



New Academic Program Workflow Form

General

Proposed Name: Medicine

Transaction Nbr: 00000000000048

Plan Type: Major

Academic Career: Undergraduate

Degree Offered: Bachelor of Science

Do you want to offer a minor? N

Anticipated 1st Admission Term: Fall 2021

Details

Department(s):

MDTC

DEPTMNT ID	DEPARTMENT NAME	HOST
0719	Pharmacology	Y

Campus(es):

MAIN

LOCATION	DESCRIPTION
TUCSON	Tucson

Admission application terms for this plan: Spring: N Summer: N Fall: Y

Plan admission types:

Freshman: Y Transfer: N Readmit: N Graduate: N

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 51.0000, Health Services/Allied Health/Health Sciences, General.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: Y Bachelor of Science in Medicine

Transcript: Y Bachelor of Science in Medicine

Conditions for Admission/Declaration for this Major:

3.0 GPA required to join the major.

Requirements for Accreditation:

N/a

Program Comparisons

University Appropriateness

The BS in Medicine aligns with the University of Arizona mission and 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. The University of Arizona is best location within the Arizona University System given the high caliber science, technology, engineering and research faculty and programs. Furthermore, as the only institution with a medical school, the University of Arizona is capable of providing coursework, student opportunity, and research experience that is unique for students who enroll in the BS in Medicine program. Finally, this program is consistent with the College strategic plan and will provide the curriculum of tomorrow by leveraging expertise, expanding interprofessional education opportunities, and focusing on the personalized learning journey of our students.

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT
1	Medical	BS	723	Arizona State	N

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT
	Studies			University	
2	Health Sciences Allied Health	BS	33	Northern Arizona University	N

Peer Comparison

Chart included for reference.

While the programs offered at ASU and NAU are similar in nature, they do not provide the same amount of targeted coursework in the areas defined in the UArizona BS in Medicine program. The contribution of faculty and coursework from the College of Medicine at UA provides academic, internship and other extracurricular opportunities that are unmatched at the peer institutions listed. Furthermore, the UArizona program leverages interprofessional education (IPE) to best equip students for a variety of health science careers. While IPE may be included in other programs, it is not clearly defined.

Faculty & Resources

Faculty

Current Faculty:

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
04200288	Arthur Gmitro	2328	Professor	Doctor of Philosophy	.09
04301299	Roger Miesfeld	2536	Distinguished Prof	Doctor of Philosophy	.09
04707778	Paul Gordon	0704	Professor	Doctor of Medicine	.09
07002193	Helen Amerongen	0710	Professor	Doctor of Philosophy	.09
08103385	Nafees Ahmad	0707	Professor	Doctor of Philosophy	.09
09500879	Carol Gregorio	0710	Professor	Doctor of Philosophy	.09
09805509	Todd Vanderah	0719	Professor	Doctor of Philosophy	.10
10609280	Claudia Stanescu	1401	Assit. Prof	Doctor of Philosophy	.09
12600544	Tejal Parikh	0704	Assoc. Prof	Doctor of Medicine	.09
17003704	Robert Segal	0713	Prof. Pract.	Doctor of Medicine	.09
22072968	Alicia Allen	0704	Assit. Prof	Doctor of Medicine	.09

Additional Faculty:

Additional faculty will likely not be needed for the first and second year of the program. Additional faculty will be added based on the need for expertise in content areas outlined in the new courses proposed.

Current Student & Faculty FTE

DEPARTMENT	UGRD HEAD COUNT	GRAD HEAD COUNT	FACULTY FTE
0707	0	27	6.00
0710	0	11	7.00
0719	0	15	8.00
1401	970	0	10.00
2328	155	0	7.00

Projected Student & Faculty FTE

	UGRD HEAD COUNT			GRAD HEAD COUNT			FACULTY FTE		
DEPT	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3
0719	100	250	400	0	0	0	0.00	0.00	0.00

Library

Acquisitions Needed:

None

Physical Facilities & Equipment

Existing Physical Facilities:

Existing physical facilities and equipment are adequate for the program needs.

Additional Facilities Required & Anticipated:

N/a

Other Support

Other Support Currently Available:

Provost Investment Funds are available to support this program.

Other Support Needed over the Next Three Years:

- 2 Academic Advisors
- 1 Administrator
- 1 Educational/Technology Specialist

Comments During Approval Process

8/31/2020 4:56 PM

RGOMEZ

Comments

The COS has concerns about the duplicative nature of this program given that a number of programs already serve students preparing for paths to doctorates in medicine, pharmacy and dentistry. The COS also has concerns that the program does not adequately prepare students headed toward medical school.

9/21/2020 6:03 PM

CERDELYI

Comments

On behalf of the BS in Medicine working group:

The BS in Medicine is not duplicative in nature. It is designed in response to the existing situation in which many students entering from established programs struggle to succeed (particularly in medicine, since the pre-clerkship medical curriculum has been compressed from 2 years to 18 months – a nationwide trend). The faculty designers of the program teach health professions students, and it is based on their experience of direct teaching that a need for the program was identified. It is this experience that informs program design.

The proposed BS in medicine differs from existing programs in a number of important aspects including:

Courses are taught by faculty who also teach in health professions programs. This is tremendously important in design of content specifically tailored to prepare students for these programs.

Basic science is taught in a practical, clinical context using real patient cases and in some courses, real patient volunteers with informed consent, therefore preparing students to utilize content knowledge in practical settings.

Clinical faculty with responsibility for direct patient care are involved in designing and teaching courses, and therefore not only provide highly relevant content, they also give students direct access to professional role models and mentors.

All faculty, being closely involved themselves in the health professions as researchers, clinicians and/or health care educators are aware of the many challenges of health care practice -- including political, economic, and psychological challenges. As such they are in a strong position both to give students a realistic appreciation of the field as well as to prepare students to meet the challenges.

While we very much appreciate the high quality of existing programs and their utility in preparing many students for health sciences education (and in fact we will utilize existing courses in the COS, CSBS and other colleges), the existing programs are not adequately serving all students with capability for health science careers. The BS in Medicine is designed to address that lack. Given the approximately 10,000 applicants each year to the UA College of Medicine alone, and also considering the growing interest in all UA health profession programs, it is important that we do our utmost as a university to provide opportunity and prepare students from many backgrounds for success in these programs. The COM BS in Medicine is specifically designed to help achieve this goal.



**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](#) (CIP CODE – 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 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 student 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

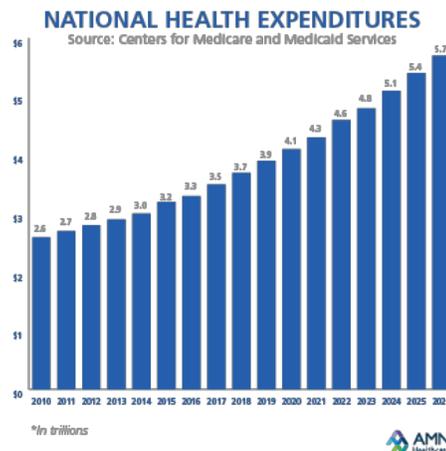
technological devices and virtual/telemedicine as healthcare tools as well as the medical content knowledge, and the hands-on skills using simulation and shadowing to prepare for the many and diverse health care jobs/careers available.

