

# MASTER OF PHARMACEUTICAL SCIENCES

## **Mission and Vision**

**Mission:** To advance the science of pharmaceutical research by developing future scientists trained to promote health through knowledge, research, and social responsibility.

**Vision:** Preeminence in pharmaceutical sciences research, drug development skills, and integrated education abilities.

## **Accreditation**

### **Senior Colleges and Universities of the Western**

#### **Association of Schools and Colleges (WASC).**

California Northstate University is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC), 985 Atlantic Avenue, #100, Alameda, CA 94501, 510.748.9001

## **BPPE**

Any questions a student may have regarding this catalog that have not been satisfactorily answered by the institution may be directed to the Bureau for Private Postsecondary Education at P.O. Box 980818, West Sacramento, CA 95834, [bppe.ca.gov](http://bppe.ca.gov), (916) 574-8900.

BPPE's The Office of Student Assistance and Relief is available to support prospective students, current students, or past students of private postsecondary educational institutions in making informed decisions, understanding their rights, and navigating available services and relief options. The office may be reached by calling (888) 370-7589, option #5 or by visiting [osar.bppe.ca.gov](http://osar.bppe.ca.gov).

## Program Overview

The option of One year and Two Years Master of Pharmaceutical Sciences (MPS) program offered by CNU is designed to provide fundamental knowledge and skills in the pharmaceutical sciences field to enable students to pursue careers in academia, the pharmaceutical industry, regulatory affairs, and government positions upon graduation. This program also provides advanced training in theory and laboratory-based settings to students opting for higher education in the health-related professions (MD/PharmD, MD/Ph.D., and PharmD/Ph.D.) and graduate schools (Ph.D.). In addition, this program provides a sufficient foundation in basic pharmacology, molecular biology and biochemistry to allow the students the flexibility to pursue careers in pharmaceutical and biotechnology industries, as well as regulatory affairs.

## **Program Objectives**

- Expand the students' foundation of Basic Pharmaceutical Sciences with emphasis in drug design, drug development or drug delivery.
- Expand the students' pharmaceutical research skills.
- Develop the students' ability to identify problems, formulate hypotheses, plan and execute experiments, analyze data and present results.

## **MPS at CNU: Strengths & Unique**

### **Features**

- Two track options: 1) One Year Capstone Paper Track (Non-thesis), and 2). Two Year Thesis Track
- Foundational core courses are complemented by a broad spectrum of well-designed electives.
- Multiple teaching pedagogical formats maximize learning and subject retention.
- Small class sizes suitable for individualized education and research skills.
- Close proximity and ties to the Colleges of Pharmacy, College of Dental and College of Medicine, with course paths to prepare students seeking entry into pharmacy, dental or medical schools.
- Established collaborations with regional clinical centers, and pharmaceutical industries, providing an array of cooperative educational opportunities.
- Located in Elk Grove, California, the second largest city in the Greater Sacramento Metropolitan Area. Northern California is the hub for many biopharmaceutical companies.

## **Curriculum**

MPS students have two course of study track options:

1) a one-year Capstone paper track; and 2) a two-year Thesis track.

### **Thesis/Course Track**

#### **Core Courses (31 credits)**

- MPS 501 Introduction to Pharmaceutical Sciences I (3 cr)
- MPS 511 Introduction to Pharmaceutical Sciences II (3 cr)
- MPS 512 Principal of FDA Regulatory Affairs and Drug Discovery (3 cr)
- MPS 513 Biostatistics & Research Methods (3 cr)
- MPS 514 Clinical Biochemistry (3 cr)
- MPS 515 Medical Immunology (3 cr)
- MPS 518 Advances in Drug Delivery (2 cr)
- MPS 506 Research and Thesis-I (3 cr)
- MPS 516 Research and Thesis-II (3 cr)

- MPS 607 Introductory Human Anatomy (3 cr)
- MPS 503 AI in Healthcare (2 cr)

## Capstone/Course Track

### Core Courses (31 credits)

- MPS 501 Introduction to Pharmaceutical Sciences I (3 cr)
- MPS 511 Introduction to Pharmaceutical Sciences II (3 cr)
- MPS 512 Principal of FDA Regulatory Affairs and Drug Discovery (3 cr)- (Only offered for MPS and MPS-to-MD Pathway)
- MPS 513 Biostatistics & Research Methods (3 cr)
- MPS 514 Clinical Biochemistry (3 cr)
- MPS 515 Medical Immunology (3 cr)
- MPS 518 Advances in Drug Delivery (2 cr)
- MPS 507 Capstone Paper-I (3 cr)
- MPS 517 Capstone Paper-II (3 cr)
- MPS 607 Introductory Human Anatomy (3 cr)
- MPS 503 AI in Healthcare (2 cr)
- MPS 509 Integrated Oral Health Biology- (only offered for MPS-Oral Health to Dental Medicine Pathway)

### MPS to MD (1+4) and (2+4)-Pathway

The (1+4) and (2+4) MPS to MD (Master of Pharmaceutical Sciences + Doctor of Medicine) pathway at California Northstate University is designed to offer a unique opportunity (pathway) for students to enter medical school. This combined program will significantly increase the chances to enter medical school, receiving competitive clinical residencies and pursue career opportunities in advanced medicine. For this MPS-MD pathway, the students must maintain a cumulative GPA of 3.5 in the MPS program and require MCAT score to grantee interview in CNUCOM.

### Program Learning Outcomes (PLOs)

**PLO 1: Foundational Knowledge in Pharmaceutical Sciences. Demonstrates the knowledge, skills, attitudes, and ethics that are required as scientists or scientific advocates**

- 1.1. Demonstrate essential knowledge of pharmaceutical sciences needed to advance these sciences
- 1.2. Evaluate scientific literature and scientific products

**PLO 2: Exposure to research instrumentation and laboratory techniques of pharmaceutical sciences**

- 2.1. Demonstrate technical proficiency with basic laboratory techniques for pharmaceutical sciences
- 2.2. Utilize innovation in research instrumentation and laboratory techniques in basic science and drug discovery/ development

**PLO 3: Critical thinking skills and problem-solving abilities**

- 3.1. Demonstrate skillful research design and adaptation
- 3.2. Apply critical thinking and problem-solving skills to make decisions in developing, testing, and producing pharmaceutical products

**PLO 4: Critical writing skills and data presentation abilities**

- 4.1. Demonstrate writing skills needed for a career in pharmaceutical sciences and effective communication of scientific ideas in oral and visual formats appropriate for key audiences
- 4.2. Work effectively in a collaborative scientific setting and demonstrate appropriate intercommunication skills

**PLO 5: Promote scientific and technique development of pharmaceutical sciences**

- 5.1. Demonstrate ability to design mechanism-based drugs
- 5.2. Utilize scientific and technical skills needed to advance the discovery and management of new drugs and other therapeutic products.

