

Case Western Reserve University School of Medicine Biochemistry MS Program Student Handbook

The MS degree program is designed for students who wish to acquire expertise in biochemistry, with a view to working in the biotechnology industry or in research labs in academia or government. The MS degree is also excellent preparation for further education. The program consists of coursework and optional research in faculty laboratories. Five optional concentrations are now available: Cancer Biology, Experimental Biotechnology, Infectious Disease, Metabolism, and Molecular Structure and Function.

Getting Started

Incoming students should contact the Director of MS Programs in Biochemistry (currently Dr. Susan Wang) and the Administrative Manager for Education (Ms. Cynthia Ernst) as soon as possible and meet with both to discuss the academic and administrative details of joining the program. International students must supply their home address to the federal Department of Homeland Security and must check in with CWRU's VISA office (Crawford Hall 215 for appointments, Crawford Hall 320 for walk-ins; <https://case.edu/visa/>; visa@case.edu). Please get your I-20 and schedule your visa appointment as early as possible. Some visas take over 8 weeks to process.

All students who plan to work in a research lab or take the biochemistry lab series must complete lab safety training offered by CWRU's Environmental Health and Safety department (<https://case.edu/ehs/>) before they can begin work. All students should complete "Laboratory Safety" and "Biosafety" as early as possible during their first semester. Initial training is typically done on Zoom (effective Fall 2023). More information on training including how to register is at <https://case.edu/ehs/training/>. Additional training may be required based on the research lab a student joins and should be arranged in consultation with the research faculty mentor.

Students register for courses using the online Student Information System (SIS; <http://sis.case.edu>). Registration must be completed before the start of the semester to avoid a late fee. Before students may register, they must meet with the Director of MS Programs to remove their SIS advising hold and to discuss coursework. Late fees, which are the responsibility of the student, are assessed after classes start. The first two weeks of the semester, ending the second Friday of classes, are the Drop/Add period. Students can change their registration during this time freely and without penalty. The academic calendar (<http://case.edu/registrar/dates-deadlines/academic-calendar>) lists these dates for each semester.

Coursework

Requirements

Effective Fall 2024, the MS degree requires 30 credit hours of coursework (18 graded). As of academic year 2023-24, the program requires 15 credits from specific courses:

BIOC 407: Introduction to Biochemistry: From Molecules To Medical Science (4 credits)

BIOC 408: Molecular Biology (4 credits)

BIOC 500: Biotechnology Laboratory: Molecular Biology Basics (1 credit)

BIOC 501: Biochemical and Cellular Techniques for Biotechnology (3 credits)

One of the following laboratory courses: BIOC 502A Biotechnology Laboratory: Molecular Biology and Biochemical Techniques (2 credits) or BIOC 502B Biotechnology Laboratory: Eukaryotic Molecular and Cellular Biology (2 credits) or BIOC 503: Biotechnology Laboratory: CRISPR

EXAM 600: Master's Comprehensive Exam (1 credit)

The remainder of the curriculum is chosen from advanced biochemistry courses and/or offerings from other departments (e.g. Biology, Pathology, Neurosciences, Systems Biology). Independent

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laboratory research may be carried out for credit (BIOC 601) for a maximum of 3 credits/semester and 9 total credits for students entering in Fall 2024. (For students who entered before Fall 2024, up to 12 credits of BIOC 601 are accepted.)

Students with significant laboratory experience may complete a laboratory proficiency exam at the 80% (B) level to be exempted from completing BIOC 500. An additional credit of coursework is needed to replace this credit.

Dual-degree students (*e.g.*, JD/MS) and university employees should consult with the Director of MS Programs to discuss whether BIOC 500 and/or BIOC 502A/B/503 are appropriate/necessary. Full-time students (enrolled in at least 9 credits/semester) typically complete the program in 4 semesters. This can be done in 21 total months (4 academic semesters) if the students do not enroll during the summer between their first and second years. This timeline can be shortened to 15 months (3 academic semesters) if students enroll for the summer as well or enroll in 10 credits per semester. (Please note that relatively few classes are offered during summer session.) Part-time students usually complete the program within 3 years. Sample schedules are shown in the table below.

