



Data Sciences

2020-2021 HANDBOOK



PennState
College of Engineering

**ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE**

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Welcome

This handbook has been prepared for your use as a guide for your studies and as a means of providing you with much of the information that you may need as you continue to work towards your degree. We hope that you read it carefully, and we invite your inquiries about any of the questions or issues that are related to your program. The Academic Affairs staff in W209 Westgate is here to serve you.

Please watch for announcements of special courses, news related to scheduling or textbooks, and other special opportunities delivered via a departmental email list.

Again, welcome to Computer Science and Engineering. We wish you well in your studies and offer our services to assist you.

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Head, Department of Computer Science and Engineering

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The Data Sciences Major

The Department of Computer Science and Engineering was created in 1993 with the merger of the Computer Engineering Program and the Computer Science Department. The department offers B.S. degrees in both computer science (CMPSC) and computer engineering (CMPEN) through the College of Engineering. It also offers the Computational Option of the inter-college Data Sciences B.S. degree.

The data sciences degree is part of an inter-college initiative between the College of Information Sciences and Technology (IST), College of Engineering, and Eberly College of Science to meet the need of professionals who can make sense of big data. The program provides students with the technical fundamentals of data science, with a focus on developing the knowledge and skills needed to manage and analyze large-scale, unstructured data to address an expanding range of problems in industry, government, and academia. As a result, data sciences graduates will possess the core skills and problem-solving approaches to compete for leading-edge analytics positions across many different industry sectors.

Computational Data Sciences, offered only through the Department of Computer Science and Engineering, focuses on the computational foundations of data science, including the design, implementation and analysis of software that manages the volume, heterogeneity and dynamic characteristics of large data sets and that leverages the computational power of multicore hardware. Students in this option will take upper-level courses in computer science and related fields to develop the skills necessary to construct efficient solutions to computational problems involving large data sets.

The mission of our undergraduate program is to prepare our students for a wide range of careers as computational data scientists and related positions in the field of computing. Our curriculum covers fundamental programming techniques and skills, broad knowledge of data science foundations, mathematical foundations of computing, and advanced topics in computing with large data sets. This curriculum provides students with the skills needed to design, develop, evaluate and analyze software solutions to computational problems involving large data and prepares them to be leaders throughout their careers. This program is intended to produce data science professionals with a deep understanding of how to compute with large data and not merely technicians who can use off-the-shelf tools. Success requires a strong aptitude in mathematics.

Because of the close relationships to Computational Data Sciences, concurrent majors in Computational Data Sciences and Computer Engineering or Computational Data Science and Computer Science are not permitted.

Program Objectives

Within a few years after graduation, graduates of the Computational Data Science major should be able to:

1. Apply appropriate theory, practices, and tools of data science to the specification, design, implementation, maintenance and evaluation of software that analyzes and manipulates large data sets.
2. Work and communicate effectively on multi-disciplinary teams.
3. Engage in continuous professional development through work assignments, graduate school study, professional training programs and independent learning.

During the first two years, students heading towards the Computational Data Sciences major take many courses in common with other engineering majors, including courses in mathematics. In addition, students take several specialized courses in the major, such as programming fundamentals. From these courses, students gain experience constructing software and completing individual and group projects. During the second two years, students complete a series of courses in computation theory, software systems and computing for data sciences. Students also select from numerous electives. Throughout the four years, students develop communication skills, including a senior year course in which students examine the complete design process and participate in a series of oral and written experiences similar to those that would be seen in industry.

Advising and Procedures for Major

If you are a first- or second-year student at University Park who is intending to major in Computational Data Sciences, you can meet with an adviser at the **Engineering Advising Center** (EAC), 208 Hammond Building, 863-1033. This office is open Monday through Friday, 8:00 a.m. to 5:00 p.m. (Walk-in advising is available, but appointments are encouraged).

If you are a junior or senior who has been admitted into the Computational Data Sciences major you will have an assigned advisor, whose name and email address will be listed in LionPATH. Schreyer Scholars will be assigned a Scholar's Adviser. **If you communicate via e-mail, always use your Penn State account**, not another account such as Gmail. For non-advising issues (questions about degree audits, scheduling, etc.) see one of the CSE staff in W209 Westgate during regular business hours.

Required courses for the Computational Data Sciences major and a suggested schedule are given on the following pages. Information about all majors at Penn State is in the **Bulletin of Baccalaureate Degree Programs** at <https://bulletins.psu.edu>. The *Bulletin* is updated yearly and should be used along with this Handbook. Clarifications to the *Bulletin* are noted here.

