

PREMEDICINE/PREDEPARTMENT

Majors:

- Bachelor of Science, Predentistry (p. 1)
- Bachelor of Science, Premedicine (p. 3)

Minor:

- Medicine and Society (p. 4)

The Bachelor of Science with a major in premedicine (MED) or predentistry (DEN) is an interdisciplinary curriculum of study. It is distinctively designed to provide a science-based, diverse education as a preparation for admission to any of the health professional schools including medical, dental, physician assistant, optometry, pharmacy, veterinary, and chiropractic. Courses in biology, chemistry, mathematics, and physics comprise the science core of the major. A substantial complement of humanities and social sciences courses are also required. Within this framework the curriculum is flexible and can be tailored to suit personal interests. During the first two years, students enroll in courses appropriate for entry into professional schools while they also fulfill basic University requirements.

Admission to professional schools depends upon many factors in addition to the curriculum or major. Academic standing, performance on standardized examinations, practical experience relevant to the profession of interest, and adherence to application procedures are all important. The Premedical Programs Office addresses these factors through a comprehensive approach to pre-health care education.

Along with the administration of the DEN and MED majors, the Premedical Programs office acts as the focal point for all matters related to admission to any allied health care professional school. It is an information clearing house, functions as a liaison with professional schools, and coordinates the application process. The Premedical Programs Office also coordinates a number of internships, health related student organizations, and community based clinical opportunities for students. Students in any major planning to apply to professional schools are urged to maintain a close relationship with this office.

The University automatically enrolls entering premedical or predental majors into special orientation classes, and identifies them to the Premedical Programs office. Members of the Premedical/Predental Advisory Committee advise these students. However, advising services are available to all preprofessional students regardless of their major. Students in other majors may elect to have committee members serve as their secondary advisors; such students should identify themselves to the Premedical Programs office.

In addition to providing counseling, Premedical Programs offers a seminar series, clinical opportunities, grants for health care related experiences, and scholarships. Since admission to professional schools is highly selective, the program monitors the academic progress of MED/DEN majors, and provides feedback at the end of the first and second year. Transfers to other majors, particularly to science majors, can usually be accommodated during the first two years without affecting normal progress towards graduation.

FACULTY LISTINGS (<https://udayton.edu/artssciences/academics/premedical/faculty-staff.php>)

Bachelor of Science, Predentistry (DEN) minimum 120 hours

The Common Academic Program (CAP) is an innovative curriculum that is the foundation of a University of Dayton education. It is a learning experience that is shared in common among all undergraduate students, regardless of their major. Some CAP requirements must be fulfilled by courses taken at UD (e.g., Capstone and Diversity and Social Justice). Some major requirements must also be fulfilled by courses taken at UD. Students should consult with their advisor regarding applicability of transfer credit to fulfill CAP and major program requirements.

Common Academic Program (CAP) ¹

First-Year Humanities Commons ²	12 cr. hrs.
HST 103 Introduction to Global Historical Studies	
REL 103 Introduction to Religious and Theological Studies	
PHL 103 Introduction to Philosophy	
ENG 100 Writing Seminar I ³	
Second-Year Writing Seminar ⁴	0-3 cr. hrs.
ENG 200 Writing Seminar II	
Oral Communication	3 cr. hrs.
CMM 100 Principles of Oral Communication	
Mathematics	3 cr. hrs.
Social Science	3 cr. hrs.
Arts	3 cr. hrs.
Natural Sciences ⁵	7 cr. hrs.
Crossing Boundaries	up to 12 cr. hrs.
Faith Traditions	
Practical Ethical Action	
Inquiry	
Integrative	
Advanced Study	
Philosophy and/or Religious Studies (6 cr. hrs.)	
Historical Studies (3 cr. hrs.) ⁶	

Diversity and Social Justice ⁷	3
	cr.
	hrs.
Major Capstone ⁸	0-6
	cr.
	hrs.

¹ The credit hours listed reflect what is needed to complete each CAP component. However, they should not be viewed as a cumulative addition to a student's degree requirements because many CAP courses are designed to satisfy more than one CAP component (e.g., Crossing Boundaries and Advanced Studies) and may also satisfy requirements in the student's major.