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 years¹. 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 trillion¹. 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 sector².

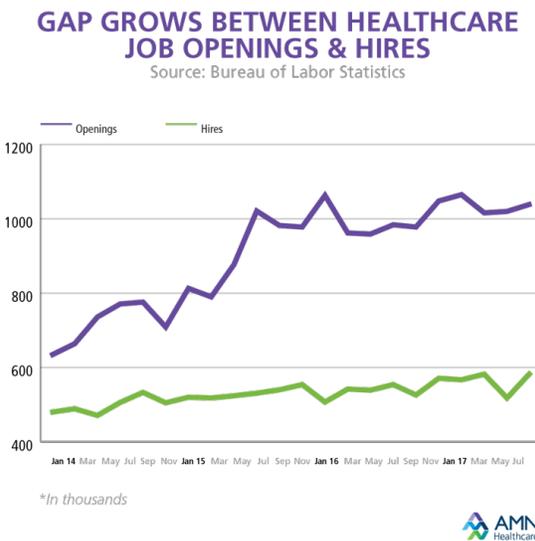
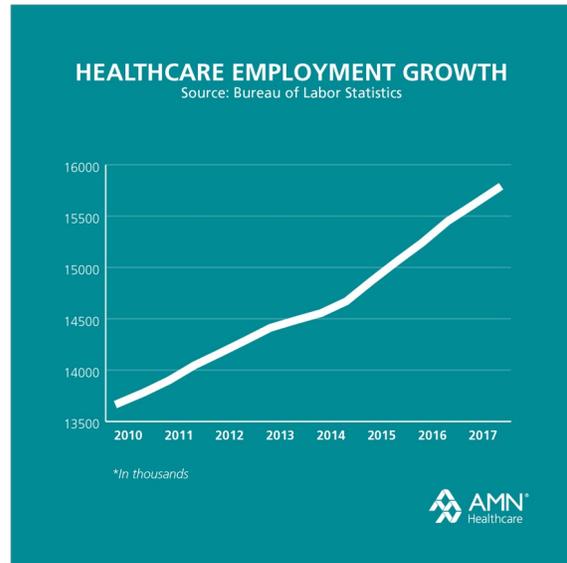
The need for well-trained healthcare professionals no doubt corresponds with larger demographic and population trends. Specifically, the aging of the US population will place greater demands on healthcare systems and services. By 2030 there will be 72 million elderly in the US, about 19% of the population^{1,2}.

State of AZ:

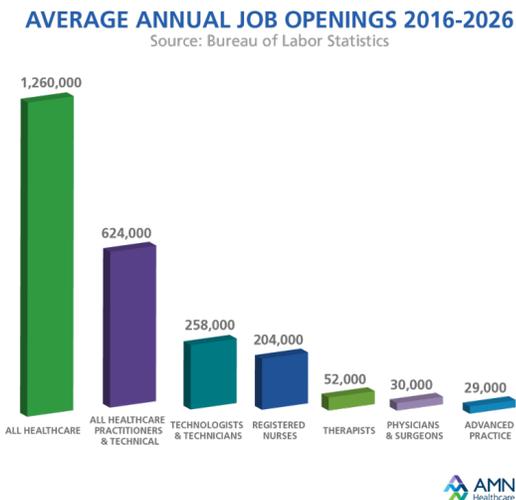
The state of Arizona is not insulated from the aforementioned trends and specific needs must be met in order to train, retain and grow the healthcare workforce within the state. Strategies to meet the growing demands include: increasing the number of health professions students and trainees that practice 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 Administration-Health Care Management;
 Health Information Technologist;
 Medical Technologist;

A BS in Medicine along with advanced certification and/or a Master’s degree will allow students to enter the following careers:

Physician Assistants (40% projected growth by 2026);
 Licensed Practical and Vocational Nurses (LPN & LVN) (37% projected growth by 2026);
 Physical Therapist Assistants (30% projected growth by 2026);
 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);
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,

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.*

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](https://www.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
Upper-division units required to complete the degree	42
Foundation courses	
Second language	<i>Second Semester Proficiency</i>
Math	Moderate Math Strand
English	<i>(3-6 units)</i> ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H (3)
General education requirements	<i>General Education: (21 units)</i> 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
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)	52
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	47 (300 & 400 level courses)
Minimum # of residency units to be completed in the major	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are	<i>Statistics Requirement (3 units)</i> Choose one: MATH 163 Basic Statistics (3 units)

<p>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.</p>	<p>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)</p> <p><u>General Sciences: (30 units)</u> 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); PHYS 102/198 or PHYS 141/142 Physics I 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 Introduction to Biology (3 units) PSIO 201 Human Anatomy and Physiology I and Lab (4 units); PSIO 202 Human Anatomy and Physiology II and Lab (4 units);</p>
<p>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.</p>	<p><u>Major Core: (33 units)</u> 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) FCM 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)</p> <p><u>Major Elective Areas: (19 units)- Emphases intended to assist in advising students</u> Emphases 1- Medical Technology; BME 477 Introduction to Bioinformatics (<i>instru consent reqd</i>) (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)</p>

	<p>SURG 401 Virtual Medical Care Training & Education in the Digital Age (2 units) FCM 4** Clinical Application of Medical Technology (3 units)</p> <p>Emphases 2- Basic Medical Sciences; 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)</p> <p>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)</p>
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	<p>FCM 402/502 Addressing Health Disparities through Interprofessional Clinical-Community Collaboration (3 units) MED 318 The History of Medicine (3 units) 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 320 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)</p> <p><u>Emphases 4- Integrative and Practice-Focused Medicine</u> 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 424a-c 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)</p>
<p>Internship, practicum, applied course requirements (Yes/No). If yes, provide description.</p>	<p><i>Optional working towards required (to be phased in)</i> 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)</p>
<p>Senior thesis or senior project required (Yes/No). If yes, provide description.</p>	<p>No</p>
<p>Additional requirements (provide description)</p>	<p>No</p>

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 4103	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 textbook 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 ecophysiological 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 and pathogens. Different pathogen control interventions that have been used to mitigate the outbreaks will also be explored.	none	In-person	S	Y
HIST 311 Cross-list 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: Addressing	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

		ing 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/operation, 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 (EAls) and explores the multitude of hazards, conditions, and predisposing factors related to human disease. Students will gain foundational knowledge of EAls 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	This 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	This 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 3053	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 storytelling, 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 career 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	Prerequisites	Modes of delivery (online, in-person, hybrid)	Status	Anticipated first term offered	Typical 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 (ASTECC) 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 2 nd session	Yes	Yes
BME 4**	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 4**/5*	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 4**/5*	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 4**/5*	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 medical 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						
CHEM 141/143	4	CHEM 142/144	4	CHEM 241A/246A	3	Language I	4
ENGL 101/107/109H	3	ENGL 102	3	CHEM 243A/247A	1	PHYS 102	3

