

Survival Guide

Graduate Student Board (GSB)

Computer Science, Purdue university

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1 Introduction

This guide provides information about the department, Purdue, the Lafayette area, Indiana, and surrounding states. The information in this guide is not complete and not guaranteed to be correct. If you are not sure about something, do not be afraid to ask a fellow student or to e-mail the CS Graduate Student Board (gsb@cs.purdue.edu). If you would like something added or changed in the Guide, please e-mail the GSB.

Disclaimer: This document is not intended to describe departmental and school policies and is not a publication of the Department of Computer Sciences nor the School of Science.

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2 Acronyms

During your first few weeks here at Purdue, you'll encounter many new acronyms and buzzwords. Here is a list of those used most frequently.

- ACM — Association for Computing Machinery. An international organization for computer scientists. Locally, ACM refers to the student ACM chapter which performs numerous services for the students.
- BO — Business Office. This is the office that handles the money and some other matters related to the CS department. Located on the third floor.
- BOSO — Business Office for Student Organizations. This is the office that handles the money and some other matters related to official student organizations. Hopefully, you will not have to deal with them unless you are an officer in a student organization in campus.
- CoRec — Cordova Recreational Sports Center. This is one of Purdue's main sports facilities, where you can go practice a large number of sports and physical activities. In 1998 it was officially renamed the Recreational Sports Center, but many people still call it the Co-Rec.
- GSB — Graduate Student Board. Represents the interests of graduate students in the department of computer science.
- ITaP — Information Technology at Purdue. This is the university group that operates and maintains the main university computer system.
- PMU — Purdue Memorial Union. The building next to Stewart Center.
- PAL — Purdue Air Link. Purdue's wireless network.
- PUSH — Purdue University Student Health center

3 Useful Links

- Off campus apartments — <https://www.purdue.edu/offcampushousing>
- Boiler apartments — <https://www.boilerapartments.com>
- Purdue Exponent — <https://www.purdueexponent.org/classifieds>
- Parking — <https://www.purdue.edu/parking>
- List of CS courses — <http://www.cs.purdue.edu/academic-programs/courses>
- Exam schedule — <https://roomschedule.mypurdue.purdue.edu/Timetabling/exams.do>
- Register for the semester, pay fess, register for classes — <https://mypurdue.purdue.edu>
- Blackboard — <https://mycourses.purdue.edu>
- CS Profile — <https://my.cs.purdue.edu>

- Research — <https://www.cs.purdue.edu/research>
- Master's Curriculum — <https://www.cs.purdue.edu/graduate/curriculum/masters.html>
- Ph.D. Curriculum — <https://www.cs.purdue.edu/graduate/curriculum/doctoral.html>
- People — <https://www.cs.purdue.edu/people/index.html>

4 History

Purdue Computer Science Department is the oldest CS department in the United States!

In case you didn't know, Purdue's CS department is the oldest in the country, formally authorized in October 1962. Dr. Sam Conte was the first department head, serving until July 1979, when Dr. Peter Denning took over. Dr. Denning took a position with NASA in June, 1983 at which point Dr. John Rice became department head. After 13 years of distinguished service, Dr. Rice stepped down and returned to teaching. He was succeeded by Dr. Ahmed Sameh who came aboard during the 1996-1997 academic school year. Dr. Susanne Hambruch, was appointed in the year 2002 and held the position until the summer of 2007. At that point in time Aditya Mathur took over as department head. In June 2012, Dr. Sunil Prabhakar has been appointed Head of the Department of Computer Science after a period of serving as an interim department head.

We are also one of the largest and most highly-rated departments in the country. We received more than 4,000 undergraduate applications for Fall 2017. Currently, 1,708 students are enrolled in the undergraduate program, an all-time high that more than doubles the number of students enrolled just five years ago.

The CS department was originally located in the Math building. In 1985, the CS department moved into a building all to itself. This building was formerly the Memorial Gymnasium. (The Memorial is to a group of Purdue students and alumni who died in a train wreck while traveling to a game). It has been completely renovated to hold us. During the renovation it was rumored that a swimming pool would be left in the basement, but this idea was apparently dropped. Finally, in the fall of 2006, the department moved into our new location, the Lawson Computer Science Building.

