KANSAS STATE UNIVERSITY

1990 GUIDE TO REQUIREMENTS

FOR

MAJORS IN COMPUTER SCIENCE & INFORMATION SYSTEMS

To major in computer science or information systems you must meet the general requirements of the University, the requirements of the College of Arts and Sciences, and the requirements of the Department of Computing and Information Sciences (all of which are listed in the General Catalog). The requirements for the BS and BA degrees are outlined on the sample curriculum guide check sheets. An up-to-date copy of the curriculum guide should be kept in your folder in the CS office for your use during advising. Please update your guide form when you pick up your enrollment permit and take the updated version with you when you see your advisor. Please return it to the CS office - Nichols Hall 234 - after you have been advised.
LIST OF COURSES THAT FULFILL DEGREE REQUIREMENTS
AS OF AUGUST, 1980

English Composition I & II
Public Speaking (or Argumentation & Debate)
Principles of Physical Fitness

Humanities: 4 courses 11 hrs. minimum
   One course from each of the 4 areas. They may be
   used at the same time to count toward the major.
   No course may be used to satisfy more than 1
   specific requirement in this section. Only
   courses taken for 2 or more credit hrs. satisfy
   these requirements. (Exception: Music-Studio
   Performance areas 252-799=1+1) (MUSIC LESSONS)

1. FINE ARTS: 1 COURSE
   Anthropology -- Creativity & Culture 515, Afro-
   American Music & Culture 517
   Art technique courses -- 200-799, art history, or
   Intro. to Museum Studies 305, Computer Imaging
   Art 400
   Dance technique courses -- 323, 324, 325, 326,
   371, or Dance as an Art Form
   History of Dance 459
   * Music courses -- 200, 201, 245, 250, 310, 385,
   420, 422, 424, 555, 570, 601, 602, 650, or
   Studio Perform. areas 252-799 (MUSIC LESSONS)
   Theatre courses -- 260-799

2. PHILOSOPHY: 1 COURSE
   Except Logic courses -- 110, 220, & 510 and Comp.
   Religion 310

3. WESTERN HERITAGE: 1 COURSE
   American Ethnic Studies -- DAS 160
   * History courses in Greco-Roman, Western European
     or No. Amer. Fields
   Women's Studies -- DAS 105 or 405
   Humanities (English) Courses -- 230, 231, 233,
   234
   Modern Language Courses -- 514, 530, 565, 566
   Constitutional Law (Pol. Science) Courses -- 613,
   614, 615, 616, 799
   Music -- Introduction to American Music 245
   Political Thought (Pol. Science) -- 301, 661, 663, 667,
   671, 675, or (Sociology) 709

4. LITERARY OR RHETORICAL ARTS: 1 COURSE
   * English courses in literature or creative writing
   250-799 except 301, 400, 401, 405, 415, 492,
   499, 520, 530, 796
   * Modern Language literature courses including
     literature in translation
     Speech -- 330, 335, 430, 432, 434, 460, 725, 730,
     732, 733
     Theatre courses -- 562, 764, 770, 771, 772, 773,
     774, 776

BS Degree only: Levels I & II in the same foreign
language will satisfy the requirements of 3 & 4.

Social Sciences: 4 courses from 3 disciplines 12
hours minimum.
   Up to 2 courses from a single department may be
   used to fulfill the distribution requirements set
   forth in this section. They may be used at the
   same time to count toward the major. One course
   must be 500-799 level or carry a prerequisite in
   the same department.
   At least 3 of the 4 courses must be from:
   Psychology, Sociology, Cultural Anthropology,
   (including Archaeology), Economics, Political
   Science, History, Geography (except Environmental
   122 & 11221)
   The 4th course must be from 1 of the above or from
   the following:
   Women's Studies -- Intro. 105, Sr. Sem. 405
   Gerontology -- Intro. 315, Sr. Sem. 415
   Physical Education -- Soc. Dimen. 340, Motor Dev. &
   Learn. 320, or 435 Sport & Contemp. Society
   Speech -- Anal. of Experimental Res. Lit. in Speech
   520, Non-Verb. Comm. 323, Perspec. on Comm. 720,
   Sem. in Persuasion 726, Linguistics except Gen.
   Phonetics 601, Political Communication 435
   Journalism & Mass Communications -- Intro. to Mass
   Comm. 235, Women and the Media 612, Minority
   Press in America 645, Hist. of Journalism 660,
   Law of Mass Comm. 665, The Mass Communicator:
   Ethics & Issues 685
   Radio-Television -- Hist. of Telecomm. 660 or RTV
   Crit. 675, Radio-Television and Society 300

