Second Edition

Navigating the Research University

a guide for first-year students

Britt Andreatta, Ph.D.

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Navigating the Research University: a guide for first-year students,
Second Edition
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Production Service/Compositor:
International Typesetting and Composition

Cover Designer:
Nancy Goulet

Cover Image:
©Tony Mastres/UCSB

Cover/Text Printer:
Thomson West

Library of Congress Catalog Card Number: 2007933038

ISBN 13: 978-1-4130-3399-1
ISBN 10: 1-4130-3399-7

Wadsworth Cengage Learning
25 Thomson Place
Boston, MA 02210-1202
USA

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Printed in the United States of America
1 2 3 4 5 12 11 10 09 08

CHAPTER 1

Research and the Research University

GEORGETOWN UNIVERSITY

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If you are, or soon will be, attending a research university, it is important for you to grasp the nature of research in general to fully understand how this affects you as a student. The research mission affects every aspect of an undergraduate student's education, including what you learn in your classes, the majors from which you can choose, who teaches your classes and the quality of their teaching, the makeup of the student body, various opportunities that are or will be available to you, and your future options after college. Many students apply to research universities because of their prestige without really understanding the nature of the research mission.

This chapter will provide you with an overview of what research is, how faculty conduct research and share it with the world, the ways in which research affects almost every aspect of the university environment, and the various members of the campus community. Whether you are a freshman or a transfer student, this knowledge will provide you with an important base from which to understand the information presented in the remaining chapters as well as your own daily experiences as a university student. ■

The Purpose of Research

Research is the process of discovering and creating new knowledge—that which has not been known before. This is very different from **teaching,** which is the dissemination of known knowledge. Research is very important to human society because it has allowed us to develop almost every aspect of what surrounds you. From turning on a light switch, to the medicines you take, to eating microwave popcorn, to cell phones that take pictures, research has played a role in bringing these things to society.

Research also plays a role in making our society a better place by allowing us to understand how people function in the world and how they interact with and influence each other. You are surrounded by research every day. Look at any form of media and you will find examples like these:

> While gluten allergies that provoke an immune response like hives or respiratory problems are rare, celiac disease is more common than once thought. The prevalence in North America was previously estimated at about 1 in 3,000, but several studies published in the last three years indicate that it is closer to 1 in 100. Though no one knows for sure, the revised numbers can probably be attributed to increasing incidence as well as better screening tools. "Chances are now that people actually know someone who has it," said Dr. Peter H. R. Green, director of the Celiac Disease Center at Columbia University. Researchers in the United States, Italy and Great Britain have hypothesized that the incidence of celiac disease is on the rise worldwide because wheat has become so prevalent in the Western diet that humans are actually overdosing on it.
>
> *New York Times, May 8, 2007*

> Despite the common notion that America remains plagued by a divorce epidemic, the national per capita divorce rate has declined steadily since its peak in 1981 and is now at its lowest level since 1970. Other researchers have documented what they call "the divorce divide," contending that divorce rates are indeed falling substantively among college-educated couples but not among less-affluent, less-educated couples. "Families with two earners with good jobs have seen an improvement in their standard of living, which leads to less tension at home and lower probability of divorce," said Andrew Cherlin, a professor of public policy at Johns Hopkins University.
>
> *Time, May 11, 2007*

New knowledge can come about in a variety of ways, from happy accidents such as the one in which researchers at 3M created the nonsticky glue that makes Post-it notes so useful, to following a hunch, as many inventors have done. Through a process of trial and error, Ben Franklin discovered electricity and the Wright brothers discovered how to fly. There is also the process of formal research, which is done in a detailed and very structured way to systematically search for new answers. For example, scientists systematically test various chemicals and the impact they have on cancer cells. This requires a steady and slow process of trying something new and recording the results, making an infinitesimally small adjustment, and then trying it again and recording the results. This process allows researchers to chart their progress and to recreate findings should they prove to be successful.

Research can happen in all kinds of places and can be done by all kinds of people. Some prominent places in which research is conducted are corporations as they work to develop "new and improved" products to sell, government offices and labs, private "think tanks," hospitals, and educational institutions of all kinds. While all of these

places for research are important, this book will focus on research as it occurs in a university setting and how this affects the education of undergraduate students.

The Research Mission of a University

According to the Carnegie Foundation for the Advancement of Teaching, there are nearly 4,400 institutions of higher education in the United States, ranging from two-year community colleges to Ivy League private universities. The Merriam-Webster OnLine Dictionary defines a **college** as "an independent institution of higher learning offering a course of general studies leading to a bachelor's degree." A **university** is defined as "an institution of higher learning providing facilities for teaching and research and authorized to grant academic degrees; specifically one made up of an undergraduate division which confers bachelor's degrees and a graduate division which comprises a graduate school and professional schools each of which may confer masters degrees and doctorates." As a result, a university may house several colleges and schools within it.

A **research university** is a university that has a research mission. This means that the primary goal of the institution is to bring together a group of the best minds in the world to do their research. These people, the faculty, are hired and promoted largely on the basis of their research skills—in other words, a primary focus of their jobs is to produce new knowledge and share it with the world through publications. This requires lots of time and incredible skill. In addition, these faculty members need to disseminate known knowledge in a process called teaching. Both aspects are important in a student's educational experience at a research university. See "Point of Interest: Participating in Research."

In the United States, the **Carnegie Foundation for the Advancement of Teaching** classifies all institutions of higher education. Research universities are classified based on the number of doctoral degrees awarded per year and the amount of research generated, as well as whether they are a public or private institution. To see the Carnegie Classification of Institutions of Higher Education or to find out how your university is classified, see Appendix A or visit the Carnegie Foundation's website at www.carnegiefoundation.org.

In addition to the Carnegie Foundation's classification system, research universities can distinguish themselves by becoming members of the prestigious **Association of American Universities** (AAU). According to the AAU's website, the AAU "is an organization of research universities devoted to maintaining a strong system of academic research and education." In 2007, membership consists of sixty-two U.S. universities and two Canadian universities. The AAU was founded in 1900 by a group of fourteen Ph.D.-granting universities in the United States to strengthen and standardize doctoral programs. Today, the primary purpose of the AAU is to provide a forum for the development and implementation of institutional and national policies that promote strong programs in academic research and scholarship as well as undergraduate, graduate, and professional education. A current listing of members in the Association of American Universities is available online at www.aau.edu and member institutions are indicated in Appendix A. If you look at your campus's website or promotional materials, you might find references to both of these organizations.

Who Conducts Research

Conducting research requires a set of specific and well-honed skills, as does flying a large commercial plane. Just as a pilot goes through extensive training and years of practice to become a qualified and excellent pilot, so does a researcher. Some of the specific skills

POINT OF INTEREST

Participating in Research

If you are like most freshmen, you probably didn't understand what a research university was when you applied to one, and you may not be particularly interested in a career as a researcher or a professor. That's OK. However, since you are attending a research university, you should still take advantage of this unique educational setting. The best part about attending a research university is the research, so I strongly recommend getting involved in research during your college experience. Not to do so is like going to the Hershey's Chocolate Factory and not tasting the chocolate. Sure, there are other things to do, but you miss out on the whole point of the place. At a research university, you have the amazing opportunity to participate in research by working with faculty in their labs, classrooms, and even far away from the campus on research sites. Students at my campus have been involved with the following:

- Traveling to Tibet and recording the unwritten languages of mountain tribes
- Documenting and coding violence in television programs
- Photographing the annual fashion shows in Milan
- Testing how a new medicine affects the symptoms of drug addiction
- Deep-sea diving to document the mating patterns of a newly discovered fish
- Taking samples from the ice core in Antarctica

You could participate in groundbreaking research as an undergraduate student and even publish or present your work as a scholar. It's an opportunity not to be missed!

There are several ways to get involved in research. First, you can approach faculty members whose classes you enjoy and ask whether they have any positions open in their research projects. Second, you can visit the department to see whether there are any postings for jobs or positions. Finally, there might be an office on your campus that coordinates student involvement in research. Check with your college or major department to find out more. And don't be discouraged if you have to start out with less-than-glamorous work. Often, faculty members expect you to work a bit with them before they give you access to the truly interesting stuff, so be patient.

and abilities that a person needs to excel at research include critical thinking, reading, analyzing, creative thinking, and writing, to name a few. In addition, researchers must be very knowledgeable about the area or topic they are researching. A person would need to know chemistry very well to research aspects of it, and another person would need to know history in order to conduct historical research.