The final responsibility for selecting courses and meeting degree requirements is yours. The role of your adviser is to suggest, recommend, and remind you of the requirements of the major and rules of the University. (Two helpful references for University procedures on-line are: **University Faculty Senate Policies for Students** at <https://senate.psu.edu/policies-and-rules-for-undergraduate-students/>

and the **Code of Conduct** at <https://studentaffairs.psu.edu/support-safety-conduct/student-conduct/code-conduct>.)

When meeting with your adviser, always take a copy of your recent degree audit, transcript, your present schedule, and your plan for at least the next semester's courses.

Do not rely on LionPATH to correctly categorize your courses. LionPATH only understands the degree requirements as specified in the Bulletin and will therefore occasionally place courses into an inappropriate category. This handbook contains additional restrictions and explanations. To ensure that you meet degree requirements, you must have your degree audit reviewed by your advisor periodically. You should submit petitions to correct any mis-categorization by LionPATH. Failure to do so may result in delaying your graduation until degree requirements are met.

Because data science is such a rapidly changing field, adjustments in course content and/or course offerings should be expected. It will be to your advantage to keep abreast of new course offerings, current course enhancements, and allowable course substitutions through regular contact with your adviser and the department office.

Entrance to the Major (ETM)

For the entrance-to-major requirements, see the "How to Get in" section of the Data Sciences major page in the University Bulletin for the year that you began at Penn State: <https://bulletins.psu.edu/undergraduate/archive/>

Degree Audits

You are responsible for periodically checking your *Degree Audit* on LionPATH to verify that the courses you have taken and plan to take will satisfy your degree requirements and that you are on track to complete your degree when you expect to complete it. You are encouraged to meet with an advisor to review your degree audit to verify this information. **Do not rely on LionPATH to place your courses into their appropriate categories.**

Change of Major

If you discover an interest in other areas of study or you are not admitted into the Computational Data Sciences, you should explore other possible majors and alternatives at the **Engineering Advising Center** or at online at the **Academic Advising Portal**.

Concurrent Major

Concurrent majors will not be allowed in Computational Data Sciences and Computer Engineering or Computational Data Sciences and Computer Science, although it is possible to obtain a concurrent major with another non-enrollment-controlled program.

Registration

When it is time to register for the next semester's courses, refer to this handbook and consult with your adviser to determine an appropriate set of courses. Then go to LionPATH and use its Schedule Builder to construct your schedule. You should register as early as possible – **courses fill up quickly!**

Re-ordering your course schedule from the “sample schedule” will not necessarily delay graduation. The key to completing 126 credits over 4 years is to average approximately 15-16 credits per semester. Though many students do maintain this pace, it is not unusual for students to take lighter loads some semesters and to delay graduation. Some classes may be taken during the summer (not necessarily at University Park). Some students may elect to register for a 9th semester to complete their degree requirements. Some electives are not offered every semester, so please be careful in your scheduling. This is especially true for co-op students.

Prerequisite Courses

If a CMPEN or CMPSC course has prerequisites, you must complete the prerequisite course before taking the successor course. For most courses an appropriate grade is a grade of D or higher. If the prerequisite course is a “Prescribed C or better” course and you receive a D you may register for the next course but you still must retake the prerequisite course. Waiving of prerequisites is rarely approved and requires approval by both the course instructor and the associate department head. **If you schedule a course for which you have not satisfied the prerequisites, you will be removed from the course near the start of the semester.**

Schedule Changes

Schedule adjustments (course adds/drops) may be made online using LionPATH during the first 5 calendar days of each semester. Detailed instructions, costs, and deadlines are provided in the university’s *Undergraduate Advising Handbook*. After this time, you may still adjust your schedule, but any change is considered a late add or a late drop. REMEMBER: A student who has not yet been admitted to the major should seek advice at the Engineering Advising Center; a student who has been admitted should see their assigned adviser. Excessive dropping of courses may affect your eligibility for federal financial aid.

General Education

All Baccalaureate students at the University are required to complete 45 credits of General Education. You will partially meet these requirements by taking prescribed courses required for the major, and by selecting additional courses that fulfill the remaining requirements. Details can be found in the Baccalaureate Degree General Education Requirements at

<https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/>.