**MPS-Oral Health to Dental Medicine Pathway**

The One-Year MPS-Oral Health to Dental Medicine (MPS-OH to DM) Pathway is a specialized pathway offering an in-depth understanding of oral health biology. MPS-OH to DM Pathway will help students to build a strong foundation in oral biology including oral cavity histology, pathology, microbiology, immunology, pharmacology and head & neck anatomy. Also, to enhance the research background of the graduate students in the MPS-OH to DM Pathway, the students are required to complete a capstone paper project in oral-pathophysiology field. Therefore, the MPS-OH to DM Pathway is a great preparation for students pursuing a career in dental field. Because MPS-OH to DM Pathway curriculum is significantly overlapping with the foundation curriculum of the first-year dental school, thus, it will enhance students' academic credibility leading to significant increase in their chances to get accepted in different dental programs

# Admissions

## Educational Prerequisites

- A bachelor's degree (B.S. or B.A.) or higher in Biology, Chemistry or relevant science disciplines, or one year of biology and
- year of chemistry.
- A cumulative grade point average (GPA) of 2.5 for MPS, (GPA) of 3.2 for MPS-to- MD Pathway and (GPA) of 3.0 for MPS-OH to DM Pathway is considered competitive. When evaluating applicants, greater emphasis will
- be placed on courses that are relevant to our program.
- Completion of the GRE is preferred but not required.

## Applying to M.S. in Pharmaceutical Sciences:

- The online application must be completed fully.
- Application Fee: \$60 for applicants
- Personal Statement: Please provide a personal statement describing your professional goals as well as the characteristics you possess that make you a qualified candidate for entry into the Masters of Pharmaceutical Sciences Program.
- Official Transcripts: Your academic records from each college-level institution you have attended are required. Canadian applicants and all other foreign applicants must submit a foreign coursework evaluation; CNU accepts evaluations from ECE, IERF, WES, and Education Perspectives.
- Transcripts from undergraduate and graduate institutions attended must be sent directly from the institution, even if a degree was not awarded.
- Minimum requirement GPA 2.5
- Official GRE General Test scores is preferred, but not required
- Official TOEFL scores for international applicants
- Letters of Recommendation: At least two letters must be submitted from faculty members who are knowledgeable about your academic capabilities and interests.
- Official letters of recommendation should be mailed directly to CNU Master of Pharmaceutical Sciences at the following address:

California Northstate University Master of Pharmaceutical Sciences  
Admissions  
9700 W. Taron Dr.  
Elk Grove, CA 95757

## Additional Admission Requirements

Applicants are strongly encouraged to communicate with potential CNU research advisors listed in the graduate program prior to the admissions process. It is important to identify a research mentor and anticipated area of research prior to beginning the program. Formal research laboratory rotations with faculty members will be implemented after your admission. Onsite interviews are also provided to enable applicants to familiarize themselves with CNU faculty and their research areas.

## **Deadlines**

The deadline to submit an application for Fall enrollment will be August 15<sup>th</sup> of the same year. All supporting documents must be received prior to August 1st for a Fall enrollment and official transcripts must be received by September 30<sup>th</sup> of the same year. The online application must be fully completed to be accepted.

## **Student Enrollment Agreement**

The Student Enrollment Agreement must be completed and submitted to the college in order to show intent to enroll in the program. The Student Enrollment Agreement is a legally binding contract when it is signed by the incoming student and accepted by the institution.

By signing the Enrollment Agreement, the student acknowledges that the catalog, disclosures, and information located on the website have been made available to the student to read and review.

Any questions or concerns regarding the Student Enrollment Agreement should be directed to the college or university department.

## **Catalog and Website**

Before signing the Student Enrollment Agreement, the prospective student is strongly urged to visit the University and College website at [www.cnsu.edu](http://www.cnsu.edu), and to read and review the CNU General Catalog.

The Catalog contains important information and policies regarding this institution.

## **Student's Right to Cancel and Refund**

You have the right to cancel the Student Enrollment Agreement until 12:01 AM on the first calendar day after the first classroom instruction session attended, or until 12:01 AM on the eighth calendar day after a student has signed the Enrollment Agreement, whichever is later. Cancellation shall occur when you give written notice of cancellation to the University at the University's address shown at the top of the first page of the Enrollment Agreement. You can do this by hand delivery, email, facsimile, or mail. Written notice of cancellation sent by hand delivery, email, or facsimile is effective upon receipt by the University. Written notice of cancellation sent by mail is effective when deposited in the mail properly addressed with postage prepaid.

After the cancellation period described above, you have the right to withdraw from the University at any time. Withdrawal shall occur when you give written notice of withdrawal

to the Registrar at the university's address shown at the top of the first page of the Enrollment Agreement.

### **Student's Right to Withdraw and Refund**

After the cancellation period described above in "Student's Right to Cancel and Refund," you have the right to withdraw from the University at any time. Withdrawal shall occur when you give written notice of withdrawal to the Registrar at the University's address shown at the top of the first page of the Enrollment Agreement. You can do this by hand delivery, email, facsimile, or mail. Written notice of withdrawal sent by hand delivery, email, or facsimile is effective upon receipt by the Registrar. Written notice of withdrawal sent by mail is effective when deposited in the mail properly addressed with postage prepaid.

The written notice of withdrawal should be on the Official College Withdrawal Form provided by the Office of the Registrar but may also be in any writing that shows you wish to withdraw from the University. Please include your student ID number on your notice. A withdrawal may also be effectuated by the student's conduct showing intent to withdraw, including but not necessarily limited to the student's continuing and unexcused failure to attend all classes.

If you withdraw before or at completion of 60% (and no more) of the current term, you will be eligible for a pro-rata refund for such term. The University will perform a pro-rata calculation of current term tuition as follows:

**Step A)** Total calendar days\* in current term\*\* – Calendar days in current term completed = Total Calendar days Not Completed

**Step B)** Total calendar days not completed/Total calendar days in current term = % of pro-rata refund

**Step C)** Institutional charges\*\*\* x % of pro-rata refund = Total refund owed

\* Total calendar days include weekends and holidays, except:

- Scheduled break of five or more consecutive days when no classes are offered.
- Days of leave of absence are not included in the total days.

\*\*Current term generally means the current semester, but when tuition is charged for the entire period of enrollment rather than by semester, then the current term shall mean that period of enrollment.

\*\*\*Institutional charges excluded from the pro-rata refund are: (1) non-refundable registration fee (applicable to first year, first semester students only), (2) all other non-refundable fees as described in the current General Catalog, (3) Student Tuition Recovery

Fund fee, and (4) Student Health Insurance premium estimated at \$3,200.00, if applicable; institutional charges included in the pro-rata refund include: (1) current term tuition.

There is no refund for students who withdraw after completing more than 60% of the current term.