² May be completed with ASI 110 and ASI 120 through the Core Program.

³ May be completed with ENG 100A and ENG 100B, by placement.

⁴ May be completed with ENG 114 or ENG 198 or ASI 120.

⁵ Must include two different disciplines and at least one accompanying lab.

⁶ May be completed with ASI 110 and ASI 120 through the Core Program.

⁷ May not double count with First-Year Humanities Commons, Second-Year Writing, Oral Communication, Social Science, Arts, or Natural Sciences CAP components, but may double count with courses taken to satisfy other CAP components and/or courses taken in the student's major.

⁸ The course or experience is designed by faculty in each major; it may, or may not, be assigned credit hours.

Major Requirements 64

Satisfies CAP Mathematics and CAP Natural Science		
BIO 151 & 151L	Concepts of Biology I: Cellular & Molecular Biology and Concepts of Biology Laboratory I: Cellular & Molecular Biology	4
BIO 152 & 152L	Concepts of Biology II: Evolution & Ecology and Concepts of Biology Laboratory II: Evolution & Ecology	4
CHM 123 & 123L	General Chemistry and General Chemistry Laboratory	4
CHM 124 & 124L	General Chemistry and General Chemistry Laboratory	4
CHM 313 & 313L	Organic Chemistry and Organic Chemistry Laboratory	4
CHM 314 & 314L	Organic Chemistry and Organic Chemistry Laboratory	4
CHM 420	Biochemistry	3
CHM 420L	Biochemistry Lab for the Medical Sciences	1
MTH 148 & MTH 149	Introductory Calculus I and Introductory Calculus II	6
or MTH 168 & MTH 169	Analytic Geometry & Calculus I and Analytic Geometry & Calculus II	
PHY 201 & PHY 202	College Physics I and College Physics II ²	6
or PHY 206 & PHY 207 & PHY 208	General Physics I - Mechanics and General Physics II - Electricity & Magnetism and General Physics III- Thermodynamics, Waves, and Fluids	
PHY 201L	College Physics Laboratory I ²	1
PHY 202L	General Physics Laboratory	1
MED 339	International Medical Experience	1

or MED 230	Community Pre-Dental Experience	
MED 299	Sophomore Seminar	1
MED 480	Pre-Medicine Capstone (Satisfies CAP Major Capstone)	1
Select one course from:		3
MTH 207	Introduction to Statistics	
MTH 367	Statistical Methods I	
PSY 216	Elementary Statistics	
Select five science courses, two with accompanying laboratories, from: ³		17
BIO 309 & 309L	Comparative Anatomy of the Vertebrates and Comparative Anatomy Laboratory	
BIO 312 & 312L	General Genetics and Genetics Laboratory	
BIO 403 & 403L	Physiology I and Physiology Laboratory I	
BIO 404	Physiology II	
BIO 411 & 411L	General Microbiology and General Microbiology Laboratory	
BIO 415 & 415L	Neurobiology and Neurobiology Laboratory	
BIO 427	Immunology	
BIO 439	Analysis & Interpretation of Biological Data	
BIO 440 & 440L	Cell Biology and Cell Biology Laboratory	
BIO 442 & 442L	Developmental Biology and Developmental Biology Laboratory	
BIO 445	Evolution & Development	
BIO 462	Molecular Biology	
BIO 466	Biology of Infectious Disease	
BIO 470	Cancer Biology	
BIO 475 & 475L	Human Anatomy and Human Anatomy Laboratory	
BIO 480 & 480L	Principles of Microscopy and Principles of Microscopy Laboratory	
CHM 201 & 201L	Quantitative Analysis and Quantitative Analysis Laboratory	
CHM 302	Physical Chemistry	
CHM 427	Medicinal Chemistry	
CHM 451	General Biochemistry I	
CHM 452	General Biochemistry II	

Breadth

ASI 150	Introduction to the University Experience	1
Electives ^{4,5}		10
ENG Elective ⁶		3
Select one course from: (Satisfies CAP Practival Ethical Action and Adv Studies in PHL or REL)		3
PHL 312	Ethics	
PHL 315	Medical Ethics	
REL 365	Christian Theology and Environmental Ethics	
REL 367	Christian Ethics & Health Care Issues	
Social and Behavioral Sciences (Includes CAP Social Science)		12
Total Hours to total at least		120

- ¹ Well qualified students are advised to take MTH 168-MTH 169.
- ² Well qualified students are advised to take PHY 206-PHY 207-PHY 208 lecture sequence with PHY 201L and PHY 202L.
- ³ The elective courses must be directly related to the primary field of interest.
- ⁴ Only general elective courses can be taken under Grading Option Two.
- ⁵ Courses in graphic design, studio art, or performing arts are recommended.
- ⁶ Select from any 300 or 400 level ENG course.