Not all people are good at, or interested in, doing research—just as not all people want to fly planes. Research is a career that certain people are drawn to and must spend years of study to prepare for. **Faculty** who are hired as researchers must have an advanced degree in their field. Types of advanced degrees include a Doctorate of Philosophy (Ph.D.), a Doctorate of Medicine (M.D.), a Doctorate of Education (Ed.D.), a Master's in Business Administration (M.B.A.), and a Juris Doctor (J.D.) or law degree. These advanced degrees signify that after completing an undergraduate degree in college, the person chose to go on for more schooling to become an expert in a particular field. Many of these degrees require several years of graduate study; for example, a Ph.D. in anthropology takes five to seven years to complete, and an M.D. requires four years of medical school followed by a residency program.

Most faculty members at research universities have a Ph.D. in a particular discipline, such as physics or literature. A **discipline** is a field or area of study, such as history, biology, mathematics, philosophy, dramatic arts, sociology, electrical engineering, or music. A large part of the degree is learning and mastering the research skills that are required for that particular discipline as well as conducting an original research project.

This research project focuses on a narrow topic within the larger discipline and culminates in a **doctoral dissertation,** which is a sort of "final paper" exemplifying research skills and expertise. Every Ph.D. program around the globe requires doctoral students to do extensive study in their discipline and then to choose a very narrow area in which to focus their research.

Today's most famous theorists were once doctoral students and were required to follow this standard process. Let's look at an example. Dr. Stephen Hawking, the world-renowned physicist who, among other things, proposed the existence of black holes, attended the University College at Oxford University as an undergraduate, where he studied physics and graduated with a degree in natural science. He went on to earn his Ph.D. at Trinity Hall at Cambridge University, where he narrowed his interests to cosmology, which is the study of the universe as a whole and the basic laws that govern it. After earning his Ph.D., he worked at Cambridge University. Dr. Hawking's research led to the groundbreaking work of combining the theory of general relativity with quantum theory, which is considered one of the great developments in science. Throughout his astonishing career, Dr. Hawking has published articles and books on a wide range of topics within his field. If you visit his website at www.hawking.org.uk, you will find a list of his 184 publications from 1965 to 2002.

Although not all research university faculty are as famous as Stephen Hawking, most have a similar history. They have all completed intense academic study and are motivated by a desire to learn that is so strong that they pursued it as a career. Many faculty members are also motivated by the desire to teach. You can find out more about your faculty's research history and publications by looking them up in your campus library's database or by visiting them in office hours and asking about their work. Needless to say, attending a research university means you are taking classes from some of the best minds in the world who are truly experts in what they study and teach. This is an amazing opportunity for you to explore your own passion for learning (see "Juan Carlos's Story from the Path").

The Academic Disciplines

There are literally hundreds of academic disciplines in the world, and it would not be very efficient or cost-effective for every campus to do research in every discipline. As a result, each college or university chooses to offer a certain set of disciplines in which students can earn a degree. You can discover the disciplines that exist at your institution by looking at the academic departments that are listed in the general catalog. Each department will indicate the particular disciplines that are offered.

If your institution has a biology department, this means that your university has a group of faculty who specialize in research in the **academic field** of biology and will offer one or more majors within the biological sciences. Within that field of biology, each faculty member will specialize in a very narrow subfield of that discipline. If you explore your general catalog, you will find that each major department lists the areas of study that are available at your school. For example, at the University of California at Santa Barbara, we offer six subfields of biology: molecular, cellular, developmental, ecological, evolutionary, and marine. This means that students here can find several faculty members who are nationally recognized for their work in each of these areas, as well as ample courses to choose from on these topics.

Likewise, our department of communication specializes in three subfields: mass media, interpersonal communication, and organizational communication. The faculty that are here specialize in one of these major areas and are engaged in research and

Juan Carlos's Story from the Path

Hometown: Davis, California

University: University of California, Santa Barbara

Activities: reading, writing, running, art, blogging, and cycling

Favorite Music: good music

Favorite TV Shows: C-Span, the "Wingy" (*West Wing*), *Sesame Street, The Simpsons*

Favorite Quote: "I am convinced that if we are to get on the right side of the world revolution, we as a nation must undergo a radical revolution of values. We must rapidly begin . . . we must rapidly begin the shift from a thing-oriented society to a person-oriented society. When machines and computers, profit motives and property rights, are considered more important than people, the giant triplets of racism, extreme materialism, and militarism are incapable of being conquered."—Martin Luther King, Jr. *Beyond Vietnam* (1967)

Assisting with academic research led to the most fulfilling experiences of my undergraduate career. It began during my second year after completing a course about U.S. legal history that I really enjoyed. I visited my history professor to talk about her other courses, the subjects she studied, and whether I could work with her through an independent study. She agreed, and soon I was working with her as a research assistant, checking footnotes, reviewing court cases, and evaluating scholarship. The experience initiated a new way of thinking and created many undergraduate and professional career opportunities.

This research added to all of my undergraduate work because it provided an in-depth starting point from which to look at different subjects. Whether I was studying the Renaissance, racial theory, or higher education, the lessons I learned as a research assistant encouraged a critical-thinking approach to new subjects. Working as an assistant also improved my relationships with other professors. Because we shared an interest in research, I was more comfortable speaking in class. Even outside the classroom, as a student activist, I used many academic theories and concepts to help me shape stronger arguments when fighting to save student outreach programs and facilitating community dialogues about social justice and diversity.

What was most interesting about research was the way working with my professors repositioned me from a place of *learning from* my professors to *helping them* acquire new knowledge. From an insider's perspective, I was able to understand how individual experiences and ideas determined what my professors chose to teach. Similarly, the research process taught me new ways to ask questions about my own life. It forced me to think about where my ideas come from and how those ideas shape my everyday choices. In this way, research introduced me to a new way of thinking that influenced how I make decisions about my life.

Assisting professors ultimately motivated me to do my own research. Using the research tools I learned as a research assistant, I examined issues that I found personally relevant, which included an affirmative action policy history, an evaluation of diversity facilitation models, and a study of "access to justice" in the California court system. In doing so, the relationships I developed with my professors were essential, as they shared valuable feedback and advice. Later, my professors also helped me when I needed undergraduate and career advice, letters of recommendation, and information about job opportunities. Because they knew my work and we shared a common passion, they were more than happy to help me further my career.

At its most basic, research is about curiosity. If you are a curious person and you want to learn how to ask better questions, then research is for you. Beyond that, like anything else, research presents its own challenges and rewards: from the research process itself to what you get when the project is over.

teaching classes on topics related to these areas. As a result, a student at this school could focus on one of these areas in his or her own choice of classes while completing a major in this field. There are obviously many more areas within this field, such as rhetoric and intercultural communication, which are not offered at this institution. However, you

will find rhetoric programs at Purdue University, the University of Nebraska at Lincoln, the Ohio State University, Carnegie Mellon University, and many others. Programs in intercultural communication can be found at the Pennsylvania State University, Pepperdine University, the University of Wisconsin, and the University of Kansas, to name a few.

Essentially, a **department** consists of a group of faculty members who are experts in their subfields and who offer a set of courses that satisfy a bachelor's degree and often a master's or doctoral degree. Each university must decide which fields it will offer and then build a strong department by hiring faculty members who are renowned researchers in that field. It is generally better for a department to focus on a certain set of subfields and then bring in the best researchers it can to create breadth and depth within those few subfields than to try to offer a wider range of subfields.

It's important to remember that the primary mission of the institution is to conduct research, so these decisions are made from the perspective of carrying out that mission to the highest degree possible. Each institution makes informed choices about being very strong in certain areas, knowing that other areas will become the hallmark of another campus.

All of these various **academic disciplines** can be a bit unwieldy, so they are often clustered with similar disciplines that share general philosophies or practices. According to Compton and Tait (1994), these clusters can be defined in the following ways:

- The **humanities** are the academic disciplines that study human thought and experience through the written record of what people have thought, felt, or experienced in a variety of cultures. Subject areas include languages, literature, philosophy, history, and religion.
- The **social sciences** are the academic disciplines that study people and their behavior from a variety of perspectives: as individuals (psychology), within social groups (sociology, ethnic studies), within cultures (anthropology), within social structures (education), or even as economic and political entities (economics, political science, global studies).
- The **arts** are the academic disciplines that explore and represent human thought and behavior in creative works. Creating works of art is a way of both coming to understand and expressing ideas and feelings. Subject areas include studio art, dramatic art, film studies, dance, and music.
- **Quantitative studies** are the academic disciplines that create systems for describing the physical world or human behavior in abstract or mathematical terms. Subject areas include mathematics, statistics, and computer science.
- The **physical and biological sciences** are the academic disciplines that study the physical world, its inhabitants, and the symbolic relationships within. Subject areas include biology, ecology, physics, geology, chemistry, and environmental studies.
- The **engineering sciences** are the academic disciplines that study how scientific knowledge can be applied to practical uses for society. Subject areas include civil, electrical, mechanical, computer, and chemical engineering.