5 First Week on Campus

This section presents, roughly, an outline of some of what you should do in your first week on campus.

- Select courses (<http://www.cs.purdue.edu/academic-programs/courses/>) and register (<https://mypurdue.purdue.edu>). For late registration or for research credits, you need to ask your instructor/advisor to sign a Form-23 which you then need to take to the Registrar's Office (Hovde building).
- Get your student ID card: <http://www.purdue.edu/business/card/>
- Start a boiler express account (<https://dining.purdue.edu/>, look for eAccount or <http://www.purdue.edu/business/card/>) if you want, which you can use in dining courts cafes and other places on campus.
- Get a fob access key to the areas you are authorized to access by talking to Building Operations Coordinator (LWSN 1158).
- Get a mailbox by asking someone in the mail room.
- If you are an International Student, you should have gone through the orientation for International Students. If not, report to the ISS in Schleman Hall as soon as possible.
- Set up your profile in <https://www.cs.purdue.edu/people/graduate-students/index.html> which you can do via <https://my.cs.purdue.edu/>.
- Set up your personal webpage in your \$HOME/.www/ directory.
- Get a locker on Recreational Sports Center.

6 Housing

If you do not have any housing by the first week of the semester, run, do not walk, to the Dean of Students Office in Schleman Hall to obtain the Off Campus Housing listing and advice on obtaining a place to live. This information can also be accessed online via:

<https://www.purdue.edu/offcampushousing>

Also check the Exponent:

<https://www.purdueexponent.org/classifieds>

and Boiler apartments:

<https://www.boilerapartments.com/>

for housing ads and roommate classifieds.

Grad students often live in one of the Grad Houses or in Purdue Village. If you wish to live in Purdue Village (PV), you should apply ASAP. Purdue Village, which used to be only for married students, does allow single students. Spots in PV tend to fill up fast.

There are a numerous student apartment complexes all around campus and many old houses that have been divided into multiple living units. The apartments right around campus tend to be leased in January and February for the following fall semester, so start your search early in the spring for your fall housing. In addition, if you have a group of friends that you can live with, you can usually find an older house for rent if you check the classifieds. One other resource available to grad students is the Purdue Research Foundation (PRF), which has many old houses around campus for rent. Unfortunately for undergrads, PRF will only rent to faculty and grad students.

Apartments within walking distance of campus tend to be quite expensive but if you have transportation, there are numerous apartment complexes all over the Lafayette area that are quite reasonable. If you don't have a car, you can see if the bus line runs nearby. Of course, you always run a risk if you depend heavily on the buses. One more thing to consider when deciding on off-campus housing is related to restrictions on obtaining parking permits. The University will not sell you a parking permit if you live too close to campus. If you plan on driving to campus, make sure you live far enough away to get a university parking permit.

7 Utilities

If you are moving into an apartment or house, you will probably need to hook up some utilities. When you sign a lease, check with the landlord to see what utilities are not included in the rent. Then a few days before you move in to your new domicile, call the utility companies to hook up the necessary utilities. Many of the utility companies will demand a deposit for new service if you did not have an account with them previously. Examples of *some* carriers are shown in the table below:

Utility	Company	Phone
Cable	Insight Communications	765-447-6886
Electric	Cinergy/PSI	800-521-2232
Gas	Indiana Gas Company	800-666-3090
Telephone	Verizon	800-483-4600
Water	West Lafayette Water Company	765-463-5531
Water	Lafayette Municipal Water System	765-742-8404

The city of West Lafayette provides curb-side service for recycling and garbage pickup only for houses with four units or less. If you live in a complex or house with more than four units then a private contractor must be hired for garbage disposal. Labeled bins are provided for anyone wishing to drop-off recyclable materials at 705 S. River Road. There are also bins for recyclable materials around Purdue Village.

8 Parking

Note! Purdue is increasing its efforts towards a greener campus. If you don't already own a car, consider alternative means of transportation. **CityBus** offers **fare-free** access to the CityBus system with a valid Purdue ID. In 2018, state street has been renovated to be more **bike** friendly.