Bachelor of Science, Premedicine (MED) minimum 120 hours

The Common Academic Program (CAP) is an innovative curriculum that is the foundation of a University of Dayton education. It is a learning experience that is shared in common among all undergraduate students, regardless of their major. Some CAP requirements must be fulfilled by courses taken at UD (e.g., Capstone and Diversity and Social Justice). Some major requirements must also be fulfilled by courses taken at UD. Students should consult with their advisor regarding applicability of transfer credit to fulfill CAP and major program requirements.

Common Academic Program (CAP) ¹

First-Year Humanities Commons ²	12 cr. hrs.
HST 103 Introduction to Global Historical Studies	
REL 103 Introduction to Religious and Theological Studies	
PHL 103 Introduction to Philosophy	
ENG 100 Writing Seminar I ³	
Second-Year Writing Seminar ⁴	0-3 cr. hrs.
ENG 200 Writing Seminar II	
Oral Communication	3 cr. hrs.
CMM 100 Principles of Oral Communication	
Mathematics	3 cr. hrs.
Social Science	3 cr. hrs.
Arts	3 cr. hrs.
Natural Sciences ⁵	7 cr. hrs.
Crossing Boundaries	up to 12 cr. hrs.
Faith Traditions Practical Ethical Action	

Inquiry	
Integrative	
Advanced Study	
Philosophy and/or Religious Studies (6 cr. hrs.)	
Historical Studies (3 cr. hrs.) ⁶	
Diversity and Social Justice ⁷	3 cr. hrs.
Major Capstone ⁸	0-6 cr. hrs.

- ¹ The credit hours listed reflect what is needed to complete each CAP component. However, they should not be viewed as a cumulative addition to a student's degree requirements because many CAP courses are designed to satisfy more than one CAP component (e.g., Crossing Boundaries and Advanced Studies) and may also satisfy requirements in the student's major.
- ² May be completed with ASI 110 and ASI 120 through the Core Program.
- ³ May be completed with ENG 100A and ENG 100B, by placement.
- ⁴ May be completed with ENG 114 or ENG 198 or ASI 120.
- ⁵ Must include two different disciplines and at least one accompanying lab.
- ⁶ May be completed with ASI 110 and ASI 120 through the Core Program.
- ⁷ May not double count with First-Year Humanities Commons, Second-Year Writing, Oral Communication, Social Science, Arts, or Natural Sciences CAP components, but may double count with courses taken to satisfy other CAP components and/or courses taken in the student's major.
- ⁸ The course or experience is designed by faculty in each major; it may, or may not, be assigned credit hours.

Major Requirements 64

Satisfies CAP Mathematics and Natural Science		
BIO 151 & 151L	Concepts of Biology I: Cellular & Molecular Biology and Concepts of Biology Laboratory I: Cellular & Molecular Biology	4
BIO 152 & 152L	Concepts of Biology II: Evolution & Ecology and Concepts of Biology Laboratory II: Evolution & Ecology	4
CHM 123 & 123L	General Chemistry and General Chemistry Laboratory	4
CHM 124 & 124L	General Chemistry and General Chemistry Laboratory	4
CHM 313 & 313L	Organic Chemistry and Organic Chemistry Laboratory	4
CHM 314 & 314L	Organic Chemistry and Organic Chemistry Laboratory	4
CHM 420	Biochemistry	3
CHM 420L	Biochemistry Lab for the Medical Sciences	1
MTH 148 & MTH 149	Introductory Calculus I and Introductory Calculus II	6
or MTH 168 & MTH 169	Analytic Geometry & Calculus I and Analytic Geometry & Calculus II	
PHY 201 & PHY 202	College Physics I and College Physics II ²	6

or PHY 206 & PHY 207 & PHY 208	General Physics I - Mechanics and General Physics II - Electricity & Magnetism and General Physics III- Thermodynamics, Waves, and Fluids	
PHY 201L	College Physics Laboratory I ²	1
PHY 202L	General Physics Laboratory	1
MED 299	Sophomore Seminar	1
MED 210 or MED 220 or MED 339	Premed Community Health Experience Hospital Elder Life Program International Medical Experience	1
MED 480	Pre-Medicine Capstone (Satisfies CAP Major Capstone)	1

