Submitted to the Members of the Faculty Senate on April 23, 2021

From: Dr. Todd Vanderah, Professor and Head, Department of Pharmacology
Re: Proposed BS in Medicine

Summary of Activities and Changes to Proposed BS in Medicine Following the April 5, 2021 Senate Meeting:

1. I made changes to some of the required courses (added MCAT/Med School course requirements). I investigated 28 medical schools in the West to Midwest as well as the MCAT requirements on the Excel sheet [enclosed]. I also included the BS in Medicine courses and highlighted in yellow what may (or may not) be needed.

2. I worked intensely on looking up job qualifications using websites like Indeed.com, and investigated the US Bureau of Labor Statistics, etc. to find out what type of medical jobs require a BS/BS degree, qualifications, growth of these jobs and starting pay. I am continuing to build this as it will be useful for our students if the BS in Medicine is approved.

3. I met with the majority of those who wrote letters of opposition to work on mitigating issues and in some cases came to resolution but in other cases, we were unable to come to a full agreement. For example, several faculty asked that we simply propose a minor (and not a BS degree) to see how well this would be accepted and offer "good working relationships with other programs". I have brought this idea to our team and administration and there was an overall vote of No - we would like to continue to pursue a BS in Medicine Program.

4. I recruited a medical (physician) faculty member from our team — Dr. Paul Gordon —to be a spokesperson(s) for the BS in Medicine program. Practicing physicians are better able to explain the differences and advantages that the BS in Medicine Program can offer.

5. I requested changing the name of the program to Medical Science and this was voted down. I had Administration in the Provost's Office look into the Legalities of the CIP code and the name BS in Medicine as being a legal name for this program as well.

Thanks,
Todd

Todd W. Vanderah
Professor and Head
Department of Pharmacology
Co-Director of the MD/PhD Program
Director of the Comprehensive Pain and Addiction Center

University of Arizona, COM

MCAT recommendations

Gen Chem	labs	2 semester
Organic chem/Biochem	labs	2 semester
Biology	labs	2 semester
Physicis	labs	2 semester
Cell bio/MCB		2 semester
Anatomy/Physiology		2 semester
Statistics		1 semester
Sociology		1 semester
Psychology		1 semester

Premedical School Requirements

UofA COM-T

Physiology	2 semester
Biochemistry/genetics	2 semester
Social & Behavioral Sciences	1 semester
Statistics	1 semester
Upper- MCB, Cell Bio, Micro, Path, Pharm, Immuno	2 semester
English	2 semester

UofA COM-P

Physiology	1 semester
MCB, Cell Bio	2 semester
Biochemistry	1 semester
Chem	1 semester
Social & Behavioral Sciences	2 semester
Statistics	1 semester
English	2 semester
Humanitites	1 semester

Univ of New Mexico

Biology + Lab	2 semester
Chemistry + Lab	2 semester
Organic Chemistry + Lab	2 semester
Biochemistry	1 semester
Physics	2 semester

Univ of Colorado

Physiology	2 semester
Chemistry	2 semester
Organic Chem	1 semester
Biochemistry/genetics	2 semester
Social & Behavioral Sciences	1 semester

Statistics	1 semester
MCB, Cell Bio	2 semester
Physics	2 semester

Univ of Las Vegas

Biology + Lab	2 semester course/1 seme
MCB, Cell Bio	1 semester
Biochemistry	1 semester
Social & Behavioral Sciences	1 semester

University of Nevada Reno SOM

Biology + Lab	2 semester
Chemistry + Lab	2 semester
Organic Chemistry + Lab	2 semester
Biochemistry	1 semester
Physics	2 semester
MCB/Cell Bio/Genetics	2 semesters
Psychology	1 semester

Oregon State Univ

Biology	2 semester
Chemistry	2 semester
Organic Chem	2 semester
Physics	2 semester

Oregon Health Sciences Univ

Biology	2 semester
Chemistry	2 semester
Organic Chem/Biochem	1 semester
MCB/Micro + Lab	1 semester
Psychology	1 semester
Statistics	1 semester

Univ of Washington

Biology	2 semester
Chemistry	2 semester
Organic Chem/Biochem	1 semester
MCB	1 semester
Psychology	1 semester
Statistics	1 semester
Sociology	1 semester
Humanities/english	2 semester
Physics	2 semester

Washington State Univ

Biology	2 semester
Chemistry	2 semester
Organic Chem	2 semester
Cell Bio/Genetics	1 semester
MicroBio + Lab	1 semester
Biochemistry	1 semester
Physics	2 semester

UCLA

Physiology
Biology/genetics
MCB, Cell Bio,
Chem + Labs
Biochemistry
Physics + Lab
Social & Behavioral Sciences
Statistics

USC

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + Labs	2 semester
Physics + Labs	2 semester
English	2 semester

UCSF

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + Labs	2 semester
Physics + Labs	2 semester
Biochemistry	1 semester

UC San Diego

Biology + labs	2 semester
Chemistry + labs	2 semester
Organic Chemistry + labs	2 semester
Physics + labs	2 semester
Biochemistry	1 semester
Stats or Calculus	2 semester

Stanford

Biology/Biochem
MCB, Cell Bio,
Chem + Labs
Physics + Labs
Social & Behavioral Sciences
Statistics
English

Univ. of Texas

Biology + labs	2 semester
Cell Bio/MCB	2 semester
Chemistry + labs	2 semester
Organic Chem + labs	1 semester
Biochem	1 semester
Physics + labs	2 semester
Statistics	1 semester
English	2 semester

Texas A&M

Biology + labs	2 semester
Cell Bio/MCB	2 semester
Chemistry + labs	2 semester
Organic Chem + labs	2 semester
Biochem	1 semester
Physics + labs	2 semester
Statistics	1 semester
English	2 semester

Kansas Univ

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + Lab	2 semester
Physics + Labs	2 semester
English	2 semester

Mayo Clinic (Alix School of Med) Scottsdale

Applicants to Mayo Clinic Alix School of Medicine must be on track to earn a ba
Successful candidates will have a strong background in the life sciences and soc
but as of the 2020-2021 admissions season, Mayo Clinic Alix School of Medicine

California Northstate University

Biology + Labs	2 semester
Chemistry + Labs	2 semester

Organic Chemistry + Lab	2 semester
Physics + Labs	2 semester
English	2 semester
Statistics/math	2 semester
Biochemistry	1 semester

California University of Science and Medicine

Biology + Labs	2 semester
Chemistry/Biochem	2 semester
Physics + Labs	2 semester
English	2 semester
Statistics/math	2 semester

Loma Linda University School of Medicine

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + Lab	2 semester
Physics + Labs	2 semester
Biochemistry	1 semester

UC Davis School of Medicne

Biology	2 semester
Chemistry	2 semester
Organic Chemistry/Biochem	2 semester
Physics	2 semester
labs encouraged	

UC Irvine School of Medicne

Biology	3 semester
Chemistry	2 semester
Organic Chemistry/Biochem	2 semester
Physics	2 semester
labs encouraged	

University of Hawaii SOM

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + Lab	2 semester
Physics + Labs	2 semester
Biochemistry	1 semester
MCB	1 semester

South Dakota Sanford SOM

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + lab	1 semester
Physics + Labs	2 semester
Biochemistry	1 semester
Stats/Math	2 semester

University of North Dakota SOM

We do not have required prerequisite coursework.
Understanding of the natural science underpinnings of biomedical sciences incl
An understanding of foundational concepts of psychology, sociology, and beha

University of Utah

Biology + Labs	2 semester
Chemistry + Labs	2 semester
Organic Chemistry + Lab	2 semester
Physics + Labs	2 semester
Biochemistry	1 semester
MCB	1 semester
Stats	1 semester

BS in Medicine Proposal Requires:

ENGL 101 or 107 (3)
ENGL 102 or 108 (3)

2 courses/ 6 units- Tier I 150 (INDV)
2 courses/ 6 units-Tier I 160 (TRAD)
1 course/ 3 units-Tier II **Arts**
1 course/ 3 units-Tier II **Humanities**
1 course/ 3 units-Tier II **Individuals and Societies**

MATH 163 Basic Statistics (3 units). OR MATH 263, SBS 200, BME 376, AREC 239

CHEM 141 and 143/145 or CHEM 151 or General Chemistry I (4 units);
CHEM 142 and 144/146 or CHEM 152 or General Chemistry II (4 units);
CHEM 241A and 243A Organic Chemistry I and Lab (4 units); NOTE - for so
BIOC 384 Foundations in Biochem ***OR*** BIOC 385 Metabolic Biochemistry (3 units);

PHYS 141/142 Physics I and Lab (4 units);
PHYS 241/242 Physics II and Lab (4 units);

MCB 181R & L Introduction to Biology & Lab/ ECOL 181R & L (4 units)
ECOL 182 Introductory Biology II (4 units)

PSIO 201 Human Anatomy and Physiology I and Lab (4 units);
PSIO 202 Human Anatomy and Physiology II and Lab (4 units);

PSYC 101 Introduction to Psychology (3 units)
SOC 101: Introduction to Sociology (3 units)

MED 101 Introduction to Medical Care (2 units)
FCM 201 Being a Healthcare Professional (3 units)
FCM 296 Seminar- Careers in Medical-Health Sciences (2 unit)
CMM 459 & 461 Clinical Reasoning and Medical Case Based Learning (2 units)
CMM 410 Human Histology: An Intro to Pathology (3 units) OR equivalent Histology, CMM 43
PSIO 467 Endocrine Physiology (3 units)
IMB 401 Medical Microbiology & Immunology (4 units), OR PSIO 431 Physiology of the Imm
MED 441 Introduction to Medical Devices and Their Utilization (3 units)
MED 401 Medical Ethics and Professionalism (3 units), OR PSIO 411 Scientific Methods and
PHCL 412 Intro to Pharmacology (3 units), OR PCOL 406 Comprehensive Human Pharmacolc
PATH 415 Mechanisms of Human Diseases (3 units)
FCM 496D Disability Perspectives in Research, Policy, and Practice (3 units)

Professional Ethics, OR MED/PHIL 321 Medical Ethics (3 units)

THE UNIVERSITY OF ARIZONA

NEW ACADEMIC PROGRAM-UNDERGRADUATE MAJOR
ADDITIONAL INFORMATION FORM

I. MAJOR DESCRIPTION -provide a marketing/promotional description for the proposed program. Include the purpose, nature, and highlights of the curriculum, faculty expertise, emphases (sub-plans; if any), etc. The description will be displayed on the advisement report(s), Degree Search, and should match departmental and college websites, handouts, promotional materials, etc.

Bachelor of Science in Medicine~~ine~~ (CIP CODE – 51.1199~~51.0000~~, College of Medicine)
The Bachelor of Science in Medicine is a four-year degree program designed and delivered as a collaboration between clinicians, basic scientists and humanists, with focus on clinical reasoning and case-based learning. The program juxtaposes applied topics such as what it is to be a health care provider, clinical case analysis, medical ethics, professionalism, health care delivery to improve quality care, and hands-on experience through simulation, with topics in the human medical sciences, including advanced anatomical, biochemical, neurological, and physiological science, pathology of disease, mechanisms of treatment, and integrative therapies. This degree does not allow licensure to practice medicine.

Understanding and integrating medical technology in healthcare practice is critical in the future of health care and is included in the degree program as an area of emphasis. The degree is designed to provide students with opportunities to learn about the application of personal medical devices in cutting-edge medical/healthcare research as well as educate students on the effective use of medical devices and biomedical data to evaluate disease presentations and/or disease risk factors and help understand therapy options.

The BS in Medicine is a multi-disciplinary degree program involving collaboration with UArizona programs in Engineering, Life Sciences, Applied Sciences and Technology, Social and Behavioral Sciences, Humanities, Nutritional Sciences, Nursing, Pharmacy and Public Health. The program provides a broad range of electives for in-depth study, including in biomedical engineering, bioinformatics, emergency medicine, aging in medicine, medical ethics, integrative medicine, history of medicine, and climate change as a factor in medical care.

Faculty involved in design and oversight of the program are clinicians and basic scientists who contribute significantly to professional health science programs at UArizona, especially Medicine. This faculty expertise insures that the BS in Medicine is and will remain carefully tailored to meet the needs of students seeking entry into professional healthcare programs and/or careers in allied health. Guided by the aforementioned faculty, students in the BS in Medicine program will develop knowledge and clinical reasoning skills useful in understanding their own health as well as in counseling and caring for others. Students will learn the use of

technological devices and virtual/telemedicine as healthcare tools as well as the medical content knowledge, and the hands-on skills using simulation and shadowing to prepare for the many and diverse health care jobs/careers available.

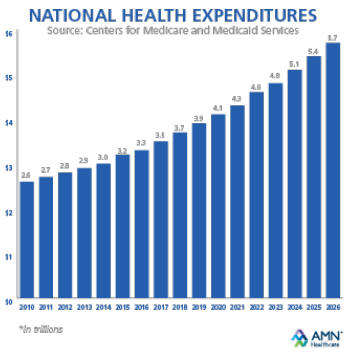
The purpose of the program is to advance student knowledge of human diseases/disorders, treatments, patient-professional interactions, clinical reasoning, medical health technology and cutting-edge research in medicine/health care. Students who graduate from the program will be well-prepared to: 1) enter careers directly in health care support positions; or 2) enter advanced degree programs in Human Medical and Health Sciences (i.e., medicine, nursing, nurse anesthetist, physical/occupational therapy, pharmacy, public health, physician assistant, clinical research, basic science research/tech, hospital lab tech, industry, etc.); or 3) become familiar with the basic science of human medicine as supportive to alternative careers (i.e., medical marketing, medical technology, medical law, biomedical engineering, medical business, medical administration, etc.). Yet, completion of this degree does not include licensure to practice medicine.