Natural Sciences: BS Degree -- 4 courses/14 hr. min.
   BA Degree -- 3 courses/11 hr. min.
   Courses that fulfill this requirement may be used at
   the same time to count toward the major. No courses
   may be used to satisfy more than 1 specific
   requirement in this section. Only courses taken for
   2 or more credit hrs. satisfy these requirements &
   courses in excess of 5 credit hours count as 2
   courses.

1. A Life Science with Lab
2. A Physical Science with Lab
3. A Life or Physical Science

Life Sciences: Biology, Biochem., Paleobiology
   (Geol) 581, Paleogeology 704, Intro. Phys.
   Anthro. 280, 281, Fossil Man & Evol. 688,
   Primatology 691, Osteology 694, Ost. Lab 695

Physical Sciences: Physics, Chemistry, Envir. Geog.
   I 220 & II 221 only, Geol. except Paleobiol. 581,
   Paleocoll. 704

4. BS Degree only: 1 course (3 cr. hr. min.) with
   a prerequisite in the same dept. chosen from the
   following: Life or Physical Sci. listed in #3,
   Biochem. courses with a chem. prerequisite, Phys.
   Ed.-Kinesiology 330, Physio. of Exercise 335,
   Psych.-Psychobiology 470, Fund.of Percep. &
   Sensation 480, Comp. Psych. 616

(COVER)
QUANTITATIVE AND ABSTRACT FORMAL REASONING:

BS DEGREE ONLY

Courses used for this requirement may also satisfy any major requirement for which it qualifies.

Select one of the following three options:

1. Three courses from:
   - Math, Statistics, Logic (Philosophy), Computer Science (note: CMPSC 200 requires 201, 202, 206, or 207 and is equivalent to one required course)

2. One of the following pairs:
   - General Physics I 113 & Trig. 150
   - Quantitative Analysis in Geog. 700 & Stat. I level course
   - Methods in Social Research 520 & Stat. I level course
   - Methods of Social Work Research 519 & Stat. I level course
   - Intermed. Quantitative Methods 725 & Stat. I level course
   - Measurement & Evaluation in PE 710 & Stat. I level course

3. Level III: 2 courses
   - Math -- Plane Trig. 150; Elem. Applied Math 201, General Calc. & Lin. Algebra 205
   - Philosophy -- Symbolic Logic II 510
   - Computer Science -- Fund. of Comp. Prog. 200 & one of the following: Fortran 201, Basic 206, Pascal 207, Fortran/Engg. 211

--OR--

Level III: 1 course
   - Philosophy -- Topics in Metalogic 701
   - Computer Science -- Algorithmic & Data Structures 300, Comp. Organ. & Prog. IA 305

BA DEGREE ONLY

Foreign Language: 4 courses 15 hrs.
One of the foreign language sequences offered by the Dept. of Modern Languages or equivalent competency.

Mathematics: 1 course 3 hours
100-299 level course offered by the Dept. of Mathematics, or any other course for which there is a mathematical prerequisite. Any course used to satisfy this requirement cannot be used to satisfy any other general education requirement.

INTERNATIONAL OVERLAY:
This course may also satisfy a requirement in the major, social sciences, or humanities.

The 4th course in a single foreign language sequence (other than Latin) will satisfy this requirement.

Anthropology -- Intro. Cultural 200, Intro. to Ling. Anthro. 220, Intro. to Archaeology 260, Civ. of South Asia I 505, Civ. of South Asia II 506, Folk Cultures 507, Male & Female 508, Cultural Ecology & Econ. 511, Pol. Organ. in Folk & Nonliterate Cultures 512, Creativity & Culture 515, Afro-Amer. Music & Cult. 517, Black Cultures of the Americas 536, Cultures of India & Pakistan 545, Cultures of Africa 550, Culture & Personality 604, Religion in Culture 618, Music & Culture 616, Indians of N. Amer. 630, Indian Cultures of So. Amer. 634, Pre-Columbian Civ. of Mexico & Guatemala 673, Archaeology of the Old World 676