In addition consider these parking options:

- Low Emission Parking
- Charging stations for electric vehicles
- Use a Zipcar

Parking at Purdue can be a nightmare. Public parking near campus is in very short supply, and permit parking isn't much better. The largest public parking lot is behind the Stadium, quite a hike from the CS building. A, B, and C parking permits allow you to park on campus. A and B parking permits are for faculty and three-quarter time staff only, so students are normally limited to C parking permits.

<https://www.purdue.edu/parking/>

A C parking permit allows you to park in C parking places, which are marked by red signs. Unfortunately, the C parking places are generally not close to the CS building with most of the C parking in a lot off State Street by the dorms, and near CoRec. To obtain a C parking permit, you must prove that you live more than 1.5 miles from campus (what they call walking distance). C Garage permits are also available. These allow you to park at the top of a specific parking garage.

If you drive but don't buy a permit, there is public street parking near the building on some of the side streets. However, these spaces are generally all gone by 8:30 am daily and most have a 3 hour time limit, for two reasons:

Many folks forget about this time limit, and their vehicles become easy prey for West Lafayette police who roam about with ticket pads armed and ready. The pointless shuffling of vehicles from one parking spot to another amuses the neighborhood children. Note that cars are time-stamped with a swatch of chalk on one of the rear tires so that the time they've been parked in one spot is known, and, therefore, the time that they're eligible for ticketing is known. Parking at night is no problem. All A, B, and C spots are open after 5 pm and on weekends. Also, never park in a 24 hour reserved spot; you will be ticketed and towed.

Residence hall parking permits are available to people living in Grad Houses or the Dorms. Stop by the Grad House or Dorm main office to inquire about permits, and check early since the number of residence hall permits is limited. One final note for students living in Purdue Village, you should stop by the PV office on Nimitz Drive after obtaining your Purdue permit in order to get a PV permit. It's free and allows you to park your car near your apartment.

9 Research

Part of the reason that the department is highly-regarded is that the faculty are active in research, publications, and service to the CS community. It would take pages to describe all the current research projects. Therefore, for reference, the department Research page and Annual Reports page contain a summary of current projects:

<https://www.cs.purdue.edu/research/>

https://www.cs.purdue.edu/about/annual_reports.html

There is a research project for anyone here. There are research centers and institutes specializing in particular topics, a complete list of which is given at:

<https://www.cs.purdue.edu/research/centers.html>

Most notably, the Center for Education and Research in Information Assurance and Security (CERIAS) is currently viewed as one of the world's leading centers for research and education in areas of information security that are crucial to the protection of critical computing and communication infrastructure. CERIAS is unique among such national centers in its multidisciplinary approach to the problems, ranging from purely technical issues (e.g., intrusion detection, network security, etc) to ethical, legal, educational, communicational, linguistic, and economic issues, and the subtle interactions and dependencies among them. CERIAS evolved from the COAST (Computer Operations, Audit, and Security Technologies) lab in 1999, which was a multiple project computer security research laboratory in Purdue's computer science department. For more information please refer to <https://www.cerias.purdue.edu>.

In addition, there are a number of groups that offer research seminars on a weekly basis:

<https://www.cs.purdue.edu/research/seminars.html>

10 Courses

First, look at the list of courses being offered on the CS Department web site:

<https://www.cs.purdue.edu/academic-programs/courses>

If you are a first-year Master's students, you will face many choices of classes. The choices for a first-year Ph.D. student are somewhat restricted. Talk to second or third year graduate students. The best place to get information about a course and a professor is from someone who has taken the course, and not necessarily your advisor or professors in the department. This is probably the most important step in the registration process.

Most people find it best to select courses so that their workload is balanced among various types of work: reading, programming, theory, mathematics (calculus, real analysis, linear algebra), etc. Taking two heavy programming courses together is a lot of work, three can be suicidal.

There is also the number of course hours to consider. Typical and maximum course loads are shown below. Keep in mind that what is said to be "typical" below may be a lighter or heavier load than what is right for you. If you are a Master's candidate, how much of a rush you are in to complete your degree will also be a factor. Taking the maximum number of credit hours in your first semester, however, is probably a recipe for disaster.

