



CONCORDIA  
UNIVERSITY  
CHICAGO

# Applied Microscopy

## Bachelor of Science

Offered by Concordia University Chicago  
in partnership with The College of Microscopy

### Do you enjoy solving mysteries and have an interest in natural science?

The highly in-demand field of microscopy is providing exciting new career opportunities for today's students. Microscopy is for those interested in science, solving problems and analyzing samples on a microscopic scale.

Applied Microscopy, offered by Concordia University Chicago in partnership with the College of Microscopy, a member of The McCrone Group, offers students the unprecedented opportunity to learn from world leaders in the field. The College of Microscopy is internationally known for its excellent reputation for materials characterization and identification through microscopy and microanalysis, and is widely regarded by industry, academia and government institutions as "the premier microscopy resource." The College of Microscopy specializes in training at undergraduate and graduate levels for scientists, crime lab personnel, researchers, educators and technicians from around the world.

### What can I do with a degree in Microscopy?

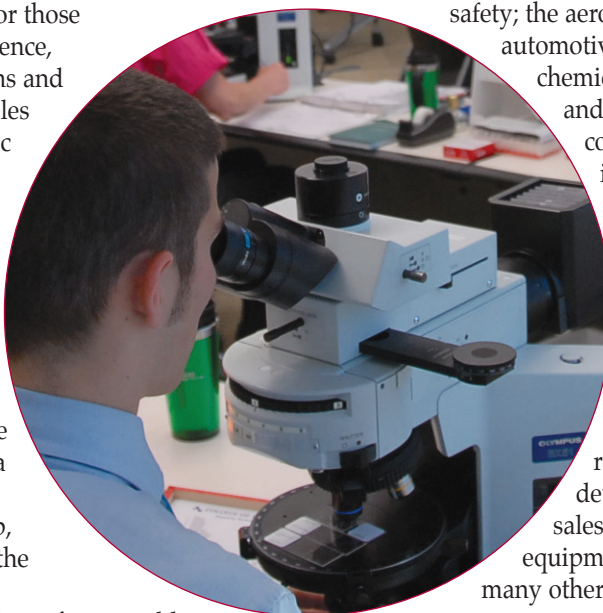
Microscopy is used everyday in a wide range of industries. This program will give you an "edge over the competition" by having in-depth training on the use of microscopes and practical applications for sample analysis.

Key services areas include manufacturing; the pharmaceutical industry; materials analysis; environmental and ecological sciences;

forensic science; electronics; art conservation and archaeology; geology and the petroleum industry and nanotechnology.

Demand also is high in the areas of homeland security; public health and safety; the aerospace and automotive industries;

chemical identification and development; contamination identification; education; food contamination; medicine and healthcare; paints and coatings; packaging; polymer research and development; sales of scientific equipment and many others.



### What does it take to earn a Microscopy degree?

In the College of Arts and Sciences, you can earn your Bachelor of Science degree in 65 semester hours of study. Of the required hours, 32 are completed through mandatory classes in general, organic and analytical chemistry; biology; forensic science; instrumental analysis; calculus and physics.

You also will take 33 hours over two semesters at the College of Microscopy. These hours will include required courses in polarized light microscopy; scanning electron microscopy; transmission electron microscopy; infrared and Raman microspectroscopy; particle isolation and manipulation and optical crystallography techniques. You can choose your remaining 12 hours of credit from a list of College of Microscopy courses. Students must earn grades of "B" or better in all coursework at Concordia and the College of Microscopy to earn the bachelor of science degree.

### Can I minor in Microscopy?

Yes! The number of chemistry pre-requisites for microscopy courses make this minor an excellent fit with a bachelor of science or bachelor of arts in chemistry, or a bachelor of arts in natural science.

To complete the minor in microscopy, students must earn 21 required hours over a full semester and one May or summer term at the College of Microscopy. These hours will include required courses in polarized light microscopy; scanning electron microscopy; transmission electron microscopy; infrared and Raman microspectroscopy; particle isolation and manipulation and optical crystallography techniques.

### What facilities and technology are available to me as a Microscopy major?

In addition to the resources at Concordia, you will complete your upper-level coursework over two semesters at the College of Microscopy, learning and using the most advanced modern microscopy technology in their state-of-the-art learning center in Westmont, Illinois, just 15 miles from the Concordia campus. Concordia's outstanding faculty and natural science programs provide excellent foundational instruction, while the College of Microscopy offers specialized education from its experienced staff scientists and hands-on training with a wide range of state-of-the-art microscopy instrumentation. You will learn the latest skills and techniques from world-leaders in microscopy through a variety of courses in light microscopy, electron microscopy, infrared and Raman microspectroscopy, sample preparation and small particle handling. In addition, you will master theory and practice with a range of microscopes and technologies for chemical, biological and forensic applications through intensive coursework at both institutions.