Not all campuses organize their departments in these exact groupings, but the general categories are fairly accurate. These categories are not distinct, and aspects of our world can overlap several disciplines. For example, poverty is a topic that can be explored and researched in all of these disciplines. An economist might explore the relationship between minimum wage jobs and the number of people living in poverty. A sociologist might research the relationship between the quality of a poorer community's public high

POINT OF INTEREST

Making Connections between Classes

Even though you might be taking classes in a wide variety of disciplines, there will be some connections among them. Students gain the most from their education when they can draw connections and see similarities among the various courses they are taking. Instead of approaching your history class as a separate entity unto itself, see how what you are learning in that history class might be relevant to your biology class or your language class. Look for the bigger picture and the interdisciplinary nature of things whenever you can. You might even find that this allows you to bring a unique and critical analysis to a course you are taking and ultimately improves your performance in that course.

school education and the college success of its graduates. A biologist might study the effects that inadequate nutrition has on bone density. An ethnomusicologist would be interested in the forms of music that have their roots in poorer communities. A mathematician might want to create a statistical model of how long it would take a family on welfare to rise above the poverty level on the basis of different salaries. As you can see, the possibilities are endless. See "Point of Interest: Making Connections between Classes."

Route Summary

One assumption that faculty and administrators make is that students have "done their homework" in looking at what a school has to offer. We often assume that you looked at the various types of colleges and universities available to you and specifically chose to attend a research university because you wanted this particular type of education. We also assume that you explored which majors were offered before you applied to various universities; if so, then you should find yourself at an institution that offers the kinds of fields you might want to major in. If you did not check these things out before applying or if you were undecided at that time, you might discover that your institution does not offer what you want. If this is the case, you can consider choosing from the majors that are offered or transferring to a different institution that does offer what you are looking for. You can receive very helpful advice from academic and career advisors, as well as the faculty, at your campus. Many disciplines overlap, so you might be able to find a field comparable to the one you were hoping to study.

Some students are disappointed to find the research emphasis at a research university. They were hoping to find classes that prepared them for specific careers. While there are very few classes that do this, the majority of students that graduate from research universities go on to successful jobs and careers in nonresearch areas. Many graduates find the research background helpful in their careers. The prestige of their degree does have value in the workplace even though the content of their courses might not have given them specific job skills. It is true that to be competitive in today's job market, many students need to gain important job skills while in college. The best way to do this is through internships. **Internships** provide students with preprofessional work opportunities in companies and organizations in the surrounding community, on campus, and even in another city, state, or country. Some internships are paid and some are not, but all provide valuable job training as well as a chance to "try on" a career before committing to it. To learn more about internships, visit the office on your campus that provides career advising. It is never too early to secure an internship, and many career advisors recommend completing at least three before you graduate. ◆

How Research Is Conducted

Discussing research in a general sense is a bit challenging to do because each discipline has a unique approach. There are sets of prescribed processes, called **research methods,** that researchers can use to best address the topic they are exploring. For example, a biologist might be interested in what causes a healthy cell to become cancerous and multiply out of control. To learn more about that process, the researcher will need to work with cells and do a variety of tests that involve lab work, Petri dishes, microscopes, chemistry, and so on. Obviously, a biologist could not ask the cells to fill out a survey about why they multiply. On the other hand, a sociologist who is interested in how the economy of a neighborhood is related to crime rates might not find it very useful to look at skin samples of criminals under the microscope. In this case, looking at police records and census data would be far more useful. The more creative disciplines such as music or art focus on the creation or production of new works, so "research" in these fields is often focused on the work associated with writing an innovative composition or creating a specific sculpture. However, there are also subfields in these disciplines that might use more traditional research methods. For example, ethnomusicology is the study of how music relates to the expression of a specific culture, so a researcher in this field might analyze sound patterns of a certain regional genre or conduct surveys to ask people in a particular tribe about the ceremonial purpose of their songs.

Each field has its own way of conducting research, and there are certain methods of inquiry that are appropriate for getting answers to questions. One of the things you will learn during your university education is how these fields differ from each other and the various ways in which research is conducted in each field. Once you select a major, you will be introduced to the methods that are appropriate to the field you selected to study. In chemistry, you will learn how researchers precisely measure and control various experiments. In anthropology, you will be introduced to how researchers observe and document aspects of a culture without interfering with it. These introductions will allow you to better understand and evaluate the various material you will learn in your courses for a particular major. Should you choose to pursue research as a career, you will be taught research methods and procedures in much more depth in your graduate studies. It would be impossible to provide an overview here of all the disciplines because the list would take up the rest of this book! Suffice it to say that learning about research will make up a large portion of your education at a research institution. If you want to learn more, use your general catalog to see the types of research classes that are offered in various departments.

How Knowledge Is Shared

Referring back to the purpose of research as finding and creating new knowledge, it is important that once this knowledge is found, it can be shared with others. This sharing of knowledge is another primary aspect of being a researcher and it is done through **publishing** results of scholarly studies. As a result, faculty must continually engage in writing and speaking about their research as a way to add what they have learned to the body of knowledge of their field. This is most often done in writing in the form of journal articles and books. The way most research is shared with other researchers is through something called a **scholarly journal,** which is a monthly or quarterly publication that features write-ups of the latest studies that have been done in a particular field. Each discipline has several of these journals, with each journal focusing on a certain aspect of

that discipline. Most researchers subscribe to several of these journals to stay current on the latest findings, and the campus library subscribes to hundreds of journals so that they are accessible to faculty and students alike.

For example, in the field of education, some of the scholarly journals are the *Journal of Higher Education*, the *Journal of College Student Development*, *Higher Education Review*, and the *American Educational Research Journal*. Some journals for the field of marine science are the *Journal of Marine Biology and Ecology*, *Marine Ecology Progress Series*, *Ecological Monographs*, *Oecologia*, and *Marine Biology*. It is important for a researcher to stay up on the latest developments in his or her field, so reading journals is a big part of a researcher's job. Your faculty members will often be reading several books and journals simultaneously. The ability to read and comprehend copious amounts of material on a consistent basis is a trademark skill for the research profession.

Route Summary

Ultimately, this affects your daily experience as a student because your faculty members pass along expectations for this level of reading to you. We are used to reading large amounts of material, so faculty rarely think we are assigning too much. When we put together our books and readers for your classes, we are truly assessing what we think you need to know—and for faculty, it's hard for us to eliminate material because so much of it seems relevant. In addition, we put together our courses independently of each other; we don't compare notes to see how much is being assigned in mathematics or art history. As a result, you could find yourself in a set of courses with heavy reading loads. The sooner you develop the skills needed to read and comprehend large amounts of material, the better off you will be. ◆

While your faculty are in the process of learning about others' research, they are engaging in their own research with the ultimate goal of also sharing it with their professional colleagues. The type of research that faculty members conduct varies greatly and is guided by their discipline. Some faculty members are conducting experimental studies of some kind while others are analyzing already existing material to create new connections and understandings. Once a researcher completes his or her work, it is time to write up that research in some form in order to share the new knowledge with others by having it published. Studies are generally shared in the form of a paper or journal article, while other research lends itself more to being a book chapter or an entire book. You will find that, in general, writing a series of journal articles is more affiliated with the sciences, whereas writing a book or book chapter is more affiliated with the humanities. Research also takes a lot of time. Depending on the field, it can take several months to years to initiate, plan, conduct, complete, and publish a study. For this reason, most researchers are simultaneously working on several research projects, each in a different stage of completion. For example, Dr. Tania Israel, an associate professor in clinical psychology, is currently working on the following projects:

- Four studies in which she is preparing to collect data
- Three studies in which she is collecting and analyzing data
- Six manuscripts in preparation for submission to be published
- Four articles submitted for publication and awaiting reviews from editors
- Two proposals for grant funding
- Three proposals submitted for book chapters in other editors' books
- One book that she is coediting and providing feedback to the authors who are submitting chapters

This particular faculty member is engaged in several research and writing projects simultaneously; many of your faculty members will be just as busy working on one book rather than several articles. This workload is very typical, and it does not include the work of teaching several classes a year as well as holding office hours and serving on campus and nationwide committees. These responsibilities also take up a lot of time. It is common for most faculty to work fifty to sixty hours per week—more than is required for the average full-time job.

Scholarly Standards for Publication

It would be very chaotic if every person writing up research did so in his or her own unique way. It would be very difficult to review and analyze the work in any kind of consistent or fair manner. As a result, some professional standards have been created for **academic writing** that all researchers and scholarly publishers follow. One aspect of this standardization has to do with writing style, and there are several manuals and guides that faculty use based on their discipline. Another aspect of this standardization has to do with format. There is no one standard format for books or book chapters; each project is different, and the format is created in consultations between the researcher, editor, and publisher. However, **empirical studies** do have a specific format with which they need to be written, and they are usually published as articles in scholarly journals.