Sample Schedules for the Biochemistry MS Program	
21 month program (9+9+9+3 credits)	15 month program including summer (9+9+3+9 credits)
Year 1, Fall BIOC 407 Introduction to Biochemistry: From Molecules To Medical Science (4) BIOC 500 Biotechnology Laboratory: Molecular Biology Basics (1) BIOC 501 Biochemical and Cellular Techniques for Biotechnology (3) BIOC 511 Practice and Professionalism in Biotechnology OR BIOC 601 Research OR BIOC 611 Biochemistry Seminar (1)	Year 1, Fall BIOC 407 Introduction to Biochemistry: From Molecules To Medical Science (4) BIOC 500 Biotechnology Laboratory: Molecular Biology Basics (1) BIOC 501 Biochemical and Cellular Techniques for Biotechnology (3) BIOC 511 Practice and Professionalism in Biotechnology OR BIOC 601 Research OR BIOC 611 Biochemistry Seminar (1) Elective (3)
Year 1, Spring BIOC 408 Molecular Biology (4) BIOC 502A or B Biotechnology Laboratory (2) Elective (3)	Year 1, Spring BIOC 408 Molecular Biology (4) BIOC 502A or B Biotechnology Laboratory (2) Elective (3)
Year 2, Fall Electives (9)	Year 1, Summer Elective (3)
Year 2, Spring Electives (2) EXAM 600 (1)	Year 2, Fall Electives (8) EXAM 600 (1)

Domestic students have flexibility with the number of credits enrolled per semester. Please bear in mind that half-time enrollment (5 credits) per academic semester is required for financial aid. Consult with the CWRU Office of Financial Aid directly in case of any questions. If you have special circumstances, you may consult with the Director of MS Programs, but the Department of Biochemistry DOES NOT have access to your detailed financial aid records.

International students are **required** to maintain full-time enrollment each semester. Thus, international students must be enrolled in at least 9 credits/academic semester (Fall/Spring) except

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the semester in which they complete EXAM 600. Typically international students may not withdraw from classes because doing so would result in dropping below full-time status.

Students who entered the MS Biochemistry degree program prior to Fall 2024 are required to complete 36 total credits and may take up to 12 credits of BIOC 601.

Concentrations

To help guide students in their studies, we created five optional concentrations, which are suggested course sequences in areas of interest. These concentrations are each 9 credits and leave room in for research and/or additional electives. In general, students can begin taking these courses in Spring of their first year. Each course below is 3 credits unless otherwise noted.

Cancer Biology

BIOC 450: Molecular Basis of Cancer (Fall); BIOC 453: Biochemical Pathways in Cancer Therapeutics (Spring); BIOC 460: Advanced Technologies for Cancer Research (Fall)

Experimental Biotechnology (effective Fall 24; students who entered previously have different requirements for this track)

BIOC 460: Advanced Technologies for Cancer Research (Fall); BIOC 500: Biotechnology Laboratory: Molecular Biology Basics (1 cr; Fall); BIOC 511: Practice and Professionalism in Biotechnology (1 cr; Fall); Two Biotechnology Laboratory classes (BIOC 502A: Biotechnology Laboratory: Molecular Biology and Biochemical Techniques (2 cr; Spring) OR BIOC 502B: Biotechnology Laboratory: Eukaryotic Molecular and Cellular Biology (2 cr; Spring) OR BIOC 503: Biotechnology Laboratory: CRISPR (2 cr; to be determined)

Infectious Disease

BIOC 410: Microbial Physiology and Therapeutic Opportunities (Spring); BIOC 411: Antimicrobial Therapies and Resistance (Fall); BIOC 434: Structural and Computational Biology (Fall)

Metabolism

BIOC 412: Proteins and Enzymes (Spring); Two of BIOC 415: Biological Membranes and Their Proteins (Spring); BIOC 444: Molecular Endocrinology (Spring); BIOC 445: Metabolic Regulation, Dysregulation, and Disease

Molecular Structure and Function

BIOC 412: Proteins and Enzymes (Spring); BIOC 415: Biological Membranes and Their Proteins (Spring); BIOC 434: Structural and Computational Biology (Fall)

Dual Degrees

The MS program is part of several dual degree programs. These dual degrees are for students with broad interests that include biochemistry. They include:

JD/MS in Biochemistry. This program is designed for students interested in intellectual property law. The biochemistry portion of the degree provides students with the science background to practice intellectual property and patent law specializing in the biomedical sciences.

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MA in Patent Practice/MS in Biochemistry. This program combines the unique one-year Patent Practice degree offered in the Law School, with the MS in Biochemistry. This program provides individuals with scientific knowledge allowing them to pursue careers in this area of patent practice.