Tier 1 Gen Ed	3	MATH 263/376	3	Tier 1 Gen Ed	3	PHYS 181	1
MCB 181R	3	FCM 201	3	Tier 1 Gen Ed	3	Tier II Gen Ed	3
MED 101 intro	2	Tier 1 Gen Ed	3	PSIO 201	4	PSIO 202	4
				MED 296 seminar/career	2		
Total	15	Total	16	Total	16	Total	15

Semester 5		Semester 6		Semester 7		Semester 8	
Course prefix and number	Units						
BIOC 384/385	3	CMM 410	3	FCM 496D	3	IMB 401/PSIO 431	3
Language II	4	BME 4** 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	Major Electives	3	Elective	3	Elective	4
Tier II Gen Ed	3	PSIO 467	3	Elective	3		
Total	15	Total	15	Total	15	Total	13

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

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

BME 4** 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 4** 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:

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	BME 4**
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.			
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Learning Outcomes	Sources(s) of Evidence	Assessment Measures	Data Collection Points
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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)
<u>Program Evaluation</u> 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
<u>Completion Evaluation</u> 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					
	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th 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					
	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th 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: <i>At the successful completion of this major, students will be able to</i>

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 **Estimated Amount:**

Program Fee Justification:

Specialized Accreditation? YES NO

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 <u>double-dipping restrictions</u> (Yes/No)? If yes, provide description.		

**Proposal Title: Development of a Bachelor of
Science in Medicine
Department: Pharmacology**

Personnel Salaries (includes salary and ERE)	FY2021	FY2022	FY2023
Staff	\$ 102,180	\$ 128,380	\$ 222,700
Faculty	\$ 65,500	\$ 163,750	\$ 245,625
Students	\$ -	\$ -	\$ -
Graduate	\$ -	\$ -	\$ -
Undergraduate	\$ -	\$ -	\$ -
Post-docs	\$ -	\$ -	\$ -
Other Professionals (list)			
	\$ -	\$ -	\$ -
Advertising/Outreach and Ops	\$ 10,000	\$ 15,000	\$ 20,000
Total Operating Expenses	\$ 177,680	\$ 307,130	\$ 488,325
Revenue			
Program Revenue*	\$ -	\$ 190,991	\$ 441,587
PIF	\$ 100,000	\$ 100,000	\$ -
Additional funds committed by Department, College, or Other Unit	\$ (77,680)	\$ (16,139)	\$ (46,738)

Personnel Assumptions:

	FTE			Salary
Staff				
Academic Advisor	1.00	1.00	1.50	\$52,000
Administrative Support		0.50	1.00	\$40,000
Educational/Technology Specialist	0.50	0.50	1.00	\$52,000
Faculty	0.20	0.50	0.75	\$250,000

***Program Revenue**

RCM Revenue	Y1	Y2	Y3	Y4	Y5	Enrollment	1,313	
Projected Enrollment (incremental)	100	150	150	150	200	Tax	0.3329	437.10
Projected Student Credit Hours	500	1,500	2,659	4,119	4,904	Net		875.90
Undergraduate Enrollment	0	87,590	131,385	131,385	131,385	SCH	310.00	
Student Credit Hours	0	103,401	310,202	549,832	851,891	Tax	0.3329	103.20
	0	190,991	441,587	681,218	983,276			206.80

From: [Vanderah, Todd W - \(vanderah\)](#)
To: [Gomez, Rebecca L - \(rgomez\)](#)
Subject: Detailed Budget
Date: Friday, December 4, 2020 2:11:55 PM

Hi Rebecca,

To prevent this from delaying things:

Academic Advisor (1.0FTE) Salary (\$120,00 - \$150,000 + ERE)

1 Co- Advisor (0.5 FTE) Salary (\$120,000 - 130,000 + ERE)

Initial 2 Academic Advisors (1.0 FTE ea) Salary for Experienced (\$75,000-\$95,000 + ERE) and Salary for Mid-level (\$55,000-\$65,000)

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 Educational/Technology Specialists (1.0 FTE) Salary (\$65,000-\$95,000 + ERE)

with a plan of one additional Educational/Technology Specialist for every 500 additional students enrolled.

1 Staff (1.0 FTE) Salary (\$50,000 - \$60,000 + ERE) 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).

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

Undergraduate Major Peer Comparison Chart - select two peers for completing the comparison chart from (in order of priority) [ABOR-approved institutions](#), [AAU members](#), and/or other relevant institutions recognized in the field. The comparison chart will be used to identify typically required coursework, themes, and experiences for majors within the discipline. The comparison programs are not required to have the same degree type and/or major name as the proposed UA program. Information for the proposed UA program must be consistent throughout the proposal documents.

Program name, emphasis (sub-plan) name (if applicable), degree, and institution	Proposed UA Program: BS Medicine	Peer 1: BS Medical Studies, Arizona State University	Peer 2: BS Health Sciences- Allied Health, Northern Arizona University
Current # of enrolled students		Information regarding program enrollment not provided	33
Major Description. Includes the purpose, nature, and highlights of the curriculum, faculty expertise, emphases (sub-plans; if any), etc.	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.	The medical studies BS program provides students with the opportunity to meet the prerequisites for a variety of health professions programs (medicine MD/DO programs, dentistry, physician assistant, pharmacy, occupational therapy, optometry and others) and prepares the student for required postgraduate entrance exams, including the revised MCAT. Students can customize the medical studies degree to meet the prerequisites of the health professions programs for which they intend to apply. Students have the opportunity to learn directly from health care providers who are currently practicing in the field, and they can select clinically related internships or electives during their junior year. This degree program integrates communication, ethics, critical thinking, teamwork and leadership, all of which are essential competencies for members of today's health care teams. https://chs.asu.edu/programs/medical-studies	The online B.S. Health Sciences Allied Health program provides an innovative "3+1" curriculum that prepares students to advance their careers in health-related fields. These programs are specifically designed for students who have completed their associate's degree in an allied health discipline from a regionally accredited program and who have successfully obtained the related professional license. Our programs provide students with foundational knowledge of health promotion, disease promotion concepts, and understanding of the interconnectedness of personal, family, organizational, community, and societal health. Our students will use this knowledge to work collaboratively to provide comprehensive patient-centered care. While completing this degree, students will expand their critical thinking, problem solving, and decision making skills and enhance their ability to communicate effectively with others in order to provide excellent care for their patients. We specialize in preparing students in enhancing