II. **NEED FOR THE MAJOR/JUSTIFICATION**-describe how the major fulfills the needs of the city, state, region, and nation. Provide market analysis data or other tangible evidence of the need for and interest in the proposed major (and emphases, if applicable). This might include results from surveys of current students, alumni, and/or employers or reference to student enrollments in similar programs in the state or region. Include an assessment of the employment opportunities for graduates of the program for the next three years. Curricular Affairs can provide a job posting/demand report by skills obtained/outcomes/CIP code of the proposed major. Please contact the Office of Curricular Affairs to request the report for your proposal.

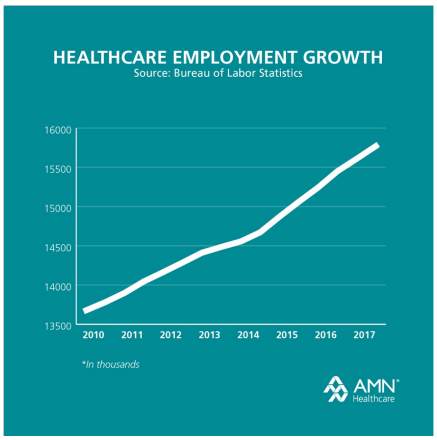
United States;

Healthcare consumes nearly one-fifth of the US economy with projections of job growth at >30% for the next 10 to 20 years[1]. A powerful signal of rising demand for healthcare services and healthcare workers is how much money is projected to be spent on healthcare in the future. From 2010 to 2026 the amount spent on healthcare is projected to double reaching beyond $5.7 trillion[1]. Expenditures include payments for all healthcare costs, including pharmaceuticals, equipment and technology.

Expenditures will rise for many reasons, but growing demand for the services of healthcare workers is a of the greatest significance.



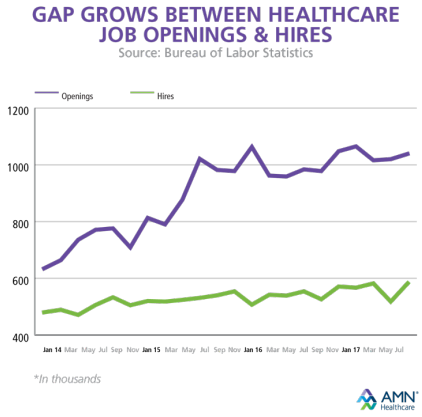
Employment growth in the healthcare sector has been expanding since the end of the recession and continues to expand month over month according to the US Bureau of Labor Statistics Current Employment Statistics[1,2]. Reports indicate healthcare job growth has been robust and graduates of our rigorous and relevant program will be in high demand, representing a specific and desired talent in the medical health care sector[2].



The need for well-trained healthcare professionals no doubt corresponds with larger demographic and population trends. Specifically, the aging of the US population will place greater demands on healthcare systems and services. By 2030 there will be 72 million elderly in the US, about 19% of the population[1,2].

State of AZ:

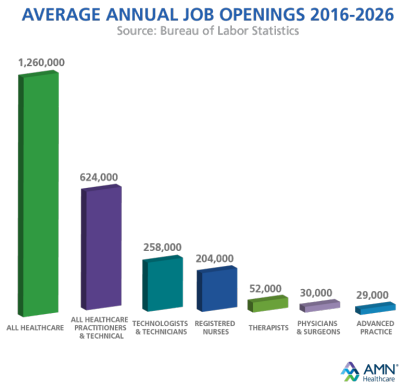
The state of Arizona is not insulated from the aforementioned trends and specific needs must be met in order to train, retain and grow the healthcare workforce within the state. Strategies to meet the growing demands include: increasing the number of health professions students and trainees that practice in Arizona after graduation through scholarships, loan repayment, tuition remission, and tax credits; recruiting licensed health professionals from other states and countries; enhancing the efficiency of care delivery through integration and inter- professional team based care; retaining the existing workforce – through retention incentives[3,4,5].



Alignment with UArizona Strategic Plan

The BS in Medicine aligns with the University of Arizona strategic plan, specifically, Pillar II: Grand Challenges and aims to leverage 4th Industrial Revolution advancements and tackle critical problems at the edge of human endeavor. Students who complete this degree program can go on to confront pressing health and wellness challenges in our communities through interdisciplinary collaboration. Students will be prepared to bring wellbeing and the use of medical device technology to communities, improving health and quality of life. *This degree has*

a strong focus on what it takes to become a health care provider, how to use medical information to create pathways for future medical care, medical science-based reasoning, healthcare management, medical technology, medical devices, medical supplies manufacturing, machine learning, medical/health informatics and environmental influences on health and medical care. Students educated in use of medical devices and the science of "bio-medical data" will be in high demand and can help to build a workforce capable of addressing grand challenges related to disease prevention and wellness.



A BS in Medicine will allow students to directly enter into the workforce including:

~~Healthcare Providers at nursing homes *(33% projected growth by 2026),*~~
~~Home Health Aides *(70% projected growth by 2026);*~~
~~Personal Care Aides *(32% projected growth by 2026);*~~
~~Physical Therapist Aides *(32% projected growth by 2026);*~~
~~Occupational Therapy Assistants *(22% projected growth by 2026);*~~
~~Phlebotomists *(20% projected growth by 2026);*~~ Health Care in Artificial Intelligence (1,858 jobs posted in Indeed.com)
Worldwide Healthcare Business Development *(Salary 122,300/year, Experience in the Healthcare Industry, good understanding of how the healthcare industry (both provider and payer) operates and the unique characteristics of the industry ecosystem. Advanced research experience and understanding of clinical genomics is a plus. Education in health/medical sciences preferred)*
Health Care Sales Rep *(1+ years of experience selling technology to Healthcare customers - BA/BS degree or equivalent work experience required)*
Health Administration-Health Care Management; *(BA/BS degree required)*
Director of Global Clinical Intelligence *(BA/BS degree required)*
Health Research and Development Contractor *(BA/BS degree required)*
Health Information Technologist; *(BA/BS degree required for some positions + Experience required for some positions)(salary ranges from $55,260-$109,000) (Projected 10-year growth: 13%)*

- Systems analyst
- Consultant
- Product architect
- Programmer analyst
- Software developer
- Software engineer
- Chief security officer
- Chief technology officer

Medical Technologist; *Projected 10-year growth: 23% (BA/BS degree required) Salary $76,000-86,000/year*
Medical Research Analyst *(BA/BS degree required)(salary varies based on experience -4 levels are available)*

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Medical Marketing Specialist *(BA/BS degree or equivalent work experience required)*
Medical Program Coordinator *(BA/BS degree or equivalent work experience required)*
Clinical Study Analyst *(Bachelor's degree in a health-related field or an equivalent combination of education and experience with preference to an advanced degree)*

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Tables for income based on the US Bureau of Labor Statistics (https://www.bls.gov/ncs/ocs/sp/nctb0750.pdf)

***A BS in Medicine along with advanced certification and/or a Master's degree will allow students to enter the following careers*:**
Physician Assistants (*31~~40~~% projected growth by 203~~0~~26*)(Median pay $112,260 annual)~~;~~
Licensed Practical and Vocational Nurses (LPN & LVN) *(37% projected growth by 2026)*;
Physical Therapist Assistants (*~~43~~0% projected growth by 2026*)(Median pay $52,000 annual);
Medical Assistant s(*28% projected growth by 2026*);
Operations Research Analysts (*25% projected growth by 2026)*;
Health Specialties Teachers–Postsecondary (*22% projected growth by 2026);*
Occupational Therapists *(25% projected growth by 2026);*
Perfusionist and Echo Technician;
Radiation Therapist/Technologist;
Radiologic and MRI Technologists;
Medical Device Technologist;
Pharmacy Technician Certificate;
Surgical Technologists;
Massage Therapists;
Medical Records and Health Information Technicians;
Dental Assistant;
Nuclear Medicine Technologist;
Dental Hygienists;
Diagnostics Medical Sonographers and Cardiovascular Technologists and Technicians;
Medical and Clinical Laboratory Technologists and Technicians;
Speech Therapy
Respiratory Therapy
Emergency Medical Training
Paramedics

***A BS in Medicine along with advanced doctoral degree and licensure will allow students to enter into careers such as*:**
Physical Therapists (DPT); *(18% projected growth by 2030)*~~-~~(Median pay $89,440 annual);

Medical Physician (MD or DO),
Professor (PhD),
Pharmacists (PharmD),

Dentist (DDS),
Podiatrist (DPM),
Optometrist (OD),
Nurse Practitioners (RN) *(41% projected growth by 2026) and* (DNP)
Nurse Anesthetists,
Nurse Midwives,

By partnering with other Colleges, BS in med opens up opportunities in careers like:
Environmental Law and Policy.
Public Administration.
Clinical Research.
Nonprofit Leader
Global Health Non-Profit Leader
Medical/Health Care and Business
Medical/Health Care and Cyber Security
The College of Medicine will be creating a unique "admittance to medical school from high school" for select students to encourage top high school performers in the State of AZ as well as Students with a diverse background to attend the UofA COM. The College of Medicine has created a unique "Accelerated Pathway to Medical Education, APME" which is a 7 year program for select high school students nationwide.
https://medicine.arizona.edu/admissions/accelerated-pathway-medical-education-apme
The BS in Medicine is one program that would be available for students.

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References:

1. Future of Healthcare Jobs. Healthcare News. *AMN Healthcare. Retrieved from:*
2. Current Employment Statistics (CES) National. *United States Bureau of Labor Statistics.* Retrieved from bls.gov/ces.
3. *Tabor JA, Jennings N, Kohler L, Degan B, Derksen D, Campos-Outcalt D, Eng HJ. The Supply of Physician Assistants, Nurse Practitioners, and Certified Nurse Midwives in Arizona: Arizona Area Health Education Centers and Center for Rural Health, University of Arizona, Tucson, 2014;138; . ;*
4. *Tabor JA, Eng HJ. Arizona Rural Health Workforce Trend Analysis 2007-2010. Tucson: Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona, 2012; http://crh.arizona.edu/sites/crh.arizona.edu/files/u25/AZ_Workforce_Trend_Analysis_2007-_10_0.pdf.*
5. *Tabor JA, Jennings N, Kohler L, Degan B, Derksen D, Campos-Outcalt D, Eng HJ. Safety Net Health Care in Arizona 2015. Tucson (AZ): Arizona Area Health Education Centers and Center for Rural Health, University of Arizona, Tucson, 2016; 36.*

III. MAJOR REQUIREMENTS– complete the table below by listing the major requirements, including required number of units, required core, electives, and any special requirements, including emphases* (sub-plans), thesis, internships, etc. Note: information in this section must be consistent throughout the proposal documents (comparison charts, four year plan, curricular/assessment map, etc.). Delete the EXAMPLE column before submitting/uploading. Complete the table in Appendix A if requesting a corresponding minor.

Total units required to complete the degree	120~~0~~

Upper-division units required to complete the degree	42
Foundation courses	
Second language	*Second Semester Proficiency*
Math	Moderate Math Strand
English	*(3-6 units)* ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H (3)
General education requirements	*General Education: (21 units)* 2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies *NOTE Students pursuing the MCAT will be informed in taking Psychology and Sociology course work and a degree road map will be provided*
~~**Pre-major? (Yes/No). If yes, provide requirements. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.**~~	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None
Major requirements	
Minimum # of units required in the major (units counting towards major units and major GPA)	93~~52~~
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	40~~7~~ *(300 & 400 level courses)*
Minimum # of residency units to be completed in the major	18~~18~~
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include prefix, number, units, and title. Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*Statistics Requirement (3 units)* Choose one: MATH 163 Basic Statistics (3 units) MATH 263 Introduction to Statistics and Biostatistics (3 units) SBS 200 Introduction to Statistics for the Social Sciences (4 units) BME 376: Biomedical Statistics (3 units) AREC 239 Introduction to Statistics and Data Analysis (4 units) *General Sciences: (~~33~~90 units)* CHEM 141 and 143/145 or CHEM 151 or General Chemistry I (4 units);