Credit Hours:

- fellowship or self-supported 9 - 12 hours typical, 18 hours maximum
- quarter-time assistantship 6 - 12 hours typical, 15 hours maximum
- half-time assistantship (most TAs) 6 - 9 hours typical, 12 hours maximum
- half-time research assistantship (most RAs) less than 18 hours, at least 6 hours thesis work
- full-time research assistantship less than 18 hours, at least 12 hours thesis work

You can find the requirements for a Master's and Ph.D. students here:

<https://www.cs.purdue.edu/graduate/curriculum/masters.html>

<https://www.cs.purdue.edu/graduate/curriculum/doctoral.html>

A graduate student is classified as a full-time student if he or she is registered for 6 credit hours when funded by an assistantship or 9 credit hours when funded by a fellowship. Master's students need (eventually) to complete 10 three-credit courses, or 8 three-credit courses with a thesis, for their degrees. One of CS 502 or CS 565, one of CS 503 or CS 536, and CS 580 are required; the others are chosen by the student. You should get an idea of the courses you might like to take now, but don't bother trying to work out a schedule more than a semester in advance — the actual scheduling of courses (regardless of what the course descriptions say) is quite variable. There are also "topics" courses that are offered each semester, some of which you might find interesting. A 590 topics course is directed study for students who wish to undertake individual reading and study on approved topics. A general topics course is worth three credit hours. It usually takes three to four semesters to complete the work for a Masters degree.

11 Courses Descriptions

This section contains descriptions of CS courses that are offered on the graduate level in our department. It does not include courses offered by other departments (i.e. MATH, EE, STAT, MGMT) that are also available to obtain graduate credit in the M.S. and Ph.D. programs in CS. For transferring credit check with your academic advisor, or with Secretary to the Graduate Office:

<https://www.cs.purdue.edu/people/staff/index.html>

As there are substantial differences among the courses offered in regard to the amount and type of work for assignments, projects, in-class presentations, term papers, and exams, we are presenting a table that shows the major differences among these courses. The info given is mostly drawn from an old survey among graduate students in our department in Spring 1993, although some additions have been made for courses which were not included in the 1993 survey. Although some of the courses have changed over the years, this list will give you a rough idea of the type of workload to expect. However, course contents and workload depend considerably on the professor who teaches the course. The same number of programming assignments for two courses does not necessarily indicate a comparable effort in writing the code. Therefore, nothing presented here should be taken literally, only as an outline. Do not be afraid to talk to the professor who will teach the course and ask him more detailed information. Note that not all courses are offered every semester. Furthermore, it is not our purpose to show you a way to a degree at Purdue with the least possible effort, but to give you the chance to balance your course load for each semester according to your interests and degree program requirements.

The official prerequisites listed on the course pages are not completely accurate in terms of what you really need to succeed in a course. The survey disclosed that unstated prerequisites for nearly every course. It is not absolutely necessary to know these to do well in every course, but knowing them can greatly increase your efficiency. A comment nearly everyone made at some point was: "Course are hard and require lots of work ... but in the end it's worth it." So, you can look forward to a lot of pain during the semester, and a very good feeling afterwards.

12 Books

There are a number of bookstores around campus that will be happy to take your life savings in exchange for a text book. University Book Store's main location is across the street from the Union at 360 W. State Street. University Bookstore is the original home of Purdue Pete. The Book Store used Purdue Pete for their logo, and the University later adopted him as the Purdue Mascot. University Book Store also has a smaller branch across from Mackey Arena at 720 Northwestern Avenue. Follett's Bookstore has two locations, 1400 W. State Street in Purdue West and 714 Northwestern Avenue across from Lambert Fieldhouse.

Name	Location	Phone
Follett's Bookstore	Purdue West	765-743-9642
Follett's Bookstore	Northwestern Ave	765-743-9696
University Book Store	State Street	765-743-9618
University Book Store	Northwestern Ave	765-743-9432

Text books are sometimes held on reserve in the Undergraduate Library or the Math Library. A few CS text books are also available in the Undergraduate Student Office and the Graduate Student Office in Lawson.

13 Registering

You can register for courses by visiting <https://mypurdue.purdue.edu>, under the registration tab. Select the School term you need and if required enter the Registration PIN Verification, which is usually "999999".