If the amount of the current term payments is more than the amount that is owed for the time attended, then a refund of the difference will be made within 45 days after the notice of withdrawal is received by the Office of the Registrar. Refunds owed to the student as a result of a pro-rata calculation will be done in the following order:

- Private Educational Loan(s);
- To the student.

If the amount of the current term payments is less than the amount that is owed for the time attended, it is the sole responsibility of the student to contact the University to make appropriate payment arrangements.

## **Student Tuition Recovery Fund (STRF) Disclosures**

The State of California established the Student Tuition Recovery Fund (STRF) to relieve or mitigate economic loss suffered by a student in an educational program at a qualifying institution, who is or was a California resident while enrolled, or was enrolled in a residency program, if the student enrolled in the institution, prepaid tuition, and suffered an economic loss. Unless relieved of the obligation to do so, you must pay the state-imposed assessment for the STRF, or it must be paid on your behalf, if you are a student in an educational program, who is a California resident, or are enrolled in a residency program, and prepay all or part of your tuition. You are not eligible for protection from the STRF and you are not required to pay the STRF assessment, if you are not a California resident, or are not enrolled in a residency program.

It is important that you keep copies of your enrollment agreement, financial aid documents, receipts, or any other information that documents the amount paid to the school. Questions regarding the STRF may be directed to the Bureau for Private Postsecondary Education, 1747 North Market Blvd., Suite 225, Sacramento, California, 95834, (916) 574-8900 or (888) 370-7589. To be eligible for STRF, you must be a California resident or are enrolled in a residency program, prepaid tuition, paid or deemed to have paid the STRF assessment, and suffered an economic loss as a result of any of the following: 1. The institution, a location of the institution, or an educational program offered by the institution was closed or discontinued, and you did not choose to participate in a teach-out plan approved by the Bureau or did not complete a chosen teach-out plan approved by the Bureau. 2. You were enrolled at an institution or a location of the

institution within the 120 day period before the closure of the institution or location of the institution, or were enrolled in an educational program within the 120 day period before the program was discontinued. 3. You were enrolled at an institution or a location of the institution more than 120 days before the closure of the institution or location of the institution, in an educational program offered by the institution as to which the Bureau determined there was a significant decline in the quality or value of the program more than 120 days before closure. 4. The institution has been ordered to pay a refund by the Bureau but has failed to do so. 5. The institution has failed to pay or reimburse loan proceeds under a federal student loan program as required by law, or has failed to pay or reimburse proceeds received by the institution in excess of tuition and other costs. 6. You have been awarded restitution, a refund, or other monetary award by an arbitrator or court, based on a violation of this chapter by an institution or representative of an institution, but have been unable to collect the award from the institution. 7. You sought legal counsel that resulted in the cancellation of one or more of your student loans and have an invoice for services rendered and evidence of the cancellation of the student loan or loans.

To qualify for STRF reimbursement, the application must be received within four (4) years from the date of the action or event that made the student eligible for recovery from STRF. A student whose loan is revived by a loan holder or debt collector after a period of noncollection may, at any time, file a written application for recovery from STRF for the debt that would have otherwise been eligible for recovery. If it has been more than four (4) years since the action or event that made the student eligible, the student must have filed a written application for recovery within the original four (4) year period, unless the period has been extended by another act of law. However, no claim can be paid to any student without a social security number or a taxpayer identification number.

## **Disclosures**

All tuition, fees, expenses, and policies listed in this publication are effective as of June 2021 and are subject to change without notice by California Northstate University.

In the tables below, MPS1 and MPS2 indicate the student's year in the program, e.g. MPS1 is a first-year student; MPS2 is a second-year student.

Tuition is charged on a full-time, semester basis. Generally, tuition and fees are charged to a student's account thirty (30) days prior to the start of each semester term. The above is based on the assumption that a student will attend each semester term on a full-time basis, which allows for a student to graduate after successfully completing two (2) years of coursework consisting of 31 semester credit hours.

International students are not charged additional fees or charges associated with vouching for student status.

Payment deadlines, loan obligations, refund calculations due to cancellation and withdrawal, and the Student Tuition Recovery Fund (STRF) disclosures are located on page 196 of the General Catalog.

### **Notice Concerning Transferability of Credits and Credentials Earned at California Northstate University**

The transferability of credits you earn at California Northstate University is at the complete discretion of an institution to which you may seek to transfer. Acceptance of the units and degrees you earn in the MPS program is also at the complete discretion of the institution to which you may seek to transfer. If the units and degrees that you earn at this institution are not accepted at the institution to which you seek to transfer, you may be required to repeat some or all your coursework at that institution. For this reason, you should make certain that your attendance at this institution will meet your educational goals. This may include contacting an institution to which you may seek to transfer after attending California Northstate University to determine if your units and degrees will transfer.

**California Northstate University does NOT accept or otherwise participate in any federal direct student loan program (Title IV) funding, any federal veterans' benefits program (Title 38) funding, or any other government student loan program funding.**

If a student obtains a loan to pay for an educational program, the student will have to repay the full amount of the loan plus interest.

### **Cost of Attendance and Tuition and Fees for Incoming Students: CAPSTONE**

The cost of attendance is an estimate of expected educational expenses for the period of enrollment. These educational expenses are calculated as described below and apply to all students enrolled in the Master of Pharmaceutical Sciences program at California Northstate University:

**Master of Pharmaceutical Sciences Degree Program - Tuition & Fees for Academic Year:  
2026-2027**

<b>Tuition &amp; Fees</b>	<b>Amount</b>	<b>Class</b>
Tuition - Fall 2026	\$14,763	MPS1
Tuition - Spring 2027	\$14,763	MPS1
Tuition - Summer 2027	\$14,763	MPS1
Student Activity Fee	\$100	MPS1
Technology Fee	\$50	MPS1
Pharma Sci Lab Fee	\$700	MPS1
Orientation Fee	\$50	MPS1
Student Tuition Recovery Fee <sup>4</sup>	\$0	MPS1
Enrollment Fee (Nonrefundable)	\$100	MPS1
Graduation Fee	\$250	MPS1
<b>MPS1 Total Tuition &amp; Fees per Year</b>	<b>45,539</b>	

**Total cost for the 1-year Master of Pharmaceutical Sciences Degree Program is \$45,539.00**

<b>Other Educational Related Costs<sup>1</sup></b>	<b>Amount</b>	<b>Class</b>
Health Insurance premium <sup>2</sup>	\$3,841	MPS1
Books and Supplies	\$1,600	MPS1
Room and Board (based on 12 months)	\$24,000	MPS1
Transportation (based on 12 months)	\$5,362	MPS1
<b>MPS1 Total Estimated Cost per Year<sup>3</sup></b>	<b>\$80,342</b>	

- <sup>1</sup> Estimated costs and expenses a student may incur during the applicable year of the program, whether or not paid directly to CNU or MPS. These expenses include estimated out-of-pocket cost of living expenses for the year.
- <sup>2</sup> Optional, estimated, and will increase based on number of insured members.
- <sup>3</sup> Includes total of Tuition & Fees and Other / Optional Estimated Educational Related Costs tables, including some out-of-pocket cost of living expenses as described in footnote 3 above.
- <sup>4</sup> Effective April 1, 2024, the STRF assessment rate will change from two dollars and fifty cents (\$2.50) per one thousand dollars (\$1,000) of institutional charges to zero dollar (\$0.00) per one thousand dollars (\$1,000) of institutional charges.