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	CHEM 142 and 144/146 or CHEM 152 or General Chemistry II (4 units); ~~PHYS 102/198 or~~ PHYS 141/142 Physics I and Lab (4 units); PHYS 241/242 Physics II and Lab (4 units); CHEM 241A and 243A Organic Chemistry I and Lab (4 units); BIOC 384 Foundations in Biochem ***OR*** BIOC 385 Metabolic Biochemistry (3 units); MCB 181R & L Introduction to Biology & Lab/ ECOL 181R & L (~~43~~ units) ECOL 182 Introductory Biology II (4 units) PSIO 201 Human Anatomy and Physiology I and Lab (4 units); PSIO 202 Human Anatomy and Physiology II and Lab (4 units);
Major requirements. List all major requirements including core and electives. If applicable, list the emphasis requirements for each proposed emphasis*. Courses listed count towards major units and major GPA. Courses listed must include prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*Major Core: (~~3333~~ units)* MED 101 Introduction to Medical Care (2 units) FCM 201 Being a Healthcare Professional (3 units) FCM 296 Seminar- Careers in Medical-Health Sciences (2 unit) CMM 459 & 461 Clinical Reasoning and Medical Case Based Learning (2 units) CMM 410 Human Histology: An Intro to Pathology (3 units) ***OR*** equivalent Histology, CMM 437, and 438 and 439 (1 unit each) PSIO 467 Endocrine Physiology (3 units) IMB 401 Medical Microbiology & Immunology (4 units) ***OR*** PSIO 431 Physiology of the Immune System (3 units) MED 441 Introduction to Medical Devices and Their Utilization (3 units) MED 401 Medical Ethics and Professionalism (3 units) ***OR*** PSIO 411 Scientific Methods and Professional Ethics ***OR*** MED/PHIL 321 Medical Ethics (3 units) PHCL 412 Intro to Pharmacology (3 units) ***OR*** PCOL 406 Comprehensive Human Pharmacology (5 units) PATH 415 Mechanisms of Human Diseases (3 units) FCM 496D Disability Perspectives in Research, Policy, and Practice (3 units) *Major Elective Areas: (1~~89~~ units)- Emphases intended to assist in advising students* **Emphases 1**- Medical Technology; BME 477 Introduction to Bioinformatics (*instru consent rqd*) (3 units) BME 486 Biomaterial-Tissue Interactions PHCL 386 Intro to Tech Transfer in Medicine (3 units) CSC 250 Essential Computing for the Sciences CMM 441: Brightfield Microscopy (1 unit) CMM 446: Fluorescence Microscopy (1 unit) CMM 442: Fundamentals of Digital Imaging (1 unit) LAW 476A – Drug Discovery, Development, and Innovation to Reach the Marketplace (3 units) BME 4** Technology and Big Data in Individualized Care (3 units) SURG 401 Virtual Medical Care Training & Education in the Digital Age (2 units) FCM 4** Clinical Application of Medical Technology (3 units) **Emphases 2**- Basic Medical Sciences;

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	SOC 101: Intro to Sociology (3 units) *recommended for MCAT* PSYC 101 Intro to Psychology (3 units) *recommended for MCAT* CHEM 241B and 243B Organic Chemistry I and Lab (4 units) *recommended for some Medical Schools* BIOC 466 Biochemistry of Nucleic Acids CMM 401 Gross Anatomy (Summer course only) (4 units) CMM 437 Immunology Basics (1 unit) IMB 467 Cancer Immunology and Immunotherapy (3 units) IMB 465 Principles and Molecular Mechanisms of Microbe-Host Interactions (3 units) CMM 427 Pathophysiology Basics (1 unit) CMM 428 Pathophysiology of Integumentary, Respiratory & Digestive Systems (1 unit) CMM 429 Pathophysiology of Urogenital and Endocrine Systems (1 unit) CMM 404 Cell Biology of Disease (3 units) PHCL 445 Drugs of Abuse (3 units) PHCL 430 Pain (2 units) PHCL 444 Human Neurobiology Basics (1 unit) PHCL 331 Controversies in Pharmacology (3 units) PSIO 427 Metabolism and Disease (3 units) PSIO 450 Respiratory Physiology (3 units) PSIO 452 Digestive Physiology (3 units) PSIO 465 Systems Neurophysiology (3 units) PSIO 469 Human Reproductive Physiology (3 units) PSIO 485 Cardiovascular Physiology (3 units) PSIO 487 Physiology of Aging (3 units) PHCL 442 Human Performance Pharmacology (3 units) PCOL 410 Pharmacogenomics and Precision Medicine (3 units) PCOL 305 Drug Approval: The 3 Billion Dollar Bet (2 units) PCOL 355 Drug Delivery Systems (3 units) PCOL 350 ADME: How the Body Changes Drugs (3 units) CMM 444-6: Medical Embryology (1-3 units) New IMB 402 Medical Microbiology Basics (1 unit) New IMB 404 Medical Virology Basics (1 unit) MCB 301 Molecular Basis of Life (4 units) MCB 304 Molecular Genetics (4 units) **Emphases 3**-Medicine and Society; PHPM 310 Health Care in the U.S. (3 units) LAW 452 Health Law (3 units) LAW 478A - Legal and Regulatory Aspects of Healthcare Delivery (3 units) LAW 480A - Liability and Regulation of Healthcare Professionals (3 units) EHS 425-A Public Health Lens to Climate Change (3 units) FCM 496E Introduction to Population Health Management (3 units) PHPM 310 Health Care in the US" (3 units) FCM 302 Clinical Health Disparities in Sexual and Gender Minority (SGM) Populations (3 units) FCM 402/502 Addressing Health Disparities through Interprofessional Clinical-Community Collaboration (3 units) MED 218 The History of Medicine (3 units)

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	HIST 373 Politics of Health and Medicine in the Americas: From Historical Roots to Contemporary Development (3 units) MED 319 The History of Medical Technology (2 units) MED 3** Parallel History of Medicine and Law (3 units) CMM 479 Art of Scientific Discovery (1 unit) HPS 433 Global Health (3 units) EHS 439A Outbreaks and Environmental Microbiology: Then to Now (3 units) EHS 420 Environmentally Acquired Illnesses (3 units) HIST 311 History of Epidemics (3 units)- Cross list as MED 311 HNRS 305 Narrative Medicine and Healthcare (3 units) **Emphases 4**- Integrative and Practice-Focused Medicine FCM 301 Substance Misuse in Maternal and Child Health Populations (3 units) FCM 496A Advancements in Substance Misuse Research and Clinical Care Seminar (2 units) PSIO 497A Physiology of Mind-Body Interactions (3 units) IHM 401/501 Integrated Health & Medicine Foundation: Mind-Body-Spirit: Addressing Stress & Mental Health (1 unit) FCM 424/524 Arts and Community Health Intercultural Perspectives and Applications Parts I-III (1-3 units) FCM 303 Difficult Conversations in Patient Care: The Art of Empathy (1 unit) EMD 197 – Emergency Medical Technician (4 units) EMD 350 – Advanced Emergency Medical Services Systems (3 units) NSC 2** Fundamentals of Precision Nutrition and Wellness (3 units) PHP 205 - Fundamentals of Telehealth (3 units) NSC 310 Principles of Human Nutrition in Health and Disease (3 units) AIS/MAS/MED 435 Mexican Traditional Medicine: An Overview of Indigenous Curing Cultures (3 units) MED 301 Healthcare Professional Well-being (1 unit)
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	*Optional working towards required (to be phased in)* New MED 4** Clinical Applications of Medical Technology (2 units)(Marv Slepian & Vignesh Subbian) FCM 498 Community Health Field Training Experience (2 units) New PATH 4** Clinical Skills (path, pharm, phlebotomy, EKG, imaging, etc.) (2 units) (Mark Nelson) New FCM 4** Reflections on Clinical Medicine through Clinical Shadowing (Karyn Kohlman) New FCM/COPH 4** Community Health Field Training Experience (Ben Brady, Bridget Murphy, Ron Sorenson)
Senior thesis or senior project required (Yes/No). If yes, provide description.	No
Additional requirements (provide description)	No
Minor (specify if optional or required)	Optional
Any double-dipping restrictions (Yes/No)? If yes, provide description.	Yes, major core courses not permitted to double-dip. Supporting coursework may double dip with other majors

*Emphases are officially recognized sub-specializations within the discipline. ABOR Policy 2-221 c. Academic Degree Programs Subspecializations requires all undergraduate emphases within a major to share at least 40% curricular commonality across emphases (known as “major core”). Total units required for each emphasis must be equal. Proposed emphases having similar curriculum with other plans (within department, college, or university) may require completion of an additional comparison chart. Complete the table found in Appendix B to indicate if emphases should be printed on student transcripts and diplomas.

IV. CURRENT COURSES–using the table below, list all existing courses included in the proposed major. You can find information to complete the table using the UA course catalog or Uanalytics (Catalog and Schedule Dashboard "Printable Course Descriptions by Department" On Demand Report; right side of screen). If the courses listed belong to a department that is not a signed party to this implementation request, upload the department head's permission to include the courses in the proposed program and information regarding accessibility to and frequency of offerings for the course(s). Upload letters of support/emails from department heads to the "Letter(s) of Support" field on the Uaccess workflow form. Add rows to the table, as needed.

Course prefix and number (include cross-listings)	**Units**	**Title**	**Course Description**	**Pre-requisites**	**Modes of delivery (online, in-person, hybrid)**	**Typically Offered (F, W, Sp, Su)**	**Dept signed party to proposal? (Yes/ No)**
MATH 163 Equivalent to: (DATA 361, DATA 363, MATH 160, MATH 160-CC, MATH 163-CC, MATH 263, MATH 263-CC, MATH 361, MATH 363)	3	Basic Statistics	Organizing data: displaying distributions, measures of center, measures of spread, scatterplots, correlation, regression, and their interpretation. Design of experiments: simple random samples and their sampling distribution, models from probability, normal distributions, and normal approximations. Statistical inference: confidence intervals and hypothesis testing, t procedures and chi-square tests. Not intended for those who plan further studies in statistics. Except as per University policy on repeating a course, credit will not be given for this course if the student has credit in a higher level math course. Such students may be dropped from the course. Examinations are proctored.	PPL 60+ or MCLG 88+ or SAT I MSS 640+ or ACT MATH 26+ or one recent course from MATH 108, 112, 113, 116, 119A, 122B, or 125.	In-person	F, Sp	Y
MCB 181R Equivalent to: (BIOC 181R, ECOL	3	Introduction to Biology	Introduction to biology covers fundamental principles in molecular and cellular biology and basic genetics. Emphasis is placed on biological function at the molecular level, with a focus on the structure and regulation of genes, the	PPL 40+ or SAT I MSS 560+ or ACT MATH 24+ or one course from Math 108, 112, 113, 119A, 120R, 124,	In-person, online	F, Sp, Su	

181R, MCB 184, MCB 315, MIC 181R)			structure and synthesis of proteins, how these molecules are integrated into cells, and how these cells are integrated into multicellular systems. Examples stem from current research in bacteria, plants, and animals (including humans) in the areas of cell biology, genetics, molecular medicine and immunology.	122B, 125, 129, or 223.			
MATH 263 Equivalent to: DATA 361, DATA 363, MATH 160, MATH 160-CC, MATH 163, MATH 163-CC, MATH 263-CC, MATH 361, MATH 363		Introduction to Statistics and Biostatistics	Organizing data; distributions, measures of center and spread, scatterplots, nonlinear models and transformations, correlation, regression. Design of experiments: models from probability, discrete and continuous random variables, normal distributions, sampling distributions, the central limit theorem. Statistical inference; confidence intervals and test of significance, t procedures, inference for count data, two-way tables and chi-square procedures, inference for regression, analysis of variance. Examinations are proctored	PPL 60+ or MCLG 88+ or SAT I MSS 640+ or ACT MATH 26+ or one recent course from MATH 108, 112, 113, 116, 119A, 122B, or 125	In-person online (iCourse)	F, Sp, Su	Y
CHEM 141 and 143/145 or CHEM 151	4	General Chemistry I	Separate lab and lecture, both offered in-person and online (CHEM 141 and 143/145). There is also an in-person only integrated lecture-lab course. Both sequences are designed to develop a basic understanding of the central principles of chemistry	Credit is allowed for only one of these lecture/lab combinations: CHEM 105/106A, CHEM 141/143, CHEM 151 or CHEM 161/163.	In-person, online	F, Sp, Su	Y
CHEM 142 and 144/146 or CHEM 152	4	General Chemistry II	Separate lab and lecture, both offered in-person and online (CHEM 142 and 144/146). There is also an in-person only integrated lecture-lab course. Both sequences are continuations and designed to develop a basic understanding of the central principles of chemistry.	Credit allowed for only one of the these lecture/lab combinations: CHEM 105B/106B, CHEM 142/144, CHEM 162/164, or CHEM 152.	In-person, online	F, Sp, Su	Y
PHYS 102/198 or	4	Physics I	Introductory Physics. Topics include motion of particles in one and two dimensions, forces, Newton's laws, energy, momentum, angular	PHYS 102: PPL 60+ or SAT I MSS 610+ or ACT MATH 26+ or one course	PHYS 102: In-person, online	PHYS 102 & PHYS 181: In-	Y

PHYS 141/142			momentum, and conservation laws, gravitation, fluids: Archimedes and Bernoulli, mechanical waves, sound, temperature, heat, heat engines, laws of thermodynamics. OR A first course in Newtonian mechanics; introduces freshman-level students to the statics and dynamics of point particles, rigid bodies, and fluids. Topics include vector algebra, projectile and circular motion, Newton's Laws, conservation of energy, collisions and conservation of momentum, rotational dynamics and conservation of angular momentum, statics, harmonic oscillators and pendulums, gravitation and Kepler's Laws, fluid statics and dynamics.	from MATH 108, 112, 113, 116, 119A, 120R, 122B, 125, 129, or 223 PHYS 141: MATH 122B, 124, or 125, or appropriate Math Placement Level	PHYS 141: In-person	person: F, Sp, Su PHYS 102 Online: F PHYS 141: F, Sp, Su	
AREC 239	4	Introduction to Statistics and Data Analysis	This is an introductory course in statistics and probability. This course deals with applied data analysis, probability concepts, and statistical inference including confidence intervals and hypothesis testing. Applications and examples will be drawn from life and social sciences.	PPL 60+ or MCLG 88+ or SAT I MSS 640+ or ACT MATH 26+ or one recent course from MATH 112, 113, 116, 122B, or 125	In-person	Sp	
CHEM 241A and CHEM 243A	4	Organic Chemistry I and Lab	General principles of organic chemistry.	CHEM 105B/106B or CHEM 142/144 or CHEM 152 or CHEM 162/164, completion Concurrent registration encouraged.	In-person	F, Sp, Su	Y
BME 376:	3	Biomedical Statistics	This course covers application of statistics to biomedical engineering and research. Topics include describing and summarizing biomedical data, study designs, probability distributions, diagnostic testing, and statistical inference for biomedical applications. All topics will involve use of R Statistical Computing Software	MATH 129 and Advanced standing	In-person	F	Y
BIOC 384	3	Foundations in Biochemistry	Structure and function of proteins, lipids, carbohydrates, and nucleic acids, with a focus on understanding the molecular function of essential biomolecules	MCB 181R and (CHEM 142 or CHEM 152 or CHEM 105B or CHEM 162) and (CHEM 241A or	In-person, online	F, W, Sp, Su	Y