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### Who will teach my classes?

At CUC and the College of Microscopy, you will never sit in a lecture hall with hundreds of other students! Instead, science classes are small and encourage hands-on learning. Our faculty members get to know students and help them directly, whether with class assignments or career decisions. Your professors are available if you have questions or wish to discuss a topic.

#### Concordia University Chicago faculty include:

**Anita V. Briedis-Bilsens, Ph.D.**

*University of Illinois, Chicago, Illinois  
Biochemistry*

**Richard C. Calhoun, Ph.D.**

*Indiana University, Bloomington, Indiana  
Calculus and Physics*

**Marilyn E. Moehlenkamp, Ph.D.**

*University of Missouri, Rolla, Missouri  
Organic Chemistry*

**Deborah L. Serra, Ph.D.**

*Rice University, Houston, Texas  
Inorganic Chemistry*

**Rebecca Trueman, Ph.D.**

*University of Illinois, Chicago, Illinois  
Environmental Biology*

**Wm. Michael Whiteside, Ph.D.**

*University of Illinois, Chicago, Illinois  
Molecular Biology*

Faculty with the College of Microscopy are teaching scientists and researchers. To learn more, visit [www.collegeofmicroscopy.com/instructors](http://www.collegeofmicroscopy.com/instructors)

### What other opportunities are available to me as I study science at CUC?

The Department of Natural Sciences offers a range of unique opportunities, such as Aqualytica, part of the University's Student Operated Undergraduate Laboratory (SOUL) program. Aqualytica is a community outreach water testing laboratory designed to give students the opportunity to serve community residents by providing analysis of local water samples while gaining real-world experiences in the process.

Students also can take part in opportunities such as "Life in the Biosphere," a May Term travel course that explores flora and fauna and studies biogeochemical processes. In May 2008, the class traveled to Arizona to work in Biosphere II, the famed 3.14-acre center for research, outreach, teaching and lifelong learning about the Earth.

Along with departmental offerings, Concordia science students participate in consortium-type seminars and botany course experiences through the Associated Colleges of the Chicago Area (ACCA). The ACCA is an association of 15 liberal arts universities and strives to promote collegiate education in the sciences through the collaboration of member colleges and government laboratories, along with learning at such institutions as Chicago's renowned John G. Shedd Aquarium and the Morton Arboretum. **CUC**

## Bachelor of Science: Microscopy

### College of Arts and Sciences

#### Department of Natural Sciences

#### Total 65 Semester Hours

#### Required Support Courses

<u>Course No.</u>	<u>Course Name</u>	<u>Semester Hours</u>
CHE-2211	General Chemistry I	4
CHE-2212	General Chemistry II	4
BIO-2200	Biology I	4
BIO-2210	Biology II	4
BIO-4XXX	Forensic Science (NEW!)	3
CHE-3311	Organic Chemistry I	4
CHE-3312	Organic Chemistry II	4
CHE-3410	Analytical Chemistry	4

#### Quantitative/Deductive Reasoning:

CHE-4410	Instrumental Analysis (NEW!)	4
MAT-2500	Calculus I	4
PHY-2211	Elementary Physics I	4
PHY-2212	Elementary Physics II	4



#### College of Microscopy Semester One: 18 Semester Hours

<u>Course No.</u>	<u>Course Name</u>	<u>Semester Hours</u>
COM-4100	Polarized Light Microscopy	3
COM-4200	Techniques of Optical Crystallography	3
COM-4300	Scanning Electron Microscopy	3
COM-4400	Transmission Electron Microscopy	3
COM-4510	Particle Isolation, Mounting & Manipulation	3
COM-4600	Infrared Microscopy	3

#### College of Microscopy Semester Two: 15 Semester Hours

<u>Course No.</u>	<u>Course Name</u>	<u>Semester Hours</u>
COM-4700	Raman Microscopy	3

Electives – Choose COM courses equivalent to 12 hours

All COM courses include an additional week of practicum following the course.

Student can take IDS-4970 Values and Virtues online, or in the evening during their College of Microscopy—Semester Two.