			<p>their careers with an understanding of the importance of leadership and inter-professional teamwork among health professionals, as well as skills to sustain personal health and well-being.</p> <p>https://nau.edu/health-sciences/allied-health-online/</p>
<p>Target careers</p>	<p>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 Administration-Health Care Management; Health Information Technologist; Medical Technologist; <u>A BS in Medicine along with advanced certification and/or a Master's degree will allow students to enter the following careers:</u> Physician Assistants (40% projected growth by 2026); Nurse Practitioners (RN) (41% projected growth by 2026); Licensed Practical and Vocational Nurses (LPN & LVN) (37% projected growth by 2026); Physical Therapist Assistants (30% projected growth by 2026); Medical Assistant (28% projected growth by 2026); Operations Research Analysts (25% projected growth by 2026); Health Specialties Teachers–</p>	<p>Positions could include:</p> <ul style="list-style-type: none"> • community health worker • project coordinator • research assistant • sales or marketing representative (e.g., medical device or pharmaceutical industry) <p>Students are well-prepared to pursue postgraduate health degrees, resulting in a career as a:</p> <ul style="list-style-type: none"> • chiropractor • dentist • naturopathic physician • optometrist • pharmacist • physician • physician assistant • podiatrist • public health professional 	<p>Diagnostic Medical Imaging and Therapy Medical Assisting Public Health Allied Health Physical Therapy Respiratory Care Surgical Technology Paramedic Care Fitness Wellness Nutritional and Food Physical Education</p>

	<p>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; Nurse Anesthetists, Nurse Midwife, Nurse Practitioners Speech Therapy Respiratory Therapy Emergency Medical Training Paramedics</p> <p><u>A BS in Medicine along with advanced doctoral degree and licensure will allow students to enter into careers such as:</u></p> <p>Physical Therapists (DPT); Medical Physician (MD or DO), Professor (PhD), Pharmacists (PharmD), Dentist (DDS), Podiatrist (DPM), Optometrist (OD), Nurse Practitioners (DNP)</p>		
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Total units required to complete the degree	120	120	120
Upper-division units required to complete the degree	42 Minimum	45 Minimum	30 Minimum
Foundation courses			
Second language		None	
Math	Moderate Math Strand 3 Units	Minimum 3 units (Pre-Calculus)	Minimum 3 (Quantitative Reasoning)
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	No	Yes- To be admitted to this program, you must: <ul style="list-style-type: none"> • have or be currently pursuing an Allied Health Associate's degree through a regionally-accredited college • secure state certification or licensure upon completion of your Associate's degree • have a cumulative GPA of 2.5 or higher
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None	Major GPA: 2.00 minimum Cumulative GPA: 2.00 minimum	A cumulative grade point average of at least 2.0 on all work attempted at Northern Arizona University
Major requirements			
Minimum # of units required in the major (units counting towards major units and major GPA)	52	60	30
Minimum # of upper-division units required in the major (upper division units)	47	45	30

counting towards major GPA)			
Minimum # of residency units to be completed in the major	18	30	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.	<p><u>Statistics Requirement (3 units)</u> 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)</p> <p><u>General Sciences: (30 units)</u> 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); PHYS 102/198 or PHYS 141/142 Physics I 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 Introduction to Biology (3 units) PSIO 201 Human Anatomy and Physiology I and Lab (4 units); PSIO 202 Human Anatomy and Physiology II and Lab (4 units);</p>	None	Students can transfer up to 90 credits into the major
Major requirements. List all major	<p><u>Major Core: (33 units)</u> New MED 1** Introduction to Medical Health Care I (2 units)</p>	<p>3.0 GPA required</p> <hr/> <p>Occupational Therapy Professional</p>	<p>Take the following 30 units with a Grade of "C" or better in each course:</p> <ul style="list-style-type: none"> • HS 300, HS 320, FW 321, HS

<p>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.</p>	<p>FCM 201 Being a Healthcare Professional (3 units) New MED 2** 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) New BME 4** Introduction to Medical Devices and Their Utilization (3 units) New MED 4** Medical Ethics and Professionalism OR PSIO 411 Scientific Methods and Professional Ethics OR 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)</p> <p><u>Major Elective Areas: (19 units)</u> Theme 1- Medical Technology; BME 477 Introduction to Bioinformatics (instructor consent required) (3 units) BME 486 Biomaterial-Tissue Interactions New 3** Medical Tech Transfer CSC 250 Essential Computing for the Sciences</p>	<p>Track</p> <p><u>CHS 260: Health Professions Terminology</u> <u>PSY 341: Developmental Psychology (SB)</u> <u>PSY 366: Abnormal Psychology (SB)</u> <u>SOC 400: Perspectives on Aging (SB) or SOC 410: Race, Medicine, and the Body (L) or SOC 418: Aging and the Life Course (SB & H) or SOC 424: Women and Health (SB) or SOC 426: Social Inequality (SB) or SOC 427: Sociology of Health and Illness (SB)</u></p> <p>Optometry Professional Track</p> <p><u>MAT 251: Calculus for Life Sciences (MA)</u> <u>MIC 205: Microbiology (SG) AND MIC 206: Microbiology Laboratory (SG)</u> <u>PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)</u> <u>PHY 112: General Physics (SQ) AND PHY 114: General Physics Laboratory (SQ)</u></p> <p>Pharmacy Professional Track</p> <p><u>COM 225: Public Speaking (L)</u> <u>MAT 251: Calculus for Life Sciences (MA)</u> <u>MIC 205: Microbiology (SG) AND MIC 206: Microbiology Laboratory (SG)</u> <u>PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)</u></p> <p>Medicine (MD/DO) Professional Track</p> <p><u>BIO 340: General Genetics</u> <u>MIC 205: Microbiology (SG) AND MIC 206: Microbiology Laboratory (SG)</u> <u>PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)</u> <u>PHY 112: General Physics (SQ) AND PHY 114: General Physics Laboratory (SQ)</u></p> <p>Dentistry Professional Track</p> <p><u>PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)</u></p>	<p>404, HS 410 (15 units)</p> <ul style="list-style-type: none"> • HS 390W which meets the junior-level writing requirement (3 units) • HS 460C which meets the senior capstone requirement (3 units) • Any other Health Sciences (HS) or Fitness Wellness (FW) courses at the 300-level or higher (9 units) <p>HS 200 is a requisite for other courses that are required for this degree. You may transfer in an equivalent or be able to count it toward your general elective credit if taken at Northern Arizona University.</p>
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	<p>CMM 441: Brightfield Microscopy (1 unit) CMM 446: Fluorescence Microscopy (1 unit) CMM 442: Fundamentals of Digital Imaging (1 unit) LAW 476A – Dru (3 units) Discovery, Development, and Innovation to Reach the Marketplace New: Technology and Big Data in Individualized Care New SURG 4** Virtual Medical Care Training & Education in the Digital Age</p> <p><u>Theme 2- Basic Medical Sciences;</u> 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</p>	<p>PHY 112: General Physics (SQ) AND PHY 114: General Physics Laboratory (SQ) MIC 205: Microbiology (SG)</p> <hr/> <p>Physician Assistant (PA) Professional Track</p> <hr/> <p>CHS 260: Health Professions Terminology BIO 340: General Genetics MIC 205: Microbiology (SG) MIC 206: Microbiology Laboratory (SG)</p>	
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	<p>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 4** Medical Microbiology Basics (1 unit) New IMB 4** Medical Virology Basics (1 unit) MCB 301 Molecular Basis of Life (4 units) MCB 304 Molecular Genetics (4 units)</p> <p>Theme 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) New CMM 3** Health, Medical Care and Climate Change (3 units) New FCM 4** Introduction</p>		
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	<p>to Population Health Management (3 units) New FCM 4** Introduction to the Organization & Delivery of Health Services in the US (3 units) FCM 302 Clinical Health Disparities in Sexual and Gender Minority (SGM) Populations (2 units) New FCM 4** Addressing Health Disparities through Interprofessional Clinical-Community Collaboration “In the Field Course” (1-3 unit) New MED 2** The History of Medicine (3 units) New MED 3** The History of Medical Technology (2 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)</p> <p><u>Theme 4- Integrative and Practice-Focused Medicine</u> 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) New FCM 4** Creative Arts in Health, Healing & Wellness (3 units) New MED 4** Difficult Conversations in Patient</p>		
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	<p>Care: The Art of Empathy (1 unit)</p> <p>EMD 197 – Emergency Medical Technician (4 units)</p> <p>EMD 350 – Advanced Emergency Medical Services Systems (3 units)</p> <p>New NSC 2** Fundamentals of Precision Nutrition and Wellness (3 units)</p> <p>NSC 310 Principles of Human Nutrition in Health and Disease (3 units)</p>		
<p>Internship, practicum, applied course requirements (Yes/No). If yes, provide description.</p>	<p>Internship recommended</p>	<p>Internship recommended</p>	<p>No</p>
<p>Senior thesis or senior project required (Yes/No). If yes, provide description.</p>	<p>No</p>	<p>No</p>	<p>Yes- Capstone HS460C- This capstone course will focus on conceptual understanding of leadership and interprofessional teamwork and the analysis and synthesis of these concepts as observed in practice settings. While students will still engage in targeted observation in various practice settings (minimum of 24 clock hours required). Arrangements for observation experiences will NOT occur prior to the beginning of the course, as the requirements for these experiences will be introduced within the course. In addition to other course requirements such as quizzes and reflective discussions on selected course topics, students will produce a summative portfolio of important concepts and skills acquired throughout the degree program.</p> <p>HS 460C will require a Certificate of Eligibility from an advisor who will make sure you have met the requirements and will enroll you in the course. Degree progression plans should ensure that students</p>