				CHEM 242A or CHEM 246A)			
BIOC 385	3	Metabolic Biochemistry	Fundamentals of metabolism and nucleic acid biochemistry at the cellular and organismal levels, with a focus on key pathways and regulatory mechanisms	MCB 181R and (CHEM 142 or CHEM 152 or CHEM 105B or CHEM 162) and (CHEM 241A or CHEM 242A or CHEM 246A).	In-person, online	F, W, Sp, Su	Y
PSIO 201	4	Human Anatomy and Physiology I and Lab	Study of structure and function of the human body. Topics include basic anatomical and directional terminology; fundamental concepts and principles of cell physiology; histology; the integumentary, skeletal, muscular and nervous systems; special senses. Primarily for majors in physiology, biology, and health professions.		In-person	F, Sp, Su	Y
PSIO 202	4	Human Anatomy and Physiology II and Lab	Study of structure and function of the human body. Topics include basic anatomical and directional terminology; fundamental concepts and principles of cell physiology; histology; the integumentary, skeletal, muscular and nervous systems; special senses. Primarily for majors in physiology, biology, and health professions.	PSIO 201	In-person	F, Sp, SU	Y
CMM 410	3	Human Histology: An Intro to Pathology	This course will provide pre-health science professions students (Medicine, Pharmacy, Nursing, Public Health) as well as students planning a career in biomedical research with essential background in functional morphology of human tissues and organs. Pathology examples will be used to help illuminate normal structure and function. The mode of instruction will be interactive lecture, including facilitated group study of virtual slides.	MCB 181 or equivalent or permission of instructor.	In-person	Su	Y
PSIO 431	3	Physiology of the Immune System	Focuses on physiology of the immune system, how it functions correctly, and some problems that occur when the immune system does not function properly (immunopathology).	PSIO 201 and PSIO 202 Grade C or better required	In-person, Online in summer	Sp, Su	Y
IMB 401	4	Medical Microbiology &	The molecular and biological characteristics of microorganisms of importance in human health and	Students should have taken undergraduate	In-person, online (iCourse)	Sp	Y

		Immunology	disease; the reaction of the host (immune system) to infectious agents and the mechanisms of host defense (immunity); molecular and cellular immunology and pathogenesis of infectious disease. This course will include areas such as immunology, virology, bacteriology, mycology, parasitology and infectious diseases.	courses such as microbiology, immunology, biochemistry, molecular biology or biology to enroll in this course.			
PSIO 411	3	Scientific Methods and Professional Ethics	This course will introduce students to the historical development of scientific scholarship and current controversies within the scientific community; various approaches to scientific methods and the application of these approaches to the natural sciences; elementary background knowledge of experimental design and the statistical procedures commonly used in physiological research; and important procedural, practical, and ethical issues pertaining to physiological research at a modern research university. The course will also provide practical personal experience in selected areas of professional analysis and communication	PSIO 201 and PSIO 202 Grade C or better required	In-person	F, Sp	Y
MED/PHIL 321	3	Medical Ethics	Ethical issues that arise in relation to medicine and health care: abortion, euthanasia, the allocation of scarce medical resources, socialized medicine, doctor-patient confidentiality, paternalism, etc.	2 courses from Tier One - Traditions/Cultures	In-person, online	F, W, Sp, Su	
PHCL 412	3	Intro to Pharmacology	Principles of how drugs act to produce changes within the body. Lectures will include the anatomy of physiology of body structures, with special emphasis on the processes that govern drug absorption, distribution, metabolism, and excretion. Other lectures will include the processes that establish and maintain intracellular electrical charge the membrane potential, nerve impulse conduction, how excitable tissue becomes excited or inhibited, and the mechanism(s) of drug action on such tissues.	1 course in Biochemistry	In-person, online	F	Y

FCM 201	3	Being a Healthcare Professional	Course offers an overview of our health care system in the larger context of our society. It includes the history of different health care fields, communication with patients, health disparities, discussion of health systems and policy issues, and interprofessional and cross-cultural care.	Two courses from Tier One, Individuals & Societies	Online , in-person	Sp	Y
FCM 496D	3	Disability Perspectives in Research, Policy, and Practice	This course will provide an introduction to how the lives of people with disabilities are framed by society through research, policy, and practice. Interdisciplinary in focus, the course will explore: 1) disability as conceptualized by society historically and in theory, policy and practice today; 2) the lived experience – disability over the lifespan; and 3) how research and policies inform practices in the field. Students will bring perspectives from their respective fields of study.	PSIO 201/202 highly reccomended	Online , in-person	F	Y
PATH 415	3	General Pathology	The course will deal with the basic reactions of cells and tissues to injury that underlie all disease processes and include cell injury and death, circulatory disturbances, inflammation and repair and disturbances of growth and neoplasia. concepts will be introduced in problem-based studies including 1) Definition of the process; 2) Pathogenesis and patho-genetic mechanisms important in the development of the process; 3) Morphologic characteristics that are useful for recognition of the process; 4) Clinical and pathophysiologic significance of the process; and 5) Physiologic and pathologic sequelae of the process.	Biology or Physiology (4 units) and Chemistry 4 units	On-line and in person	F	Y
BME 477	3	Introduction to Biomedical Informatics	Topics at the intersection of people, health information and technology.	ECE 175 or CSC 127A or CSC 110	On-line and in person	F	Y
BME 486	3	Biomaterial-Tissue Interactions	Biomaterials and their applications; protein-surface and blood-biomaterial interactions, inflammation, wound healing,	CHEM 151, or CHEM 103A, or CHEM 103A-CC, or CHEM 104A, or	On-line and in person	S	Y

			biocompatibility, implants and tissue engineering.	CHEM 105A, or CHEM 106A,			
CSC 250	4	Essential Computing for the Sciences	This course teaches essential computing skills for students in scientific disciplines. No prior background in programming is required. The content focuses on three computational skills: (i) basic programming in a scripting language such as Python, and knowledge of its supported data structures; (ii) facility with the UNIX operating system environment, including file structure, regular expressions, and job control; (iii) essential database skills, including database accession and interfacing through the SQL query language.	none	On-line	F, Sp	
CMM 441	1	Bright-Field Microscopy	This course will cover the fundamentals and theory of Bright-Field Microscopy. Students will learn image formation theory based on optical theory and diffraction as it relates to bright-field methods. The class will discuss several modes of bright-field microscopy, including standard bright-field, phase contrast, polarized light, and differential interference contrast microscopy.	MCB 181R	On-line	Sp	Y
CMM 446	1	Fluorescence Microscopy	This course will cover the fundamentals and theory of Fluorescence Microscopy. Students will learn image formation theory based on optical theory and light interactions. The class will discuss several modes of fluorescence microscopy, including: Wide-field fluorescence, Confocal microscopy, Convolution and deconvolution, Super-Resolution imaging. The content will conclude with a discussion of Imaging Ethics, as relates to fluorescence microscopy and as accepted by the world's scientific community.	MCB 181R	On-line	Sp	Y
CMM 442	1	Fundamentals of Digital Imaging	This course will cover the fundamentals and theory of Digital Imaging. Students will learn image resolution theory based on optical theory. Once the fundamentals have been covered, the class will discuss several aspects of Digital Imaging.	MCB 181R	On-line	Sp	Y

			The content will conclude with a discussion of Imaging Ethics, as relates specifically to digital imaging and as accepted by the world's scientific community. Digital imaging is a ubiquitous tool in biomedical research and in medical practice, therefore, students pursuing many fields in medicine will benefit from an understanding of this very versatile tool.				
BIOC 466	4	Biochemistry of Nucleic Acids	The biochemistry of nucleic acids Including replication, repair, recombination, restriction of DNA, transcription, processing and translation of RNA, gene regulation and biochemical and genomic techniques to study these processes with a molecular emphasis. Designed primarily for majors and minors in biochemistry and chemistry.	BIOC462A	In-person, online	Sp	Y
CMM 410	4	Human Gross Anatomy	This course is an intensive, dissection-based survey of the gross structure of the human body. The course is intended for upper-level undergraduates (and graduate students, who will take the 501 version of the course) preparing for careers in biomedical sciences, biology teaching or anthropology. Daily labs will be student-directed opportunities for active learning and peer teaching. Exams will be both practical and written.	PSIO 201, PSIO 202	In-Person	Su	Y
CMM 437	1	Immunology Basics	The immune system integrates with all organ systems of the body, providing defense against pathogenic microorganisms and cancer, while contributing to homeostasis of many pathways throughout the body. This course, intended as an introduction to immunology, will provide essential background for medical and other health sciences students studying the immune system.	MCB 181R	On-Line	Sp	Y
IMB 465	3	Principles and Molecular Mechanisms of	Course covers the interactions that occur between microbes (bacteria, parasites and viruses) and their host that result in disease, commensalism or parasitism. Examples will be drawn from systems that have been	MCB 181R	On-Line, In-person	Sp	Y

		Microbe-Host Interactions	defined at the molecular/genetic levels, and viewed from the standpoints of microbe and host. Ideas will be presented in lecture format and class discussions of assigned literature.				
CMM 427	1	Pathophysiology Basics	This course will provide students with a foundational understanding of disease as a manifestation of disrupted physiology. Course content will include introductory cell physiology and disruption of homeostatic maintenance in disease processes associated with hematologic, cardiovascular and immune system. Principles will be illustrated using representative commonly occurring disorders and their treatments. This course is designed to compliment CMM 547, Histology Basics, which presents principles of cell and tissue organization of the human body.				Y
CMM 428	1	Pathophysiology of Integumentary, Respiratory & Digestive Systems	This course will provide students with a foundational understanding of disease as a manifestation of disrupted physiology. Course content will include an overview of normal physiology of integumentary, respiratory and digestive systems, as well as disruption of homeostatic maintenance in disease processes associated with these organ systems. Principles will be illustrated using representative commonly occurring disorders and their treatments. This course is designed to compliment CMM 548, Histology of Respiratory and Digestive Systems.				Y
CMM 429	1	Pathophysiology of Urogenital and Endocrine Systems	This course will provide students with a foundational understanding of disease as a manifestation of disrupted physiology. Course content will include an overview of normal physiology of urogenital and endocrine systems, as well as disruption of homeostatic maintenance in disease processes associated with these organ systems. Principles will be illustrated using representative commonly occurring disorders and their treatments. This				Y

			course is designed to compliment CMM 549, Histology of Urogenital and Endocrine Systems.				
CMM 404	3	Cell Biology of Disease	This team-taught course is designed to provide a solid introduction to graduate-level cell biology with an emphasis on how key pathways contribute to human disease. The course format consists of discussion-oriented lectures on key concepts in cell biology, with each concept linked to specific diseases caused by dysregulation of the relevant pathways. Course topics will be divided into broad cell biology themes with related diseases as "case studies" to illustrate the connection between cell biology and health.	biochemistry, molecular biology, and cell biology	On-Line, In-person	Su	Y
PHCL 445	3	Drugs of Abuse	Pharmacology and toxicology of abused drugs with emphasis on mechanisms of drug action, theories of addiction, and treatment approaches.	biochemistry, molecular biology,	On-Line, In-person	Sp	Y
PHCL	2	Pain, Neuropharmacology	Students will be introduced to the basic concepts of pain, neural pathways of touch/pain, and neuropharmacology. Students will be required to read research articles and describe the goal of the experiments and well as the techniques used in the manuscripts. Students will be exposed to current research occurring within the department. Students should interact by asking questions and answering questions during lectures. Concepts will include our current understanding of pain perception, pain pathways, and how pain may be perceived at higher cortical levels of the central nervous system (CNS). Students will be introduced to different categories of pain and medications currently used to inhibit pain.	biochemistry, PSIO 201 PSIO 202	On-Line, In-person	F	Y
PHCL 442	3	Human Performance Pharmacology	In this course, students can explore the pharmacology of purported performance enhancing drugs and supplements used by athletes and "weekend warriors". Lectures and course material will enable students	4 Units Physiology OR 4 Units Biology) and 4 Units Chemistry.	On-line, in person	F. Sp	Y

			to review the most discussed and relevant products as well as dismantle public misperception about the actual efficacy and risks associated with these products.				
PHCL 444	1	Human Neurobiology Basics	This course will cover the general anatomy and physiology of the human nervous system as well as some pathology and pharmacology.	PSIO 201 PSIO 202	On-line	F	Y
PHCL 331	3	Controversies in Pharmacology	This writing-intensive course offers students information about prominent and controversial topics in pharmacology. Ideas presented in this course may be new to students or they may represent a novel way of thinking about a topic. Narrated lecture presentations, videos, podcasts, news stories, and manuscripts will allow students to learn the science underlying such controversial events while encouraging an intellectual, ethics-based exploration of these concepts. Topics include, but are not limited to, lethal injection as capital punishment, health care provider conscience clauses to deny patient medications and services, human performance enhancement drugs, and FDA compassionate drug use programs.	MCB 181R	On-Line, In - person	F, Sp	Y
PSIO 427	3	Metabolism and Disease	Students will study the biochemical principles that govern metabolism in physiological and pathophysiological states. We will discuss the underlying biochemistry and cell biology of specific diseases that disrupt normal cellular physiology including metabolic diseases, cancer, diabetes, cardiovascular and neurodegenerative diseases. Course activities include lectures, classroom discussions and oral presentations and assessments include exams, presentations and discussions.	PSIO 201 PSIO 202	On-Line, In - person	F, Sp	Y
PSIO 452	3	Digestive Physiology	This course uses an integrative approach to introduce students to the structure and function of the digestive system, and will survey how the digestive system functions correctly, how it is regulated, and	PSIO 201 PSIO 202	On-Line, In - person	F, Sp	Y