Note: Some campuses do not have a first-year seminar requirement, but instead require participation in a first-year experience. If you started at such a campus, you will need to take 1 additional credit of department list course work.

Writing Requirement

All Penn State students have a Writing Across the Curriculum graduation requirement. You must complete at least 3 credits of writing-intensive courses selected from “W” courses offered within the major or college of enrollment. Student in the Computational Data Sciences major must complete DS 340W to satisfy the writing requirement.

Graduation Requirements

To graduate from the University, every student must:

- (1) Complete the course requirements for his or her major (including earning Cs or higher in all C-required courses) and
- (2) Earn at least a 2.0 cumulative grade-point average for all courses taken at the University

Credit Acquisition

In addition to taking courses at any Penn State campus, you may be able to earn credit through Independent Learning (World Campus) or by transferring credits from another school. Before taking a course at another university, check with the Admissions office and your adviser to be sure the course will transfer usefully. **Note that CMPSC 465, DS 340W and DS 440 must be taken at Penn State.**

Cooperative Education Program

The cooperative education program provides work experience by alternating periods of academic study and full-time employment in industry or government. The program typically starts at the beginning of the junior year and consists of three rotations, providing a cumulative work experience of one year.

If you have interest in the co-op program, you should obtain advising no later than your fourth semester from the designated co-op adviser, who will help you plan work and study schedules. You may earn up to 3 credits toward graduation in the Department List requirements.

If you prefer less of a time commitment, you can pursue one or more summer internships. You earn 1 credit per internship (maximum of 2 credits total) toward graduation in the Department List requirements.

If you are not a formal co-op or internship student, you may still take related summer jobs; however, you may not claim credits for jobs you arrange outside of the formal programs.

Honors Program

Students in the Schreyer Honors College (Atherton Hall, 863-2635) may earn honors in Computational Data Sciences by completing a thesis with a member of the CSE faculty. See an honors adviser if you are interested in finding out more. (The department office, W209 Westgate Building, can identify the honors advisers for you).

Minors

A minor is a specialization of at least 18 credits that supplements a major. Some courses may concurrently meet the requirements of our major. Popular minors for students in our department include:

- 1) Engineering Leadership Development

- 2) Engineering Entrepreneurship
- 3) Mathematics
- 4) Statistics

Other Issues

For additional information on minors, withdrawal, leaves of absence, concurrent majors, change of major, satisfactory/unsatisfactory credits, and other academic issues, refer to University Faculty Senate Policies for Students at

<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/>.

Waivers and Exceptions

All exceptions to the degree requirements must be approved and documented using Penn State's Course Substitution Request at <https://coursesub.psu.edu/>. Be sure to submit course substitution petitions prior to taking courses and prior to the semester in which you plan to graduate.

Inquiries about exceptions and general degree requirements should be taken to the Department of Computer Science and Engineering Office (W209 Westgate Building), to your adviser, or to the Engineering Advising Center. Note that petitions that require College level approval (exceptions/waivers to College & University requirements) will NOT be accepted during the semester in which you plan to graduate.

Academic Integrity

Recognizing not only the value of integrity in the academic environment, but also its value for the practicing data scientist and for society at large, we in the department urge you to act as a responsible professional while you are a student. Academic integrity is defined as follows in Faculty Senate rule 49-20:

“Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.”

The EECS School maintains a specific Academic Integrity Statement at

<https://www.eecs.psu.edu/students/resources/EECS-CSE-Academic-Integrity.aspx> related to programming courses.

It is commonly accepted that people learn better if they can interact, discuss, and assist each other in solving problems and understanding concepts. Yet persons submitting identical homework papers overstep the bounds of beneficial interaction. The specific limits of acceptable collaboration will be spelled out by the instructor in each course in the course syllabus. The specifics may vary from course to course, but you are always responsible for keeping your work private and inaccessible to others. Do not, for any reason, show another student a part of your code or write code for another student. Do not put your code online in any location that might

be publicly accessible. Any collaboration that exceeds these guidelines or the instructor's guidelines will be considered cheating. Clearly, professionals share ideas, but they should not use another's work without clear acknowledgement of who did the work. Academic dishonesty in any form is not condoned or tolerated.

Program Requirement Summary Chart

On the next pages, you will find a semester-by-semester chart of what courses to take with notes describing any choices to be made or restrictions to be followed. Please realize that although all the courses listed are required for the degree, they need not be taken during the semesters shown in the charts.

