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Handbook Overview

The Computer Science and Informatics Graduate Program Handbook (handbook) outlines the policies of the Computer Science and Informatics Graduate Programs at Emory University. The handbook complements the Laney Graduate School (LGS) Handbook, which contains general degree requirements and graduate school policies. In general, students should consult the latest version of the handbook. Should the handbook change, students can opt to satisfy the requirements of the version that prevailed upon their matriculation or the current version. If unsure about a policy or rule, students should consult with their advisor, the graduate program coordinator (GPC), or the Director of Graduate Studies (DGS).

Program Overview

The James T. Laney School of Graduate Studies is committed to graduate education that provides students with deep and broad expertise in their chosen fields, creativity to cross discipline boundaries, courage to challenge convention, and confidence to ask unexpected questions and articulate bold new perspectives.

The Computer Science and Informatics Graduate program (CSI) is offered and managed by the Departments of Computer Science (CS), Biomedical Informatics (BMI), and Biostatistics and Bioinformatics (BIOS). Faculty from these three departments collectively support the academic teaching, research and service missions of the CSI program. The set of program administrators include:

- Director of Graduate Studies (DGS);
- Graduate Program Coordinator (GPC);
- co-Directors of Graduate Studies (co-DGSe) for CS Master’s degree, BMI and BIOS

Computer Science and Informatics Ph.D. Program

The Computer Science and Informatics (CSI) Ph.D. program is designed around departmental research strengths in data and information management, data mining, healthcare analytics, machine learning, natural language processing, security and privacy, and information access and retrieval. The program is distinguished by its interdisciplinary nature and is a joint program between the departments of Computer Science, Biomedical Informatics, and Biostatistics and Bioinformatics. The program has collaborations with Emory's computational and discrete mathematics faculty, departments of physics, biology, psychology, and chemistry, and highly regarded schools of medicine and public health.

The academic course work is expected to be finished within the first 2-3 years followed by a qualifying examination in the student's chosen concentration, and a thesis proposal followed by the thesis defense. By year 3 or often earlier, students are expected to begin working closely with an advisor on original research. On average, a PhD degree takes 5-6 years to complete.

Ethics Requirements

All PhD students must complete the LGS Jones Program in Ethics (JPE), consisting of the following three parts:

1. JPE 600*: A one-day graduate school workshop typically scheduled one week prior to the start of the fall semester during the student's first year of study.
2. CS 590: Teaching seminar on computing-related teaching pedagogy including scholarly misconduct. CS 590 is to be completed in the fall of the first year of study or fall of the second year in exceptional circumstances. (This part may be supplemented by CS700 Graduate Seminar and an annual department meeting.)
3. JPE 610*: A minimum of 6 hours of graduate school hosted seminars to be completed over the course of the student's PhD study. Students must show their ID in order to get attendance credit.
*LGS will notify students regarding JPE 600 and 610 offerings.

**Teaching Requirements**

Teaching training is an important part of a student’s overall preparation for possible academic careers. Students are expected to complete their teaching requirements during their first two years (fall, spring, summer of year 1, and fall and spring of year two).

Students must complete summer TATTO (TATT 600) course offered through LGS prior to serving as a Teaching Assistant (TA) or Instructor. Students register for TATT 605 during the semester of a TAship or TATT 610 during a semester as instructor of record for a course. More details on the TATTO program can be found in the LGS Handbook.

CSI PhD students must fulfill their minimal teaching requirements by completing three TATT 605 courses, i.e. serving as a TA for three courses. Alternatively, each TATT 610 instructorship can replace two TATT 605s. (A student may also serve as a TA or Instructor for additional courses after satisfying the minimal requirements.) Each graduate instructor will have a faculty mentor for the course that they are teaching or co-teaching.

CS 590 Teaching Seminar explores theoretical and practical approaches for effective teaching, with particular emphasis on the discipline of Computer Science. After this course, students will be able to demonstrate knowledge of multiple pedagogical strategies, write a syllabus, develop assessment items, and design and deliver lectures and presentations for a variety of different audiences.

**Note:** All departing graduate students must provide copies of their grade books (or spreadsheets) for the courses they taught in the preceding year. If you teach during the academic year, you must send an electronic grade book to the Program Administrator before the department will sign off on your degree application. If there is an outstanding or incomplete grade in a class you taught, or in your grade book, you must also leave a statement to the program coordinator stating what is left for the student to complete in order to change the grade.