Economics -- Civ. of So. Asia I 505, Civ. of So. Asia II 506, Capitalism & Socialism 656, Intern'l Trade 681, Underdeveloped Countries 682

Geography -- World Regional 100, Human Geography 200, Civ. of So. Asia I 505, Civ. of So. Asia II 506, Latin America 620, Europe 640, Soviet Union 650, Geography of Hunger 710, World Population Patterns 715


Journalism & Mass Communications -- International Communications 670

Management -- Intern'l Business (Bus. Adm.) 690

Marketing -- Intern'l Marketing (Bus. Adm.) 544

Modern Languages -- Russian Culture & Civ. 250, Russian Lit. in Translation: 19th Cent. 504, Russian Lit. Translation: Soviet Period 508, Survey Russian Lit. 552

Philosophy -- Comparative Religion 310


Sociology -- Civ. of So. Asia I 505, Civ. of So. Asia II 506, Soc. & Change So. Asia
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<tr>
<th>Courses for Computer Science</th>
<th>Courses for Information Systems</th>
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<tr>
<td>Anal Geom &amp; Calc I M220</td>
<td>Elem of Statistics S320</td>
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<tr>
<td>Anal Geom &amp; Calc II M221</td>
<td>Intro Business Prog CIS362</td>
</tr>
<tr>
<td>Discrete Math M510</td>
<td>Gen Calc &amp; Lin Alg M205</td>
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<tr>
<td>Symbolic Logic P220</td>
<td>Finite Applications M312</td>
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<tr>
<td>Prob System Modeling S410</td>
<td>Business Data Prog* CIS562</td>
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<tr>
<td>Theo. Found of Comp. CIS570</td>
<td>Systems Analysis* CIS567</td>
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**BS Degree Only**

| Written Comm for Sc E516   | 3 |
| Elem Numerical Anal* M655  | 3 |
| Numerical Computing* CIS580| 3 |

Courses required for BOTH Majors

- Fund. of Computer Programming CIS 200 3
- Fund. Language Laboratory CIS 203 1
- Intro. to Computer Engineering EECE 241 3
- Alg & Data Structures CIS 300 3
- Computer Archit. & Prog. CIS 350 3
- Anal of Algorithms & Data Struct* CIS 500 3
- Intro. to Programming Languages# CIS 505 3
- Operating Systems* CIS 520 3
- Software Engineering Project I* CIS 540 3
- Software Engineering Project II# CIS 541 3
- Intro to Data Management Systems# CIS 560 3

* Fall ONLY
# Spring ONLY

Technical Electives To Be Approved By Advisor:
(6 hrs for BA degree, 9-12 hours for BS degree)

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<th>Course</th>
<th>Credits</th>
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Courses for BA Degree

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<th>Humanities (4 Courses)</th>
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<td>1. Fine Arts</td>
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<td>2. Philosophy</td>
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<td>3. Western Heritage</td>
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<td>4. Literary or Rhetorical Arts</td>
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<tr>
<td>Social Sciences (4 Courses)</td>
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<td>4. Course must be 500-799 or have preq. in same dept.</td>
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<th>Natural Sciences (3 Courses)</th>
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<tr>
<td>1. Life Science w/Lab</td>
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<td>2. Physical Science w/Lab</td>
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<td>3. Life or Physical Science</td>
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<th>Foreign Languages (4 Courses)</th>
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<td>4. Quantitative requirement is met by majoring in CMPSC or INSY</td>
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<th>Math (1 Course)</th>
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<td>1. Internet I Overlay (1 course)</td>
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AREAS OF TECHNICAL ELECTIVES

COMPUTER SCIENCE MAJORS
BA select 6 hours, BS select 9 hours as follows:

Courses taken to meet the Computer Science major may not be used as technical electives. Technical electives must be Computing and Information Sciences 300 level and above. One course must be from the CIS 600 or CIS 700 levels.

INFORMATION SYSTEM MAJORS
BA select 6 hours, BS select 12 hours from the suggested coursework for a particular track.