You should be sure to check course prerequisites before you deviate from the suggested schedule. **Care should be exercised to be sure core courses are taken in the proper sequence and in a timeframe allowing you to meet entrance to major requirements.** Also remember that a course that is designated as **C required** must be completed with a C or higher. You should not wait until your last semester to take C required courses. A total of 126 credits is required for graduation.

Sample Schedule of Courses by Semester

First Year			
FALL	CREDITS	SPRING	CREDITS
CMPSC 121 or 131 (GQ)*##†	3	CMPSC 122 or 132*##	3
MATH 140 (GQ)*##†	4	MATH 141 (GQ)*##	4
DS 200 or STAT 200*#	4	DS 220*	3
General Education Course	3	ENGL 15 (GWS)‡	3
First-Year Seminar	1	General Education Course	3
	15		16

Second Year			
FALL	CREDITS	SPRING	CREDITS
CMPSC 221*	3	CMPSC 360*	3
STAT 184*	2	STAT 380*	3
MATH 230*	4	STAT 414*	3
MATH 220*	2	General Education Course	3
CAS 100A or 100B (GWS)‡†	3	General Education Course	3
General Education Course	3		
	17		15

Third Year			
FALL	CREDITS	SPRING	CREDITS
CMPSC 442 or DS 442*	3	CMPSC 410 or DS 410*	3
CMPSC 465*	3	CMPSC 448	3
DS 300*	3	CMPSC 455*	3
STAT 415*	3	General Education Course	3
General Education Course	3	General Education Course	3
	15		15

Fourth Year			
FALL	CREDITS	SPRING	CREDITS
DS 340W*	3	DS 440*	3
List A Course	3	List A Course	3
List B Course	3	List B Course	3
ENGL 202C (GWS)‡†	3	General Education Course	3
Department List (General Elective)	3	Department List (General Elective)	3
General Education Course (GHW)	1.5	General Education Course (GHW)	1.5
	16.5		16.5

Total Credits 126

- * Course requires a grade of C or better for the major
- ‡ Course requires a grade of C or better for General Education
- # Course is an Entrance to Major requirement
- † Course satisfies General Education and degree requirement

GRADUATION REQUIREMENTS

Many of the courses below have prerequisites; some prerequisites are shown in parentheses; others are given in the Bulletin.

Data Sciences/IST (18 credits)

- DS 200 (4) – Introduction to Data Sciences
- DS 220 (3) – Data Management for Data Sciences (CMPSC 121 or 131)
- DS 300 (3) – Data Privacy and Security (DS 220)
- DS 340W (3) – Applied Data Sciences (DS 300, CMPSC 448)
- DS 410 (3) – Data Analytics at Scale ((CMPSC 122 or CMPSC 132) and DS 220)
- DS 440 (3) – Data Sciences Capstone (DS 220)

Computer Science and Engineering (21 credits)

- CMPSC 121 GQ (3) – Introduction to Programming Techniques (MATH 110 or MATH 140 concurrently or as a prerequisite) OR
 CMPSC 131 (3) – Programming and Computation I Fundamentals (MATH 110 or MATH 140 concurrently or as a prerequisite)

- CMPSC 122 (3) – Intermediate Programming (CMPSC 121) OR
CMPSC 132 (3) - Programming and Computation II Data Structures (CMPSC 121 or
CMPSC 131)
- CMPSC 360 (3) – Discrete Mathematics for Computer Science (Concurrent: CMPSC 122 or
132)
- CMPSC 442 (3) – Artificial Intelligence (CMPSC 221; Concurrent: CMPSC 465)
- CMPSC 448 (3) – Machine Learning (STAT 415, CMPSC 122 or 132)
- CMPSC 455 (3) – Introduction to Numerical Analysis I (MATH 220; MATH 230 or MATH
231; and 3 credits of programming)
- CMPSC 465 (3) – Data Structures and Algorithms (CMPSC 360 or MATH 311W)

Statistics (15 credits)

- STAT 184 (2) - Introduction to R (MATH 21)
- STAT 200 (4) – Elementary Statistics (MATH 21)
- STAT 380 (3) – Data Science through Statistical Reasoning and Computation (STAT 184,
STAT 200)
- STAT 414 (3) – Introduction to Probability Theory (MATH 230)
- STAT 415 (3) – Introduction to Mathematical Statistics (STAT 414)

Technical Electives (12 credits)

Select 6 credits from **List A**:

- CMPSC 450 (3) – Concurrent Scientific Programming (CMPSC 121, CMPSC 131, CMPSC 201
or CMPSC 202; MATH 220; MATH 230 or MATH 231)
- CMPEN 454 (3) – Fundamentals of Computer Vision (MATH 230 or MATH 231; CMPSC 121
or CMPSC 201)
- CMPSC 456 (3) – Introduction to Numerical Analysis II (CMPSC 455)

Note: Some courses are NOT offered every semester or even every year.