MBA/MS in Biochemistry. This program is for students who are interested in the business aspects of the health and biomedical science fields (hospitals, pharmaceuticals, biotechnology, etc.).

Please consult with the Director of MS Programs for more details about dual-degrees.

Grades

According to the School of Graduate Studies, MS students must have at least a B average (GPA ≥ 3.0) to graduate. Passing grades are A, B, C, or S. Research, seminar courses, and select other courses are graded pass/no pass (P/NP). Students must retake a required course if they fail to earn a passing grade. Students may **not** take graded coursework pass/no pass.

The Comprehensive Exam

Biochemistry MS students write their comprehensive exam in their last semester in the program. This activity is done as EXAM 600 (1 credit). The student writes an NIH-style predoctoral (F31 series) research proposal in an area of their choosing. The goal is to pose a scientific question or hypothesis and propose experiments that will answer the question or test the hypothesis. If the student is volunteering in a research lab and/or is enrolled in BIOC 601, the proposal should be based upon their current research and include “preliminary data” based on their own research results. If the student does not conduct laboratory research, they should consult with the Director of MS Programs regularly during the semester they enroll in EXAM 600 for assistance. The student submits their proposal, which is then read by a committee of three faculty including the Director of MS Programs, the student’s laboratory research mentor (if applicable), and 1-2 other Biochemistry faculty members. The student then presents their proposal to the faculty committee in an oral examination. For MS students who start in the fall semester and plan to graduate in 2 academic years, the EXAM 600 defense is scheduled in mid- to late March of the final spring semester. This is done relatively early in the final semester because the School of Graduate Studies typically requires graduation paperwork to be completed at the end of the first week of April. If you plan to graduate in either summer or fall, consult with the Director of MS Programs to determine the appropriate deadline. Students can consider taking a proposal/grant-writing class as an elective to assist in their grant writing; please consult with the Director of MS Programs for more details.

Departmental Seminars

The Biochemistry Department holds two weekly seminar series in the fall and spring semesters. Attendance at these seminars is required for students enrolled in BIOC 611 (fall semester) and BIOC 612 (spring semester). MS students are strongly encouraged to attend even if they are not enrolled in 611/612. These seminars are excellent opportunities to learn about research carried out in the Biochemistry program, at CWRU, and by scientists around the world. MS students can use these seminars to increase their understanding of research techniques and scientific advances; these are particularly valuable for students who wish to continue to PhD programs. MS students are NOT required to present their work in these seminar series.

Monday PhD Student Seminars- Each Biochemistry PhD student gives an annual seminar on their thesis research to the program. These student seminars are scheduled Mondays at 11:40 AM. This is an opportunity to learn about the work by student colleagues working in labs in the Biochemistry Program. If you enter a PhD program in the future, you are likely to have to present your work in

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this way.

Thursday Biochemistry Research Seminars-The Biochemistry Department sponsors a research seminar series Thursdays at 4 PM. Speakers from CWRU and outside the university present their research work. The speaker often has lunch with students either Thursday and/or Friday. These are great opportunities to meet and network with other scientists. Please contact Cynthia Ernst if you are interested in having lunch with a Thursday seminar speaker.

Authorship and Credit for Work

Students must receive credit for their scientific work in publications. In a collaborative effort in which a student makes the major scientific contribution, the student's name should be the first author. Students should receive co-authorship for lesser contributions. Everyone who supervises the work of graduate students should ensure that students receive proper credit. If a student believes that proper assignment of credit has not been made, the questions should first be discussed among the collaborators. If agreement is not reached, the dispute should be submitted to the Graduate Education Committee.

Leaving the Program After Graduation

All research materials generated during a student's on-campus research are the property of the university by the rules of federal funding agencies. Because others will use these materials in future experiments these materials (cells, proteins, plasmids, etc.) must be cataloged and shared with others in the lab. After consultation with their advisor, the student may discard all materials that do not have further use. Similarly, all research records (notebooks, computer files, etc.) are the property of the university. They must be cataloged and left in the advisor's laboratory. Students may make copies of their research records. All university materials (ID card, keys, etc.) should be returned following CWRU procedures.

STUDENT LIFE

**Portions of this section are based on the student handbook of the Physiology and Biophysics program.*

Office of Graduate Student Life

This office provides several resources for graduate students; please visit <https://case.edu/studentlife/graduate/> for more details.