**Cost of Attendance and Tuition and Fees for Incoming Students: THESIS TRACK**

The cost of attendance is an estimate of expected educational expenses for the period of enrollment. These educational expenses are calculated as described below and apply to all students enrolled in the Master of Pharmaceutical Sciences program at California Northstate University:

**Master of Pharmaceutical Sciences Degree Program - Tuition & Fees for Academic Year:  
2026-2027**

<b>Tuition &amp; Fees</b>	<b>Year 1 - MPS1</b>	<b>Year 2 - MPS2</b>
Tuition	\$38,688	\$39,848
Student Activity Fee	\$100	\$100
Technology Fee	\$50	\$50
Pharma Sci Lab Fee	\$700	\$700
Orientation Fee	\$50	\$0
Student Tuition Recovery Fee <sup>4</sup>	\$0	\$0
Enrollment Fee (Nonrefundable)	\$100	\$0
Graduation Fee	\$0	\$250

<b>Total Estimated Tuition &amp; Fees per Year</b>	<b>\$39,688</b>	<b>\$40,948</b>
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**Total cost for the 2-year Master of Pharmaceutical Sciences Degree Program \$80.636**

<b>Other Educational Related Costs<sup>1</sup></b>	<b>Year 1 - MPS1</b>	<b>Year 2 - MPS2</b>
Health Insurance premium <sup>2</sup>	\$3,841	\$3,841
Books and Supplies	\$1,600	\$1,600
Room and Board (based on 12 months)	\$24,000	\$24,000
Transportation (based on 12 months)	\$5,362	\$5,362
<b>Total Estimated Cost per Year<sup>3</sup></b>	<b>\$74,491</b>	<b>\$75,751</b>

<sup>1</sup> Estimated costs and expenses a student may incur during the applicable year of the program, whether or not paid directly to CNU or MPS. These expenses include estimated out-of-pocket cost of living expenses for the year.

<sup>2</sup> Optional, estimated, and will increase based on number of insured members.

<sup>3</sup> Includes total of Tuition & Fees and Other / Optional Estimated Educational Related Costs tables, including some out-of-pocket cost of living expenses as described in footnote 3 above.

<sup>4</sup> Effective April 1, 2024, the STRF assessment rate will change from two dollars and fifty cents (\$2.50) per one thousand dollars (\$1,000) of institutional charges to zero dollar (\$0.00) per one thousand dollars (\$1,000) of institutional charges.

## General Policies

### Orientation & Registration

Registration for classes requires:

1. All admission contingencies be fulfilled.
2. Financial aid clearance from the Financial Aid Officer.
3. Completion of all new student paperwork.

Admission contingencies include proof of medical insurance coverage and any other institutional requirements.

Students may enroll in the Student Health Insurance Plan to satisfy the insurance requirement.

New students must submit the *Emergency Contact and Medical Information Form* to the Office of the Registrar by the end of Orientation. To make updates, a new form must be submitted to the Registrar. The Office of the Registrar requires submission of the Authorization to Release Student Records if a student desires to grant a personal third-party (such as a parent, spouse, etc.) access to his/her student record. Please refer to the Directory Information and Access to Student Records section of this catalog for more information.

New students should review their local, home, and billing contact information via the Student Portal and update as needed. It is the student's responsibility to maintain valid contact information throughout their enrollment at CNU. Instructions for accessing the Student Portal is sent by the CNU IT department to the student's CNU email address.

Registration is conducted by the Registrar prior to the start of each semester for new and continuing students. Students with business, financial, or other registration holds on their account will not be registered until the Registrar is notified that the hold has been cleared. Students who are incompliant with institutional requirements or who have a hold on their student account at the time of registration are required to satisfy the requirement and may also be required to submit the Course Add/Drop form by the end of the Add/Drop period to register or make schedule changes.

### **Address Where Instruction Will Be Provided**

Class sessions are conducted at MPS classroom at 9700 West Taron Drive, Elk Grove CA 95757.

### **Catalog, School Performance Fact Sheet, and Website**

As a prospective student, you are encouraged to review this catalog before signing an enrollment agreement. You are also encouraged to review the School Performance Fact Sheet, which must be provided to you before signing an enrollment agreement. The SPFS contains important performance data for the institution. The Catalog contains important information and policies regarding this institution. By signing the Enrollment Agreement, the student is acknowledging that the catalog, disclosures, and information located on the website have been made available to the student to read and review.

### **Instruction/Course Delivery**

All courses for MPS are 84% face-to-face on-campus teaching, with the exception of two courses: MPS 512 and MPS 518

Discovery and Development. This comprehensive course is designed using a hybrid teaching format, combining direct faculty-student interaction and eLearning.

All courses are taught in English and English language services are not provided.

### **EVALUATION OF TRANSFER CREDIT POLICY**

A maximum of 13 credits will be considered for transfer of graduate-level courses from other accredited graduate programs. The CNUMPS cumulative grade point average (GPA) is based solely upon course work taken at CNUMPS. For more information please refer to the MPS Credit Transfer Policy.

## Description of Facilities

Information on research laboratories and facilities utilized by California Northstate University in conjunction with the delivery of instruction for all CNU Colleges, can be located on page 229 of the General Catalog.

## Academic Policies and Procedures

### Academic Calendar

The academic calendar consists of two semesters lasting approximately 15 weeks long.

### Credit Hour Policy

<b>Code</b>	<b>Course Type</b>	<b>Code</b>	<b>Course Type</b>
<b>AL</b>	Active Learning	<b>LEC</b>	Lecture course
<b>LAB</b>	Laboratory	<b>SEM</b>	Seminar

For each 15-week semester, one (1) unit of credit is assigned per hour each week of classroom and a minimum of two (2) hours of out-of-class student work (homework) (*LEC/SEM*). For courses that include workshop and/or laboratory time, one (1) unit of credit is assigned per two (6) hours each week of student time spent in this activity (*LAB/AL*) course.

### Grading

A letter grade equal to or greater than C is considered satisfactory performance (passing) for completion of a course. Students must maintain a minimum cumulative grade point average (GPA) of 2.0. The breakdown for assignment of letter grades and grade points for each letter grade are as follows:

<b>Grade</b>	<b>Definition</b>	<b>GPA Unit</b>
A	90.0 – 100%	4.00
B	80.0 – 89.9%	3.00
C	70.0 – 79.9%	2.00
D	60.0 – 69.9%	1.00
F	<60%	0.00
I	Incomplete	Not in GPA

## **GPA Calculation**

To calculate cumulative GPA, letter grades will be converted to their numeric grade point value using the grading convention table above, and then added together. The sum is then divided by the number of courses taken. Grades received in retaken classes will be used in determining cumulative GPA. The grade initially received in the course will not be included in the calculation but is recorded on the transcript.