Select 6 credits from **List B**:

- CMPSC 431W (3) – Database Management Systems (CMPSC 221; ENGL 202C)
- EE 456 (3) – Introduction to Neural Networks (CMPSC 201 or CMPSC 202; MATH 220)

- IST 441 (3) - Information Retrieval and Organization (IST 210, IST 240)
- STAT 416 (3) - Stochastic Modeling (STAT 318 or STAT 414; MATH 230)
- STAT 440 (3) - Computational Statistics (STAT 200, STAT 415, MATH 220)

Note: Some courses are NOT offered every semester or even every year.

Communications (9 credits)

- ENGL 15 GWS (3) – Rhetoric and Composition (ENGL 30 GWS may be substituted)
- ENGL 202C GWS (3) – Technical Writing
- CAS 100 A/B (3) – Effective Speech

Quantification (14 credits)

- MATH 140 GQ (4) – Calculus with Analytic Geometry I
- MATH 141 GQ (4) – Calculus with Analytic Geometry II
- MATH 220 GQ (2) – Matrices
- MATH 230 (4) – Calculus and Vector Analysis (combination of MATH 231 (2) and MATH 232 (2) may be substituted)

Health Sciences and Physical Education (3 credits)

The Health and Wellness (GHW) requirement can be met by taking one 3-credit course or various credit combinations, most frequently two 1.5 credit courses, (which can be taken in different semesters). A student who completes an ROTC program may use 3 credits of ROTC to satisfy the GHW requirement.

Natural Sciences (9 credits)

Nine credits of Natural Science (GN) are required. Any GN courses except the following may be used: ASTRO 1, 7N, 10, 11, 120, 140; all BISC courses; All below CHEM 110 (except 3 credits of CHEM 106 can be used); PHYS 250, 251, all below PHYS 211, GEOSC 20.

Arts, Humanities, Social and Behavioral Sciences, US/IL (18 credits)

Details for the remaining General Education requirements can be found in the [Baccalaureate Degree General Education Requirements](https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/) at

<https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/>.

Department List (General Elective) Guidelines (6 credits)

Choose enough credits to bring the total number of credits up to at least 126. If your US/IL course was not an Arts, Humanities, Social or Behavioral Sciences course, it may be counted in this list. (For US/IL courses, see the *General Education and US & International Cultures in the Curriculum* booklet). These are sometimes called approved free electives or general electives, but the following restrictions apply:

- no courses not satisfying minimum requirements for baccalaureate degree program (see course descriptions in *University Bulletin*)
- no courses described as intended for non-science or non-technical majors in course description in *University Bulletin* (**You may take non-technical courses** but look at the *Bulletin* to be sure the description doesn't say "for non-science majors only").
- no courses similar or remedial to a required course or course already taken (when in doubt, check with your advisor before scheduling the course). For example, you may not include 2 credits of MATH 140A or 2 credits of CHEM 106.
- not ENGL 4, 5, or any other remedial English
- no more than 3 credits of ROTC
- no more than 6 credits of music performance courses
- no more than 3 additional credits of physical education
- no more than 3 credits of Cooperative Education
- no more than 2 credits of Engineering Internship
- no more than 3 credits of CHEM 106
- none of the following:
 - Astronomy (ASTRO) 1, 7N, 10, 11, 120, 140
 - Biological Science (BISC) 1, 2, 3, 4
 - Chemistry (CHEM) 1, 3, 108, 101
 - Computer Science (CMPSC) 100, 101, 200, 201, 203
 - Earth and Mineral Sciences (EMSC) 150
 - English as a Second Language (ESL) 4
 - Information Science & Technology (IST) 140, 220, 230, 240, 242, 261, 311, 361
 - Language and Literacy Education (LLED) 5, 10

- Mathematics (MATH) 200, MATH below 140
- Philosophy (PHIL) 12
- Physical Science (PHSC) 7
- Physics (PHYS) 250, 251, PHYS below 211
- Science, Technology, and Society (S T S) 150
- Speech Communication (CAS) 126, 283
- Statistics (STAT or MATH) below 318, 401
- STAT (MATH) 318, STAT (MATH) 319, STAT (MATH) 414, STAT (MATH) 415, STAT (MATH) 418

First Year Seminar (1 credit)

Small interactive classes that allow first-year students to meet faculty and alumni, explore different majors and career opportunities, or focus on hands-on projects and skill development. If you started at a campus that did not require a separate 1-credit first year seminar course or are a transfer student, then you must add an additional credit to the Department List requirement.