International Students

International students often face additional challenges, especially if they are first-time visitors to the US. The Office of International Student Resources and Engagement (<https://case.edu/studentlife/internationalresources/>; Tomlinson Hall 143; international@case.edu) provides information and support for incoming and current international students. They can also help with a wide range of non-academic issues (housing, personal, financial, legal) that international students may encounter during their studies at CWRU. The VISA office (Crawford Hall 215 and 320; <https://case.edu/visa/>; visa@case.edu) provides assistance with immigration and visa issues.

Health Insurance and University Health and Counseling Services

All students must have health insurance. Students can purchase coverage through the University's health plan. If a student has their own coverage (through a spouse, their family, or a third-party supplier), they may waive coverage through the University.

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(case.edu/studentlife/healthcounseling/medical-planwaiver-information/health-waiver-process). Be aware of the deadlines for waivers/enrollment!

University Health and Counseling Services (UHCS, Dental Research Building) provides health coverage to our students. CWRU also has an outside insurer for the Student/Dependent Medical Plan (<https://case.edu/studentlife/healthcounseling/medical-plan>); details of plan coverage can be found online. UHCS is staffed by health professionals with an interest in student health. These include physicians, nurse practitioners, psychologists, psychiatrists, social workers, and registered nurses.. More information may be obtained by visiting the UHCS website

(<https://case.edu/studentlife/healthcounseling/>; e-mail uhcs@case.edu) or by calling one of these numbers:

General Information:	216 368-5872
After Hours/Weekends Nurse On-Call:	216-368-2450
After Hours/Weekends Counseling	216-368-5872

Virtual appointments are available through TimelyCare (timelycare.com/cwru). Students should seek care through UHCS before utilizing other providers because many preventive and regular well-person services can be obtained at no cost through UHCS.

Graduate school is a time of tremendous self-exploration and change. At times these changes are intentional and understandable; at other times they are unpredictable, chaotic and upsetting. Each year hundreds of students seek out University Counseling Services to help them gain perspective and to lay the groundwork for personal change. For many, the change can become a ‘Turning Point’ in their lives. UCS (case.edu/studentlife/healthcounseling) offers students help with their personal counseling and behavioral health needs, including individual, couples and group counseling, psychiatric medication management, stress management and recovery support. Its offices are staffed with psychologists, social workers and consulting psychiatrists: and group counseling, psychiatric medication management, stress management and recovery support. Most services are provided without cost.

Dental Care

The CWRU School of Dental Medicine has dental clinics to provide training for pre-doctoral dental health professionals. Participants in the Student/Dependent Medical plans are eligible to receive free and discounted care through the School of Dental Medicine. Treatment is administered by pre-doctoral and doctoral dental students under the close supervision of experienced dental health professionals. Services through the School of Dental Medicine are often significantly less expensive than going to a private practice dentist. More information is available at: <https://case.edu/studentlife/healthcounseling/medical-planplan-information/dental-coverage>.

Legal Services

The *Milton A. Kramer Law Clinic Center* at CWRU provides legal services to members of the community unable to afford legal counsel. Third-year law students act as the primary legal counsel in matters related to civil, community development, immigration, and health law. Go to: <https://case.edu/law/practical-training/law-clinic>

Housing

CWRU does not provide university housing (“dormitories”) for graduate students. Most graduate students rent housing in one of the many nearby neighborhoods. Please visit the Off-Campus

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Housing website at <https://offcampus.case.edu/> for more details. Many neighborhoods also have housing offices as well as guided tours of available rental properties. Contact local city governments for further information. Another alternative is the Steiner House Cooperative, which is a student-run organization offering housing for graduate students (steinerhouse.org).

Parking

Parking Services (case.edu/parking) manages the University's parking program. All commuter students are eligible for parking permits upon enrollment. Students who need parking should contact *Access Services* (368-2273, parking@case.edu). The Access Services office for students is located in the Tinkham Veale University Center (TVUC or “the Tink”). Most graduate students park in surface lots or the Veale Garage (S-53) which are closest to the School of Medicine.

Shuttle Services

There are many free shuttle bus routes that serve the campus, University Circle, and some neighborhoods in Cleveland Heights. Visitors may use UCI's public routes to reach various University Circle institutions. Service is provided approximately 18 hours per day Monday through Friday, with reduced service on weekends and holidays. Bus route schedules and maps are available at (case.edu/access-services/transportation/shuttles). There is also an app (TransLoc Rider) for mobile devices that shows the locations of buses in real time (case.edu/access-services/transportation/shuttles/shuttle-tracking).