Essentially, every article needs to include the following sections in the following order; because you will no doubt read hundreds of these journal articles before you graduate, it's important for you to understand them as well:

1. An **abstract,** which is a very brief summary of the study and the primary findings.
2. An **introduction** to the general topic being studied.
3. A review of all that is currently known about that topic—this is known as the **literature review** and is an overview of all (yes, all) relevant past research, most of which has been published in journals and books.
4. From the literature review comes a discussion of what makes this study different from that which has already been done—in other words, a justification of what makes it new knowledge and an answer to the question "Why should this study be done?"
5. A detailed list of specific **research questions** this study attempts to answer—this often includes educated guesses about what the researcher thinks will be found, which are called **hypotheses.**
6. A detailed description of how the study was conducted, or the **research methods** that were used and how these were implemented—this includes the who, what, where, and when of the study.
7. An overview of how the data were analyzed (quantitatively or qualitatively) and what the **results** were with regards to the specific research questions—essentially, the researcher has to address whether the hypotheses were right or wrong and to what degree (using statistical indicators).
8. A **discussion** of what the researcher thinks the results mean with regard to the hypotheses and the general topic—this is also known as the discussion section and is essentially the author's interpretations of what the study indicates in the bigger picture of that topic or discipline.

9. A list of all literature that was reviewed or mentioned in the course of the study with all the information that another person would need to look up those references—this is called the **bibliography.**
10. Finally, throughout the paper, there may be relevant charts and graphs that illustrate aspects of the study or the results.

All of this has to be written in a formal way that is very objective and factual. The only place where the researcher's opinion is allowed is in the discussion section, and even there, that opinion must flow logically from the results of the study and the topic at hand. In addition, a researcher is held to the utmost ethical standard that everything written is true, is authentic, and represents the work of the person who wrote it.

Once the researcher has written up the study and has edited and proofread it numerous times to ensure that it is of the highest possible quality, the researcher submits the paper to a specific journal to be considered for publication. Other researchers in the same field review the article extensively and anonymously. The reviewers do not know the identity of the author, and the author does not know the identities of the reviewers. The reviewers evaluate the paper on the basis of the quality of research that was done, the extent to which it contributes new knowledge to the field, and the quality of the writing. The paper can be rejected or sent back to the researcher for revisions based on any of these issues. If the submission is deemed to be poor in some way, it will be rejected for publication. At this point, the author has to correct the problems the reviewers identified in the article or book before it can be resubmitted for publication.

Eventually, if the researcher did a good study and has good writing skills, the paper will be published in the journal in the form of an article, thereby contributing to the knowledge of that field. This whole process can take many months, and even years, from the date a study was completed to the date it is published. Books take even longer; getting a book published is often a multiyear process.

The Cutting Edge

This is all important for you to know because it illustrates one of the main benefits of attending a research university. While researchers are conducting their research, writing their articles and books, and spending hours in the library, they often share their newly discovered knowledge with students in the classroom that same day—long before others will read about it. This is known as the **cutting edge,** and it refers to the fact that the new knowledge that is being discovered every moment at a research university is woven into the education of the students who are currently enrolled. You will hear information in your classes that will not even be published for at least three to four years and will not reach a textbook until later still.

Let's take this book as an example. Although it is more of a text or reference book than a research-related book, the publishing process is similar for most books. I am writing this sentence on October 10, 2003, while sitting in my home office in Santa Barbara, California. I began to work on this book in December 2002 when I wrote a five-page proposal that gave an overview of the book and an outline of the various chapters. The proposal was positively reviewed and I signed a contract with Thomson on July 15, 2003.

Then I began writing. I have spent many hours writing, editing, researching, and rewriting the chapters (including this one) and completed them by April 2004. Each chapter was sent out to several anonymous reviewers, who critiqued it and offered suggestions. These were sent to me and I utilized their feedback to make changes by August 2004. At that time, the entire book was sent to more reviewers, who read the entire text and offered more suggestions. I incorporated those changes by October 2004.

Finally, the book was entrusted to the good people at Thomson, who did some more editing, designed the layout, created a cover design, and sent it to the printing press to be printed and bound. I received my first actual copy in April 2005.

I am now working on the second edition and am writing this sentence on May 12, 2007. All of the chapters have significant changes from the first edition, based on the reviews of the instructors who used the book in their classes. These updated chapters are due to Thomson on June 1, 2007, and it will again go through the editing, design, and printing process so that a book can be completed by December 2007. If you are reading this page, it means that the whole process worked and these words made their way from my computer in California in 2003 to your hands on today's date.

As I was writing this book, I shared all of these ideas with my students in my class lectures. That means that freshmen at my university began hearing about these ideas in the fall of 2000. Even if you are the first person to buy the current edition of this book, you will be reading these words over seven years later. So listen carefully in your lectures this week—you might hear something the rest of the world will not know for a few years. Pretty cool, huh?

Theories of Knowledge

Epistemology, the study of knowledge, is a word you'll often hear at a research university. In essence, it explores what knowledge is and is not and how people gain knowledge. The processes of discovering new knowledge, disseminating it to others, and learning it are all activities that occur at a research university on a daily basis. More specifically, there are certain levels that both faculty and students go through in gaining an understanding or knowledge of a certain topic. In 1956, Benjamin Bloom created a taxonomy, or hierarchy, of various levels of knowledge. His model was later revised in 1990 by Lorin Anderson, a student of Bloom's, who reversed two of the levels and changed some of the original terms. Table 1.1 shows Lorin's version of **Bloom's Hierarchy of Knowledge** along with associated skills, question cues, and sample exam questions. The first two levels focus on learning and memorizing the material as well as understanding it. The third level requires applying or using that knowledge. While these first three levels are often the hallmark of K–12 education, you will find that this is not the case at a research university. Remember, a research university places more emphasis on discovering new knowledge, which includes looking at things in new ways. As a result, the first three levels of Bloom's hierarchy serve as the background or base from which the new levels of knowledge are reached. The top three levels of analysis, evaluation, and synthesis are more directly related to the research process in that they require a person to take a set of known information and transform it in some way to create something that was not present before.

Table 1.1 highlights the levels of the hierarchy, provides an overview of the kinds of skills students would be asked to demonstrate for each level, and gives examples of question cues and student behaviors. See "Point of Interest: How to Study Better."

Route Summary

You'll be expected to learn material at all levels of the hierarchy, and your faculty will design assignments to test your ability to do so. Many students often understudy in that they only memorize and understand the reading or lecture material, that is, they focus on only the first two levels. While this is important, it is really only the first step, and students should be studying to perform at the upper four levels as well. Students are often surprised to find that

Table 1.1 Lorin's Revision of Bloom's Hierarchy of Knowledge

Competence	Skills Demonstrated	Question Cues	Sample Questions
Knowledge (Memorizing)	Student remembers or recognizes information, ideas, and principles in the approximate form in which they were learned. • observation and recall of information • knowledge of dates, events, places • knowledge of major ideas • mastery of subject matter	Write, list, label, name, state, define, tell, show, describe, identify, recognize, quote, examine, tabulate, who, when, what, where	Define the six levels of Bloom's Hierarchy of Knowledge. Describe the factors that indicate global warming.
Comprehension (Understanding)	Student explains, comprehends, or interprets information based on prior learning. • understanding information • grasp meaning • translate knowledge into new context • interpret facts, compare, contrast • order, group, infer causes • predict consequences	Explain, illustrate, exemplify, predict, summarize, infer, paraphrase, interpret, associate, distinguish, estimate, differentiate, discuss, extend	Provide examples that illustrate the differences between the analysis and evaluation levels of Bloom's Hierarchy. Estimate the earth's population in 2030 and discuss the impact this will have on global climate.
Application (Using)	Student selects, transfers, and uses data and principles to complete a problem or task with a minimum of direction. • use information • use methods, concepts, theories in new situations • solve problems using required skills or knowledge	Use, compute, solve, implement, demonstrate, apply, construct, calculate, complete, illustrate, examine, modify, relate, change, classify, experiment, discover	Write an instructional objective for each level of Bloom's Hierarchy. Calculate how many U.S. citizens would have to switch to hydrogen-based vehicles to stop the rise of carbon dioxide in the atmosphere.
Analysis (Taking Apart)	Student differentiates, classifies, and relates the assumptions, hypotheses, evidence, or structure of a statement or question. • seeing patterns • organization of parts • recognition of hidden meanings • identification of components	Analyze, compare, contrast, organize, order, categorize, separate, connect, authenticate, classify, arrange, divide, select, deconstruct	Classify the following 10 questions by the level of Bloom's Hierarchy they illustrate. Compare the cost/beneft ratio of ethanol to fossil fuels in terms of production costs and CO_2 emissions.