Helpful University Park Offices and Phone Numbers

College of Engineering:

Dean's Office, 101 Hammond Building	865-7537
Associate Dean for Education, 101 Hammond Building	863-3750
Global Engineering Education, 205 Hammond Building	863-9899
Engineering Advising Center, 208 Hammond Building	863-1033
Assistant Dean for Academics, 208 Hammond Building	865-7539
Engineering Outreach and Inclusion, 211 Hammond Building	865-4287
Career Resources and Employer Relations, 117 Hammond Building	863-1032
Outreach for Adult Learners, 128 Outreach Building	863-2504
Career Services, 101 MBNA Career Services Center	865-2377
Information Technology Services (ITS) Help Desk, 204 Wagner Building	865-4357
Counseling and Psychological Services, 501 Student Health Center	863-0395
Student Disability Resources, 116 Boucke Building	863-1807
Penn State World Campus, 128 Outreach Building	865-5403
Division of Undergraduate Studies (DUS), 101 Grange Building	865-7576
Penn State Learning, 220 Boucke Building	865-1841
Office of Student Aid, 314 Shields Building	865-6301
Residence Life, 201 Johnston Commons	863-1710
Undergraduate Admissions, 201 Shields Building	865-5471
Schreyer Honors College, 10 Schreyer Honors College	863-2635
Office of Veterans Programs, 325 Boucke Building	863-0465
General Information, HUB Desk, First Floor Lobby	865-2000

Sources of Information

This *Handbook* provides program information specifically for the undergraduate computational data sciences major. It should be used as a supplement to the *College of Engineering Undergraduate Programs Guide* that is available online. The information in this *Handbook* pertains to students who began at Penn State in Summer 2020, Fall 2020, or Spring 2021 semesters. Students who began at Penn State in an earlier year should refer to the appropriate earlier version of the Handbook. Students in pre-major (ENGR) status may use this Handbook as a reference for scheduling; however, your official degree requirements will be established when you enter the major. For information about the computer engineering degree, refer to the *Computer Engineering Undergraduate Handbook*. For information about the computer science degree, refer to the *Computer Science Undergraduate Handbook*. All of these documents are available in the department office, W209 Westgate Building and online at <http://eecs.psu.edu/students/undergraduate/Majors-Minors-Certificates.aspx>. (If you are at a

campus other than University Park, you should contact the College of Engineering representative at your location).

Although this *Handbook* lists all requirements for the data sciences major, only those specific to data sciences are described in detail. Other general College and University requirements are discussed only briefly with references to more comprehensive supporting documents. Hard copies of these documents can be obtained from a Dean's office or local bookstore. Many are available on-line. A list of useful web resources is provided below. For easy reference, resource names are printed in bold throughout the *Handbook*.

School of EECS – <http://eecs.psu.edu>

Engineering Advising Center – <https://advising.engr.psu.edu>

Academic Advising Portal – <http://advising.psu.edu>

Bulletin of Baccalaureate Degree Programs – <http://bulletins.psu.edu/undergrad>

University Faculty Senate – <http://www.senate.psu.edu/policies/>

Student Affairs – <https://studentaffairs.psu.edu>

General Education – <https://gened.psu.edu>

LionPATH – <http://launch.LionPATH.psu.edu>

Association of Women in Computing - <http://www.awc.cse.psu.edu>

Association for Computing Machinery Student Chapter – <http://acm.psu.edu>

For additional information, you can contact the **Engineering Advising Center** (208 Hammond, 863-1033), the Assistant Dean for Student Services (208 Hammond, 865-7539), or the **Department of Computer Science and Engineering** (W209A Westgate Building, 865-9505). The structure in the Department of Computer Science and Engineering includes an Undergraduate Program Coordinator, an Undergraduate Adviser and an Undergraduate Staff Assistant, all of whom can provide information and guidance during your academic. **If you communicate via e-mail, always use your Penn State account**, not another account such as Gmail.