**Course Requirements**

CSI PhD course requirements are in addition to LGS general degree requirements. Students with insufficient background in computer science may need to complete additional preparatory courses.

It is the student’s responsibility to ensure that he/she meets the general degree requirements described in the Laney Graduate School Handbook. In particular, students must complete, in advanced standing, 18 hours of coursework (with no more than three hours of directed studies), and another 18 hours of research and coursework before candidacy.

For area-specific elective requirements, the listed sets of courses are representative, not exclusive. With prior written approval from the DGS or co-DGS, a student may select from area-relevant graduate courses in Mathematics, Computer Science, Biomedical Informatics, Biology, Chemistry, the Rollins School of Public Health, School of Medicine, and appropriate schools at Georgia Tech. Generally, we expect no more than 2 courses to be taken outside of the CS, BMI, BIOS and MATH departments at Emory.

Students must complete their core courses with a grade of B+ or higher and complete the remaining coursework by year three with a GPA of 3.5 or higher.
**Computer Science & Informatics Main Track**

All courses are 3 credit hours unless otherwise indicated. Courses listed below are offered on a regular schedule, except for topics courses.

**FOUR CORE COURSES**: All students in the CSI PhD Main Track are required to take the following 4 core courses:

- CS 526 Algorithms (or CS 523 Data Structures and Algorithms by permission)
- CS 534 Machine Learning
- CS 551 Systems Programming
- CS 554 Database Systems

**SEVEN ELECTIVE COURSES**: Students are required to take at least 7 elective courses from the three areas listed below (including any topics e.g. 584's or 700 level courses offered in that area). These courses serve as building blocks of a broad and rigorous training in computer science and informatics.

*Data and IIS (Min. 2 courses)*: The objective of this area is to provide training in data management, statistical techniques, language theory and intelligent systems and to obtain rigorous training in underlying foundations.

*Systems (Min, 2 courses)*: The systems area provides strong foundations in computer operating systems, architecture, storage, language translation and related topics.

*Foundations and Applications (Min. 1 course)*: The objective of this area is to obtain the necessary background in probability, numerical analysis, theory of computing and/or an understanding of applications in various domains.

*A listing of courses that satisfy the various elective areas can be found in the “CSI Program Handbook Companion: Operations and Procedures” guide.*

**Expected Degree Progression**

The following is a typical five-year schedule of the PhD study:

<table>
<thead>
<tr>
<th>Year</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Two to three core courses; Five core or elective courses combined; One TATT605 or TATT610; One rotation project</td>
</tr>
<tr>
<td>2</td>
<td>One to two core courses; Five to six core or elective courses combined; Two TATT605 or one TATT 610; One rotation project</td>
</tr>
<tr>
<td>3</td>
<td>Remaining core/elective courses (if any); Remaining TATT605/610 (if any); Research; Qualifying Exams</td>
</tr>
<tr>
<td>4</td>
<td>Advanced to candidacy; Research; Dissertation prospectus</td>
</tr>
<tr>
<td>5</td>
<td>Research; Dissertation Defense; Graduation</td>
</tr>
</tbody>
</table>

*Note: A listing of courses that satisfy the various elective areas can be found in the “CSI Program Handbook Companion: Operations and Procedures” guide.*

**Biomedical Informatics Concentration**

The Biomedical Informatics Concentration (BMI) focuses on the effective use of biomedical data, information and knowledge for biomedical and clinical research, as well as decision support, driven by efforts to improve human health. Requirements for the concentration follow a similar structure to the Main Track of the Computer Science and Informatics Ph.D. program. Details of the coursework and rotation projects are different and
Students are required to take 3 core courses that establish a foundation of biomedical informatics, an additional 6 required courses from 3 areas, and two elective courses as detailed below. All courses are 3 credit hours unless otherwise indicated. Courses listed below are offered on a regular schedule, except for topics courses.

THREE CORE COURSES: All students are required to take the following 3 core courses:
- BMI 500 Introduction to Biomedical Informatics
- CS 534 Machine Learning
- BIOS 506 Statistical Methods (4)

SIX ELECTIVE COURSES: Students are required to take 6 courses that serve as building blocks of a sound biomedical informatics training (including any topics e.g. 584’s or 700 level courses offered in that area). These courses are organized into three areas: Analytical Foundations, Biomedical Applications, and Computational Techniques. Students must take two courses from each. Details about these three areas is described below.