(*continued*)

Table 1.1 Lorin's Revision of Bloom's Hierarchy of Knowledge (*Continued*)

Evaluation (Judging)	Student appraises, assesses, or critiques on a basis of specific standards and criteria or justifies a decision or course of action. • compare and discriminate between ideas • assess value of theories, presentations • make choices based on reasoned argument • verify value of evidence • recognize subjectivity	Judge, recommend, critique, justify, assess, decide, rank, grade, test, measure, convince, select, support, discriminate conclude, summarize	Critique the effectiveness of Bloom's Hierarchy from the perspectives of three different academic disciplines. Using the standards of the KyotoTreaty, rank the top three nations in terms of reducing greenhouse gas emissions. Justify your position with specific evidence.
Synthesis (Creating)	Student integrates and combines ideas to create a product, plan, or proposal that is new to him or her. • use old ideas to create new ones • generalize from given facts • relate knowledge from several areas • predict, draw conclusions	Create, design, invent, produce, hypothesize, develop, combine, integrate, modify, rearrange, construct, substitute, plan, compose, formulate, prepare, generalize, rewrite, what if?	Design a syllabus for a high school history class that utilizes all levels of Bloom's Hierarchy. Formulate a plan for reducing student use of fossil fuels by 50 percent on this campus.

their exams require them not just to summarize the information they studied, but also to apply, analyze, synthesize, or evaluate it—and often all four! Students might also be asked to complete different assignments that measure their competency in all six levels. Successful students will utilize Bloom's hierarchy as a study tool. ◆

The top three levels of Bloom's hierarchy (analysis, evaluation, and synthesis) are all part of another concept called **critical thinking.** You will hear this term a lot at research universities because it is a primary goal of your faculty to teach you how to engage in critical thinking. In fact, 99 percent of all faculty state that developing their students' ability to think critically is very important or essential, based on a 2005 study of over 55,000 faculty members at 50 institutions of higher learning (Lindholm, et. al., 2005). Critical thinking is essentially the process of suspending your beliefs and authentically looking at other options. This is a crucial skill for researchers because the search for new knowledge must be committed to finding the "truth" and not just confirming what one already believes. The processes of analysis, evaluation, and synthesis require us to let go of the material as we know it and to become open to altering it through taking it apart, putting it together, or assessing it in some new way.

The Importance of Academic Integrity

Because the primary mission of the university, as well as that of each of your faculty members, is to create and discover new knowledge, you can probably understand that **academic integrity** is an essential element of the entire research process. The whole

POINT OF INTEREST

How to Study Better

When you study, focus on applying the material you are learning to all six levels of Bloom's hierarchy. Study in such a way that you could answer the kinds of question cues listed in Table 1.1. Also, don't assume that topics will be presented one at a time; you might be expected to apply these levels to two or more topics simultaneously. For example, in an introductory sociology class, you might have started the class learning about the modern sociological theories, including symbolic interactionism, then later read information on the civil rights movement of the 1960s and a few weeks later hear a lecture on the effects of globalization on today's world economy. A faculty member might ask you to analyze the civil rights movement and the effects of globalization from the perspective of a symbolic interactionist. Clearly, this question would test your knowledge and comprehension of those three seemingly separate pieces of information, but it would also require you to apply the theory to these two situations and analyze them from that theoretical perspective. Needless to say, many new students could walk into this exam feeling ready and yet walk out feeling blindsided. Be prepared—faculty can and do utilize the whole range of Bloom's hierarchy to assess your mastery of the material. If you can study accordingly, you will excel in your classes.

value of research would collapse if it could not stand on the notion that people do honest work and represent their research accurately and completely. One of the worst violations a researcher can commit is to manipulate or misrepresent his or her findings; this invalidates the entire search for the truth. Faculty have been fired for this. With that said, academic integrity is a value that is woven deeply into every element of your institution and is also expected of all students. You are expected to do your own work and stand by the quality of that work. Needless to say, cheating and plagiarism (using another's words or ideas without giving him or her credit) are serious violations of the essence of a research university. For this reason, it is important that you become very familiar with your campus's definitions and regulations regarding cheating and plagiarism. You will most likely find that these issues are very different from, and treated far more seriously than, what you experienced in high school. In fact, a typical high school book report would be considered plagiarism at most universities because it summarizes the words of another without giving appropriate credit.

Some common forms of **cheating** include copying answers from a classmate on an exam, bringing and using unapproved notes and resources to an exam, having another person take an exam in your place, changing answers on an already graded exam and resubmitting it for credit, and stealing exam materials from department offices. Typical forms of **plagiarism** include using material from any source (for example, books, lectures, the Internet) without giving the proper credit, purchasing a paper from the Internet or another source, turning in another student's work (even if it is several years old), using your own work from one class in another (you need permission from both instructors to do so), turning in papers with similar sections as another student (even if they are worded differently, similarly organized thoughts and arguments can constitute plagiarism), and stealing another student's work and turning it in. Even if you do not engage in cheating or plagiarism directly, you can be held responsible for aiding in another student's **academic dishonesty.**

When an instructor suspects a student of cheating or plagiarism, several actions can be taken. At some universities, instructors have the power to determine that student's grade on that particular assignment or even in the entire course without consulting

Justin's Story from the Path

Hometown: Boulder, Colorado

University: Dartmouth College

Activities: skiing (not boarding), ice skating, hiking, reading

Favorite Movies: *The Secret, Knocked up, Blades of Glory*, all things *Shrek*

Favorite Books: *Atlas Shrugged, Why Cats Paint*, anything by Tom Clancy

Favorite Quote: "Though no one can go back and make a brand new start, anyone can start from now and make a brand new ending."—Unknown

My freshman year was totally ruined because I was accused of cheating. Halfway through the year, I got called in to my political science professor's office. He told me that my paper was almost identical to another student's in the class. I was shocked because I had worked really hard on that paper and I had written it myself. Apparently, the other student told him the same thing, so he had to accuse both of us of cheating because he didn't know who was lying. The class had 700 students in it, and I didn't even know the other guy! We were both sent to the Office of Judicial Affairs, where we were assigned a hearing, which didn't occur until over a month later. In the meantime, I still had to go to all my classes, including poli sci, and try to focus, but I was a stress case, so it was hard. The hearing was really scary because there were twelve people in the room, and I had to prove my innocence. It turns out that he lived in my hall and kind of knew my roommate. He had asked to use my roommate's computer one night when I was out. My roommate was working on another assignment, so he let the guy use mine. The guy found my paper, and he copied it. I guess he just rearranged the paragraphs and turned it in. Luckily, my roommate was able to testify on my behalf because the other guy kept swearing that I stole his paper! I was found innocent, and he was suspended for three terms. But the whole thing was really stressful and made that whole quarter hell. Since then, I put a password on my computer, and no one is allowed to use it that I don't personally know. Even then, I have another password on my homework files.

anyone. If the instructor fails a student, the student would have to retake the course to change the grade. All universities have some office or governing body that deals with cases of academic dishonesty; it might be called something like the Office of Judicial Affairs or the Committee on Student Conduct that oversees the enforcement of campus regulations and issues punishments to those who violate them. In some cases, faculty have the option to turn the student over to this agency, and in some cases, faculty are required to do so. This agency usually engages in a judicial process in which all evidence is presented to an impartial group of people, usually comprising faculty, staff, and students, who hear the case and render a decision. If found innocent, the student is let go without penalty. However, if found guilty, the student faces serious consequences that can include suspension from the university for a term or two, or even permanent expulsion. In addition, a guilty finding forces the creation of a conduct record for that student that exists for five to seven years. All universities are required to divulge if a student has a conduct record, and this can damage a student's future admission to other institutions and many jobs. See "Justin's Story from the Path."

Route Summary

Be forewarned that the consequences for cheating and plagiarism are usually quite severe. At my campus, a first-time infraction typically results in a two-quarter suspension after a hearing. This means that the student must move out of the residence hall, lose financial aid, drop out of classes, and stop attending for the length of the punishment. With such steep consequences, it is important that you know what your campus's policies are. They

are most likely published in a printed version and online, and a simple search at your campus's website will likely yield them. However, you can always speak to your instructors or academic advisors if you have any questions.

In addition, if you participate in the process of another student's cheating, either intentionally or not, you can be held accountable. You have to be very careful in how you share your work with other students. For example, if you let another student see your paper, it is up to you to make sure that he or she does not use it to cheat. For this reason, it is important to be clear with your peers how, and to what extent, they can utilize any materials you are sharing with them. In addition, it is your responsibility to keep your hard copies and computer files secure. If you let a friend use your computer and he copies your paper and turns it in, you can both be accused of academic dishonesty. Hopefully, your "friend" will be honest and tell the dean or conduct committee that you are not at fault, but if he doesn't, it will be your word against his, and the university might find you both responsible if they cannot discover the truth. ◆

Members of the University Community

The campus community is made up of many, many individuals. There are undergraduate students, graduate students, faculty, staff, and administrators as well as people from the local community in which the campus is located. Each of these groups plays some integral role in the daily functioning of the research university and is part of what is known as the **community of scholars.** As we have discussed, the role of the faculty is primarily to conduct research. In addition, faculty are charged with teaching both graduate and undergraduate students as a way to prepare future researchers as well as to provide the courses needed to satisfy graduation requirements. Staff and administrators play pivotal roles in ensuring that every aspect of the university runs smoothly and efficiently. In addition, people who live near the university often interact with and/or are affected by the university community in a variety of ways. Each of these groups has different responsibilities, needs, goals, and ways of working. As a result, it is important for you to learn more about these different communities and how they affect your daily experience as an undergraduate student.