Safe Ride Program

This program (case.edu/access-services/transportation/shuttles/safe-ride-program) provides safe transportation around campus and the surrounding CWRU community between 7 pm and 3 am. The goal is to provide students with safe transportation late at night. You can request a pickup at saferide.case.edu or 216-368-3000.

Building and Department Access

All Medical School buildings require ID card access. Biochemistry office personnel get card access for you using your University ID. Activation usually takes 24 to 48 hrs. If you have forgotten your ID or your ID will not activate the card reader during evening hours, you can call the CWRU Police Department at 368-3333, and an officer will be dispatched to let you in. You can also stop by the Biomedical Research Building (BRB) security desk on the ground floor and ask security personnel there to let you into the Wood Building. You may need to present a picture ID.

Campus Security

The University provides a variety of security and safety programs to help ensure a safe educational environment. These programs are directed by *the CWRU Division of Public Safety* (<http://police.case.edu>), located at 1689 E. 115th St. Security personnel patrol the campus and respond to emergencies, fire alarms, and routine security incidents. The Police Department can be reached at 216-368-3333 for emergencies and 368-3300 for non-emergencies.

CWRU has a safe campus, but everyone needs to contribute to their own safety. We strongly encourage everyone to:

- Be aware of your surroundings
- Use *Safe Ride* late at night
- Install the Spartan Safe app on your mobile device and sign up for safety alerts (text, email,

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voice).

Academic Support Services for Students (<https://case.edu/studentlife/academicresources/>)

The university provides several opportunities for students to get assistance with coursework beyond their instructors. Options include supplemental instruction (SI) and peer tutoring. Many of these options are focused upon undergraduate students, but graduate students are welcome and encouraged to utilize these opportunities if necessary. If you need help with a class, **talk to your course instructor first**. MS students who are successful in BIOC 407 and 408 can consider becoming peer tutors for those classes in their second year.

Disability Resources and Office of Accommodated Testing Services (OATS)

Disability Resources (402 Sears Building) assists students with disabilities to maximize their CWRU experience. The OATS office provides testing accommodations for students who qualify. For more information, contact Disability Resources directly at disability@case.edu; 216-368-5230; <https://case.edu/studentlife/disability/>.

Non-Discrimination Policy (from the Office of Equity/Title IX regulations; <http://case.edu/equity>; Nursing Research Building, Suite 1180; titleix@case.edu; 216-368-3066); **please note Title IX training is REQUIRED effective Fall 2024**

Case Western Reserve University does not discriminate in recruitment, employment, or policy administration on the basis of race, religion, age, sex, color, disability, sexual orientation or gender identity or expression, national or ethnic origin, political affiliation, or status as a disabled veteran or other protected veteran under U.S. federal law. In addition, the university expects all employees, students, vendors and associates to comply with the policy of non-discrimination. The university intends to maintain an environment free of sexual harassment and will not tolerate any form of harassment of its employees, faculty or students. Retaliation against persons raising concerns about discrimination, sexual harassment or harassment of any kind is prohibited and will constitute separate grounds for disciplinary action up to and including discharge or expulsion from the university.

No Retaliation Policy

Retaliation is prohibited and will constitute separate grounds for disciplinary action. Retaliation is the act of taking adverse action against a complainant, a respondent, or any other person involved in the process under this policy based on the person's reporting or participation in the process under this policy. Retaliation includes behavior on the part of the respondent or the complainant and other related persons, including, but not limited to, acquaintances, friends, and family members. Although independent action will be taken against anyone engaging in retaliation, the complainant and the respondent are responsible for discouraging such actions and will also be held responsible to the extent of their involvement in the retaliation. An individual who believes they have experienced retaliation should contact the Office of Equity under this policy, and the university will investigate the complaint.

Diversity and Inclusion

It is the intent that all students regardless of their background and perspective be well-served by this program. Further, material whose content is respectful of diversity (gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture) should be

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delivered in a way that respects these differences as well. We expect that all students, instructors and guests will help foster an atmosphere of respect, trust and safety in the classroom.

If you have suggestions for how to make classes, the program, or the environment more inclusive, or have specific incidents to report, please reach out to course instructors or the Director of MS Programs. If you are not comfortable reaching out to your faculty, please reach out to someone else, such as the School of Medicine Graduate Education Office (som-geo@case.edu) or the Office of Diversity, Equity, and Inclusive Engagement (oideo@case.edu).