			some problems that occur when it does not function properly.				
PSIO 450	3	Respiratory Physiology	This course will introduce students to the structure and function of the respiratory system, including lung structure and development, physiology of the pulmonary airways, lung fluid balance, pulmonary circulation, pulmonary mechanics, gas exchange, regulation of breathing, respiration in the neonate and cardiopulmonary interactions. Each topic will be addressed from the molecular to the systems level of organization, and respiratory system disease will be used as a framework for understanding basic physiology.	PSIO 201 PSIO 202	On-Line, In - person	Sp	Y
PSIO 465	3	Neurophysiology	This course is concerned with how systems of neurons operate together to perform a wide array of functions including the processing of sensory information and generation of motor behaviors. Relevant aspects of neuroanatomy will be covered and some neural diseases will be discussed. A brief review of cellular neurophysiology will be provided at the outset of the course.	PSIO 201 PSIO 202	On-Line, In - person	Sp	Y
PSIO 469	3	Human Reproductive Physiology	We will examine contemporary issues in the field of reproductive physiology with particular emphasis on clinical applications and societal concerns. The class structure is designed to encourage application of primary scientific literature and text-book hypotheses to real-world practice and exploration of new issues. Students are encouraged to bring recent articles, newspaper clippings, opinions, ideas and questions to class to promote active learning.	PSIO 201 PSIO 202	On-Line, In - person	Sp	Y
PSIO 485	3	Cardiovascular Physiology	Physiology principles of the heart, blood and peripheral vasculature, viewed in an integrative manner, from the cellular to the systems level.	PSIO 201 PSIO 202	On-Line, In - person	F, Sp	Y
PSIO 487	3	Physiology of Aging	In this course we will examine the processes of lifecycle development, normal and pathological aging, senescence, and death from an eco-physiological perspective. Course	MCB 184 or (MCB 181R and MCB 181L)] and (ECOL 182R and 182L) and [(PSIO 201	On-Line, In - person	F, Sp	Y

			objectives include understanding the impact of aging on major physiological systems; evaluation of relevant research papers form genetics, ecology, gerontology and geriatrics; understanding the role of the elderly in modern society; and analysis of selected eldercare controversies in the scientific, medical, and political communities.	and PSIO 202) and (PSIO 303A or 303B)]			
PCOL 473	3	Pharmacogenomics and Precision Medicine	This course will introduce the student to the field of pharmacogenomics, which involves measuring the subtle differences in the biological blueprint and its expression in different individuals, and from that drawing conclusions about the likelihood of that individual having a beneficial drug effect, no effect, or a toxic effect. That information is then used to guide the choice and dose of drugs for the patient.	PCOL 350 &. 406	On-Line, In - person		Y
CMM 443-5	1-3	Medical Embryology	This series of three one-credit online course swill provide pre health science professions students (Medicine, Pharmacy, Nursing, Public Health) as well as students planning a career in biomedical research with valuable background in the development of the human body. Clinical cases resulting from congenital malformations will be used as instructive comparisons to normal structure and function. The courses will complement study of gross anatomy and histology, and will help students in mastering other health science topics such as physiology and cell biology, as well as provide vocabulary that is useful in approaching the medical literature.		On-Line		Y
MCB 301	4	Molecular Basis of Life	The course encompasses foundational material for the study of Molecular and Cellular Biology. It will be one of three core courses required for the MCB major. The focus will be on the fundamental concepts governing the interaction of biological macromolecules required for the central dogma of molecular biology: DNA > RNA > protein.	MCB 181R and 181L; Prior completion of first-semester Organic Chemistry, CHEM 241A and 243A.	In person, On-line	Sp	

MCB 304	4	Molecular Genetics	This is the second course in a three part upper division series required for MCB majors. The course will cover the foundations of genetics and genomics: 1) how cells and organisms transmit information to the next generation, 2) how the phenotypes of cells and organisms are connected to the information encoded within a DNA template, and 3) how DNA sequencing and recombinant DNA technology can be used to sequence and analyze the entire set of DNA in cells. In the first half of the course, the topics will include the mechanisms of genetic transmission, basis of traits, genome replication, and gene expression. The focus of the second half of the course will be to synthesize our understanding of these fundamental processes and to explore their application to the analysis of a wide range of biological phenomena.	MCB 181R and MCB 181L, Introductory Biology I and Laboratory CHEM 105A and CHEM 106A or CHEM 151, General Chemistry I CHEM 105B and CHEM 106B or CHEM 152, General Chemistry II	In-Person, On-Line	F	
PHPM 310	3	Health Care in the U.S.	This course describes the structure and function of the various private and public health care entities within the United States. Strengths and weaknesses related to cost, quality and access are analyzed. Basic economic theories that drive financing are also considered.	two courses from Tier One-Individuals/Societies	On-line	F	Y
LAW 452	3	Health Law	Description This is a survey of the four major parts of "Health Law": (1) Regulation, Finance, and Policy; (2) Medical Liability; (3) Bioethics; and (4) Public Health.	none	In-person, on-line	F	Y
CMM 479	3	The Art of Scientific Discovery	This is a lab and discussion course whose purpose is to develop your skills in solving problems encountered in scientific research. You will be challenged with difficult puzzles that each teach principles in scientific problem solving. You will also study by example from the history of scientific discoveries. Topics include observation and discovery from patterns, organizational problems, overcoming challenges, generalization, synthesis,	none	On-line	F	Y

			slippery logic, and heuristic reasoning.				
HPS 433	3	Global Health	This course introduces and examines major health & health-related challenges of developing, resource constrained and emerging nations, and discusses how individual countries and global health partners are finding solutions to address these challenges. Students will study and analyze a variety of health priorities among different populations, cultural settings and health systems in relation to global health goals and partnerships.	CPH 200 and CPH 309	In-person, on-line	F	Y
EHS 439A	3	Outbreaks and Environmental Microbiology: Then to Now	This course will examine historical and present day outbreaks in regards to the environmental microbiology of pathogens. Different pathogen control interventions that have been used to mitigate the outbreaks will also be explored.	none	In-person, on-line	F	Y
HIST 311 Cross-listed as MED 311	3	History of Epidemics	Over the course of the semester, we will analyze how epidemic and infectious diseases created historical watersheds that have shaped our world history socially, politically, environmentally, and economically to the present day. We will also examine human responses to epidemics in artistic, cultural, and intellectual realms, and the ways in which politicians, medical doctors, national and international bureaucracies, religious personnel, scholars, and everyday women and men debated their philosophical and moral implications. The final weeks of the course analyze contemporary "pandemic preparedness" policy and responses to health threats including vaccine controversies, ebola, and H1N1.	None	In-person	S	Y
FCM 301	3	Substance Misuse in Maternal and Child Health (MCH)	The effects of addiction, substance use disorders, and other forms of substance misuse has many broad and persistent health effects in MCH populations. This course will cover the effects of several substances (including, but not limited to,	none	In-person, on-line	F	Y

		Populations	tobacco, alcohol, marijuana, and opioids) on the psychological and physical wellbeing of women, infants, and children. We will also cover current clinical guidelines for treatments and expected treatment outcomes. The course will be especially useful to pre-health science professions students (including, but not limited to, medicine, pharmacy, nursing, public health) as well as students planning a career in addiction-related fields.				
FCM 496A	2	Advancements in Substance Misuse Research and Clinical Care Seminar	This seminar is a forum for presentation and discussion of original research findings, clinical advancements, and other topics as related to the treatment of addiction and substance use disorders. Each week students will read one related article, attend the seminar, participate in a discussion after the seminar, and prepare brief reflections on the each week's topic. Students also will take turns acting as the facilitator during the discussion. The course will be especially useful to pre-health science professions students (including, but not limited to, medicine, pharmacy, nursing, public health) as well as students planning a career in addiction-related fields.	none	In-person, on-line	F	Y
PSIO 497A	3	Physiology of Mind Body Interactions	Students will explore the connections between their own mental/emotional processes and their physiological responses. As a result they will learn how to regulate their autonomic nervous system to reduce stress and improve performance.	PSIO 201 PSIO 202	In-person, on-line	Sp	Y
IHM 401	1	Integrated Health & Medicine Foundation: Mind-Body-Spirit: Addressi	Integrated Health & Medicine Foundation: Mind-Body-Spirit: Addressing Stress and Mental Health through an Integrative Lens is intended for graduate and upper division undergraduate students as an introduction to concepts and theories in mind-body medicine, the role of spirituality on health/wellness, and integrative	none	On-Line	F, Sp	Y

		ng Stress & Mental Health	approaches to support mental wellbeing. This course will provide students planning careers in the pre-health science professions as well as students planning a career in biomedical research, with a valuable grounding in one of the foundations of integrative health and medicine.				
EMD 197	4	Emergency Medical Technician	This workshop, EMD 197, provides the medical knowledge necessary to become an Emergency Medical Technician. EMD 197 will provide a brief introduction to EMS systems, the structure and history of EMS, and will focus on providing the fundamental knowledge necessary to become an EMT. With completion of EMD 197, students will have attained the required didactic training hours to meet the National Registry of Emergency Medical Technicians (NREMT) prescribed requirements for Emergency Medical Technicians (EMT).	BLS Provider CPR certification card is required prior the first day of class	In Person, On-Line	Sp, Su	Y
EMD 350	3	Advanced Emergency Medical Services Systems	This course will provide a broad overview of medical care provided by EMS services, the science behind EMS operations, and the legal framework under which out-of-hospital medical care is provided. Course topics will include the history and foundations of EMS, EMS systems, state and regional EMS systems, trauma systems, emergency departments and EMS, medical oversight and accountability, administration/management/28peration, system financing, communications, emergency medical dispatch, medical record documentation and EMS information systems, ambulance ground transport, inter-facility and specialty care transfer, air medical transport, EMS for children, rural EMS, disaster response, emergency medical care at mass gatherings, response to terrorist incidents and weapons of mass destruction, operational EMS, EMS and public health, research, EMS educational programs, EMS providers and system roles,	none	On-Line	F, Sp, Su	Y

			occupational health issues, medical-legal concerns in EMS, EMS research, Emergency Medical Treatment and Labor Act (EMTALA) and EMS. .				
NSC 310	3	Principles of Human Nutrition in health and Disease	This course will provide a deeper understanding of the human body's nutrient requirements and utilization of those nutrients. The application of basic nutrition science principles in the selection of nutritional therapy for a wide variety of clinical disease states will also be investigated.	NSC 170C1 or NSC 101	In Person, On-Line	F, Su	Y
MAS/AIS/ MED 435	3	Mexican Traditional Medicine: An Overview of Indigenous Curing Cultures (3 units)	A survey of various popular and Indigenous medicinal systems that fall under the rubric known as Mexican Traditional Medicine (MTM). Mexican scholar Carlos Viesca Treviño defines MTM as medicinal knowledge(s) that emanate from Mesoamerican world views and that have adapted to historical and social conditions in the Americas. This course will explore various expressions of MTM, with a special emphasis on Indigenous medicinal approaches to healing that exemplify both continuities and adaptations. We will compare across cultures some shared values in various Indigenous systems as well as how they are uniquely expressed in contemporary settings. We will also draw from the local knowledge holders of Indigenous populations from this region to compare various approaches in traditional medicine. This course will introduce students to the relationship between place, healing and cosmology in Indigenous-based cultures that maintain curing traditions and practices. We will explore the theories and philosophies that are used in MTM as well as applied knowledge and practices that are useful for self-care and community wellness.	None	In person	S	Y
EHS 420	3	Environmentally Acquired	Illnesses related to environmental exposures are on the rise but frequently misdiagnosed due to a lack of understanding of the	none	On-Line	Sp	Y