			leave general electives as the preferred courses to be taken with HS 460C. If necessary, 400-level courses may be taken concurrently with the capstone. ALL other HS courses must be completed prior to the semester of the capstone.
Additional requirements (provide description)	None	None	None
Minor (specify if optional or required)	Optional	Optional	Required

*Note: comparison of additional relevant programs may be requested.

April 30, 2020

Todd W Vanderah
Professor and Head
Pharmacology, COM - T

Dear Todd:

In our roles as Dean and Deputy Dean for Education, we write in strong support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine.

This new Bachelor of Science in Medicine degree will help grow the overall number of students coming to UArizona as well as those enrolling on-line. In addition, several College/Department/Center faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities.

Sincerely,



Kevin F. Moynahan, MD
Deputy Dean, Education
Professor, Medicine



Michael M.I. Abecassis, MD MBA
Dean, College of Medicine - Tucson
Professor, Departments of Surgery & Immunobiology

KFM/al

Office of the Department Chair
Department of Medicine



1501 N. Campbell Avenue
P.O. Box 245035
Tucson, AZ 85724
Tel: 520.626.6349
Fax: 520.626.2919
<http://deptmedicine.arizona.edu>

May 9, 2020

Todd W Vanderah, Ph.D.
Professor and Head
Pharmacology, College of Medicine
University of Arizona Health Sciences

Dear Todd:

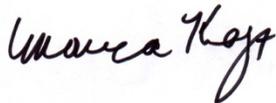
In my role as Professor and Chair, Department of Medicine, I am writing in strong support of the College of Medicine- Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Medicine and the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several Department faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincerely,



Monica Kraft, MD
The Robert and Irene Flinn Professor of Medicine
Chair, Department of Medicine, College of Medicine-Tucson
Deputy Director, Asthma and Airway Diseases Research Center
University of Arizona Health Sciences



THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
Molecular & Cellular Biology

Joyce Schroeder, PhD
Professor and Department Head
1007 E Lowell St
Tucson, AZ 85721
Telephone: (520) 621-7563
joyces@email.arizona.edu

Todd Vanderah, PhD
Head, Department of Pharmacology

May 8, 2020

Dear Todd,

After consultation with the faculty in my department, we cannot support this proposal to establish an undergraduate major in Medicine.

We are enthusiastic about several goals of the proposed major, particularly serving important audiences that are not well served by existing curricula. Medicine is indeed a growing industry in the country and the state, and the University is lacking in applied medicine coursework for students who will not pursue more advanced degrees. A new major focused on those students could be very beneficial to the University.

Unfortunately, in its current form, the proposed major is overly broad and ineffective in providing rigorous and appropriate preparation (i.e., too little for some and too much for others). While the new major is likely to appeal to many students preparing for healthcare careers, a fatal flaw is that it aims to serve students with very different needs using a single core curriculum. In essence, it under-prepares those headed for doctorates in fields such as medicine or pharmacy, while at the same time it overwhelms those headed for technical careers such as phlebotomy and massage therapy. In addition, as proposed a focal audience for the major is students whose goal is to pursue doctoral work in medicine, pharmacy, or dentistry. These students are already more than well served by multiple other majors on campus. The need for such a duplicative program is unclear and harms the overall educational experience on campus.

Training students for doctoral programs in medicine and health is not an area on campus that is under, or inappropriately, served. Students interested in further doctoral study are currently served by programs in Biology, MCB, Biochemistry, Neuroscience, and Physiology. The Medicine and Society theme is encompassed by the Care, Health & Society major offered by Sociology, and Anthropology offers a BS in Human Biology. These majors have all carefully developed curricula that fit the needs of students bound for professional programs in health and medicine. In MCB, we have spent years refining our pre-health curricula to ensure these students are competitive when applying to professional degrees and successful when they get there. We have recently developed an online program to reach additional students with similar career goals. We track the ever-changing requirements to enter professional schools, as well as the competencies needed to succeed on gate-keeping tests into post-bac programs. In addition, we have dedicated substantial time and research into developing and assessing methods to teach students to problem-solve and think creatively; these methods are incorporated into all our coursework. This type of focused attention to the diverse needs and requirements for student success is not transparent in the BS in Medicine proposal. Given the already fierce competition for this limited pool of students, this proposal to build yet another program to compete for the same students makes no sense fiscally and undermines the entire program to support pre-meds that currently exists on campus.

Importantly, the new BS in Medicine is lacking key requirements for many students. The General Science core of the proposed BS in Medicine major includes intensive foundational coursework in organic chemistry, physics and biochemistry, all necessary for medical school admission. The proposed curriculum lacks any required coursework in genetics or cell biology - both are required for admission to medical school. Genetics is among a long list of potential electives in the Basic Medical Sciences theme in the proposed major, but without careful advising, many students aiming for doctoral work in medicine will leave the major unprepared. Similarly, courses in organismal and evolutionary biology are not even available as electives, again missing a key aspect of biological education necessary for medical school admissions. In summary, the proposed curriculum does not include course work required to prepare students for admission to professional programs, and thus it does not serve well those students headed for doctoral work.