More information on University policy and resources are available on OIDEO's website (<https://case.edu/diversity/>).

Computer Information and Tips for Biochemistry Students

E-mail–You must activate your CWRU net e-mail account: The University has created an email account for you. You must be able to receive mail sent to this address! We will use this address to send you information about classes, rotations and program activities. Because this is the address that is published in the University directory, faculty members and other students will also use the address. You can either check mail directly in this account or you can have it forwarded to another address (see below).

Activating your account: You should have received an email from the School of Graduate Studies that describes how to activate your account.

Your email address: Each email account can be addressed in several different ways. Your account name (e.g abc123) or firstname.lastname (with the possible addition of a number) are accepted. You can also create other aliases (its-services.case.edu/mailalias/).

How to check your e-mail: All email accounts are run through Gmail. You can check your mail either using the web (webmail.case.edu) or using a separate mail client. If you already have another e-mail account that you wish to keep using, you can have your CWRU mail forwarded to that account. From webmail.case.edu, click the Settings link. You'll see a tab that lets you set up automatic forwarding of your mail. Just remember that you **must** monitor mail sent to your CWRU account in a timely way.

Google Apps

CWRU provides applications from Google (G Suite) that include many useful functions. You can learn about them at <https://case.edu/utech/help/knowledge-base/google-workspace-education/google-workspace-education-information>.

Connecting your computer

Laptop computers can connect to the University network either through a wireless or ethernet connection. Go to <https://its-services.case.edu/NetworkTools/IPDB/systemRegistrationForm.html> to register your computer for a wired ethernet connection. For wireless connections, use CaseWireless and log in with your network ID and password. If you use this connection, you are considered an on-campus user. For any other wireless connection (including CaseGuest), you are an off-campus user. You will need VPN (virtual private network; vpnsetup.case.edu) to access some services including the Software Center (see below). CaseGuest now requires a user acknowledgement every 4 hours of use.

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The Help Desk

The University operates a Help Desk staffed with people who are both knowledgeable and helpful about technology issues. You reach the help desk in several ways: Call 368-4357 (HELP) or go to help.case.edu. Their staff (UTech) can answer most questions about computers, software and networking. In person assistance is available at the UTech CARE Center (<https://case.edu/utech/help/utech-care-center>) in Kelvin Smith Library.

On-Campus Printing

The wepa cloud printing network allows students to print materials for a fee on campus. For more information visit <https://my.case.edu/My/Services/Wepa/>. Note that none of these printing locations are on the Health Sciences Campus portion of the CWRU Campus. The closest printing locations are Bingham, Clapp, Millis, and Sears/Nord, all on the main quad (west of Adelbert Road).

Electronic Journals

Electronic journals can be accessed from any CWRU net computer through the Health Sciences Library. Go to case.edu/chslibrary/electronic-resources/electronic-journals on the Health Sciences Library web site for a complete listing. This page will take you to sites that will let you download articles as PDF files. This is the surest way to find online journals. Other links (e.g. the ones in Pubmed that take you to the publishers' sites) don't always work because they don't recognize the University's subscriptions.

The University purchases licenses for electronic journals. Most e-journals can be accessed through OpenAthens (<https://researchguides.case.edu/discovery>) without use of a VPN. Instructions for setting up the CWRU VPN can be found at vpnsetup.case.edu.

PubMed

PubMed, which indexes biomedical literature through the National Library of Medicine, is available to you over the web in many different ways. Using the Cleveland Health Sciences Library link https://www.ncbi.nlm.nih.gov/pubmed?holding=cwruclib_fft_ndi&otool=cwruclib should allow you to access articles accessible to CWRU users through SSO (single sign-on), especially when you are off campus.

Electronic Resources for Learning and Research

Many other electronic resources are available through the University library. For more information go to: <http://library.case.edu/ksl/index.html> (Kelvin Smith Library) or <https://case.edu/chslibrary/> (Cleveland Health Sciences Library).

Software

There's a lot of useful software for your personal computer that is either free or available at greatly reduced cost at softwarecenter.case.edu. To use the Software Center you must connect from a University ethernet connection, CaseWireless, or with a VPN connection.

Some software titles can only be downloaded once. If you start a download and then cancel it, this counts as a download, so be careful!