## **Course Add/Drop Procedure**

Changes in course registration may be made without penalty up to the end of the first week (5 class days) for fall and spring terms. Specific add/drop deadlines will apply for courses offered during the summer term.

## **Incomplete or Withdrawal from a Course**

During a semester, a student may withdraw or fail to complete all required assignments and/or examinations due to extenuating circumstances, such as, but not limited to, an illness or a family emergency. In such cases, the course coordinator may give a grade of Incomplete for the course.

All missed assignments and exams must normally be completed within 10 business days after the end of the semester in which the Incomplete was received, or within a timeframe determined by the course coordinator. Failure to successfully complete the course will result in an earned F grade for the course and placement on Academic Probation.

Withdrawal from a course must first be approved by the course coordinator and the Office of Academic Affairs. Where a student has had to withdraw from a course a grade of W will be applied, and the student will have to repeat the course next time it is offered.

## **Grade Appeals Procedure**

A student can file an appeal if there is a disagreement with a final course grade. The appeal must be submitted within ten (10) business days of online grade posting. The student must initiate a formal grade appeal process in writing and present the appeal to the course coordinator.

The faculty member will respond to the student in writing within ten (10) business days. If the appeal cannot be resolved, the student has two (2) business days to appeal in writing to the MPS Director who renders a decision in writing within ten (10) business days of receipt of the formal appeal. (If the course Coordinator is the MPS Director, then the student may appeal the

decision directly to the Dean. The student has two (2) business days to submit an appeal in writing to the Dean. The Dean will render a decision in writing within ten (10) business days of receipt of the formal appeal).

If the MPS Director cannot resolve the appeal, the student has two (2) business days to submit an appeal in writing to the Dean. The Dean will render a decision in writing within ten (10) business days of receipt of the formal appeal.

If a grade appeal is approved, the course coordinator must complete a Grade Change Form and submit the form to the MPS Director for final approval. The form must then be submitted to the Registrar so that the grade can be changed on the transcript.

A record of the final decision concerning the appeal will be kept on file in the MPS Director office.

### **Academic Progression Policy**

The Master of Pharmaceutical Sciences (MPS) at California Northstate University has a rigorous academic progression policy to ensure students' progression through the curriculum in a timely manner.

The purpose of the academic progression policy is to ensure students in the MPS program reach and maintain a high standard of course learning and successfully complete course credits and thesis or capstone paper within required time frame.

Students in the MPS program must pass all courses each semester with at least a grade of C and maintain a minimum grade point average (GPA) of 2.0. A grade of D or below in a course indicates a lack of understanding of the fundamental knowledge of the course necessary for progression.

Students struggling with academic courses must complete the MPS program either within 2 years (1-year program) or 3 years (2-year program) from the time they register and attend their first core course if insufficient knowledge has been identified and remediated.

### **Remediation**

Remediation is provided to students who earn a letter grade lower than C in any course in the MPS curriculum. The course coordinator/instructors determine the format of remediation examination that covers the course material presented throughout the course. Preparation of the remediation exam is the sole responsibility of the student. A grade of C to this course will be reported to the Registrar if the remediation examination was satisfactorily completed.

## Dismissal

A student may be dismissed from the MPS program if any of the following conditions occur, and the Professional and Academic Standards Committee determines that dismissal is warranted:

- a. Failure to meet any terms of remediation or academic probation.
- b. Conduct subject to dismissal as described in the Student Handbook.
- c. Failure to complete the degree requirements in three (two-year program) or five (dual degree) consecutive academic years from the date of the first day the student begins the program.

## Appeal of Dismissal

Students dismissed from the MPS program may appeal the decision in writing within thirty calendar days of notification of dismissal to the Dean of the College. The Dean will render a decision in writing within 15 calendar days of the receipt of the formal written appeal.

The Dean's decision is final.

## Degree Requirements

The Master of Pharmaceutical Sciences degree is a Two-Year Thesis program or a One Year Capstone Track program.

Degree requirements for the Thesis-based track and the Capstone/Course track are as follows:

### Thesis-based Track:

To graduate from the M.Sc. program, students in this track must earn a minimum of 31 credits. In addition to the course requirements, students must pass and complete a thesis.

### Capstone/Course Track:

Students in this track must pass a minimum of 31 credits and a capstone paper that consists of conducting a detailed literature review.

## Comparison of Thesis-based and Capstone Track

	Thesis Track	Capstone Track
Years	2	1
Total Credits	31	31
Core Course Credits	31	31
Written Examination	Yes	Yes
Thesis	Yes	Capstone paper

## **Attendance Policy**

The MPS program will follow MPS Excused Absence Policy which requires mandatory attendance for all students. Specifically, students are expected to attend and participate in all classes and complete all exams and assessments as scheduled (together defined as “coursework”).

However, occasionally an absence from coursework will be unavoidable. The policy described below delineates the circumstances when an absence will be considered excused along with expectations for timely communication with the Course Coordinator and makeup of missed coursework.

### **EXCUSED ABSENCE POLICY AND PROCEDURES**

#### **I. PURPOSE**

The purpose of this policy is to set the criteria and procedures under which CNUMPS students can request an excused absence to make-up coursework, assignments, quizzes, tests, and exams.

#### **II. SCOPE/COVERAGE**

This policy applies to all students who want to request an excused absence and guides the MPS administration, faculty and staff on criteria and procedures when a student requests an excused absence.

#### **III. POLICY STATEMENT**

The MPS program recognizes that legitimate circumstances occasionally result in a student being absent from a class or laboratory learning session. An excused absence is defined as a properly documented absence according to the criteria in this policy.

#### **IV. PROCEDURE**

A. MPS program recognizes as legitimate circumstances and valid reasons for a student to apply for excused absences:

1. **Illness or Hospitalization:** Includes office visits for medical or dental appointments, admission into a hospital or emergency room, or physician or legally verified quarantine. In order for the absence to be granted, proper supporting documentation must be provided.