For late registration or for courses that require the instructor's permission you need to fill a course-request form (Form-23), which you can get from the CS Graduate Office (LWSN 1137). After completing the form and

Course	Course Name	Load
CS 502	Compiler Design	written(1), program.(5), proj.(1), quizzes(1), midterm, final - heavy programming
CS 503	Operating Systems	written(1), program.(5), proj.(1), midterm, final - heavy reading, heavy programming
CS 510	Software Metrics	- moderate reading
CS 514	Numerical Analysis	written + program.(8), midterm, final - math and programming
CS 515	Analysis of Linear Systems	- math
CS 520	Computational Methods	written + program.(10), proj.(2), midterm, final - math, problem solving, big projects
CS 525	Parallel Computing	written, program, midterm, final
CS 526	Information Security	written(5), project(3), midterm, final
CS 530	Intro. To Scientific Visualization	written, program, midterm, final
CS 535	Computer Graphics	program.(4), midterm - very heavy programming
CS 536	Computer Networks	written(5), program.(3),midterm, final - reading, heavy programming
CS 541	Database Systems	written(5), program.(2), midterm, final - reading, light programming
CS 542	Distributed Database Systems	written(3), proj.(1), midterm, final - reading, light programming
CS 543	Simulation and Modeling	written(2), program.(6), proj.(1), presentation(1), midterm, final - heavy programming
CS 555	Cryptography	written(6), proj.(1), midterm, final - moderate reading and problem solving, math
CS 565	Programming Languages	written + program.(5), proj.(2), midterm, final - heavy reading, theory, projects
CS 580	Algorithm Design	written(8), midterm, final - theory and problem solving
CS 584	Theory of Computation	written(10), presentation(1), quizzes(2), midterm, final - theory, participation in class
CS 603	Advanced Operating Systems	- reading, systems programming
CS 614	Ordinary Differential Equations	- math
CS 615	Partial Differential Equations	- math and programming
CS 636	Internetworking	program.(3), proj.(1), presentation(2), quizzes(2), oral final - heavy programming, participation in class

have your instructor/advisor sign it, you need to take it to the Registrar's Office in the lowest level of Hovde Hall, Room 45.

You should be able to verify your registered classes through <https://mypurdue.purdue.edu>.

14 Ph.D.

The basic requirements for getting a Ph.D. at Purdue are fairly straightforward, as described here: <https://www.cs.purdue.edu/graduate/curriculum/doctoral.html>. This section focuses on giving some advise beyond these basic requirements.

14.1 Advisor

Your advisor will be the person overseeing your research while you work on your dissertation. In other words, a thesis advisor is a combination of a friend, co-worker, guru, and mentor figure. He or she will therefore be one of the more important people in your life for the next few of years, so choose carefully. Desirable traits in an advisor include:

- Easy for you to get along with

- Interested in the same area(s) you are
- Will not be leaving in the next couple of years (that you can tell)
- Can supervise your work closely (if you like that)
- Won't pressure you (if you want it that way)
- (Optional) Has grant money to support you

Usually, you talk to several professors in your area before making a decision. It is possible to change advisors after making your decision, but it is not generally recommended because it tends to delay your graduation.

14.2 Plan of Study

Once you have an advisor, your next job is to form the rest of your advisory committee. These will be the people who read your thesis, point out flaws, and eventually decide whether you have done Ph.D.-caliber work. Therefore, they are important people in your education. You and your advisor find (at least) two other professors interested in your area to be on this committee, one of which should be a senior faculty member. About the time you are doing this, you should also file a Plan of Study, an official document telling the administration what classes you have taken, what courses you plan to take, your area of interest, and other vital information. This can be done via <https://mypurdue.purdue.edu>.

14.3 Thesis

Now that you've demonstrated your aptitude at passing hard tests, and thus qualified yourself for research work, you have to thrash about, reading landmark papers from your area, trying to find a thesis topic. Remember that your goal at this point is to find a topic that you can learn to do research on; that's what the degree process is about. The topic doesn't have to be earth-shattering; in fact, you'll probably get out much more quickly if it isn't. Save the good stuff for when you're on your own trying to get grants and such. Also, consider that by the time you get done with your thesis, you will be eating, sleeping, living and breathing your topic. Try to pick something that you can survive becoming incredibly intimate with for 12 to 24 months; also, by the time you're done, you'll probably be burned out on the topic, so pick something you won't regret not working on for some time after you've graduated.