Undergraduate Students

The part of the community of scholars of which you are a member is the **undergraduate student** body. This ranges from freshmen to graduating seniors—any student who is currently enrolled in a bachelor's degree program. In addition, you will find yourself a member of the freshman or transfer class or the "Class of [fill in graduation year here]." On some campuses, class identity is quite strong, and you will find yourself identified by your group and familiar with many people in your class. On larger campuses, this is much harder to do. At the University of Georgia, there are over 25,000 undergraduate students and a freshman class of 5,000 students, and the only time the freshmen are seen as a group is during the first week of school at convocation, the official induction ceremony. Because not all students graduate in exactly four years, the entire freshman class is usually not together at commencement four years later. At larger research universities, most students know a smaller group of

students whom they met in their residence hall, at their job, through a club or organization, in classes for their major, through a sport or hobby, or by some other similar avenue.

The role that an undergraduate plays in the community of scholars is to be both a consumer of knowledge and a producer of knowledge. As you take classes, your instructors will teach you information about that particular topic, and you will be asked to learn this material and demonstrate your mastery of it through exams, papers, and other assignments. The quality of your work will be assessed and reflected in the grade you earn. As you take introductory courses in a variety of disciplines, most often done to fulfill general education requirements, you will also be exposed to some elements of that particular discipline. This process helps students to learn more about both their interest in, and talent for, a particular discipline.

Once you select a major, you will begin to receive more specific training in how to conduct research for that particular discipline. This is where you also begin to be a producer of knowledge, as many of your assignments in these and other major classes will require you to write research papers and conduct mini-research projects. If you show academic promise in your major, you might be invited to conduct a senior research project or to be involved in a faculty member's research. You can also seek out these opportunities on your own by inquiring with the department or speaking to faculty members whom you have gotten to know.

Many undergraduate students serve in vital roles in large research projects and may even publish an article before they have received their bachelor's degree. If you aspire to continue on to graduate school, these are excellent opportunities to participate in, as they give you a chance to build your research resume early. Participating in research as an undergraduate definitely gives you an edge when applying to graduate schools.

In addition to their academic work, undergraduate students contribute to the campus community in the form of community service. Many students join clubs and organizations that serve the larger campus in some way, or they participate in student government or serve on an important campus committee that is trying to improve an aspect of the campus. This involvement is just as important in your overall education as your courses, so be sure to participate.

Graduate Students

Most research universities have both graduate and undergraduate students. **Graduate students** applied for, and were admitted to, an advanced degree program (usually master's or doctorate) in a specific discipline at your campus. That means that, just like you, they have courses to take and papers to write in order to graduate. Depending on the program they are in, they will be graduate students for one to three years if they are pursuing a master's degree or four to seven years if they are pursuing a doctoral degree. You might not always recognize graduate students because many pursue their advanced degree right after finishing their bachelor's degree, so they are close in age to undergraduates.

Graduate students play some key roles in the workings of a research university. First, they are researchers-in-training. In their courses, they are learning the theories and research methods that are used in their disciplines (usually in much greater depth than that which is presented to undergraduate students). They must also become producers of knowledge by engaging in the type of research that is common in their discipline. Before they can graduate, they must produce original research under the close scrutiny of the faculty in their department.

POINT OF INTEREST

Get to Know Your TAs

Get to know your TAs and other graduate students on your campus. They were all very successful as undergraduate students, and they probably have some useful pointers for you. Graduate students can assist you with the assignment they might be grading, provide advice on how to balance academics with a social life, and give you useful strategies for various academic skills. They are also usually in the know about the best coffeehouses in town. Take advantage of this important resource.

The most likely place where you will encounter graduate students is in your classes, as they often serve as teaching assistants, or TAs. TAs work with faculty members to help provide courses to undergraduate students—and frankly, the university could not run without them. They usually are responsible for running discussion sections, teaching additional material in those sections, and grading some, if not most, of your work. All of these duties are done under the close supervision of the instructor of record for a particular course. Serving as a TA usually provides the graduate student with two important resources: money for school (as these positions are paid) and valuable teaching experience as they prepare for their own careers as faculty members. While most TA positions are technically quarter- or half-time (that is, ten to twenty hours per week), in reality they often require more time than that, as each TA leads two to three discussion sections per week in addition to attending all lectures and grading students' work.

In some cases, very advanced graduate students may be promoted to a teaching associate position and given a course of their own to teach as hands-on job training; that is, they would serve as the instructor of record and have primary responsibility for that course. These advanced students usually have several years of their graduate program under their belt and are close to graduating and becoming an entry-level faculty member somewhere else. Some campuses utilize quite a few teaching associates to teach introductory-level undergraduate courses; other campuses pride themselves on having their highest-ranked professors teach these courses.

Of the 38,538 freshmen who participated in the national 2005 Your First College Year study, 58 percent interacted with their teaching assistants during office hours. See "Point of Interest: Get to Know Your TAs."

Faculty

There are different types of faculty members at a research university. A **faculty member** is any person who has a contract with the university to provide teaching, research, or both. These titles may vary slightly from institution to institution, but they are generally similar across universities in the United States and Canada. The length of the contract may also vary; some faculty members have temporary or short-term appointments while others have long-term or permanent contracts. This distinction between the lengths of the contract is very important and essentially creates two categories of faculty.

Long-Term Contracts

The first category of faculty is people with long-term contracts, and it includes those with "professor" titles. The **professorial titles** are the most prestigious faculty titles at a

research university. These positions focus most on the person's research skills, although teaching is important as well. Because the primary job responsibility is research, the teaching loads for professors are lower than those of lecturers (described in the next section). At the University of California, this means four to five courses per year and may range from large undergraduate courses to graduate seminars with as few as three students enrolled. These positions are paid the highest of the faculty titles and have many levels for growth and promotion.

These positions are also known as **ladder-rank** faculty because they are "on the ladder" to tenure. **Tenure,** which is job security, is a very important concept because it is closely tied to the process of research and is the way in which academic freedom is guaranteed. **Academic freedom** ensures that every faculty member has the right to research and teach what she or he wants without fear of retribution or punishment. This means that a researcher can actively pursue controversial or marginalized topics without fear of losing his or her job. For example, a political scientist could research and publish things that were critical of the state or federal government, or a biologist could explore an unpopular theory about AIDS transmission. Academic freedom is a core value of a research institution and is held in the same sacred way that freedom of speech is held in the United States. In fact, the concept of academic freedom was born following the McCarthy era when scholars were routinely harassed and persecuted for holding views that the government did not agree with. Academic freedom and the tenure that guarantees it were specifically designed to ensure that McCarthyism could never be repeated in the United States.

Tenure is job security, and it means that a person has a job for life and cannot be fired except under extreme circumstances. Tenure is based on a person's contributions in four main areas:

1. Research, usually assessed by examining the quality and quantity of scholarly contributions (such as publications or creative works)
2. Teaching, usually assessed primarily by examining teaching evaluations from students
3. Community service to the home campus, usually assessed by examining the amount of participation in campus programs, on campus committees, and so on
4. Professional service to the discipline, usually assessed by examining the amount and level of involvement in national or international professional organizations

Every faculty member with the title of professor goes through a very comprehensive performance evaluation in which these four areas are assessed. This review involves faculty from the same department, other departments on the same campus, professional colleagues from around the world, and various administrators up the chain of command all the way to the president or chancellor.

By far the most heavily weighted factor at a research university is the faculty member's research skills, which are often determined by examining the quantity and quality of the person's scholarly contributions, such as publications or creative works. It is generally believed that the quantity of contributions indicates that the person is a competent researcher who regularly contributes to the new knowledge of the field and is respected by colleagues around the world. Therefore, this person will be a valuable addition to a university and will help fulfill its research mission.

There are four levels within the ladder rank or professor titles. See "Point of Interest: Who Faculty Are."