Acceptable documentation for illness or hospitalization includes:

- a) Medical and dentist office visit notes. In order to be accepted, such notes must indicate date and time of the visit, date the note was issued, be signed by the professional and include their full name and license number. Proof of scheduling an appointment or appointment reminder notes is not accepted. Note: MPS considers a conflict of interest a medical and/or dentist note issued by the student's parents or siblings, and as such does not accept as valid documentation for excused absences.
  - b) Hospital or emergency room admittance document, issued in the hospital's official letterhead and signed by an authorized hospital official, identified by their registration number.
  - c) Official medical or state document attesting the quarantine recommendation with the period covered by the quarantine.
2. Death of an immediate family member: MPS defines an immediate family member as the student's parent, grandparent, legal guardian, spouse or life partner, child, sibling, as well as step- and in-laws of the same relationship.
  3. Jury Duty and Court Subpoena: A student who is required and selected to participate in any jury duty, and/or required to appear in court as a witness, victim of a crime, or other court-required appearance has an excused absence. Supporting court documents such as the jury summons or note from the appropriate jury commissioner or clerk of the court, as proof of attendance, is required for the excused absence to be granted.
  4. Professional School Entrance Exams or Interviews: Exams such as MCAT, DAT or other required exam for admission in professional schools are considered circumstances in which application for excused absences are allowed. In such cases, only the exam day is counted towards the excused absence and one additional day if the exam site is distant more than 200 miles from CNU Elk Grove campus. Proof of registration for the exam or official confirmation of interview must be presented.
  5. Religious Holidays: CNUMPS may recognize selected religious holidays for the purpose of excused absences. Such holidays may include, but are not limited to, Eid-Al-Fitr, Eid-AlAdha, Diwali, Holi, Good Friday, Chanukah, and Passover.
  6. Personal Emergency: Under this category, students can request an excused absence in cases of fire at home, flooding, natural disasters, traffic accidents, being victim of a crime or domestic violence, and a life-threatening situation. Students must provide supporting

documentation that includes, but is not limited to, police reports, insurance claims, or hospital summary.

B. If the excuse for absence meets one of the above circumstances, the student will complete a “Request for Excused Absence” form and submit to the Office of MPS Director and MPS administrative assistance as per instructions provided in the form. Please note:

1. Excused absences are not counted against any attendance requirements and do not relieve students from their responsibilities for completing any course work, assignments, or assessments/evaluations assigned or due during their absence.
2. The Dean of College of Graduate Studies or MPS Director may grant excused absences for special reasons, not included in this policy, as long as the request is supported by documentation and represents an event in which the student absence was mandatory. Family reunions, birthdays, weddings, vacations, and other private/family celebrations are not justifiable excused absence in any circumstances.
3. All documents requesting an excused absence must be provided, whenever possible, by the day of the absence. When this is not possible, supporting documents must be provided no longer than five (5) business days after the absence event. If documentation is not supplied within this timeframe, the student waives the right to request an excused absence. Documents are accepted in hard copies or pdf format; no pictures or jpeg documents are accepted.
4. An excused absence must be requested by the student through an official “Request for Excused Absence” form as indicated above, that must be sent with supporting documentation, to the Office of MPS Director and MPS administrative assistant through email (ahmed.elshamy@cnsu.edu) and (aashna.pillay@cnsu.edu) or hand delivered directly to MPS administrative assistant.
5. Once the “Request for Excused Absence” form is received, the MPS Director will evaluate the students request for an excused absence, the student will be notified of the approval or denial of the request via CNSU email within two (2) business days. The Office of MPS Director will notify the faculty of approved excused absences via CNSU email.
6. Faculty should not grant any make-up or extend deadlines for assignments without a notice from the Office of MPS Director that an excused absence was officially granted.

7. To avoid chronic absenteeism, a maximum of 2 excused absence events/didactic course may be granted to a student per semester. An event is considered a single (1) completed and approved excused absence form.
8. If a student has 3 or greater absences from any didactic course, the student will be subjected to losing the attendance and professionalism grades of this course.
9. Faculty should make all necessary efforts to provide students with a way to effectively learn the missed course content and make-up all assignments, tests, and exams, within ten (10) business days of the excused absence event at the faculty's discretion. The Office of MPS Director will provide support when needed. End of the semester make-ups cannot exceed ten days after the final exam date.

### **Leave of Absence**

A leave of absence is approved for a specific period of time, not to exceed more than a year, and the institution agrees to permit the student to return to the University/College without formally reapplying for admission to the University/College.

The student will be required to return to the University/College at the beginning of the semester in which the leave was granted. All students requesting a Leave of Absence should fill out a Leave of Absence Form after discussing their decision with the Academic Official for Academic Affairs. If a student is requesting a leave of absence, the Academic Official for Academic Affairs must sign the form. If the student is approved for a leave of absence, the student is eligible to return without reapplication if the absence is within the approved time frame. A student requesting a leave of absence should also meet with the Financial Aid Manager and Business Office to determine the impact of their decision and any requirements needing fulfillment prior to the leave.

Non-attendance does not constitute notification of intent to apply for leave of absence status. The date of leave status is the date the Registrar receives the signed form.

### **Return from Leave of Absence**

The Office of the Registrar will contact a student on Leave of Absence (LOA) approximately 90 days before the LOA expires via certified US mail and the email addresses on record. The student will receive the Intent to Return Form and instructions for re-enrollment and for withdrawing from the University.

The student will have 30 days of the date of the notice to reply to the Office of Registrar with their intent to return to the University/College or officially withdraw.

If a student does not return within 1 year of approved LOA they are no longer eligible to return as a continuing student and must reapply to the University/College for admission.

### **Thesis Guidelines**

The thesis is a vital portion of the curriculum for graduate students choosing the thesis-based track. These students will conduct hands-on, original research in CNU's state-of-the-art laboratories, mentored by faculty with experience in the biomedical and pharmaceutical sciences. Students will select their research topics after consultation with their major advisors. This course will examine student capabilities in scientific literature review, research design, research execution, statistics, result analysis & discussion, and written skills as required to produce a laudable thesis. Lab-based thesis research starts in the summer of the 1st year and proceeds through the entire 2nd year, with 1 credit in each semester. Students will be evaluated each semester, and their progress monitored closely by their thesis advisors. The components of this course evaluation include the following comprehensive elements: literature review; experimental design; research performance; statistical analysis; result presentation and discussion, and conclusion.

### **Defense of thesis or capstone paper project**

Defense of thesis or capstone paper project is the final step for MPS students. This process tests the depth and breadth of knowledge in pharmaceutical sciences and will assess the overall understanding of scientific inquiry. Students will be expected to justify their decisions in study design and interpretation of data. The advisory committee will make the recommendation based on the quality of the project, answers to all questions, and other factors.

### **Requirements for Laboratory-based Research**

Laboratory research is one of the essential components for graduate students in the Master's program in Pharmaceutical Sciences at California Northstate University (CNU). Any student working in the Lab must abide by the following standards.

1. Students must complete the Collaborative Institutional Training Initiative (CITI) training and relevant biosafety training that are required for the personnel working in the Lab at CNU. CITI is an on-line service program providing research ethics and related

modules to faculty, staff, and students working for research projects or courses. Students must present completion certificates to their major advisors prior to self-directed work in the labs. Students must complete and pass the Responsible Conduct of Research course and the student Biosafety and Biosecurity Course. Additional courses may be recommended or required by their instructors.