TWO ADDITIONAL ELECTIVES: Students are required to take 2 additional graduate level courses. To meet this requirement, students may opt for courses from Mathematics, Computer Science, Biology, Chemistry, Biomedical Informatics, the Rollins School of Public Health, School of Medicine, and appropriate schools at Georgia Tech through the ARCHE program.

Analytical Foundations (2 courses): The objective of this area is to provide training in mathematical and statistical techniques to analyze data, formulate and test hypotheses and obtain rigorous training in underlying foundations.

Computational Techniques (2 courses): The objective of this area is to provide training in computational systems and techniques that are essential to the conduct of biomedical informatics research and development activities.

Biomedical Informatics Applications (2 courses): The objective of this area is to provide training in the specific domains that motivate the methodological and applied activities of biomedical informatics research.

Expected Degree Progression
The following is a sample of a five-year schedule of the PhD study:

<table>
<thead>
<tr>
<th>Year</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

Note: A listing of courses that satisfy the various elective areas can be found in the “CSI Program Handbook Companion: Operations and Procedures” guide.
Qualifying Examinations

Computer Science and Informatics Track

CSI PhD qualifying examinations help to determine a student’s readiness to conduct original research in a chosen area. The exam covers fundamental knowledge in select topics. Students may take a qualifying exam once they have completed the minimum course requirements and must declare their intention to do so at least one semester prior to taking the exam.

The exam committee consists of at least one program faculty advisor and two other program faculty members. Any committee member or the student may request additional committee members from outside the program.

The committee determines the format of the exams: oral, written, or a combination. Upon completion, the committee assigns a grade of pass, conditional pass, or fail to each exam. In the case of conditional pass, the committee will specify requirements that the student must satisfy for removing the contingency. In the case of fail, the student may retake the exam one more time.

Students must select one major topic and one minor topic both chosen from the ACM Computing Classification, shown in the next table.

<table>
<thead>
<tr>
<th>Topic</th>
<th>ACM Classification</th>
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<tbody>
<tr>
<td>Systems, Networks, Parallel Programming</td>
<td>C.2, D.4, D.3.2-D.3.4</td>
</tr>
<tr>
<td>Numerical Analysis, Scientific Computing</td>
<td>G.1</td>
</tr>
<tr>
<td>Database Management, Data Mining, Information Extraction and Retrieval</td>
<td>H.2, I.5.2, I.5.3, I.5.4, H.3.2, H.3.3</td>
</tr>
<tr>
<td>Artificial Intelligence, Natural Language Processing, Machine Learning</td>
<td>I.2.4, I.2.5, I.2.6, I.2.7, I.2.8</td>
</tr>
<tr>
<td>Bio/Medical/Health Informatics</td>
<td>J.3</td>
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Biomedical Informatics Track

The objective of the BMI Qualifying Exam is to evaluate your depth and breadth of knowledge in Biomedical Informatics. Prior to the exam, schedule a meeting with the BMI DGS and complete a checklist to confirm that you have completed your course requirements. You are also required to select a 3-member committee which includes your thesis advisor. The exam is structured as follows:

- You are required to submit, to your committee, a publishable writeup that describes a recent research project/activity. This is similar to a conference submission (it can be a resubmission of a conference paper) and should therefore be properly formatted with references etc.
- The committee will review and grade your submission prior to your exam. The written section allows us to evaluate your writing style and also assess your research progress.
- The qualifying exam is an oral exam that is 60-90mins long. During the exam the students will
  - Make a 15-20 presentation followed by ~10mins of Q&A. This constitutes the depth section of your qualifying exam
  - It is followed by an open-ended questioning that is focused on the breadth of your chosen field.
Research Requirements

Rotation Requirements: CS 598R

Rotation projects provide practicum opportunities to students prior to their dissertation research. The objective is to expose students to computational research problems in practical settings and to potential faculty research advisors, collaborators and thesis committee members. Rotations may also help to provide focus on a specific research area and to jump-start dissertation projects. PhD students must complete two rotation projects as part of the candidacy qualifying process; the first rotation should be completed before the start of Year 2 and the second rotation before the start of Year 3.