POINT OF INTEREST

Who Faculty Are

If you think about it, faculty members are people who liked school so much that we never left. Ponder that for a moment. We were perhaps the top students in our high schools, and we went on to become the top students in our undergraduate colleges. We then chose to pursue a Ph.D. or other advanced degree that requires several more years of schooling. Once we graduated, we intentionally chose a career that required hours of reading, writing, studying, and research. Generally, we are truly excited about learning and we find the material we research and teach to be fascinating. And we think our students do too. We often assume that you intentionally chose a research university because you want to become a researcher yourself and are interested in the material we have to teach. This assumption can create a disconnection between students and faculty because we believe that you have a passion for learning, just like us, when students may be focused more on getting a good grade or a good job after graduation instead. Nothing slights our academic passion more than to have a student seem uninterested or bored, or worse, only focused on finding out what is on the test. Those kinds of priorities, and the attitudes that accompany them, are like knives to the hearts of your faculty. Think carefully about how you interact with these passionate educators and what you convey about yourself with your words and actions.

Assistant Professors. These are faculty members who have a Ph.D. and have been hired by the university for a specified period of time, usually up to seven years. They do not have tenure and are given a period of time in which to earn it. They have usually just completed their Ph.D. at another university, and this is their first professional job as a faculty member. During this time period, assistant professors are trying to demonstrate their research and teaching skills—in other words, their usefulness to both their field and their institution. Assistant professors have up to seven years to produce a professional file that shows them to be worthy of tenure. This means that they are trying to publish enough articles, book chapters, or other research results to be reviewed favorably and be granted tenure by their colleagues. Needless to say, this is a big job because assistant professors are also expected to teach and demonstrate their teaching prowess. When assistant professors are granted tenure, they earn a permanent position at that university. If tenure is not granted, then they are asked to leave the university, and the temporary contract is ended. In other words, they are fired. The phrase **"publish or perish"** refers to this process and is often the mantra of stressed young faculty who are trying to gain tenure. Some campuses tie together tenure and promotion to the next level of associate professor; others keep these two processes separate.

Associate Professors. These faculty members are more advanced than assistant professors in the career of academia. At some universities, advancement to associate status comes with tenure, while at others, tenure is earned separately. Once tenure is earned, associate professors have job security for life, but the university's expectations that they continue to produce new knowledge also last for a lifetime, so associate professors by no means reduce their publishing goals. But they do probably feel less pressure and stress because they cannot be fired, and this frees up some of their time for involvement in university and professional service. What motivates associate professors to continue researching is their passion for learning and teaching. At some campuses, future promotions and salary increases may be based on their research skills and the quantity and quality of new contributions. There may be several minilevels of promotion

within the associate professor title that can be granted after each performance review every few years, if the person's performance record was satisfactory.

Full Professors. These faculty members also have tenure but have now achieved the highest level possible within this career in academia. They have been promoted from associate professor and granted the esteemed title of full professor. Again, full professors are motivated because of their intellectual passion. At some campuses, future promotions and raises may depend on their production of research. Full professors tend to be older because of the length of time it takes to reach the status of full professor. They are also the highest-paid members of the faculty, but salaries vary greatly across disciplines. Once faculty members achieve full professor status, they might also take on more administrative duties at their campus by becoming the administrative leader, or chair, of their department or by serving as an academic dean. Outside of their campus, they might become a leading officer in a professional organization or become an editor of a scholarly journal. If a professor chooses to stop or slow his or her research production, the result is career stagnation. Although the person will continue to have job security for life, there is a cost in that colleagues might not view that person as highly as before, and this can lead to fewer opportunities within the department or campus.

Emeritus Professors. These faculty members have served as full professors for many years and have now retired. They no longer have an active contract, although some emeritus professors are asked to teach an occasional course in their specialty. They are still viewed as members of the community of scholars and often are given great respect, as they have reached the pinnacle of their field in academia.

Short-Term Contracts

The second category of faculty is people with short-term contracts. This includes teaching assistants and teaching associates, who were described earlier, in the section about graduate students.

Lecturers. These are faculty members who have been hired on the basis of their teaching skills. As a result, they have the heaviest teaching loads and are expected to teach several courses per year. At the University of California, this is usually nine courses per year. These courses may be introductory courses for freshmen or advanced courses for seniors. Occasionally, lecturers might be asked to teach a course for graduate students. Lecturers' contracts tend to have a specific time limit after which the contract is ended, no matter how good the lecturer was at the job. For example, there might be a limit of six years or a certain number of terms. These faculty positions are paid less than the professor titles, even though most lecturers also hold a Ph.D.

Visiting Titles. These are faculty members who have a Ph.D. and have been invited to be part of the faculty for a specified, and usually short, period of time. The term visiting can be attached to both lecturer and professor titles; it indicates that although the person is working at this particular institution for a short period of time, she or he has a position at another institution elsewhere in the state, country, or world. The "visiting" title usually matches the title that the person holds at his or her home institution; for example, someone who is an associate professor at home will be a visiting associate professor at the new campus. Visiting faculty often are invited because they bring a perspective or background that is not found among the regular faculty at that particular campus. Visiting faculty often accept the invitation because they also gain something from working and researching in the new location, for example, access to some data that would be harder to gain while at

their original campus or an opportunity to work with a different group of faculty or students. Clearly, this arrangement is often very beneficial to everyone involved.

Acting Titles. The term *acting* can also be used with all the faculty titles; it indicates that the person is in a temporary position with specified beginning and ending dates. It also might indicate that the person does not hold a similar title at his or her home institution or company but does have the appropriate academic qualifications. An acting title can also be used when a person is asked to fill an empty position temporarily, until a permanent replacement can be hired.

Regardless of the titles your instructors hold, it is important for you to use their assistance as you do your academic work. All instructors are required to have weekly office hours, the minimum being about two hours a week. This means that the faculty member teaching the course, as well as each teaching assistant, needs to have office hours every week. The purpose of **office hours** is to be sure that students have regular and easy access to their instructors for the purpose of doing well in that particular class. Nearly 90 percent of all freshmen who participated in the Your First College Year survey (Hurtado, et. al., 2007) interacted with faculty during office hours with 26 percent indicating that they visited office hours one to two times per month. Seventy percent interacted with faculty outside of class or office hours. See "Point of Interest: Dos and Don'ts of Office Hours." 78.7 percent felt somewhat or completely successful at getting to know faculty and 61.7 percent were satisfied or very satisfied with their amount of contact with faculty.

Staff and Administrators

While faculty and students represent the main producers and consumers of knowledge on a university campus, their daily lives would not be possible without the work of the hundreds of staff and administrators who work there as well. Many staff and administrators have chosen to work at research universities because they believe in the power of education and discovery. They work in ways that enable and facilitate the research and learning process of both faculty and students. Of the 38,538 freshmen who participated in the 2005 Your First College Year survey, 90 percent had interacted with academic advisors/counselors with 60 percent doing so once or twice per term. Nearly three-fourths (73 percent) interacted with other college personnel with 13.3 percent doing so more than once per week.

Without their efforts, many important aspects of the university would fail or falter. It is impossible to provide an overview of all that staff and faculty do so let's focus on how many people are involved every time an instructor wants to offer a class—it is the work of several people to schedule all classrooms, publish a document that lists all available courses, order books for students to purchase, assist in the making and copying of syllabi and exams, ensure that the classroom is heated and cleaned properly, process the grades and post them to students records, and process the instructor's paycheck every month.

And that's just a small taste of what is needed from the faculty's perspective. Think about the list of things that need to be done to allow you to sign up and successfully complete your classes: advise you on how to choose and register for classes; create documents that help you understand your choices and relevant deadlines; stock the bookstore with materials you need for your classes; counsel you when you are going through a difficult time; medically treat you when you are sick; process the payment of your tuition and provide you with financial aid when needed; talk to your family when they have questions; provide you with cocurricular activities such as campus events, clubs, and organizations; and encourage your success.

POINT OF INTEREST

Dos and Don'ts of Office Hours

Many students are intimidated by office hours because they are not sure what they are supposed to do during them. Generally, office hours are a time when you can DO the following:

- Ask questions about the week's lectures or readings—either because you did not understand the material and would like it explained further or because you have new questions about what it means in the bigger picture.
- Ask questions about your academic skills and get some advice—to show your instructor your lecture notes or chapter outlines and see whether you are capturing the right material and to the level of detail she or he would expect.
- Ask questions about an upcoming exam or assignment—to make sure that you understood it correctly and/or are approaching it in the correct way. For papers, you might also be able to have your instructor read outlines or even completed drafts and give you feedback.
- Ask questions about your past performance in order to improve—to find out why you received a certain grade for the purpose of learning how you can better prepare for future exams or papers.
- Bring something to your instructor's attention—such as an error on the syllabus or a test question that might have multiple interpretations.
- Ask for an extension on an assignment—but be sure you have a good and documented excuse, and even then, your instructor is not obliged to accommodate you.
- Ask questions about the major or the academic discipline—to learn more about the bigger scope of the field.
- Ask questions about the faculty member's research—to learn more about his or her work or to find out whether there is an open student position on the project.
- Seek advice about future classes to take, graduate programs to apply for, and the like.
- Request a letter of recommendation for graduate school or a professional job.