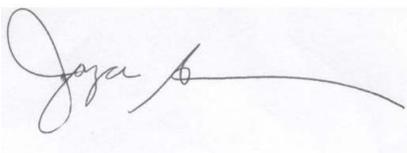
On the other hand, the intense science courses in the core curriculum are unnecessary for many of the students the major intends to serve. For example, the proposal highlights the need for more personal care aids, phlebotomists, and massage therapists. These students do not need organic chemistry, physics and biochemistry for their future goals, and the inclusion of such coursework in the core is likely to set many students up for failure or discourage some from entering the field. In short, the proposed curriculum serves many students in the target audience poorly, by including too many intensive science courses. For these students, we suggest that a certificate mechanism that students could couple with their existing majors might be more appropriate.

Beyond the curriculum itself, we are also concerned about the educational experience for students in the major. The scope of the proposed major is ambitious, with intent to encompass nearly 1000 students within a few years. Particularly given the curriculum issues highlighted above, those students will require careful one-on-one advising. Our Department and the College of Science have spent years developing a highly qualified and competent advising team that is keenly aware of the needs of the diverse student body we serve at the University of Arizona. We are concerned that a team of only two new advisors will struggle to advise so many students who are pursuing drastically different career goals.

We appreciate the goals of colleagues on the Medical campus to expand their undergraduate offerings, but the current proposal is not the way to do it. It is attempting to address too many student audiences and consequently it does not serve any of them optimally. It is also duplicative of existing efforts on campus, which creates needless confusion for the students and conflict among departments.

We are excited to work with our colleagues in the College of Medicine to improve education for students interested in medical and health related careers. But we urge that the current proposal be tabled and that a more targeted program be developed that focuses on students with unmet needs.

Sincerely,

A handwritten signature in black ink, appearing to read "Joyce", followed by a long horizontal flourish.

Joyce

May 14, 2020

Joyce Schroeder, PhD
Professor and Department Head
Molecular and Cellular Biology
College of Science
The University of Arizona

Re: *Response to letter sent by MCB on May 8th, 2020*

Dear Joyce,

Thank you for acknowledging the need for applied medicine courses for undergraduate education. This new major will provide exposure to these fields for students who do not plan to pursue advanced degrees, while also providing needed exposure and preparation for students who plan to pursue advanced degrees to help them succeed once enrolled in an advanced degree.

The broad nature of this major is intended to allow for personalization/customization for students who would like to pursue any medical or health related field.

We politely disagree that the BS in Medicine underprepares those headed for doctoral degrees. The pre-major course work required is similar in rigor to what is required in other life science majors at the UArizona. By customizing the electives, students can fulfill the requirements for entry into professional degree programs and pursue areas of interest as they make decisions about their future career paths. The number of credits required in the BS in Medicine is analogous if not greater than in other life science majors, thus providing ample preparation for advanced degrees. In addition, we are preparing a required internship that will entail a "hands-on" experience that will be geared towards a student's career ambitions; including doctoral and professional degrees.

Although we recognize that students who would like to pursue advanced degrees currently have alternative options at the University, the BS in Medicine program would provide unique courses and opportunities that other majors do not currently provide. The current majors offered at the University each provide a different focus in preparing students by emphasizing various areas of basic sciences needed for advanced degrees. The BS in Medicine will provide an additional path with a different focus, engaging clinical faculty in teaching undergraduate students, having clinical faculty share valuable career experiences and knowledge, thus adding a unique component that is not currently offered in such a direct and robust fashion. Our major plans are to use evidence based best practices in teaching and learning.

In addition, the major goal of the BS in Medicine degree is to attract *new* students from across Arizona, out-of-state and internationally rather than compete for the same pool of students. UAHS has committed funds to ensure that adequate and dynamic advertising, outreach and recruitment occur in order to increase the pool of students attending the UArizona. In partnership with the UA Global Administration team there is strong commitment by the faculty to prepare this BS in Medicine curriculum as part of the necessary global education mission. This mission has been identified as critical in aiding the entire University and will reach international students that may not have the ability to travel to the US.

Regarding the required courses included in this major, we have carefully surveyed and considered the requirements for medical school, and actively sought guidance from our own medical school curriculum director to confirm that the proposed program meets the admissions requirements. We included cell biology and genetics as elective options for students pursuing that path and we would be happy to include courses offered by MCB, including genetics, if your department gives approval for us to use these courses. Students will be provided with guidance on the elective courses that would best fit their chosen career path. Although

some courses in Biology are not included in our program, we are providing a different focus and an alternate path for students by offering other electives, making our major unique. In order to avoid course duplication, we have utilized many of the pre-existing courses across the campus with letters of support from the different departments.

We agree with the required need for careful one-on-one advising. Our current proposal includes two (2) academic advisors of which the current NACADA guidelines state that the ratio of advisor to students not exceed 1:400. Our designated academic advisors, and one educational specialist are expected to cover the one-on-one advising with a proposed ramp up as needed based on student numbers. We expect to hire additional advisors, educational specialists and staff as needed to support and guide students as, and if, the major grows over time. We also will be engaging a full time specialist with Global Education/on-line education in collaboration with the UA Global Office.

As we all are aware, the programs at UArizona are world class and students choose our science programs because of the expertise of our faculty, opportunities for student research and exposure to collaborative learning experiences that are unique to our campus. We too are excited to work with our colleagues in the College of Science and many other colleges and departments across the campus to meet these important expectations. It is our hope that we can utilize the experience, knowledge and teaching abilities of the many faculty in the Colleges of Medicine, Nursing, Pharmacy and Public Health, Engineering and others to advance and improve education for students interested in much needed medical and health related careers.

With best regards,



Todd Vanderah, PhD
Department Head, Pharmacology
Co-Director, MD/PhD Dual Degree Program
Professor, Pharmacology
Professor, Anesthesiology
Professor, Neurology
Professor, BIO5 Institute
Professor, Neuroscience – GIDP
Professor, Physiology - GIDP
COM University of Arizona
Director of the Comprehensive Pain and Addiction Center
Email: vanderah@email.arizona.edu
Office phone: (520) 626-7801



Biomedical Engineering
College of Engineering

1127 E James E Rogers Way
P.O. Box 210020
Tucson, AZ 85721-0020
(520) 621-5420
Fax: (520) 621-2130
<http://www.bmengr.arizona.edu>

Todd W. Vanderah, Ph.D.
Professor and Head
Pharmacology, COM

Dear Todd:

In my role as Department Head of Biomedical Engineering at the University of Arizona I am writing to state my support for the College of Medicine - Tucson proposal for a new Bachelor of Science in Medicine.

One core course for the new curriculum entitled *Introduction to Medical Devices and Their Utilization* will be developed and taught by BME faculty. Two existing BME courses, BME 476 – Introduction to Biomedical Informatics, and BME 486 - Biomaterial Tissue Interactions, will serve as technical elective for the proposed major. These two courses are housed within the Department of Biomedical Engineering and taught by BME faculty members. The department offers these courses regularly and is able to accommodate the anticipated increased enrollment generated from the new degree program.

