forging signatures, falsifying records, and impersonating a candidate taking an examination. Each of these instances constitutes a conscious act of deception, and may be penalized in many different ways, ranging from a failing grade on a particular examination or project to expulsion from the University. (See also the Policies Section in the Graduate Bulletin.)

If you are uncertain as to what is proper and ethical in a particular situation, consult your advisor or the Chair of the Graduate Committee.

VIII. ETC.

- A. **Housing:** There is a limited number of one-bedroom and efficiency apartments available on campus. However, most graduate students live off-campus in private housing. Information about accommodations, both on and off campus can be obtained from the Office of Residence Life, Tower Hall, Room 203, 716 N. 11th St., #414-288-7208.
- B. **Health:** The Marquette Student Health Service, located in the south-east corner of the Schroeder Complex, telephone #414-288-7184, is available. Graduate students will be seen but are charged a fee for service – although the health insurance provided with an assistantship or fellowship may cover part of this cost. (Contact the Student Health Service for free information.) The Health Service is equipped to diagnose and treat most out-patient conditions. Students with medical problems requiring specialized care will be referred to appropriate resources.
- C. **Counseling:** The Marquette University Counseling Center (2nd floor Holthusen Hall, 1324 W. Wisconsin Ave., #414-288-7172) provides individual, group and outreach services to assist students with academic, career, personal, and interpersonal concerns. The Center is staffed by professional counselors, psychologists, a consulting psychiatrist and trained, student paraprofessional program assistants. Counseling services are free of charge and strictly confidential.
- D. **Physical Recreation:** Memberships in the Helfaer Tennis Stadium and Recreation Center (525 N. 16th St., #414-288-6976) and the Rec Plex (915 W. Wisconsin Avenue, #414-288-7778) are available to graduate students and their families on a semester or yearly basis. The combine recreational facilities has air-conditioned tennis courts, swimming pools, handball/racquetball courts, basketball courts, volleyball courts, squash court, badminton courts, a fitness/weight room, pro shop, locker rooms, an outdoor recreation center (where you can rent camping equipment, skiing equipment,...), jogging lane, driving range, saunas, whirlpools, steam rooms, and a fitness assessment center. Many of our faculty members and graduate students use the Rec Center or Rec Plex. They are a great place to unwind.
- E. **Pi Mu Epsilon:** This national mathematics honorary society consists of both graduate students and advanced undergraduates. Its purpose is to support and further the mathematical interests of its members by providing an informal atmosphere in which to get together and discuss ideas. Although there is a faculty advisor, Pi Mu Epsilon is strictly a student organization and its activities are determined by its student members through their elected club officers. All MSCS graduate students are encouraged to join.
- F. **Association of Computing Machinery (ACM):** This worldwide society promotes the advancement of information technology (see www.acm.org). Marquette has a budding student chapter which often meets on Friday afternoons to discuss

computing. Again, all MSCS graduate students are encouraged to participate. For more information on the local ACM Chapter, contact Dr. Craig Struble.

- G. **Colloquia:** The Department supports a colloquium program that offers graduate students an excellent opportunity to get acquainted with various branches of mathematics, statistics and computer science at a research level. There is, on the average, about one talk per week by an invited speaker and an effort is made to represent varied interests. In addition to its value as an intellectual stimulus, the program also helps the student meet distinguished scientists from various parts of the world in the informal gatherings associated with the visit. You are strongly encouraged to attend as many of these colloquia (and the pre-colloquium coffee hour and post-colloquium parties) as is possible.

(**Note:** Don't become discouraged if you "get lost" soon after the start of some colloquium lectures. Many of our faculty members will be in the same boat!)

- H. **Library:** The University's Library System consists of over one million volumes in two facilities. The Library System also provides faculty and students with access to various electronic journals and databases. In addition, the holdings of the University of Wisconsin-Milwaukee, the Medical College of Wisconsin, and the Milwaukee Public Library systems as well as OCLC services are available to Marquette faculty and students.

- I. **Computing Facilities:** ITS provides support for numerous PC laboratories around campus. For example, ITS provides support for the PC labs in the Raynor Library, as well as the general-purpose university laboratories on the first floor of Cudahy Hall.

Departmental facilities for students include a network of SUN workstations, servers and PCs. Laboratories include two PC laboratories, a Database Lab, High Performance Computing Lab, Systems Lab, Networking Lab, UBICOMP Lab and Bioinformatics Laboratory. Please see www.mscs.mu.edu for more information.

- J. **Milwaukee:** Marquette is an urban university, centrally located near downtown Milwaukee, easily accessible by car and bus, several major public transit routes pass through the campus. The nearby freeway connects Marquette to all points of the greater Milwaukee area, with its population of well over a million. Major airlines and railroads serve the city and Chicago's O'Hare airport is but an hour's drive. Marquette University has its own art museum, the Patrick and Beatrice Haggerty Museum of Art, and theatre, the Evan & Marion Helfaer Theatre. In addition to Marquette, Milwaukee is the home of the University of Wisconsin-Milwaukee and several smaller private colleges. It offers a rich cultural life including performances by the Milwaukee Symphony, the Milwaukee Repertory Theater, the Florentine Opera, and the Milwaukee Ballet. Marquette's own Theater Department provides excellent productions at a very affordable price. The lakefront Arts Center with the spectacular Calatrava addition offers a lively and varied permanent collection. There are

numerous film societies and cinema series offering a wide variety of films at quite reasonable prices. Night-clubs feature rock and blues entertainment.

The Marquette Golden Eagles basketball team, of course, offers diversion for the sports fan, as do professional sport teams, the Milwaukee Bucks (basketball), the Brewers (baseball), and the Admirals (ice hockey). Milwaukee offers some recreational advantages such as an Olympic skating rink, a large marina on Lake Michigan for boating and sailing, and numerous public golf courses and tennis courts. Milwaukee is close to many skiing resorts. Milwaukee County has a large and diverse park system. Some parks afford spectacular views of Lake Michigan. The park system includes a horticultural conservatory, The Domes, located in Mitchell Park within walking distance of Marquette, as well as botanical gardens and a large, ingeniously landscaped zoo.

Ethnic groups are strong in Milwaukee, and their various cultures, from specialty restaurants down to dancing groups, contribute color and variety to life in the city.