Select one course from: 3

MTH 207	Introduction to Statistics	
MTH 367	Statistical Methods I	
PSY 216	Elementary Statistics	

Select five science courses, two with accompanying laboratories,
from: ³ 17

BIO 309 & 309L	Comparative Anatomy of the Vertebrates and Comparative Anatomy Laboratory	
BIO 312 & 312L	General Genetics and Genetics Laboratory	
BIO 403 & 403L	Physiology I and Physiology Laboratory I	
BIO 404	Physiology II	
BIO 411 & 411L	General Microbiology and General Microbiology Laboratory	
BIO 415 & 415L	Neurobiology and Neurobiology Laboratory	
BIO 427	Immunology	
BIO 439	Analysis & Interpretation of Biological Data	
BIO 440 & 440L	Cell Biology and Cell Biology Laboratory	
BIO 442 & 442L	Developmental Biology and Developmental Biology Laboratory	
BIO 445	Evolution & Development	
BIO 462	Molecular Biology	
BIO 466	Biology of Infectious Disease	
BIO 470	Cancer Biology	
BIO 475 & 475L	Human Anatomy and Human Anatomy Laboratory	
BIO 480 & 480L	Principles of Microscopy and Principles of Microscopy Laboratory	
CHM 201 & 201L	Quantitative Analysis and Quantitative Analysis Laboratory	
CHM 302	Physical Chemistry	
CHM 427	Medicinal Chemistry	
CHM 451	General Biochemistry I	
CHM 452	General Biochemistry II	

Breadth

ASI 150	Introduction to the University Experience	1
Electives ⁴		10
ENG Elective ⁵		3

Select one course from: (Satisfies CAP Practical Ethical Action and
Adv Studies in PHL or REL) 3

PHL 312	Ethics	
PHL 315	Medical Ethics	
REL 365	Christian Theology and Environmental Ethics	
REL 367	Christian Ethics & Health Care Issues	

Social Sciences (includes CAP social science)	6
Social and Behavioral Sciences	6
Total Hours to total at least	120

¹ Well qualified students are advised to take MTH 168-MTH 169.

² Well qualified students are advised to take PHY 206-PHY 207-PHY 208
lecture sequence with PHY 201L and PHY 202L.

³ The elective courses must be directly related to the primary field of
interest.

⁴ Only general elective courses can be taken under Grading Option Two.

⁵ Select from any 300 or 400 level ENG course.

Minor in Medicine and Society (MDS)

The minor in Medicine and Society provides students with an interdisciplinary approach to 1) understanding contemporary complexities of accessing, delivering, and receiving healthcare, and 2) understanding how issues related to medicine, health, healing and illness impact individuals and communities.

The minor includes courses in the social science fields as well as humanities disciplines. For students planning a career in healthcare, understanding the ethical, anthropological, social, and psychological issues related to medicine can help them become more effective and compassionate providers.

For students with academic or professional interests in the intersections between health and society, the minor offers a collection of perspectives that can inform their future studies and careers. The minor will engage students from all majors who want to better understand the institution and practice of medicine and its position in, effects on, and responses to society.

Students can earn the Medicine and Society minor by completing the two required courses and three additional courses from the approved course list.

The Medicine and Society minor is housed in Premedical Programs.