The BME faculty working at the interface of technology and medicine are uniquely qualified to contribute to this new program.

I believe there is an urgent need to provide multiple strong educational pathways for students who wish to pursue careers in biomedicine. The BS in Medicine could fill a gap in current discipline-based pathways and allow faculty across multiple departments develop improved pedagogy for training the next generation of healthcare professionals.

Sincerely,

A handwritten signature in blue ink that reads 'Arthur F. Gmitro'.

Arthur F. Gmitro, Ph.D.
Professor and Head Department of Biomedical Engineering
Professor of Optical Sciences and Medical Imaging
University of Arizona



THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
COLLEGE OF MEDICINE TUCSON
**Chemistry
& Biochemistry**

Andrei Sanov
Professor and Interim Department Head

Chemistry & Biochemistry (CBC)
sanov@arizona.edu

1306 East University Blvd.
Old Chemistry (OC) 221B
The University of Arizona
Tucson, AZ 85721-0041
Tel: (520) 621-5672

April 22, 2020

To Whom It May Concern:

In my role as Interim Department Head of Chemistry and Biochemistry, I am writing in strong support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Chemistry and Biochemistry the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several faculty members in our department are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities.

Sincerely,

Andrei Sanov, PhD
CBC Department Head





THE UNIVERSITY OF ARIZONA
COLLEGE OF MEDICINE TUCSON

**Family & Community
Medicine**

Office of the Department Chair

Alvernon Administrative Offices
655 N. Alvernon Way, Suite 228
PO Box 210491
Tucson, Arizona 85711
Office: 520.626.7864
Fax: 520.626.2030
fcm.arizona.edu

April 22, 2020

University of Arizona Office of the Provost
Administration Building 512
PO Box 210066 Tucson, AZ 85721-0066

To Whom It May Concern:

In my role as Dept. Chair for Family and Community Medicine am writing in strong support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Family and Community Medicine (DFCM) and the Department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program. In addition, DFCM has unique clinical and community engagement programs that will be leveraged to create outstanding educational experiences for students, as well as the capacity to offer courses for on-line instruction.

Several of our DFCM faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincere regards,

Myra L. Muramoto, MD, MPH, FAAFP
Professor and Chair, Family and Community Medicine
Professor, Public Health, Mel & Enid Zuckerman College of Public Health



April 30, 2020

Dr. Todd W. Vanderah
Professor and Head
Pharmacology, COM

Dear Todd:

In my role as Department Head in the Physics Department, I am writing in strong support of the College of Medicine - Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Physics Department and the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several College/Department/Center faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincerely,



Sumit Mazumdar
Professor and Head
Physics Department
College of Science



Nicholas A. Delamere Ph.D.
Professor and Head
College of Medicine
Department of Physiology
PO Box 245051



Tucson, Arizona 85724-5051
(520) 6626-6425
FAX (520) 626-2382
Email: delamere@arizona.edu
URL: www.physiology.arizona.edu

April 22, 2020

Professor Todd Vanderah,
Head, Department of Pharmacology.

Re. BS in Medicine.

Dear Todd,

I am writing this letter in support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine.

Several required courses in the proposed major are taught by the Department of Physiology. The Department will support the enrollment of Medicine majors in these courses. We anticipate being able to accommodate the extra enrollment generated by this new degree program.

The Department of Physiology faculty includes a number of experts in the scholarship of education, engagement and program assessment. These faculty members are uniquely qualified to contribute to the new BS as teachers and leaders.

You and I, along with our faculty colleagues, recognize the need for the University of Arizona to provide a range of different educational pathways for undergraduate students. The proposed BS in Medicine is an interesting addition to the current offerings.

Sincerely,

A handwritten signature in blue ink, appearing to read "Nicholas A. Delamere". The signature is fluid and cursive, with a long horizontal stroke at the end.

Nicholas A. Delamere, Ph.D.
Professor and Head
Department of Physiology

April 22, 2020

Todd W. Vanderah
Professor and Head
Department of Pharmacology
University of Arizona, COM

To Whom It May Concern:

In my role as Professor and Chair am writing in strong support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Pathology and the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several College/Department/Center faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincerely,



Achyut Bhattacharyya, MD
Professor and Chair
Department of Pathology

JANKO NIKOLICH-ZUGICH, MD, Ph.D. 1656 E. Mabel Street
Head, Department of Immunobiology P.O. Box 245221
Co-Director, Arizona Center on Aging Tucson, AZ 85724-5221
Bowman Professor in Medical Research Tel: (520) 626-6409
College of Medicine Fax: (520) 626-6477



April 22, 2020

Todd W. Vanderah, Ph.D.
Professor and Head
Department of Pharmacology
College of Medicine
University of Arizona

To Whom It May Concern:

In my role as Bowman Professor and Head of the Department of Immunobiology, I am writing in strong support of the College of Medicine- Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Immunobiology, including IMB 401, IMB 402, IMB 404, IMB 548, IMB 565 and other cross departmentally-listed common courses. These courses are offered regularly and several of them will be offered as online options. We will be able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several faculty members of the department are leaders in their fields and are uniquely qualified to contribute to the program.

More importantly, there is an urgent need to provide new educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities.

Sincerely,

nikolich@email.arizona.edu
Appts/Admin: Ms. Lori Wieland, 520/626-9025; lwieland@email.arizona.edu



OFFICE OF THE SENIOR VICE PRESIDENT FOR HEALTH SCIENCES

May 1, 2020

Todd W. Vanderah
Professor and Head
Department of Pharmacology
University of Arizona College of Medicine

Dear Todd:

In my role as Senior Associate Vice President for the University of Arizona Health Sciences, I am writing to voice my strong support for the proposal to develop a new Bachelor of Science in Medicine in the College of Medicine — Tucson.

An undergraduate degree in medicine is an idea whose time has come, and the University of Arizona is well-positioned to take the lead. The innovative program will perfectly complement existing undergraduate programs by giving students the opportunity to explore multiple career options while gaining a base of knowledge in the health sciences. Not every student interested in health care wants to go to medical school; this program will serve students by giving them the foundational learning needed to chase their dreams in a way that can be tailored to their interests, whether that is as a professional health care worker, health care lawyer or medical business administrator.

Courses listed as required for the proposed major are housed in colleges across the university, creating a curriculum that gives students a solid background in human medical science while also focusing on applied topics such as medical technology and patient interaction. This program will be particularly valuable in increasing student diversity by allowing students from underrepresented groups the chance to immerse themselves in an educational environment that focuses on health sciences and promotes clinical reasoning and case-based learning. Students will gain the tools they need to succeed from faculty members who are leaders in their fields and uniquely qualified to contribute to the program.

Finally, the potential for courses in the Bachelor of Science in Medicine program to be taught online makes it easily translatable for use in the University of Arizona's international programs, including our strong network of micro-campuses. The College of Law's new undergraduate law degree is the first of its kind in the U.S. and is already highly successful. It is time for the College of Medicine – Tucson to follow suit by offering students a Bachelor of Science in Medicine.