DATABASE MANAGER
CIS 600  Microcomputer Software
CIS 761  Data Base Management Systems
MANGT 420  Management Concepts
MANGT 421  Production/Operations Management
MANGT 466  Management Information Systems

INFORMATION SYSTEMS ANALYST/DESIGNER
CIS 740  Software Engineering
ACCT 211  Financial Accounting
FINAN 450  Business Finance
MANGT 420  Management Concepts
MANGT 466  Management Information Systems
MKTG 400  Marketing

MANAGEMENT INFORMATION SYSTEMS
ACCT 211  Financial Accounting
MKTG 400  Marketing
FINAN 450  Business Finance
MANGT 466  Management Information Systems
CIS 762  Office Automation
PSYCH 560  Industrial Psychology

APPLICATIONS PROGRAMMER
CIS 600  Microcomputer Software
CIS 535  Introduction to Computer-Based Knowledge Systems
CIS 636  Computer Graphics
CIS 740  Software Engineering
CIS 745  Software Development Management

COMMUNICATIONS ANALYST
CIS 600  Microcomputer Software
CIS 750  Advanced Computer Architecture
CIS 762  Office Automation
CIS 725  Computer Networks
PSYCH 425  Problem Solving and Decision Making
Information technology plays an integral role in the broader context of computing and information sciences. The rapid pace of technological development and the increasing reliance on information systems have led to a growing demand for professionals who can effectively design, implement, and manage these systems. The Master of Science Degree in Information Sciences and Technology at the University of Kansas is designed to address this need by providing students with a comprehensive education in the fields of computer science, information systems, and related disciplines.

The program curriculum is structured to provide a solid foundation in core areas of computer science and information technology, while also offering opportunities for specialization through elective courses. Students in the program benefit from small class sizes, close interactions with faculty members, and access to state-of-the-art facilities. Graduates of the program are well-prepared for careers in a variety of industries, including software development, system administration, data analysis, and technology management.

In addition to the academic coursework, the program also emphasizes practical skills and hands-on experience. Students have the opportunity to engage in real-world projects, conduct research, and participate in internships. These experiences are designed to enhance students' understanding of the field and prepare them for successful careers.

Overall, the Master of Science Degree in Information Sciences and Technology at the University of Kansas is a rigorous and dynamic program that prepares students for leadership roles in the rapidly evolving field of information technology.
courses require the student to complete a substantial software project, including specification, design, testing, and documentation.

**Theory Requirement:** One of the courses: CMSC675 or 770. These courses cover formal proof techniques.

**Breadth Requirement:** Three of the courses: CMSC671 (specification and verification), 795 (programming languages), 730 (artificial intelligence), 720 (operating systems), 740 (software engineering), or 761 (database systems). (Note: CMSC762 may be substituted for CMSC761, and CMSC725 may be substituted for CMSC720.) These courses give the student exposure to a breadth of areas in computing. Other courses numbered CMSC6xx or CMSC7xx may be used to satisfy this requirement, provided that permission is granted by the Graduate Studies Committee.

**Specialization Requirement:** One course numbered CMSC8xx or CMSC9xx (excluding seminar, projects, and M.S. research courses).

The student must receive a grade of "B" or better for each course used to satisfy the above requirements.

IIIa. Advisor and Supervisory Committee

By the end of the first year as a graduate student, a student must select a Major Professor. The Major Professor helps the student choose a Supervisory Committee, pick a Program Option, and formulate a Program of Study. The Supervisory Committee is a group of three faculty members (including the Major Professor) that approves the student's Program of Study and Program Option and gives final approval for the student's degree. The final approval is granted at the Oral Examination, which is held when all other requirements are met for the degree. The Oral Examination is described in Section IIIc. The Program Option is described in Section IIIb. The Program of Study lists the courses that the student takes to satisfy the coursework requirements for the M.S. degree. A student must obtain a Program of Study Form from the Graduate School, list the courses on it, have the Supervisory Committee sign it, and return it to the Graduate School. The Program of Study Form should be completed at the end of the student's first year of studies.

IIIb. The Program Option

The Program Option can take one of three forms:

- **Non-thesis-report Option:** Write a major paper, for example, as part of a CMSC8xx course. This option requires 33 credit hours for a M.S. degree.
- **Report Option:** Undertake a project that culminates in a written report; 2 credit hours for CMSC689 are awarded. Project work satisfying the Implementation Requirement can be used, subject to the approval of the Major Professor. This option requires 30 credit hours for a M.S. degree.
- **Thesis Option:** Perform original research that culminates in a written thesis; 5 credit hours for CMSC699 can be awarded for the work. This option requires 30 credit hours for a M.S. degree.