Required Courses

ANT 336	Topics in Medical Anthropology	3
SOC/SWK 380	Health and Inequality	3

Choose any 3 of the following: ¹ 9

CMM 372	Communication for Health Professionals	
CMM 411	Health Communication	
ENG 366	Health Literacy and Social Justice	
ENG 373	Writing in the Health Professions	
PHL 315	Medical Ethics	
PSY 366	Health Psychology	
REL 367	Christian Ethics & Health Care Issues	
SWK 307	Mental Health Services	
SWK 330	Perspectives on Aging	

SWK 331	Death, Dying and Suicide
VAF 230	Anatomy Drawing for Non-Majors
Total Hours	15

¹ Additional courses may be approved by the Program Director.

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Bachelor of Science, Predentistry

First Year			
Fall	Hours	Spring	Hours
ASI 150		1 BIO 152 & 152L	4
BIO 151 & 151L (CAP Natural Science w/lab)		4 CHM 124 & 124L	4
CHM 123 & 123L		4 MTH 149	3
MTH 148 (Satisfies CAP Mathematics)		3 REL 103 or PHL 103 (CAP Humanities Commons)	3
ENG 100 (CAP Humanities Commons)		3 REL 103 or PHL 103 (CAP Humanities Commons)	3
		15	17

Second Year			
Fall	Hours	Spring	Hours
CHM 313 & 313L		4 CHM 314 & 314L	4
PHY 201 & 201L (CAP Natural Science)		4 PHY 202 & 202L	4
ENG 200 (CAP Writing Seminar)		3 CMM 100 (CAP Communication)	3
SSC 200 (CAP Social Science)		3 Social Science - elective	3
HST 103 (CAP Humanities Commons)		3 MED 299	1
		17	15

Third Year			
Fall	Hours	Spring	Hours
CHM 420 & 420L		4 MED 480 (CAP Capstone)	1
MTH 207, 367, or PSY 216		3 Science elective	3
Science elective		3 Science elective	3
CAP Inquiry / Social Science English elective		3 CAP Arts	3
		3 CAP Practical Ethical Action	3
MED 339 or 276		1 Social Science - elective	3
		17	16

Fourth Year			
Fall	Hours	Spring	Hours
Science elective w/lab		4 Science elective with lab	4

CAP Faith Traditions	3 CAP Integrative	3
CAP Advanced Historical Studies	3 CAP Advanced Philosophy/Religious Studies	3
CAP Advanced Philosophy/Religious Studies	3 CAP Diversity and Social Justice	3
General elective	1 General elective	1
	14	14

Total credit hours: 125

Bachelor of Science, Premedicine

First Year			
Fall	Hours	Spring	Hours
ASI 150		1 BIO 152 & 152L	4
BIO 151 & 151L (CAP Natural Science w/lab)		4 CHM 124 & 124L	4
CHM 123 & 123L		4 MTH 149	3
MTH 148 (Satisfies CAP Mathematics)		3 REL 103 or PHL 103 (CAP Humanities Commons)	3
ENG 100 (CAP Humanities Commons)		3 REL 103 or PHL 103 (CAP Humanities Commons)	3
		15	17

Second Year			
Fall	Hours	Spring	Hours
CHM 313 & 313L		4 CHM 314 & 314L	4
PHY 201 & 201L (CAP Natural Science)		4 PHY 202 & 202L	4
ENG 200 (CAP Writing Seminar)		3 CMM 100 (CAP Communication)	3
SSC 200 (CAP Social Science)		3 Social Science - elective	3
HST 103 (CAP Humanities Commons)		3 MED 299	1
		17	15

Third Year			
Fall	Hours	Spring	Hours
CHM 420 & 420L		4 MED 480 (CAP Capstone)	0-1
MTH 207, 367, or PSY 216		3 Social Science - elective	3
Science elective		3 Science elective	3
CAP Inquiry / Social Science		3 Science elective	3
English elective		3 CAP Arts	3
MED 210, 220, or 339		0-1 CAP Practical Ethical Action	3
		16-17	15-16

Fourth Year			
Fall	Hours	Spring	Hours
Science elective w/lab		4 Science elective with lab	4
CAP Faith Traditions		3 CAP Integrative	3
CAP Advanced Historical Studies		3 CAP Advanced Philosophy/Religious Studies	3
CAP Advanced Philosophy/Religious Studies		3 CAP Diversity and Social Justice	3
General elective		1 General elective	1
		14	14

Total credit hours: 123-125

Courses

MED 210. Premed Community Health Experience. 0-1 Hours

This course focuses on healthcare for under-served populations and provides students with the broader context around social and health inequities. Students meet for class most weeks of the semester and shadow and volunteer at a local medical clinic. Students will learn about the complexities of providing healthcare to under-served populations and develop interpersonal skills to be empathetic and informed advocates for patients. Students must complete some pre-semester requirements. Prerequisites: Sophomore status.