A rotation project is a three-credit hour, semester long activity with pre-defined deliverables and a final evaluation. Students register for CS598R for each rotation project under the supervision of a faculty advisor. Students will be helped by their thesis advisor (or appropriate DGS/co-DGS, if they don’t have an advisor) when choosing a rotation faculty advisor. If the advisor is not a member of the CSI program faculty, then a co-advisor from the program is required.

Students must submit a project proposal with well-defined outcomes and deliverables prior to starting a rotation project and submit a final report upon completion. An accepted or published paper may serve as the final report. If software development is involved in the project, it is important to clearly specify the deliverable at the start of the project. Students must also present their work at a department seminar.

For CSI Main Track Students with interdisciplinary research interests in biomedical or public health informatics, rotation projects may involve participation in research laboratories in Biology, Chemistry, Rollins School of Public Health, the School of Medicine, or external organizations such as the CDC. BMI Students are recommended to select a domain-focused rotation faculty mentor, in addition to their advisor, who will provide the biomedical, clinical or translational domain use cases that will drive their informatics training.

BMI Concentration PhD Students (BMI Students) are required to complete one informatics and one domain specific rotation projects.

A student may earn 3 hours of course credit for each rotation project through CS598R. A single multi-semester project may continue as CS599R (not another CS598R).

Dissertation Prospectus

The dissertation prospectus comprises a written and oral presentation of the student’s proposed research. The proposal write-up, including a comprehensive bibliography must be distributed to the committee at least two weeks prior to the oral component. The proposal's oral component begins with a 30-minute presentation of the student’s proposed research followed by a question-answering session by the committee. The entire exam is an hour long.

The committee assigns a grade of pass, conditional pass, or fail to each exam. In the case of conditional pass, the committee will specify requirements that the student must satisfy for removing the contingency. In the case of fail, the student may retake the exam once more.

Dissertation Manuscript and Defense

Students must write a dissertation describing original research in their chosen area. They must deliver a public presentation of the dissertation before a dissertation committee consisting of the faculty advisor who is a member in the program, two additional faculty members from the program, and one or more members outside
of the program with Ph.D. degrees.

**Note: A student must complete his or her dissertation prospectus at least one semester prior to his or her dissertation defense and manuscript submission.**

**Candidacy**

Admission into candidacy is guided by the principle that a Ph.D. student should possess proficiency in multiple areas and mastery in at least one area. Proficiency in breadth is assessed through the student’s performance on completed courses and rotation projects, while depth in an area is determined by passing the qualifying exam and other measures such as research publications.

To be eligible for candidacy, a CSI PhD student must:
- Complete all core and elective coursework
- Complete two CS598R rotation projects
- Complete all ethics requirements, including JPE 600 and 610
- Complete all teaching requirements, including TATT 600, CS 590, and TATT 605 or 610
- Pass his or her qualifying examinations

Additionally, LGS requires that a student:
- Resolve any Incomplete (I) or In Progress (IP) grades
- Be in good standing with a minimum cumulative 2.70 GPA
- Have earned at least 54 credit hours at the 500 level or above

Students must reach candidacy by September 15 of their fourth year. Students who do not meet this deadline will be placed on academic probation, will not be eligible for PDS funds, and may forfeit financial support. These sanctions will be lifted when the student enters candidacy.

**Note: Students cannot apply for Candidacy and graduate in the same semester.**

A Ph.D. student must be in candidacy before they may submit an application for a Master’s degree based on candidacy.

**Seminar Requirements**

**Seminar Attendance**

Each student in the program is required to enroll and maintain satisfactory attendance in the Computer Science Seminar (CS700) each semester that he/she is in residence. Each student is also required to present at least one thesis-related seminar prior to graduation.

**Seminar Presentation**

Each student must present one CS700 seminar on his or her thesis research. This is done while the student is in candidacy and prior to the dissertation defense.

**Annual Progress Reports**

Every PhD student is required to submit a yearly progress report to the Director of Graduate Studies. The report must be reviewed and signed by the student’s advisor. If the student does not yet have a Ph.D. advisor, then the
DGS must review and sign the report. Reports are due by the end of May and should contain information spanning the period from June 1 of the previous year to May 31 of the current year.