The document written to satisfy the Program Option should represent the best possible writing by the student; it is not to be written or extensively edited by the Major Professor. Students should begin their writing early enough so there will be time for review by the Major Professor and rewriting by the student prior to the Oral Examination. Once the student has completed the document, the student must visit the Graduate School and obtain the Graduate School's Approval Form. The Supervisory Committee members sign the Approval Form, and the student returns it to the Graduate School.

If a student chooses either the thesis or report options, the thesis or report must meet the Graduate School's standards. Tentative copies of the thesis or report are due in the Major Professor's office approximately two months prior to graduation. The Graduate School requires three copies of the thesis or report, which are submitted after the Oral Examination.

IIIc. The Oral Examination

Once the Supervisory Committee members have signed the Graduate School's Approval Form, the student returns the form and tells the Graduate School the time, date, and place of the Oral Examination. The examination should take place approximately one month before graduation, and it must occur no sooner than one week after the Approval Form is returned.

The Oral Examination is a presentation of the student's Program Option work and a defense of the student's scholarly effort. The exact format of the Oral Examination is decided by the Supervisory Committee, and the student must consult the Major Professor prior to the examination to establish the format.

A student can either pass or fail the Oral Examination, subject to a vote by the Supervisory Committee. If the student fails, a second attempt of the Oral Examination cannot be retaken in less than two weeks but not more than twelve months after the failed examination, unless an extension is granted by the Dean of the Graduate School. No third try is allowed.

IV. NORMAL PROGRESS

Each semester of enrollment, a student must make normal progress towards the M.S. degree. Normal progress is considered to be the following:

- a grade point average that is 3.00 or better.
- a Major Professor selected and a Program of Study filed with the Graduate School by the end of the first year in attendance.
- a coursework load of at least 9 credit hours per semester.

V. UNRESOLVED ISSUES

Any issues not covered in this document shall be resolved by the Graduate Studies Committee in consultation with the faculty of the Department of Computing and Information Sciences.
GENERAL REQUIREMENTS

To be admitted to the graduate program in Information Sciences and Computing, you must be a holder of a baccalaureate degree from an accredited institution. The undergraduate degree must be in a field related to computer science, mathematics, or a related field. You must also have a minimum GPA of 3.0 on a 4.0 scale. If your GPA is below this requirement, you may still be considered if you have relevant work experience in the field.

In addition to the above, you must also submit the following:

- Two letters of recommendation from academic or professional references
- A statement of purpose
- A resume

The Department of Computing and Information Sciences will review your application and notify you of its decision.

If you have any questions, please contact the Graduate Coordinator at the university.

January 1989
KANSAS STATE UNIVERSITY

DEPARTMENT OF COMPUTING AND
INFORMATION SCIENCES

DOCTOR OF PHILOSOPHY DEGREE

GUIDELINES

INTRODUCTION

The Doctor of Philosophy degree is designed to provide advanced education and research opportunities in the field of Computer Science and Information Sciences. The program is intended to prepare students for careers in academia, research institutions, and industry.

The requirements for the degree include the successful completion of coursework, passing qualifying exams, conducting original research, and successfully defending a dissertation.

In this document, you will find information on the structure of the program, the coursework requirements, the examination process, and the dissertation defense.

[Continues on next page]
3b. You must maintain a 3.00 grade point average in all coursework.

3c. You must make regular progress toward completion of the degree. Progress of graduate students is reviewed each year in January by the Graduate Studies Committee. A written evaluation is sent to you and placed in your permanent file. Any student who does not maintain an adequate grade point average or who does not respond to a warning of inadequate progress will be placed on probation, with written notice from the Graduate School. A student on probation must correct deficiencies within the time limit indicated in the written notice or be dismissed from the graduate program.

3d. If you are employed by the department, you must enroll in at least 9 hours of graduate-level courses each Fall and Spring term of employment. (Students new to Kansas State University may request to enroll in only 6 hours of courses during their first semester.)

3e. Sometime in your graduate career you must participate in teaching within the Department, either as an assigned instructor or by special arrangement.