2. Students must respect all ethical standards and must observe all federal, state, local, and institutional regulations.
3. Students must abide by all safety regulations while present in the labs, including those regarding appropriate clothing and shoes. Students must wear lab coats, gloves, and other appropriate personal protective equipment when performing procedures in the Lab.
4. Students must follow all standard operating procedures and protocols when conducting research.
5. Students must work in their designated areas. All shared equipment and instruments must be cleaned and stored in their original (one) Location after completing experiments.
6. Students must maintain original research records, catalogs, and research materials following good practices. Computer records must be consistent with the notebooks. Students are strongly encouraged to discuss the records and seek approval from the advisors.
7. All packages, containers, buffers and reagents in the Lab must have discernible, compliant labels that include name, date, identity, and sources.
8. Eating, drinking, or smoking in the Lab are strictly prohibited. Violators will be excluded from research projects or relevant courses.
9. Hand washing with clean, running water is good practice before leaving the Lab, and is required after certain procedures.
10. It is expected that all students will exercise professionalism and decorum while in the Labs. Horseplay, practical jokes, pranks or other inappropriate or distracting behaviors will result in a loss of Lab privileges and may impact student graduation.
11. Please report all unexpected issues to your advisors or Lab Manager.

## **Student Grievance Policy**

If a student wishes to file a grievance, they can submit a written complaint using the Complaint/Grievance form placed in a sealed envelope and delivered to the Vice President of Academic Affairs or submit an online Anonymous Report available on the CNU website. The Vice President of Academic Affairs will handle the complaint in accordance with University policies and after a review of the facts will attempt to resolve the issue. Any resolution will be provided to the student in writing within 4 weeks of the form submission, excluding holidays and University breaks.

For complaints related to accreditation standards can be found on page 10 of the General Catalog.

A student or any member of the public may file a complaint about this institution with the Bureau for Private Postsecondary Education by calling (916) 574-8900 or by completing a complaint form, which can be obtained on the bureau's internet website <https://www.bppe.ca.gov/enforcement/complaint.shtml>.

## **Student Services**

Information on Student Services can be located on page 223 of the General Catalog.

## **MPS Course Descriptions**

### **Core Courses**

#### **MPS 501 Introduction to Pharmaceutical Sciences-I (3 cr)**

This course introduces the basic mechanisms of pathophysiology and pharmacology, and then integrates these disciplines through the study of the etiology, pathogenesis, clinical manifestations, treatment and prevention of major neurologic, psychiatric, and neuroendocrine diseases/disorders. Following an introduction to normal tissue types and adaptive responses, the course will cover basic etiological and pathophysiological mechanisms; mechanisms of injury will be reviewed; the central and peripheral nervous systems (CNS & PNS) are reviewed, major CNS, PNS and neuroendocrine diseases and disorders are covered, Students will learn the mechanism(s) of action and common or serious adverse effects of pharmacological agents and identify appropriate pharmacological treatments or adjust pharmacotherapy in the face of adverse effects. In addition, each student team will research a topic in depth, including a systematic search of peer-reviewed literature, to develop and present a formal case study, given at a level appropriate for an audience of healthcare professionals. To promote information literacy, teams will use systematic PubMed searches using MESH terms to identify and incorporate current literature reviews, guidelines, or other advanced professional sources, and carefully cite the information and sources on their slides.

### **MPS 506 Research and Thesis - I (3 cr)**

This course is designed to provide hands-on research experience in laboratories of biomedical and pharmaceutical sciences. Students will choose the research topics after consultation with their major advisors. This course will exam the students' capabilities in original article review, research design, research execution, statistics, result analysis & discussion, and written skills of thesis.

### **MPS 507 Capstone Paper - I (3 cr)**

This course is designed to advance critical thinking and written skills in the identification and synthesis of contemporary topics in the broad area of pharmaceutical sciences. MPS 504 (Literature & Technical Writing Skills) is divided into two sections for the graduate students in Plan B (Capstone Track):

(i) section I delineates the basic skills and techniques in reference search, review, and writing exercise; and (ii) section II is designed to evaluate the students' capabilities in integration of science, literature, and communication skills. Successful and timely completion of capstone paper is mandatory for students in this track.

### **MPS 511 Introduction to Pharmaceutical Sciences– II (3 cr)**

This course is designed to provide students with the deep understanding of the drug physicochemical properties and its effects on drug formulation and computing, dosage form as well as an understanding of the interactions between drug delivery systems and biological systems The course covers the traditional and non-traditional dosage forms as well as drug delivery systems. The course also covers pharmaceutical calculations and an overview of drug quality control and regulation.

### **MPS 512 Principal of FDA Regulatory Affairs and Drug Discovery (2 cr)**

This course focuses on regulatory strategy, guidance and regulatory compliance, legal and ethical issues, processes for product development and the business components of regulation in clinical research, all while reinforcing the science behind the methods. The regulatory affairs course provides students with the knowledge and understanding for the key elements of the regulatory process in various industries, governmental agencies, and consultancies worldwide.

### **MPS 513 Biostatistics & Research Methods (3 cr)**

This course is designed to introduce major concepts in biostatistics and pharmacoepidemiology. Students will develop the ability to interpret and critically evaluate medical literature and to identify findings that have implications for their practice. Emphasis will be placed on an examination of how observational study designs draw upon epidemiologic techniques to address drug effectiveness, safety, outcome assessment and regulatory decision making. Students will also acquire skills in applying statistical analysis concepts learned throughout this course with the use of common computer software.

### **MPS 514 Clinical Biochemistry (3 cr)**

Clinical Biochemistry (MTMS 514) course provides to MPS students a clear and comprehensive introduction to the biochemical basis of disease processes, how these diseases

are investigated in biomedical laboratories, and selected clinical cases as framework for class discussion activities. This class is one of the major courses with great benefit for prospective medical students. The course is established on organ base system study that is compatible with the teaching module in medical program.

This course prepares prospective medical students to do well in step one exam in medical school. The students taking this class are particularly enthusiastic and love the class because the exams in this class are also given in USMLE style, preparing the students to be familiar with the exam (Step 1, 2 & 3) styles they will be facing in medical school. In the class, the students learn new trends of clinical cases and their biochemical basis to further emphasize the link between theory and practice while helping them engage with emerging diseases and how to treat them. In addition, the course provides a biochemical foundation for the understanding of drug action, drug absorption and drug metabolism in the treatment of these diseases.

### **MPS 515 Medical Immunology (3 cr)**

MPS 515 is a broad-spectrum course that covers the fundamentals and clinical aspects of Immunology. The course is divided into 4 major modules: (1) Introduction to Immunology, (2) Innate and adaptive Immunity, (3) T and B cells development and (4) Clinical Immunology. Each module will be followed by an exam covering all the discussed topics within that module. In addition, students will be engaged in journal club activity for classical articles known to be the pillars in the Immunology field.