		Illnesses (3 units)	complexities of multiple hazard exposures and variable health outcomes. This course provides an overview of common and emerging Environmentally Acquired Illnesses (EAIs) and explores the multitude of hazards, conditions, and predisposing factors related to human disease. Students will gain foundational knowledge of EAIs and tools for environmental monitoring and mitigation as well as patient diagnosis and treatment options.				
PCOL 406	5	Comprehensive Human Pharmacology	Pharmacology is the study of how drugs change human physiology to prevent disease and to reduce/remove the impact of diseases. This course will present the basic principles of pharmacology, as well as instruction in the diverse mechanisms-of-action, and pharmacological effects (both desired and undesired!) of the major classes of drugs currently used to treat and prevent human diseases	PSIO 202, and CHEM 241A	in-person	F	Y
PCOL 310	2	Drug Approval: The 3 Billion Dollar Bet	Almost 60 billion dollars (2016) are spent annually on pharmaceutical research and development in the United States and almost 425 billion dollars (2015) are spent annually in drug purchasing. Drugs are key economic and therapeutic factors in the health care arena; yet, among patients and consumers the pharmaceutical industry lacks public trust and the process of drug approval is often shrouded in mystery. In this course we'll address the decisions drug manufacturers consider, including time, cost, risk and value in bringing as new drug product to market. We will explore how a new drug product is developed from concept to bedside.	ENGL 102	In Person	Fall	Y
PCOL 355	3	Drug Delivery Systems	The purpose of this course is to provide the student with a basis of understanding of pharmaceutical dosage forms. An overview of traditional and novel dosage forms will be presented along with a discussion on scientific and regulatory requirements necessary	CHEM 241B	In Person	Fall	Y

			to get a drug product approved. The course will emphasize the relationship between Physical Pharmacy (chemistry and physical science) and the pharmaceutical dosage form. Critical thinking and problem solving will be applied to the above principals				
PCOL 350	3	ADME: How the Body Changes Drugs	ADME, an acronym for absorption, distribution, metabolism, excretion, is often the determining factor in whether drugs generate the desired effect, or no effect, or a harmful effect. PCOL 350 provides students with a rounded education in the ways that the body changes the chemical form of drugs, as well as the ways that the body directs the movement of drugs over time, from administration through excretion.	PSIO 202, and CHEM 241B	In person	Fall	Y
LAW 478A	3	Legal and Regulatory Aspects of Healthcare Delivery	his course explains the different models and facility requirements for how health care is organized and delivered. Examples include the regulations that govern inpatient and outpatient treatment facilities, and the accreditation process with the Centre for Medicare and Medicaid Services. Additional topics include the regulation of tax-exempt hospitals with their associated community benefit role, and related health care statutes for providing access to care, including EMTALA. Advances in technology, such as the regulations around telemedicine and health information exchanges will be covered. The course concludes with innovative examples of improving health care delivery in the US.	none	On-line	Fall	Y
LAW 480A	3	Liability and Regulation of Healthcare Professionals	his course provides an overview of the professional licensure and compliance requirements for health professionals and describes the administrative, criminal and civil processes for non-compliance. Specific topics covered include: licensure requirements, scope of practice differentiation, obligations of providers to meet professional standards and duties of care, medical error and patient safety programs,	none	On-Line	Su	Y

			and professional claims litigation in both civil and criminal settings. The course concludes with training specifically designed for health professionals in the role of expert witnesses in litigation from the deposition process to trial.				
LAW 476A	3	Drug Discovery, Development, and Innovation to Reach the Marketplace	This course navigates the drug development path stretching across the pre-clinical and post-marketing divide from the full range of drug regulation, including drug discovery, innovative drug development tools, and the post-approval phase. Intellectual Property protection and evaluation will be covered, along with FDA-enforced market exclusivity and FDA-expedited review programs. The course concludes with international regulatory perspectives, including the European Medicines Agency, the costs involved to bring drugs through the clinical trials to market in the US and abroad, and how this affects future investment and strategy.	none	On-Line	Fall	Y
HIST 373	3	Politics of Health and Medicine in the Americas: From Historical Roots to Contemporary Developments	In this course we will examine the history of health - and health care - as well as the political dimensions of scientific research and medicine. Based on the understanding that health and health care are subject to political competitions on the nation state level and are mediated by changing global paradigms, we will use readings and class discussions to draw conclusions about citizenship rights in the Americas.	None	In-person	Fall, Spring	Y
HNRS 305	3	Narrative Medicine and Healthcare	Through an interdisciplinary perspective, this course will investigate and evaluate the significance of Narrative Medicine and NVC (non-violent, or compassionate, communication) in the healthcare profession. Students will read, discuss, analyze, and reflect on the role of story-telling, role playing, visual and performing arts, and cultural awareness in contemporary medicine. Coursework will focus on appropriate communication between patients, caregivers, and practitioners, and in communities at large.	None	Hybrid	Spring	Y

			Emphasis will be on active student engagement, creative and analytic expression, and understanding and application of Narrative Medicine resources				
EHS 425	3	A Public Health Lens to Climate Change	How does a changing environment affect human health? What is the public health role in mitigating and addressing these implications? Why is a public health lens both relevant and necessary? Students in this course will directly interact with these questions and explore the fundamentals of global environmental change with a focus on climate change. Course topics include climate change, impacts on human health, policy development, adaptation and mitigation, health equity, and climate action co-benefits.	None	On-line	Spring	Y
PHP 205	3	Fundamentals of Telehealth	This course introduces students to the basic foundations of telehealth. In this course, students will learn about the human factors, technology, applications and administrative practices required for telehealth delivery. They will also be given the opportunity to disseminate telehealth information through written and verbal methods.	None	On-Line	Fall	Y
PHPM 310	3	Health Care in the US	This course describes the structure and function of the various private and public health care entities within the United States. Strengths and weaknesses related to cost, quality and access are analyzed. Basic economic theories that drive financing are also considered	For general education credit, two courses from Tier One-Individuals/Societies	Normally in class- COVID on-line	Spring	Y
IMB 402	1	Medical Microbiology Basics	This course will present basic concepts in the areas of microbiology, including bacteriology, virology, mycology and parasitology. It will also present the pathogenesis of medically important, viral, bacterial, fungal and parasitic diseases. In addition, it will provide vocabulary that is useful in approaching the medical literature. The course will be especially useful to pre-health profession students (Medicine, Dentistry, Nursing, Pharmacy, Public Health) as well as students planning a carrier in biomedical research.	Basic microbiology and immunology course	On-line,	Fall 2020	Y
FCM 302	3	Clinical Health Disparities in	Sexual and Gender Minority (SGM/LGBTQ) populations face disproportionate rates of health risks compared to the general population.	none	On-line	Fall 2020A	Y

		Sexual and Gender Minority (SGM) Populations	Compounding this problem are provider-level lack of knowledge and sensitivity around health issues facing SGM patients. This introductory course will review primary clinical health issues within SGM populations. Students will learn current best practices when working with SGM people and practical strategies to provide inclusive and culturally responsive care to SGM patients.				
IMB 404	1	Medical Virology Basics	This course will present basic concepts in the areas of human virology. It will also present the pathogenesis of medically important viral infectious diseases. In addition, it will provide vocabulary that is useful in approaching the medical literature. The course will be especially useful to pre-health profession students (Medicine, Dentistry, Nursing, Pharmacy, Public Health) as well as students planning a carrier in biomedical research	Basic Immunology course	On-line,	Spring 2020D	Y
EHS 425	3	A Public Health Lens to Climate Change	This course is designed to provide foundational knowledge in the various, complex mechanisms through which anthropogenic changes influence the health of the environment and subsequently human health. During this course, students will be introduced to key concepts including health risks associated with climate change and other human-mediated global environmental changes; local, regional, and national efforts underway to understand and manage the adverse impacts, and the factors influencing progress on this issue. Students will have the opportunity to engage with researchers and practitioners to learn about the current science as well as challenges and opportunities associated with identifying, managing, and addressing the health implications of climate change and other anthropogenic changes	none	On-line,	Spring 2021D	Y

V. NEW COURSES NEEDED – using the table below, list any new courses that must be created for the proposed program. If the specific course number is undetermined, please provide level (ie CHEM 4**). Add rows as needed. Is a new prefix needed? If so, provide the subject description so Curricular Affairs can generate proposed prefix options.

Course prefix and number (include cross-listings)	Units	Title	Course Description	Pre-requisites	Modes of delivery (online, in-person, hybrid)	Status	Anticipated first term offered	Typically Offered (F, W, Sp, Su)	Dept signed party to proposal? (Yes/No)	Faculty members available to teach the courses
MED 101	2	Introduction to Medical Care	This course will provide an overview of medical issues and systems within fields of medicine. The course is intended as an introduction to case-based problems and teach approaches to knowledge acquisition and problem solving that are basic for multiple professional fields within medicine. The course will provide students planning careers in the pre-health science professions (Medicine, Pharmacy, Nursing, Public Health, etc.), as well as students planning a career in biomedical research, policy work, advocacy. This will serve as well to promote health literacy and a familiarity with the issues of providing medical care at a personal through a professional through a public policy level. This course should serve as both a stimulus to foster further learning in these areas, as well as an introduction to basic medical and societal concerns. Integral to the course will be exploration of potential roles students may assume in the various realms of medical care.	none	hybrid	S	Fall 2021	F, Sp	Yes	Yes
MED 296	2	Careers in Medical-Health Sciences	This course is an introductory Core course in the BS in Medicine concentration. It will provide students an opportunity to gain insight into the various disciplines involved in medicine and health sciences. These will include Medicine, Nursing, Public Health, Pharmacy,	none	hybrid	S	Fall 2021	F, Sp	Yes	Yes

			Biomedical Engineering, Social Work, Psychology, Nutrition, Occupational/Physical Therapy and Law. Through an interactive format, students will be challenged with various patient cases to consider the role that each of these disciplines plays in the care of the patient.							
SURG 401	2	Virtual Medical Care Training & Education in the Digital Age	In this four-week 5 credit elective, Summer Session Course, the Arizona Telemedicine Program (ATP) and the Arizona Simulation Technology and Education Center (ASTEC) will use both individual and group interactive on-line formats to explore resources available to medical personnel and educators in the age of COVID-19, including: interactive virtual patients, on-line medical games, and virtual cadavers. Students will be taught how to critically analyze these resources in the context of healthcare learning objectives and be guided in applying on-line modules within a lesson plan. Students will also receive specific instruction in how to use telemedicine equipment to interview and examine patients.	None	In-person, online	S	Summer 2022	Summer 2nd session	Yes	Yes
MED 441	3	Introduction to Medical Devices and Their Utilization	This course will provide a broad overview of the field of medical devices. A context of medical practice will be framed at the outset including the evolution of the health encounter and the parallel emergence	PSIO 201, PSIO 202	On-line, in person	S	Spring 2022	Sp	Yes	Yes

			of medical devices. The evolutionary history of devices will be reviewed followed by detailed definition and understanding of the differences between devices vs. drugs vs. combinational systems. A generic approach to understanding how devices work will be provided to instill the rigor of the exactness needed and the standards utilized in bringing forward a true Medical device. ...							
MED 401	3	Medical Ethics and Professionalism	This course offers an overview of both medical ethics and professionalism, which are intimately intertwined in the practice of clinical medicine. Taught by experienced physician ethicists, this course will help students develop critical thinking skills needed to evaluate ethically complex situations encountered in medical practice. The student will begin by examining the history, development, major principles and core competencies in the field of medical ethics.	none	On-line, in person	S	Fall 2021	F, Sp	Yes	Yes
FCM 498	3	Field Training Experience in Community Health	This course is part of the BS in Medicine concentration. This course is a capstone experience that provides students with a hands-on approach to identify a community health need then developing and implementing a project	none	Hybrid	S	Fall 2021	F	Yes	Yes

			to address the need. The structure of the course will allow students to complete their field project over a 16 week period. Students will work in groups and be paired with organizations focused on addressing area health needs. Students will research the health needs of the community (using existing data sources such as community health needs assessments), identify a health need that they find of importance, then work with a community agency or internal U of A program to implement a project to address the need.							
FCM 496E	3	Introduction to Population Health Management	This course is part of the BS in Medicine concentration. It will provide students with an in-depth understanding of population health management and how to implement and manage these types of initiatives. Population health management is a growing area of importance within the health care field and providers are being expected to take the lead on these initiatives within the communities they serve. This broader perspective to health requires providers to take responsibility for improving the health status of an entire group of individuals. …	none	On-line, in-person	S	Spring 2022	Sp	Yes	Yes
PHCL 386	3	Introduction to Tech Transfer in	Intellectual property (patents, copyrights, trademarks) are an increasingly critical part of university impact and medical translation.	none	On-line, in-person	S	Spring 2022	Sp	Yes	Yes

		Medicine	This introductory course is aimed at undergraduates in health sciences interested in exploring intellectual property and commercialization of medtech. Specific topics will include: the history and legislation that drive technology transfer; the role of a university's tech transfer office; types of intellectual property including patents and copyrights and what makes someone an inventor or contributor; and the entire translation process (with a focus on medtech) including patent and market analysis, patent application, licensing and more. …							
FCM 402/502	3	Addressing Health Disparities through Interprofessional Clinical-Community Collaboration	This 3-unit summer session course engages students from a broad range of disciplines in: 1) examining methods of addressing health disparities through clinical-community collaboration; and 2) experiential learning through applying the multidisciplinary theories, methods, and approaches to particular case studies, as identified by partnering FCM programs. It is intended for students preparing for the health professions (e.g. physician, nurse) or the allied health professions (e.g. physical therapist,	none	In-person	S	Summer 2022	Su	Yes	Yes

			occupational therapist, social worker, dietician, clinical or community researcher). This course will explore the various models for understanding health disparities from a number of disciplinary perspectives, including policy, social science, psychology, social work, nursing, and medicine							
MED 318	3	The History of Medicine	This course will present an overview of the History of Medicine, beginning with the Egyptian Papyri, through the present. The course will present, generally in chronological order, concepts of health and disease. In addition, it will provide vocabulary that is useful in approaching the medical literature. The course will be especially useful to pre-health science professions students (Medicine, Pharmacy, Nursing, Public Health) as well as students who are interested in how Medicine relates to diverse cultures through History.	none	On-line, In-person	S	Fall 2021	F	Yes	Yes
MED 319	2	The History of Medical Technology	This course will examine the history of medical technology, beginning with early prosthetics, through early stethoscopes, and the development of X-rays, the Jarvik heart., etc., to present day technologies including imaging, sequencing, and robotic technology.	none	On-line, in-person	S	Spring 2022	Sp	Yes	Yes