Financial Information

Fellowships and Assistantships

Except for students supported by non-Emory fellowships or scholarships, full time PhD students are typically supported by a Graduate School Fellowship (GSF) or a faculty research assistantship (RA). In most cases, LGS provides full support (tuition, stipend, health insurance) for the first 21 months (i.e., Fall of year one thru spring of year two including the intervening summer). After 21 months, PhD students are expected to join a research group and go on faculty grant support, i.e. receive a stipend through an RA or another form of external support. In exceptional circumstances, alternative arrangements are possible on case-by-case basis, based on performance evaluation and good progress in the program. Reappointment is not automatic.

The Laney GSF is not available to students in MS Degree Programs, although RAs may be available to MS students in some cases.

Responsibilities

All students, regardless of funding support, participate in teaching, research and professional development activities prescribed by the program. Students are expected to complete their TATTO, JPE, coursework and rotation requirements during the first two years. The CSI program and relevant departments assign student responsibilities for non-RAs. This may involve lab and teaching assistance, grading, and teaching. For students with interdisciplinary research interest/focus, duties may involve assignments in non-departmental research and project activities at the School of Medicine, the School of Public Health, and other collaborating units on campus. Faculty advisors determine their RAs research and other scholarly duties.

Conditions, Evaluations and Renewal

A student receiving RA or LGS support must be registered as a full-time student. Students receiving full support from Emory sources, including grants, may not accept any remuneration for any other work either in or outside the university.

The performance of each GSF and RA recipient will be reviewed and evaluated annually by the department's Graduate Committee and when appropriate, the student's faculty advisor. In addition, the assistant’s progress towards his or her degree will also be evaluated. The student must continue to make satisfactory progress toward their degrees in order to maintain the support.

Fellowships and assistantships may be reduced, suspended, or terminated by the department in advance of the stated expiration date when the student's performance is unsatisfactory. Any of the following may result in an unsatisfactory performance rating: failure to maintain the stated minimum GPA, failure to earn minimum required credits toward degree each semester, failure to advance to candidacy in a timely manner, and/or failure to perform satisfactorily in assigned teaching or work duty.

Program Development Funds

The LGS makes funds available to PhD students through a professional development support program (PDS). Students are eligible for up to $8000 in each of the three categories of training, research, and travel, over the course of their graduate career. These funds are not guaranteed but are subject to application and review. To receive an award, a student must be in good standing, both in the LGS and in the program. Support beyond the
$2500 limits is subject to a competitive application process.

Further details on the PDS program can be found in the LGS handbook and the PDS website: http://www.gs.emory.edu/professional-development/pds/index.html.

**Professional Conduct**

A graduate student involved in any form of undergraduate instruction (e.g., classroom instructor, TA, lab assistant, grader) is expected to behave as dedicated professionals and representatives of the University. Lack of preparation and unprofessional conduct undermine the efforts of the entire department and the University. The Director of Undergraduate Studies and the Chair will investigate reports and complaints by students of graduate instructors being late, rude, or unprepared. Substantiated neglect of duty can result in full or partial rescinding of the instructor's stipend, and in serious cases result in the student reported to the Laney Graduate School for a conduct code violation.

**Computer Science M.S. Program**

The Master’s program in Computer Science prepares students for professional jobs in computer industry or further graduate study. Students can choose one of the following options:

- **Course-Only Option:** 30 graduate course credits
- **Project Option:** 24+6 graduate course plus research credits
  
  Students conduct a faculty-supervised project the result of which may be a report or documented software and will be made publicly available. Satisfactory completion of the project requires approval by the faculty advisor.

- **Thesis Option:** 21+9 graduate course plus research credits
  
  The student will complete an acceptable thesis based on independent, original research to be submitted to the Laney Graduate School.

Additionally, each student must complete an internship as a part of CS596R. The internship may be done at Emory or externally (including internationally) and may be paid or unpaid. Students are expected to find their own internships, but the program may help as necessary.

**Course Requirements**

The course of study is to be completed within 2 years. For the MS degree, students choose one of the tracks below and must:

- complete their core courses with a GPA of 3.0 or higher and at most one C;
- complete a requisite number and set of electives, depending on the degree option (course-only, project or thesis);
- complete all coursework with a GPA of 3.0 or higher.