### **MPS 516 Research and Thesis - II (3 cr)**

This course is designed to provide hands-on research experience in laboratories of biomedical and pharmaceutical sciences. Students will choose the research topics after consultation with their major advisors. This course will exam the students' capabilities in original article review, research design, research execution, statistics, result analysis & discussion, and written skills of thesis.

### **MPS 518 Advances in Drug Delivery Systems (3cr)**

This course gives the students an overview on Drug Delivery Systems in terms of Formulation, Manufacture, and Quality Control. Students will learn Oral, Topical, Parenteral, Transdermal and other Modified-release Drug Delivery Systems. Details are given with respect to advanced technologies such as 3D Printing for Personalized Medicine and Nanoparticle Delivery Systems for Protein and Vaccine Therapeutics. The course also covers basic Pharmacokinetics and Pharmacodynamics considerations, Pharmaceutical Compounding and Calculations.

### **MPS 607 Introduction Human Anatomy (3 cr)**

Designed for students in MPS program with applications to activities involving medical terminology and introductory human anatomy. The emphasis is on the structural, physiological, and positional relationships of the skeleton, joints, muscles, head and neck, blood vessels and peripheral nerves in the trunk and limbs as well as the abdominal and pelvic viscera.

### **MPS 503 AI in Healthcare (2 cr)**

This course provides an overview of Artificial Intelligence (AI) applications in the healthcare sector, exploring its transformative potential, challenges, and ethical considerations. Students will learn the fundamental AI techniques used in healthcare, including machine learning, deep learning, natural language processing, and computer vision. The course will examine real-world applications, such as diagnostic imaging, predictive analytics, personalized medicine, and patient care automation. Emphasis will be placed on understanding the regulatory and ethical issues unique to healthcare AI.

### **MPS 509: Integrated Oral Health Biology (3cr)**

This course provides an integrated foundation in oral health biology through a multidisciplinary exploration of tooth development, oral histology, cariology, oral microbiology, salivary gland biology, oral immunology, oral cancer biology, anesthesia, medically complex dental care, and advanced drug delivery approaches for oral and dental applications. The course emphasizes the biologic principles underlying oral health and disease and connects basic science concepts to clinical relevance, therapeutic strategies, and emerging translational applications.

### **MPS Curriculum**

#### **Example of Schedule for Capstone Paper Track**

<b>Curriculum Layout of MPS-Oral Health to Dental Medicine Pathway</b>		
<b>Fall (2025)</b>	<b>Spring (2026)</b>	<b>Summer (2026)</b>
MPS501 (3cr)- Intro. PharmScien.I	MPS511 (3cr)- Intro. PharmScien.II	MPS509 (3cr)- Integrated Oral Health Biology
MPS515 (3cr)- Medical Immuno	MPS513 (3cr)- Biostatistics	MPS503 (2cr)- AI in Healthcare
MPS514 (3cr)- Clinic. Biochemistry	MPS506 (3cr)- Intro. Human Anatomy	MPS517 (3cr)- Capstone Paper II
	MPS518 (2cr)- Drug Delivery	
	MPS507(3cr)- Capstone Paper I	

<b>Curriculum Layout of MPS Capstone Track</b>		
<b>Fall (2025)</b>	<b>Spring (2026)</b>	<b>Summer (2026)</b>
MPS501 (3cr)- Intro. PharmScien.I	MPS511 (3cr)- Intro. PharmScien.II	MPS503 (2cr)- AI in Healthcare
MPS515 (3cr)- Medical Immuno	MPS513 (3cr)- Biostatistics	MPS517 (3cr)- Capstone Paper II
MPS514 (3cr)- Clinic. Biochemistry	MPS506 (3cr)- Intro. Human Anatomy	
MPS512 (3cr)- FDA Regulations	MPS518 (2cr)- Drug Delivery	
	MPS507(3cr)- Capstone Paper I	

## Example of Schedule for Thesis Track

Curriculum Layout of MPS Thesis Track				
Fall (2025)	Spring (2026)	Summer (2026)	Fall (2026)	Spring (2027)
MPS501 (3cr)- Intro. PharmScien.I	MPS511 (3cr)- Intro. PharmScien.II	MPS503 (2cr)- AI in Healthcare	MPS514 (3cr)- Clinic. Biochemistry	MPS506 (3cr)- Intro. Human Anatomy
MPS515 (3cr)- Medical Immuno	MPS513 (3cr)- Biostatistics		MPS512 (3cr)- FDA Regulations	MPS518 (2cr)- Drug Delivery
MPS506 (3cr)- Capstone Paper I	MPS506 (3cr)- <i>Continue</i> Capstone Paper I		MPS516 (3cr)- Capstone Paper II	MPS516 (3cr)- <i>continue</i> Capstone Paper II

## TOTAL CREDITS REQUIRED FOR MASTER of PHARMACEUTICAL SCIENCES DEGREE = 31

After completing the MPS degree, the graduates leave with enhanced academic credentials, enhanced hands-on research skills, improved admission into healthcare profession schools, and competitive advantage in the market of Pharmaceutical and Biomedical Sciences.

Graduates of this program can pursue a variety of career opportunities within the pharmaceutical industry field. MPS graduates are also positioned to work as researchers at universities, government agencies (i.e. NIH, FDA, CDC) agencies, and non-profit organizations. California Northstate University (CNU) is located in the Greater Sacramento Metropolitan Area, and provides unique opportunities for students to network with nearby biomedical, biotechnology, pharmaceutical companies, and government agencies.

## COLLEGE OF GRADUATE STUDIES

CGS Administration

**Catherine Yang** PhD, Tufts University

Dean; Vice President of Academic Affairs, Associate Dean of Medical Education

## MASTER OF PHARMACEUTICAL SCIENCES

**MPS Faculty by Last Name**

**For a current listing of faculty, titles and contact information, please visit:**

<http://pharmasciences.cnsu.edu/faculty>

**El-Shamy, Ahmed** Assistant Dean of Research

**Director, MPS**

Associate-Professor, MPS PhD, Kobe University, Japan

**Ali, Hazem**, Adjunct Assistant Professor, MPS

PhD, University of Louisiana at Monroe, Monroe, LA B. Pharmacy, Mansoura University, Egypt

**Farahat, Abdelbasset** Assistant Professor, MPS PhD, Georgia State University, Atlanta, GA  
MS, Mansoura University Egypt

PharmBS, Mansoura University Egypt

**Mohieldin Ashraf M**, Assistant Professor,

MPS, PhD University of Toledo, OH

**Mohamed, Eslam** Assistant Professor, MPS

PhD, Medical College of Georgia, Augusta, GA

PharmBS, Cairo University

**Yang, Catherine** Professor of Molecular Pharmacology and Clinical Biochemistry

PhD, Tufts University