FCM 303	1	Difficult Conversations in Patient Care: The Art of Empathy	This course will discuss how medical professionals deal with difficult patient discussion, how to address the family, patient rights and what types of things cannot be stated. How health care providers themselves deal with losses and when they have to be the ones to tell the family.	none	On-line, in-person	S	Spring 2022	Sp	Yes	Yes
NSC 2**	3	Fundamentals of Precision Nutrition and Wellness	This course is designed to teach the fundamental concepts of nutrition and wellness including disease prevention and wellness at an individual/population level through transformative advances in understanding the relationship between nutrition, lifestyle, genomics, metabolomics, and human evolution	None	In-person,	S	Spring 2022	F, SP, Su	Yes	Yes
MED 3**	3	Parallel History of Medicine and Law	This course is an overview of comparative history for the Bachelor of Science degree for Medicine or Law. The Parallel History of Medicine and Law is an opportunity for students to consider the chronological discovery, development and progression of medical knowledge compared to the advancement of laws and legal concepts within the same eras. The course reviews the circumstances of health and disease that occurs historical periods as	None	In Person and On-line	S	Spring 2022	Sp	Yes	Yes

			government, civil and individual rights.							
FCM 424A/ 524A	1	Arts and Community Health: Intercultural Perspectives and Applications: Part I – Foundation	This co-taught course provides an overview of how creative arts practices have been implemented to promote community health and wellness. Interdisciplinary in nature, the course draws on existing theoretical frameworks, practices, and research methods from both the arts and health sciences, and seeks to promote inter-professional dialogue about how to expand the contributions of creative arts in promoting healthy communities. This first course of a three part 1-credit course series focuses on the foundation of inclusive arts perspectives and applications from different disciplines	none	Hybrid	S	Fall 2021	F,Sp	Y	Y
FCM 424B/ 524B	1	Arts and Community Health: Part II – Focus on Disabilities and Client-Centered Practices	This co-taught course provides an overview of how creative arts practices have been implemented to promote community health and wellness. Interdisciplinary in nature, the course draws on existing theoretical frameworks, practices, and research methods from both the arts and health sciences and seeks to promote inter-professional dialogue about how to expand the contributions of creative arts in promoting healthy	none	Hybrid	S	Fall 2021	F,Sp	Y	Y

			communities. This second course of a three part 1-credit course series focuses on creative arts in the context of disabilities and client/person-centered perspectives and practices.							
FCM 424C/ 524C	1	Arts and Community Health:: Part III – Focus on Arts and Aging, Dementia & Brain Health	This co-taught course provides an overview of how creative arts practices have been implemented to promote community health and wellness. Interdisciplinary in nature, the course draws on existing theoretical frameworks, practices, and research methods from both the arts and health sciences and seeks to promote inter-professional dialogue about how to expand the contributions of creative arts in promoting healthy communities. This third course of a three part 1-credit course series focuses on creative arts in the context of aging, dementia, and brain health	none	Hybrid	S	Fall 2021	F,Sp	Y	Y
MED 301	1	Healthcare Professional Well-being	This course will explore the foundations of wellbeing, promoters of wellbeing, detractors from wellbeing, and the systemic and organizational issues that are unique to the healthcare system. Students will learn and practice strategies to build healthy resilience, manage chronic stress, prevent burnout, and practice mindfulness.	none	hybrid	S	Spring 2022	Sp. F	Y	Y

			This Healthcare Professional Wellbeing Course includes concepts and curriculum appropriate for learners interested in any health care career. There are three components of the course: online content (asynchronous), wellness behaviors practices and reflections (individual and asynchronous), weekly in person/zoom class (synchronous and mandatory attendance).							
MED 4**	3	Clinical Applications of Medical Technology	This course will describe and define the use of current medial technology including, personal devices, self-testing and the use of telemedicine/telecare.	none	On line	D	Fall 2022	F	Yes	Yes
PATH 4**	3	Clinical Skills	This course will teach students the skills of pathology including tissue slicing and staining, phlebotomy, pharmacology, reading an EKG and techniques for basic medical imaging.		On-line, in person	D	Spring 2023	Sp	Yes	Yes
FCM 4**	3	Reflections on Clinical Medicine through Clinical Shadowing	This course is intended to give students an in-person view of medical practice, through direct observation of health care professionals at work. Students will produce written reflections on their shadowing experience, presenting patient cases (maintaining confidentiality), clinical steps taken and personal evaluation.	none	Hybrid	D	Spring 2022	Sp	Yes	Yes

MED 4**	3	Skills for advancement; work place professionalism, resume writing, interviewing techniques, understanding HIPAA	This course will be taught by professional health care workers to help with building ones portfolio for a career in health care, how to act and what to expect in a professional health care atmosphere, give writing techniques at all levels (medical notes to writing papers, cases and grants) to understanding HIPAA laws.		On-line, in-person	D	Fall 2023	F	Yes	Yes
FCM 431	3	Creative Arts in Health, Healing & Wellness	This course focuses on the use of visual arts to promote the physical, cognitive, psychological, and emotional growth and health. Art expression is explored both as a form of non-verbal communication and as a healing agent. Students will be required to complete four major projects, read the texts, and other assigned readings. Topics for this course change annually to include special emphasis in issues related to children, adolescents, adults and older adults.	none	On-line	D	Spring 2022	Sp	Yes	Yes

*In development (D); submitted for approval (S); approved (A)

Subject description for new prefix (if requested). Include your requested/preferred prefix, if any:

NOTE: I have moved all approved courses to Section IV

VI. FACULTY INFORMATION- complete the table below. If UA Vitae link is not provided/available, attach a short CV (2-3 pages) to the end of the proposal or upload to the workflow form (in the "Letter(s) of Support" field). UA Vitae profiles can be found in the UA directory/phonebook. Add rows as needed. Delete the EXAMPLE rows before submitting/uploading. **NOTE: full proposals are distributed campus-wide, posted on committee agendas and should be considered "publicly visible". Contact Office of Curricular Affairs if you have concerns about CV information being "publicly visible".**

Faculty Member	Involvement	UA Vitae link or "CV attached"
Todd Vanderah	Chair, organizing committee; Dept Head, Pharmacology	Todd Vanderah, PhD
Claudia Stanescu	Member, organizing committee; Physiology	Claudia Stanescu, PhD
Helen Amerongen	Member, organizing committee; Cellular and Molecular Medicine	Helen Amerongen, PhD
Paul Gordon	Member, organizing committee; Family and Community Medicine	Paul Gordon, MD
Tejal Parikh	Member, organizing committee; Family and Community Medicine	Tejal Parikh, MD
Arthur Gmitro	Member, organizing committee; Dept Head, Biomedical Engineering	Arthur Gmitro, PhD
Carol Gregorio	Dept Head, Cellular and Molecular Medicine; Executive Director, UArizona Health Sciences Global and Online, Assistant Vice Provost for Global Health Sciences Member, organizing committee	Carol Gregorio, PhD
Nafees Ahmad	Member, organizing committee; Immunobiology	Nafees Ahmad, PhD
Robert Segal	Member, organizing committee; Medicine	Robert Segal, MD
Alicia Allen	Member, organizing committee; Family and Community Medicine	Alicia Allen, MD
Roger Miesfeld	Member, organizing committee; Distinguished Professor, Chemistry & Biochemistry,Associate Dean, UA Global	Roger Miesfeld, PhD

VII. FOUR-YEAR PLAN – provide a sample four-year degree plan that includes all requirements to graduate with this major and takes into consideration course offerings and sequencing. Refer to Degree Search for examples. Use generic title/placeholder for requirements with more than one course option (e.g. Upper Division Major Elective, Minor Course, Second Language, GE Tier 1, GE Tier 2). Add rows as needed.

Semester 1		Semester 2		Semester 3		Semester 4	
Course prefix and number	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**
CHEM 141/143	4	CHEM 142/144	4	CHEM 241A/246A	3	Tier 1 Gen Ed~~Language I~~	3~~4~~

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ENGL 101/107/109 H	3	ENGL 102	3	CHEM 243A/247A	1	Tier 1 Gen EdPHYS 102	33
Tier 1 Gen Ed	3	MATH 263/376	3	PHYS 141Tier 1 Gen Ed PHYS 142	43	PHYS 241181 PHYS 242	41
MCB 181R ECOL 181R	43	MED 101 intro FCM 201	23	FCM 201Tier 1 Gen Ed	33	PSIO 202Tier II Gen Ed	43
MED 101 intro	2	Tier 1 Gen Ed ECOL 182	43	PSIO 201	4	MED 296 seminar/careerPSIO 202	24
				MED 296 seminar/career	2		
Total	145	**Total**	166	**Total**	156	**Total**	165

Semester 5		**Semester 6**		**Semester 7**		**Semester 8**	
Course prefix and number	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**
BIOC 384/385	3	CMM 410	3	FCM 496D	3	IMB 401/PSIO 431	3
Tier 1 Gen EdLanguage II	34	MED 441 device	3	PHCL 412	3	Elective	3
CMM 459 & 461	2	MED 401 ethics	3	PATH 415	3	Elective	3
Tier II Gen Ed	3	Tier II Gen EdMajor Electives	3	Tier II Gen EdElective	3	Elective	34
Tier II Gen Ed	3	PSIO 467	3	Elective	3	Elective	3
Total	145	**Total**	15	**Total**	15	**Total**	153

VIII. STUDENT LEARNING OUTCOMES AND CURRICULUM MAP—describe what students should know, understand, and/or be able to do at the conclusion of this major. Work with Office of Instruction and Assessment to create a curricular map using Taskstream. Include your curricular map in this section (refer to Appendix C for sample Curriculum Map generated using Taskstream).

At the successful completion of this major, students will be able to

1. Demonstrate in-depth knowledge of the structure and function of the human body in health and disease including use of appropriate medical terminology, and apply this knowledge to evaluation of disease therapies (courses include)
MED 101 Introduction to Medical Care - Required
CMM 459 & 461 Clinical Reasoning and Medical Case Based Learning- Required
CMM 410 Human Histology: An Intro to Pathology- Required
PSIO 467 Endocrine Physiology
IMB 401 Medical Microbiology & Immunology- Required

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PHCL 412 Intro to Pharmacology- Required
PCOL 406 Comprehensive Human Pharmacology
PATH 415 Mechanisms of Human Diseases- Required
CMM 401 Gross Anatomy
EMD 197 – Emergency Medical Technician

2. Demonstrate knowledge of the scope of medical device technology as well as the complex datasets generated and their application to the practice of precision medicine. (courses include)
MED 296 Seminar- Careers in Medical-Health Sciences - Required
MED 441 Introduction to Medical Devices and Their Utilization - Required
to be required under emphases Med & Technology
BME 477 Introduction to Bioinformatics to be required under emphases
BME 486 Biomaterial-Tissue Interactions
PHCL 386 Medical Tech Transfer
CSC 250 Essential Computing for the Sciences- to be required under emphases Med & Technology New: Technology and Big Data in Individualized Care
SURG 401 Virtual Medical Care Training & Education in the Digital Age
LAW 476A – Drug Discovery, Development, and Innovation to Reach the Marketplace- to be required under emphases Med & Technology
MED 4** Clinical Applications of Medical Technology
PHP 205 - Fundamentals of Telehealth

3. Describe social determinants of health including racial/ethnic disparities, and apply scientific evidence, best practices, and professional judgment to proposing strategies to mitigate negative impacts of social factors on health outcomes. (courses include)
FCM 496D Disability Perspectives in Research, Policy, and Practice- Required
New MED 401 Medical Ethics and Professionalism- Required
PHPM 310 Health Care in the U.S.-to be required under emphases Med & Society
FCM 496E Introduction to Population Health Management
EHS 420 Environmentally Acquired Illnesses - to be required under emphases Med & Society
FCM 302 Clinical Health Disparities in Sexual and Gender Minority (SGM) Populations-to be required under emphases Med & Society
HNRS 305 Narrative Medicine and Healthcare
New FCM 402 Addressing Health Disparities through Interprofessional Clinical-Community Collaboration "In the Field Course"
PHP 205 - Fundamentals of Telehealth
HPS 433 Global Health
AIS/MAS/MED 435 Mexican Traditional Medicine: An Overview of Indigenous Curing Cultures
NSC 310 Principles of Human Nutrition in Health and Disease
FCM 301 Substance Misuse in Maternal and Child Health Populations
FCM 496A Advancements in Substance Misuse Research and Clinical Care Seminar

4. Demonstrate understanding of professional and ethical responsibility in independent and/or multidisciplinary team settings. (courses include)

New MED 296 Seminar- Careers in Medical-Health Sciences- Required
New FCM 401 Medical Ethics and Professionalism- Required
FCM 201 Being a Healthcare Professional – Required
PSIO 411 Scientific Methods and Professional Ethics to be required under emphases Med & Society
MED/PHIL 321 Medical Ethics to be required under emphases Integrative and Practice-Focused Medicine
LAW 480A - Liability and Regulation of Healthcare Professionals
IHM 401/501 Integrated Health & Medicine Foundation: Mind-Body-Spirit: Addressing Stress & Mental Health to be required under emphases Integrative and Practice-Focused Medicine
New FCM 303 Difficult Conversations in Patient Care: The Art of Empathy
EMD 350 – Advanced Emergency Medical Services Systems
New MED 301 Healthcare Professional Well-being