Remember, you are attending a research university, where the faculty are charged with discovering new knowledge and, in general, are people who love to learn. With that said, there are definitely things that you DON'T do in office hours:

- Ask for copies of lecture notes. It is your job to take your own notes. If you were absent, you need to make arrangements with a fellow student to get a copy of his or her notes. It is okay to request copies of handouts, but it might be easier to ask the student from whom you are getting the notes to pick up a set for you. However, if you are a student with a diagnosed disability, speak to your instructor about any special accommodations that you might be able to access.
- Ask questions that might be offensive to your instructor as a professional scholar—things like "Did I miss anything important?," "Will this be on the test?," or "Are we expected to know this stuff?" These questions indicate that you are trying to do the bare minimum and are not dedicated to your work.
- Go over an assignment with the instructor for the purpose of arguing about the feedback you received or making a statement like "But I always get A's on papers." Your faculty have years of experience teaching and grading, so they probably have a few things to teach you about performing at the university level. Trust that you have been assessed accurately and fairly, and seek to learn how you can do better next time. However, faculty do make mistakes occasionally (for example, we might have added a score incorrectly or misgraded a question), and it is fine to point these things out to us—just be mindful of your tone.

Remember that each instructor is free to schedule the hours at his or her convenience, so there is no guarantee that the office hours will not conflict with your other classes, job, and so on. To address this, most faculty members are also available by appointment, which means that you can request a one-on-one meeting with your faculty or teaching assistant. You can do this either in person before or

after class, by phone, or by e-mail. However, it is important that you have your schedule handy or give your instructor some options that work in your schedule. Once you have made an appointment, it is imperative that you show up. Your faculty member has taken time out of her or his busy schedule to be available to you, so missing an appointment is very unwise.

Staff and administrators are involved with every aspect of the operations of campus, so their work affects your experience every day. Obviously, these positions range from the person who mows the grass to a medical doctor who treats students in the health center. Because of this variety, it is hard to make concrete statements that represent all of these positions, but in general, tenure or job security is not something that is extended to staff and administrators at most research universities. It is also important to distinguish between staff and administrators.

Generally, **administrators** serve in leadership roles as the director or coordinator of a department or program, such as dean, provost, director, vice president, or chancellor. They must provide guidance and leadership to the staff who work under them in that particular department or program and to the department itself that they oversee. This includes setting goals and making sure they are met, overseeing the annual budget and making sure operations stay within it, hiring and supervising all staff, responding to unexpected crises, reacting to government or state mandates, and various other duties. In other words, they ensure that the program or department is functioning at its best and successfully doing the work with which it is charged. In addition, administrators usually have to answer to another administrator who is above them in the university's hierarchy.

In contrast, **staff members** are generally people who work in a department or program and report to the administrator who serves as the director or coordinator. Small departments might have just a couple of staff members who cover a range of duties, while large departments might have hundreds of staff members, each with a very specific role and set of duties. Larger departments often have organizational hierarchies so that not every person reports to the head administrator but maybe to a manager or assistant director instead.

It is important to note that staff members often work very hard and do not receive the same prestige or status that is awarded to the faculty at a research university. On some campuses and in some departments, staff are considered "second-class citizens" compared to faculty and experience daily frustrations that stem from that attitude, such as lower salaries, less favorable parking spots, cubicles instead of offices, and all kinds of other privileges that they experience in less quantity or quality than those provided to the faculty. Needless to say, this can create a negative environment that might or might not be visible to students. In general, any staff members with whom you interact will greatly appreciate being treated with respect and thanked for the service provided.

As with any community of people, sometimes problems or conflicts can arise between or among various members. Should this happen to you, seek information on the best way to get your grievance resolved. The office of the dean of students or the ombudsperson would be good places to start. See "Point of Interest: A Word about Grievance Procedures."

The Surrounding Community

Every campus is located in or near a community of some sort, whether it is a small rural town, a large city, or something in between. The presence of a university, along with its many members, has a very real impact on the surrounding community. Some of the ways in which the surrounding community is affected by a university are employment

POINT OF INTEREST

A Word about Grievance Procedures

Every once in a while, things can go wrong at a university, and a student's rights or safety are compromised. Unfortunately, sometimes an instructor or staff member treats students unfairly or inappropriately. Examples can include minor situations that can cause problems for the students, such as an instructor grading an exam incorrectly or a staff member being rude to a student. In addition, more serious problems can occur, such as a faculty member who drastically changes the assignments or grading procedures during the term or who treats some students very differently from others in ways that negatively affect their ability to perform well in the class. Faculty or staff might even make offensive comments or sexually harass a student. There is generally a standard procedure that students should follow if they have experienced a problem in which their rights or safety have been violated.

In less serious situations, the general procedure to follow is to start with the person with whom you are having the problem and determine whether it is a communication issue. State what you are requesting in clear and polite terms. You would be surprised at how many situations can be resolved with simple and direct communication. If this does not bring the results you would like, then you can take the situation up to the next level at the university. For a staff member, you would make an appointment with his or her supervisor, usually the director of the program or department; for a faculty member, you would make an appointment with the chair of the department. It is usually a good idea to write down a summary of what has happened so far, including dates and specific comments. Also, state what you are requesting in terms of a solution. Be sure you arrive on time; a missed appointment will not make you look very credible. At this meeting, you might learn about campus policies or procedures that could influence the situation and any processes that exist, such as petitions or grievance forms that you can fill out and submit.

If this meeting does not bring satisfaction, you have the option of continuing to the next level of the organization. For staff, it might be the director or the dean, or possibly the vice chancellor or vice president, who oversees the division in which that department is located. For faculty, it would be the dean or provost for the college in which the academic department is housed. Again, make an appointment and be on time. Bring written documentation and make your request clear. If this final level does not bring the results you were hoping for and you still feel strongly that you have been wronged, you can work with the office that addresses student concerns, often called the ombudsman office, the dean of students office, or the office of student complaints and mediation. You also have the option of seeking legal counsel.

In serious situations such as sexual harassment or threats of violence, you should immediately speak to someone who can help. If the situation is urgent or obviously illegal, call your local police. If not, you may be able to pursue various options at your campus. Most universities have staff and administrators who assist students with these kinds of problems and can also protect them from retribution. Often, there is a complaint officer or an ombudsperson who handles these situations, but if you are not sure, contact your dean of students office. You would want to make an appointment with this person as soon as possible. It is usually very helpful when a written summary of what has happened so far is prepared in advance. This person can talk to you about a range of options and assist you in resolving the situation. These can include removing you from the situation in a way that keeps your academic record in good standing to assisting you in filing a formal complaint and following a grievance process in which the offending party's behavior can be evaluated and possibly punished.

opportunities, housing costs and availability, parking costs and availability, student behavior, general safety, economic growth, availability of resources, and space planning and development. These impacts can be positive—for example, the availability of jobs with good benefits or resources such as an extensive library or lectures and performing arts events that are open to the public. And some of these impacts can be

negative, such as local emergency rooms being clogged with alcohol-poisoning cases or the kind of pranks that students seem to participate in "for fun that affect others' property or personal comfort."

Many communities are involved with the local university in the form of beneficial formal and informal partnerships. One example on our campus is the adoption of a local elementary school: We provide some additional funding to the school, and many of our students volunteer there as tutors. Sometimes faculty share their expertise with the local community. For example, a faculty member in our education department has done groundbreaking research on children with autism. He shares his work with local families by providing free consultations and treatment programs. Many local businesses have also created preprofessional internships in which our students can gain valuable work experience while still in college. These beneficial relationships go both ways and represent collaboration in its truest sense.

A study done in 2004–2005 of over 55,000 faculty at 500 colleges and universities found that 81 percent of faculty believe that colleges "have a responsibility to work with their surrounding communities to address local issues" (Lindhold, et. al., 2005). Nearly half (46 percent) stated that their campus placed a high or highest priority on "creating and sustaining partnerships with surrounding communities," and 85 percent felt that students should be encouraged to participate in community service.

Route Summary

It is important to be aware that you are part of something bigger than just your university. You have now become a member of these communities, both the campus and the local area, for the duration of your college experience. Your actions and choices do have an impact on those around you, and only you can choose whether these will be positive or negative. Your behavior as a member of these communities is an important part of your education, and it prepares you for your future roles as an employee, a neighbor, a parent, and a partner. ◆

Chapter Summary

In this chapter, the following topics were discussed:

- The purpose of research
  - The research mission of a university
  - Who conducts research
  - The academic disciplines
  - How research is conducted
- How knowledge is shared
  - Scholarly standards for publication
  - The cutting edge
- Theories of knowledge
  - Epistemology
  - Bloom's Hierarchy of Knowledge
  - Critical thinking

- The importance of academic integrity
- Members of the university community
  - Undergraduate students
  - Graduate students
  - Faculty
  - Staff and administrators
  - The surrounding community