3f. You are expected to participate in the professional activities of the Department. You must attend seminars and colloquia offered by the Department and by the professional societies within the Department.

4. SPECIFIC REQUIREMENTS FOR THE PhD DEGREE

4a. Upon admission to the PhD program, you are assigned an academic advisor, who remains your supervisor until you obtain your major professor (see Section 4d.). You and your advisor complete a Declaration of Intent form and give it to the departmental secretary. You must also consult with your advisor to formulate an initial research paper (see Paragraph 4b), a plan of study and an agreement with a research advisor (see Paragraph 4d).

4b. During your first year in the program, your academic advisor will assign you an initial research paper on some topic of the advisor’s choosing. The paper you write must display sound organization, clear exposition, evidence of background research, and conceptual understanding of the topic. The paper does not need to be a research proposal or a new research result. The paper might relate to or be supported by a course you are taking. It should represent from 1 to 3 credit hours of work. (In some cases, you can receive CMPS999 credit for your work.) The paper must be edited or organized by any member of the faculty.

4c. The initial research paper will be evaluated by your academic advisor in consultation with the Graduate Studies Committee. You will not be allowed to proceed to the second year of your PhD studies if your initial research paper is not accepted by your academic advisor and the Graduate Studies Committee.

4d. At the end of your first year of PhD studies, you should seek a research advisor, also known as your major professor. Your research advisor must be a member of the Graduate Faculty. (See the “Kansas State University General Catalog” for further information.) Since the research advisor organizes and directs your research, you should choose an advisor carefully. How do you find an advisor? Talk to faculty members. Take some of the 800-level or 900-level research-oriented courses. Read current survey and research papers in computer science journals and magazines. It is your responsibility to obtain a research advisor. You may not enroll in CMPS999 (Research in Computer Science) until you have permission of your research advisor to do so.

4e. In consultation with your research advisor, you must compose a supervisory committee. The supervisory committee must include three members of the Graduate Faculty in the Computing and Information Sciences Department. Another member must be from the graduate faculty of the Computer Science Department at the University of Kansas. Another member must be a Kansas State University Graduate Faculty member from a department other than Computing and Information Sciences. All committee members must be chosen for their appropriateness to your planned research topic. In addition, the Graduate School will appoint an examination chairperson from outside of the Computing and Information Sciences Department.

4f. You must consult regularly with your research advisor.

4.1. The Program of Study

4.1a. You must meet with the members of your supervisory committee and formulate a Program of Study. (Obtain the Program of Study forms from the Graduate School.)

4.1b. The Program of Study contains the following information:

4.1b.i. major professor (that is, the research advisor)
4.1b.ii. members of the supervisory committee
4.1b.iii. general area of research
4.1b.iv. three preliminary examination areas (See Paragraph 4.2c.)
4.1b.v. all graduate course credits (at least 90 hours)

4.1c. The graduate course credits must include the following:

4.1c.i. The Core Courses stated in Paragraph 2d. Equivalent courses taken at another institution are acceptable. The Graduate Studies Committee reserves the right to determine equivalency. Alternatively, Core Courses can be omitted if you elect to take and pass the comprehensive exam. (See Paragraph 4.2b.)
4.1c.ii. At least 24 hours of course credit at Kansas State University beyond the Master’s degree.
4.1c.iii. At least 30 hours of PhD research.
4.1c.iv. At least 9 hours of CMPS900-level courses.
4.1c.v. One or more courses in theoretical or foundational topics that support your chosen direction of research. The supervisory committee approves the choice of courses for this requirement.
4.1c.vi. Any additional requirements instituted by your supervisory committee. (An example: English 516, “Written Communication for Scientists,” is sometimes required for additional writing experience.)

4.2. The Preliminary Exams

4.2a. You must also pass preliminary exams. The exams consist of 4 written exams and one oral exam. By the end of your second year of studies, you must have passed the preliminary exams.

4.2b. The first preliminary exam is a comprehensive exam over the Core Courses (see Paragraph 2d). This exam is waived if you complete the Core Courses (either at Kansas State University or at your previous school) with at least a "B" in each course and with a grade point average of 3.50 or greater for all of the courses. There is no reading list for the comprehensive exam. The exam covers the content of the core
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