In each track, students may substitute at most one of the electives with a relevant course from Mathematics, Computer Science, Biology, Chemistry, Physics, Biomedical Informatics, the Rollins School of Public Health, School of Medicine, and appropriate schools at Georgia Tech through the ARCHE program. When substituting courses, a student must obtain prior written approval from their advisor and DGS.
**Main Computer Science Track**

The M.S. in Computer Science accommodates students whose primary interest is in computer science who wish to follow a core Computer Science trajectory focusing on hardware, software and network systems. Requirements for completing the degree are as follows.

**4 CORE COURSES**, with a GPA of 3.0 or higher and at most one C:
- CS526: Algorithms (or CS 523: Data Structures and Algorithms by permission)
- CS551: Systems Programming
- CS554: Database Systems
- CS580: Operating Systems

**3 COURSES AT OR ABOVE 500-LEVEL** chosen from:
- CS 524: Theory of Computing
- CS 534: Machine Learning
- CS 540: Software Engineering
- CS 543: Information and Computer Security
- CS 556: Programming Languages and Compilers
- CS 557: Artificial Intelligence
- CS 562: Advanced Computer Systems
- CS 570: Data Mining
- CS 581: High Performance Computing
- CS 584: Topics in Computer Science

---

**Computational Science Concentration**

The Computer Science Master’s program with Computational Science Concentration combines key elements of graduate study in Computer Science augmented with advanced coursework and projects in modeling, simulation, applied mathematics and computationally focused scientific inquiry. Students must complete each of the following.

**4 CORE COURSES**, with a GPA of 3.0 or higher and at most one C:
- Math 515: Numerical Analysis I
- CS 551: Systems Programming
- CS 581: High-Performance Computing
- BIOS 506: Statistical Methods I

**3 COURSES AT OR ABOVE 500-LEVEL** chosen from:
- CS 526: Algorithms (or CS 523: Data Structures and Algorithms by permission)
- CS 534: Machine Learning
- CS 543: Information and Computer Security
- CS 562: Advanced Computer Systems
- CS 563: Digital Image Processing
- CS 570: Data Mining
- CS 580: Operating Systems
- CS 584: Topics in Computer Science
- MATH 516: Numerical Analysis II
- MATH 533: Network Science
- BIOS 510: Probability Theory (4 credit hours)

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**Data Science Concentration**

The Computer Science Master’s program with Data Science Concentration combines knowledge of quantitative
techniques and computing algorithms used in the analysis of large datasets as a means of discovery and understanding. Students must complete:

**4 CORE COURSES**, with a GPA of 3.0 or higher and at most one C:
- CS526: Algorithms (or CS 523: Data Structures and Algorithms by permission)
- CS 534: Machine Learning
- CS 551: Systems Programming
- CS 554: Database Systems

**3 COURSES AT OR ABOVE 500-LEVEL** chosen from:
- CS 543: Information and Computer Security
- CS 557: Artificial Intelligence
- CS 562: Advanced Computer Systems
- CS 563: Digital Image Processing
- CS 570: Data Mining
- CS 571: Natural Language Processing
- CS 572: Information Retrieval
- CS 573: Data Privacy and Security
- CS 584: Topics in Computer Science
- BIOS 506: Statistical Methods (4 credit hours)
- BIOS 510: Probability Theory (4 credit hours)

**Biomedical Informatics Concentration**

The Computer Science Master’s program with Biomedical Informatics combines key elements of graduate study in Computer Science with advanced coursework and projects in medical informatics to apply computing methods to emerging challenges in health sciences and technology. Students must complete:

**4 CORE COURSES**, with a GPA of 3.0 or higher and at most one C:
- CS526: Algorithms (or CS 523: Data Structures and Algorithms by permission)
- CS 534: Machine Learning
- BMI 500: Introduction to Biomedical Informatics
- BIOS 506: Statistical Methods (4 credit hours)

**3 COURSES AT OR ABOVE 500-LEVEL** chosen from:
- BIOS 510: Probability Theory I (4 credit hours)
- BIOS 511: Statistical Inference (4 credit hours)
- BIOS 540: Introduction to Bioinformatics (2 credit hours)
- BIOS 545: Introduction to R Programming (2 credit hours)
- CS 540: Software Engineering
- CS 563: Digital Image Processing
- CS 570: Data Mining
- CS 581: High Performance Computing (merged with CS 555)
- IBS 523: Cancer Biology I (4 credit hours)

**CS596R: Computer Science Master’s Practicum**

This course aims to expose Master’s students to real life problems that Computer Science and Informatics professionals face in their working environment, and to help students to acquire crucial skills and experience in applying their Computer Science and Informatics skills in solving practical problems.