5. Demonstrate skills needed to engage in life-long learning, including the ability to find and critically evaluate relevant information, and apply it to solving clinical problems. (courses include)
FCM 201 Being a Healthcare Professional- Required
PHCL 412 Intro to Pharmacology- Required
New BME 401 Introduction to Medical Devices and Their Utilization- Required
MED 4** Clinical Applications of Medical Technology
New FCM 4** Community Health Field Training Experience
New PATH 4** Clinical Skills (path, pharm, phlebotomy, EKG, imaging, etc.)
New FCM 4** Reflections on Clinical Medicine through Clinical Shadowing
CMM 459 & 461 Clinical Reasoning and Medical Case Based Learning to be required under emphases Integrative and Practice-Focused Medicine
HIST 311 History of Epidemics- Cross list as MED 311
CMM 479 Art of Scientific Discovery
PHCL 386 Intro to Tech Transfer in Medicine
SURG 401 Virtual Medical Care Training & Education in the Digital Age
IHM 401/501 Integrated Health & Medicine Foundation: Mind-Body-Spirit: Addressing Stress & Mental Health
PHP 205 - Fundamentals of Telehealth
PHCL 430 Pain to be required under emphases Integrative and Practice-Focused Medicine
PCOL 410 Pharmacogenomics and Precision Medicine to be required under emphases Integrative and Practice-Focused Medicine
PCOL 355 Drug Delivery Systems

Curriculum Map:

University of Arizona AMS » College of Medicine – Tucson
BS Medicine

BS Medicine Curriculum Map

Courses and Activities Mapped to BS Medicine Outcome Set

	Outcome				
	Outcome 1: Structure & Function Demonstrate in-depth knowledge of the structure and function of the human body in health and disease, including use of appropriate medical terminology, and apply this knowledge to evaluation of disease therapies.	Outcome 2: Medical Device Technology Demonstrate knowledge of the scope of medical device technology, as well as the complex datasets generated and their application to the practice of precision medicine.	Outcome 3: Social Determinants Describe social determinants of health, including racial/ethnic disparities, and apply scientific evidence, best practices, and professional judgment to proposing strategies to mitigate negative impacts of social factors on health outcomes.	Outcome 4: Professional & Ethical Responsibility Demonstrate understanding of professional and ethical responsibility in independent and/or multidisciplinary team settings.	Outcome 5: Life-Long Learning Demonstrate skills needed to engage in life-long learning, including the ability to find and critically evaluate relevant information, and apply it to solving clinical problems.
Courses and Learning Activities					
PHCL 412 Intro to Pharmacology	A				
PATH 415 Mechanisms of Human Diseases	A				
PSIO 467 Endocrine Physiology	A				
BME 4** Introduction to Medical Devices and Their Utilization		A			
FCM 496D Disability Perspectives in Research, Policy, and Practice			A		
MED 4** Medical Ethics and Professionalism				A	
CMM 459 Clinical Reasoning					A
CMM 461 Medical Case Based Learning					A

Legend : **I** Introduced **P** Practiced A Assessed

IX. **ASSESSMENT PLAN FOR STUDENT LEARNING-** using the table below, provide a schedule for program assessment of intended student learning outcomes 1) while students are in the program and 2) after completion of the major. Add rows as needed. Delete EXAMPLE row.

X.

Learning Outcomes	Sources(s) of Evidence	Assessment Measures	Data Collection Points
Demonstrate in-depth knowledge of the structure and function of the human body in health and disease including use of appropriate medical terminology, and apply this knowledge to evaluation of disease therapies.	Demonstrated content knowledge	Embedded exam questions, Exit survey	PSIO 467 PATH 415 PHCL 412)
Demonstrate knowledge of the scope of medical device technology as well as the complex datasets generated and their application to the practice of precision medicine.	Demonstrated content knowledge	Course-embedded assessments	MED 441
Describe social determinants of health including racial/ethnic disparities, and apply scientific evidence, best practices, and professional judgment to proposing strategies to mitigate negative impacts of social factors on health outcomes.	Pre-post knowledge of health disparities	Pre-post assessment of health disparities	FCM 496D
Demonstrate understanding of professional and ethical responsibility in independent and/or multidisciplinary team settings.	Pre-post knowledge of medical ethics and professionalism	Pre-post assessment of medical ethics and professionalism	MED 401 Medical Ethics and Professionalism ***OR*** PSIO 411 Scientific Methods and Professional Ethics **OR** MED/ PHIL 321 Medical Ethics (3)
Demonstrate skills needed to engage in life-long learning,	Skill at evidence-based decision making	Grading rubric for clinical case interpretation	CMM 459 & 461: Clinical Reasoning & Working Clinical Cases (2 units)

including the ability to find and critically evaluate relevant information, and apply it to solving clinical problems.			

Learning Outcomes	Sources(s) of Evidence	Assessment Measures	Data Collection Points

XI. PROGRAM ASSESSMENT PLAN- using the table below, provide a schedule for program evaluation 1) while students are in the program and 2) after completion of the major. Add rows as needed. Delete EXAMPLE rows.

Assessment Measure	Source(s) of Evidence	Data Collection Point(s)
Program Evaluation Length of time to graduation Student program assessment Academic Program Review	Department generated statistics Department Senior Exit Survey Student/Alumni Survey	Every Year During Spring semester of senior At graduation and as part of alumni survey
Completion Evaluation Job Placement Statistics Graduate/Professional Program Enrollment	Student/Alumni Survey/Social Media Reviewers' responses	At graduation and as part of alumni survey, 2, 5, 7 and every 7 years after that for APR

XII. ANTICIPATED STUDENT ENROLLMENT-complete the table below. What concrete evidence/data was used to arrive at the numbers?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Students	100	250	400	550	750

Data/evidence used to determine projected enrollment numbers:
Projected annual enrollment was determined using data from current UA programs including Pharmaceutical Sciences and the Physiology Medical Sciences Program for comparison. The Pharmaceutical Sciences was launched in fall 2019 with 16 students graduating in May of 2020 and current enrollment for FY21 is 288 confirmed majors. The Physiology Program had 1,526 enrolled in the Spring of 2020. Based on these two programs, we estimate that we would have 100 incoming freshmen and grow by 50 students a year, with around 750 in five years.

XIII. ANTICIPATED DEGREES AWARDED- complete the table below, beginning with the first year in which degrees will be awarded. How did you arrive at these numbers? Take into consideration departmental retention rates. Use National Center for Education Statistics College Navigator to find program completion information of peer institutions offering the same or a similar program.

PROJECTED DEGREES AWARDED ANNUALLY					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Degrees	30	150	300	600	900

These numbers were derived based on the assumption that the trend in graduates will trail behind the estimated enrollment due to attrition and time to complete the requirements, which is expected to be 2-3 years.

XIV. PROGRAM DEVELOPMENT TIMELINE- describe plans and timelines for 1) marketing the major and 2) student recruitment activities.

Once approved, we would like the degree to be offered in the Fall of 2021. Many of the courses will be available via online. All new courses are currently being put together with a designated course director(s) identified and indicated above. We anticipate that all new course submissions will be complete by the Spring of 2021.

Once approved, marketing will begin immediately with dedicated staff in the Health Sciences and College of Medicine (Tucson and Phoenix) to advertise the major on their College and Department websites as well as social media often used for prospective students, parents, and employers. These include programs on Facebook, Snapchat, Pandora/Spotify, Google and online channels to generate requests for more information. The College of Medicine-T & P will reach out to offer this degree nation-wide via the AAMC and other health related professional societies. College advisors will host online recruitment events in Phoenix, Tucson, Flagstaff and rural areas of the State of Arizona. Live recruitment events will occur in Spring. Recruitment activities will include but are not limited to; 1) high school recruitment events including tabling at college fairs and presenting at high school student leadership conferences, 2) College of Medicine (T & P) will go to targeted high schools throughout AZ and select out of state colleges to promote UArizona and all majors including the NEW BS in Medicine, 3) advisors attend campus recruitment events (i.e., "Meet your Major Fair"), 4) health professionals will be asked to give Q&A on careers in their field, 5) events at community colleges across the state of AZ.

XV. DIVERSITY AND INCLUSION-describe how you will recruit diverse students and faculty to this program. In addition, describe retention efforts in place or being developed in order to retain students.

Both Colleges of Medicine (T & P) recruit diverse students through several practices: 1) the COM has its own dedicated Deputy Dean and Office dedicated to diversity and inclusion, 2) A diverse group of academic advisors and college level faculty and staff interact with students 3)

COM and all its departments are very proactive about ensuring that students of diverse backgrounds are reflected in relevant materials including for recruitment and marketing. There are student progress committees for retention efforts with members that reflect a diverse population.

The COM (T&P) have committees focused on diversity and inclusion; these committees offer professional development opportunities to staff and faculty on topics which advance perspectives on best practices for fostering an inclusive environment on campus.
Faculty from diverse backgrounds are and will continue to be recruited through professional health care- and research-based strategies which search committee members learn at Faculty Recruitment Workshops provided by Victoria Murrain *(Deputy Dean, Diversity and Inclusion)* and Human Resources. Such strategies include writing position descriptions which speak to the unit's commitment to diversity and inclusion and the value we place as a unit on joining diverse perspectives in departmental initiatives and curriculum as well as casting a very large net to advertise positions and assembling search committees with diverse representation.

XVI. ABOR REQUIREMENT: New Academic Program Request. This section is required by ABOR. Most of the information can be copied/pasted from completed sections above. Instructions/clarification for completing the table below, from ABOR, can be viewed/downloaded here.

University: University of Arizona

Name of Proposed Academic Program: BS in Medicine
Academic Units: College of Medicine - Departments of Pharmacology, Cellular and Molecular Medicine, Physiology, Family Community Medicine, Immunobiology, Pathology, Biochemistry, Medicine, College of Engineering - Biomedical Engineering
Geographic Site: Tucson, Arizona
Instructional Modality: Online and in class
Total Credit Hours: 120
Proposed Inception Term: Fall 2021
Brief Program Description: The Bachelor of Science in Medicine is a four-year degree program designed and delivered as a collaboration between clinicians, basic scientists and humanists, with focus on clinical reasoning and case-based learning. The Program juxtaposes applied topics such as what it is to be a health care provider, clinical case analysis, medical ethics, professionalism, health care delivery to improve quality care, and hands-on experience through simulation, with topics in the human medical sciences, including advanced anatomical, biochemical, neurological, and physiological science, pathology of disease, mechanisms of treatment, and integrative therapies.
Learning Outcomes and Assessment Plan: *At the successful completion of this major, students will be able to*

1. Demonstrate in-depth knowledge of the structure and function of the human body in health and disease including use of appropriate medical terminology, and apply this knowledge to evaluation of disease therapies
2. Demonstrate knowledge of the scope of medical device technology as well as the complex datasets generated and their application to the practice of precision medicine.
3. Describe social determinants of health including racial/ethnic disparities, and apply scientific evidence, best practices, and professional judgment to proposing strategies to mitigate negative impacts of social factors on health outcomes.
4. Demonstrate understanding of professional and ethical responsibility in independent and/or multidisciplinary team settings.
5. Demonstrate skills needed to engage in life-long learning, including the ability to find and critically evaluate relevant information, and apply it to solving clinical problems.

Methods of Assessment
Embedded exam questions,
Exit survey
Pre-post assessment of health disparities
Pre-post assessment of medical ethics and professionalism
Grading rubric for clinical case interpretation

Projected Enrollment for the First Three Years:
Year 1 = 250
Year 2 = 500
Year 3 = 1000

Evidence of Market Demand:

Healthcare consumes nearly one-fifth of the US economy with projections of job growth at >30% for the next 10 to 20 years.

A powerful signal of rising demand for healthcare services and healthcare workers is how much money is projected to be spent on healthcare in the future. More than doubling from 2010 to 2026, when it reaches beyond $5.7 trillion, expenditures include payments for all healthcare costs, including pharmaceuticals, equipment and technology. Expenditures will rise for many reasons, but growing demand for the services of healthcare workers is a very significant reason.

Healthcare employment growth has been thriving since the end of the recession. The US Bureau of Labor Statistics Current Employment Statistics has shown month after month growth in healthcare employment since 2013, when there were only small declines in three separate months, with the rest of the year showing monthly increases. After that year, healthcare job growth has been robust, reaching a single-month growth record of more than 45,000 new jobs filled.

Similar Programs Offered at Arizona Public Universities:
ASU - Medical Studies (BS)

New Resources Required? (i.e. faculty and administrative positions; infrastructure, etc.):
2 Academic Advisors (1.0 FTE ea) as well as an approved plan to increase 1 academic advisor per every additional 200-300 students enrolled. This plan will allow for rapid escalation of student advisors based on the number of students enrolled.
1 Director (1.0 FTE) and 1 Co-Director (0.5 FTE), upon escalation the co-Director will be approved at a (1.0 FTE)
1 Educational/Technology Specialists (1.0 FTE) with a plan of one additional Educational/Technology Specialist for every 500 additional students enrolled.
1 Staff (1.0 FTE) with a plan of one additional Staff hire for every 500 additional students enrolled.
These positions are approved by leadership (see letters of support from Drs. Dake and Abecassis).

Program Fee/Differentiated Tuition Required? YES ☐ NO X Estimated Amount:

Program Fee Justification:
Specialized Accreditation? YES ☐ NO X Accreditor:

Appendix A. Minor Requirements. Complete if requesting a corresponding minor. Delete EXAMPLE column before submitting.

Minimum total units required		EXAMPLE
Minimum upper-division units required		
Total transfer units that may apply to the minor		
List any special requirements to declare/admission to this minor (completion of specific coursework, minimum GPA, interview, application, etc.)		
Minor requirements. List all minor requirements including core and electives. Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.		
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.		
Additional requirements (provide description)		
Any double-dipping restrictions (Yes/No)? If yes, provide description.		