MED 220. Hospital Elder Life Program. 0-1 Hours

This course provides an experiential opportunity to volunteer with the Hospital Elder Life Program at Miami Valley Hospital. HELP is an innovative program designed to improve the hospital experience for older patients. Student volunteers will be trained to carry out bedside interventions and experience a high level of patient contact and responsibility. Students must complete all elements of the pre-semester training program, which includes online modules and a day-long orientation at MVH before the semester begins. Prerequisites: Sophomore status.

MED 230. Community Pre-Dental Experience. 1 Hour

This course focuses on healthcare for under-served populations and provides students with the broader context around social and health inequities. Students meet for class most weeks of the semester and shadow and volunteer at a local dental clinic. Students will learn about the complexities of providing health and dental care to under-served populations and develop interpersonal skills to be empathetic and informed advocates for patients. Students must complete some pre-semester requirements. Prerequisites: Sophomore status.

MED 277. Medical Documentation and Scribing. 2 Hours

This course is intended to orient students to the complexities of documentation in electronic medical record. In addition to learning the basics of documentation, students will be provided an opportunity to practice scribing into a medical record.

MED 299. Sophomore Seminar. 1 Hour

This course will orient students to the career options available for MED/DEN majors, and guide students in planning for matriculation to health professional school. Prerequisite(s): Sophomore status.

MED 309. Medical Terminology for Premeds. 1 Hour

This course will instruct students on the basics of the language of medicine as taught by a practicing family physician. Real-world scenarios and case studies presented from actual clinical practice will enhance the motivated student's ability to learn medical terminology. Skills mastered in this class will remain with the future physician or healthcare worker for the remainder of their career.

MED 339. International Medical Experience. 1 Hour

Exploration of global health issues in preparation for an international experience with a partnering organization. Students must apply through the Center for International Programs and comply with requirements specific to the travel location and partnering organization.

MED 351. Healthy Children: Addressing Social Needs to Improve Health Outcomes. 1 Hour

Examination of the social needs of pediatric patients and families' social needs that most affect children's health. Will include methods of helping families connect with community resources that can assist in meeting these needs. Prerequisite(s): Sophomore Standing, basic orientation to healthcare or human service industries.

MED 401. Global Regulatory and Legal Framework of Quality in Industry and Business. 3 Hours

This course will provide an overview of regulations for the pharmaceutical, medical device, biotech, animal health, and consumer goods industries. Students will be introduced to fundamental concepts in the regulations related to clinical trial development, management, ethics, data integrity, data security, privacy, change control and validation.

MED 402. Product Development and Validation in Life Sciences. 3 Hours

This course will give students an understanding of the processes used in the pharmaceutical, medical device, and pharmaceutical industries for the development of new products. Students will learn the scientific principles used in such developments that ensure that products meet quality standards. Prerequisites: MED 401.

MED 403. Risk and Failure Analysis in Quality Science. 3 Hours

Through the use of historical risk analysis techniques, such as FMEA, Fault Tree, and 5 Why's, students will analyze a holistic set of data (in-production, across product lines, across equipment, human variability, on-market, on-stability, validation studies, change control, etc.) and identify effective corrective and preventative actions (CAPA). Prerequisites: MED 401.

MED 477. Honors Thesis Project. 3 Hours

First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and department chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons. Prerequisite(s): Approval of University Honors Program.

MED 478. Honors Thesis Project. 3 Hours

Second of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and department chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons. Prerequisite(s): Approved 477; approval of University Honors Program.

MED 480. Pre-Medicine Capstone. 0-1 Hours

Seminar focuses on reflection and analysis of a clinical experience course, and preparation for applying to health professional school. Course offered in Spring semester. Junior or Senior status. MED or DEN major. Prerequisites: MED 210 or MED 220 or MED 230 or MED 339.