Once you've figured out exactly what it is that you're going to research, take your Preliminary Examination (usually known as Prelims). The party line on this exam is that it tests the student's competence in a research area and readiness for research on some specific problem. In practice, it is a public thesis proposal, given so that your committee can see what you've been up to, where you're headed, and give constructive criticism. The Graduate Committee will appoint one extra member to your advisory committee for this exam, presumably to keep everyone honest. Usually, this exam is given after you get your first results (publication) on your thesis topic.

Now, work like crazy, trying to prove whatever it is that you're trying to prove. Build, measure, tear down, read, build some more, and conclude. Write it all down in a nice form; we'll call that your *dissertation*. Hope no one else is doing exactly the same thing at another university; if they are, and manage to publish their results before you, even by one week, you're probably out of luck, and have to start all over again on a new topic. Get your committee to agree that they like your dissertation. Then you have to make it satisfy the department's rules for Thesis Format, which define what a CS dissertation must look like, dealing with margins, figures, captions, etc.

Finally, schedule a final defense. This is a public oral exam before your committee and anyone else that cares to come; it is where you present what you've done for the past few years. It's also the last chance for people to pick your work apart and point out flaws. Hopefully, your committee will have pointed them out before the defense, so you have all the answers right at your fingertips. If you've done all your work, this should be a breeze.

15 Funding

Most people are funded by either a Teaching Assistantship (TA), a Research Assistantship (RA), or a Fellowship. Some people have sources of funding outside of these three types, but it is uncommon. To be considered a "full-time" student, you must register a certain amount of hours depending on your type of funding. TAs and RAs need to have 6 credit hours, while Fellows need 9. Being considered a full-time student has many benefits that include your ability to receive student health insurance, government loans, etc.

Most students enter the department with a Teaching Assistantship. If you are going to be a teaching assistant, you are probably wondering just what your duties will be. Your teaching assignment will probably fit into one of the following three categories:

- A recitation instructor teaches recitation sections which normally consist of 20-30 students. The class will also have other lecture sections that are taught by the professor in charge of the course.
- A lab instructor teaches lab sections which normally consist of 15-25 students. The class will also have other lecture sections that are taught by the professor in charge of the course.
- A grader grades assignments, projects, and possibly exams for a course that is taught by a professor or another TA.

It is very rare that a teaching assistant is the sole instructor for a course, but it has happened in the past, for senior Ph.D. students. Teaching assignments are often not finalized until the week before classes begin. If you did not receive your teaching assignment before arriving at Purdue, talk to the graduate office. Once you have learned your assignment, contact the supervisor of the course as soon as possible. Also, all new teaching assistants must attend "training sessions" during the week before classes. These sessions will explain nearly everything you need to know about being a TA.

As a TA, you will be responsible for holding office hours, usually at least two hours a week. If your office hours schedule looks like a typical class schedule (e.g., MWF 1:30-2:30), you risk shutting out students who happen to have a class in that slot. It is much better to make your office hours schedule somewhat irregular. If you are financially supported by the department (TA, RA, grader) and need supplies for your work, they can be obtained in the mail room, LWSN 1151. The secretaries maintain a supply of paper, transparencies, manila folders, tape, pens, and pencils for instructors' and researchers' use.

Depending on your temperament, teaching can either be great fun or a terrible burden. On the positive side, you get paid for the work, you get to meet a lot of new people, and you get to see your students learning and share in their learning process. On the negative side, your students constantly pester you for information and answers, especially before an exam or the due date of a big project. Also, be assured that students will not confine requests for assistance to your office hours. If you have any problems with your assignment, see the course supervisor or Dr. Gorman.

Research Assistantships are given to you by a professor who has procured funding from, typically, an outside source such as a government agency (e.g. NSF) or a corporation. Ideally, your RA will support work that interests you and work that will contribute toward your Master's or Ph.D. thesis.

16 Acknowledgment

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