Students perform a project under direction of an Emory faculty member or supervised by a Computer Science/Informatics expert in the industry. In both cases, the project to be undertaken should be described by the student and submitted for approval by the Director of Graduate Studies.
The course is nominally taken for 1 (one) credit hour and is repeatable for up to two (2) times. CS596R is taken for S/U only. The amount of work for the course varies from full time (i.e., in case of external internship) to part time of at least 10 hours per week (i.e., in case of internal internship). 596R cannot be the last solitary course in a student’s program of study.

**MS Degree by Candidacy**

Students enrolled in the CSI PhD program may also obtain a Master’s degree in Computer Science by Advancing to PhD Candidacy. The specific concentration within the MS CS received by Candidacy will correspond to the particular set of coursework and other requirements completed by the student. No more than one M.S. may be obtained via Candidacy.

**Annual Evaluation**

The Laney Graduate School and each program have standards for academic performance that students must meet, including making satisfactory progress through the program. Students will be reviewed at the end of each semester and will receive a written evaluation at the end of each year. The evaluation will be based on an assessment of the student’s overall performance including coursework, exams, research and work duties (e.g., teaching). The result of the evaluation is either (1): Satisfactory progress; (2) unsatisfactory progress. Unsatisfactory progress can result in academic probation, which requires the student to correct the problem over the following semester. Lack of satisfactory progress while on probation may result in termination from the program.

**Other Policies and Services**

**Grievance Policy**

Students who have a grievance related to the CSI graduate program should report it to the Director of Graduate Studies. The student should describe the grievance and relevant details in a letter addressed to the DGS, who will try to resolve the grievance in conversations with the student and relevant parties. If this is unsuccessful, the Director will appoint a committee of three program faculty members or use an existing standing committee, who will review the grievance and propose an appropriate response. If it is not possible to resolve the grievance within this committee or the framework of the program’s administrative structure, the Director will forward the grievance to the Office of the Senior Associate Dean of the Laney Graduate School. At that time, the grievance will be handled according to the Grievance Procedure described in the Laney Graduate School Handbook. If the grievance is with the Director, the student submits the grievance directly to the Senior Associate Dean of the Laney Graduate School.

**Parental Accommodation Policy**

LGS Parental Accommodation Policy is for students with substantial parenting responsibility as a result of childbirth, care of newborn, or a newly adopted child. This policy guarantees PhD students a minimal level of accommodation during the transition of parenthood. For more information on the policy, eligibility requirements, and application procedure, go to this link:

http://gs.emory.edu/handbook/academic-affairs/standards/parental-accommodations.html
Office of Accessibility Services (OAS)

Emory provides all persons an equal opportunity to participate in and benefit from programs and services afforded to others. The Office of Accessibility Services (OAS), part of the Office of Equity and Inclusion, assists qualified students, faculty and staff with obtaining a variety of services and ensures that all matters of equal access, reasonable accommodation, and compliance are properly addressed. OAS “is committed to providing access to campus resources and opportunities to allow students with disabilities to obtain a quality educational experience.

Qualified students need to register with OAS and make a request for services. Confidentiality is honored and maintained. (Emory OAS website): http://accessibility.emory.edu/students/index.html

Student Support Services

Graduate school can be a stressful time on your body and mind. Be sure you are taking care of yourself. Go to Laney Graduate School student support page and the LGS/GDBBS support page for links to all student support services available to you:

http://www.gs.emory.edu/guides/students/support.html

https://secure.web.emory.edu/biomed/intranet/students/Resources%20for%20Students.html

University Policies

A selection of university policies can be found at this link: http://gs.emory.edu/handbook/university-policies/index.html

Every effort has been made to make this document as accurate and complete as possible. Policies are subject to change without notice. Refer to the latest version of the LGS Handbook (http://www.gs.emory.edu/academics/policies/index.html) and GDBBS Handbook (https://secure.web.emory.edu/biomed/intranet/handbooks/index.html) for other policies such as:
• University Policies
• Honor Code
• Minimum Degree Requirements
• Professional Development Funds
• Withdrawals and Leaves of Absences
• Parental Accommodations and Leaves
• Degree Completion & Graduation