Sincerely,



Irving L. Kron, MD
Senior Associate Vice President, Health Sciences
Professor, Surgery

April 29, 2020

Todd W Vanderah
Professor and Head
Pharmacology, COM

Dear Todd:

In my role as Chair, Department of Emergency Medicine, I am writing in strong support of the College of Medicine- Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Emergency Medicine and the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several College/Department/Center faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities.

Sincerely,



Samuel M. Keim, MD, MS
Professor and Chair
Department of Emergency Medicine
Professor of Public Health
Mel and Enid Zuckerman College of Public Health
The University of Arizona
sam@aemrc.arizona.edu



DEPARTMENT OF CELLULAR
& MOLECULAR MEDICINE

Medical Research Building 315
1501 N. Campbell Avenue
PO Box 245044
Tucson, AZ 85724-5044

Ofc: 520-626-6084
Fax: 520-626-2097

<http://cmm.arizona.edu>

April 22, 2020

To Whom It May Concern:

In my role as Professor and Head of the Department of Cellular and Molecular Medicine (CMM) am writing in strong support of the College of Medicine- Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of CMM. The department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several CMM faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincerely,

A handwritten signature in black ink, appearing to read 'Carol C. Gregorio', with a large, stylized flourish at the end.

Carol C. Gregorio, PhD
Department Head, Cellular and Molecular Medicine
Interim Executive Director for UArizona Health Sciences Global
Online Assistant Vice Provost for Global Health Sciences
Co-Director, Sarver Heart Center
Director, Molecular Cardiovascular Research Program
Professor, Cellular and Molecular Medicine
Professor, Molecular and Cellular Biology
Professor, BIO5 Institute



May 2, 2020

Todd W. Vanderah
Professor and Head
Department of Pharmacology
University of Arizona College of Medicine

Dear Dr. Vanderah,

In my role as the Senior Vice President for Health Sciences, I am writing to offer my full support of the College of Medicine – Tucson's proposal for a new Bachelor of Science in Medicine.

There is an urgent need to provide new educational pathways to students who choose the University of Arizona. Several existing pre-med programs allow students to begin their education in health care at the University of Arizona, but those programs are often in specific areas of interest with an end goal of obtaining admission to medical school. This undergraduate program will offer incoming students a multi-disciplinary look at the medical field while providing them with a foundation of knowledge in human medical science, new medical technology and health care practice that will prepare them for a diverse range of careers.

The program will provide a launching point for students to explore a variety of job opportunities in the medical industry and in complementary fields. Graduates of the program will be prepared to enter the workforce in health care support positions or continue their education in a graduate or professional degree program. The program also provides a baseline understanding the basic science of human medicine for students who wish to practice in law, business or other areas.

The proposed Bachelor of Science in Medicine will allow departments to leverage new and existing courses in novel ways and provide much-needed enrollment opportunities for students at the University of Arizona. In the Health Sciences, we are committed to promoting and supporting this first-of-its-kind program, as it aligns with our strategic goal of offering new, relevant educational degrees and certificate programs in a changing world.

Sincerely,

Michael D. Dake, MD
Senior Vice President
University of Arizona Health Sciences



May 1, 2020

Todd W Vanderah
Professor and Head
Pharmacology, COM

Dear Todd,

In my role as Department Head, I am writing in strong support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine. Several courses listed as required for the proposed major are housed within the Department of Pharmacology and Toxicology. The department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program. In addition, several faculty members in my department are leaders in their fields and are uniquely qualified to contribute to the program. Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities.

Sincerely,

Xinxin Ding, Ph.D
Professor and Head
Department of Pharmacology and Toxicology
xding@pharmacy.arizona.edu



THE UNIVERSITY OF ARIZONA

Mel & Enid Zuckerman
College of Public Health

Roy P Drachman Hall
1295 N Martin Avenue
P.O. Box 245210
Tucson, AZ 85724-5210
Tel: (520) 626-3589
Fax: (520) 626-8009

Division of Community, Environment and Policy

April 29, 2020

Todd W Vanderah
Professor and Head
Pharmacology, COM

Dear Todd:

In my role as Professor and Chair am writing in strong support of the College of Medicine- Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Department of Community, Environment and Policy and the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

In addition, several College/Department/Center faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincerely,

Kelly A. Reynolds, PhD
Professor & Chair, Community, Environment and Policy
Director, Environment, Exposure Science and Risk Assessment Center (ESRAC)
ESRAC: www.ESRAC.arizona.edu





THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE

Mathematics

617 N. Santa Rita Avenue
Tucson, Arizona 85721
www.math.arizona.edu

May 1, 2020

Executive Director
Academic/Curricular Affairs
University of Arizona

RE: Bachelor of Science in Medicine

Dear colleagues,

I am writing to express the support of the Department of Mathematics for the proposed new Bachelor of Science major in Medicine to be offered by the College of Medicine – Tucson. In particular, the Math Department has no objections to the inclusion of the following courses as electives for the new degree:

MATH 163 (Basic Statistics)

MATH 263 (Introduction to Statistics and Biostatistics)

We expect to offer these course each fall and spring, and we expect to be able to accomodate the additional students without any difficulties. Normal prerequisites and registration priorities will apply.

Sincerely,

Douglas Ulmer
Professor and Head

May 5, 2020

Delivered electronically

Todd W. Vanderah
Professor and Head
Pharmacology, COM

Re: Letter of Support for B.S. in Medicine

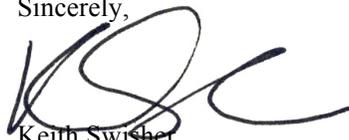
Dear Todd:

The College of Law writes in strong support of the College of Medicine - Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed for the proposed major are housed within the College of Law, and the College of Law offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program. These courses include: Law 452 - Health Law; Law 478A - Legal and Regulatory Aspects of Healthcare Delivery; Law 480A - Liability and Regulation of Healthcare Professionals; and Law 476A - Drug Discovery, Development, and Innovation to Reach the Marketplace. In addition, the College of Law faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, there is a pressing need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities.

Sincerely,



Keith Swisher
Professor of Legal Ethics
Director, B.A. in Law and MSL Programs



**DEPARTMENT OF NUTRITIONAL SCIENCES
COLLEGE OF AGRICULTURE AND LIFE SCIENCES**

Shantz Building
1177 E. 4th Street
P.O. Box 210038
Tucson, AZ 85721

Tel: 520-621-1187
Fax: 520-621-9446

<http://nutrition.cals.arizona.edu>



May 12, 2020

Todd W Vanderah
Professor and Head
Pharmacology, COM

Dear Todd:

In my role as Head of the Department of Nutritional Sciences I am writing in strong support of the College of Medicine- Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Head of the Department of Nutritional Sciences and the department offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

Many of our Department faculty members are leaders in their fields and are uniquely qualified to contribute to the program.

Finally, and most importantly, there is an urgent need to provide educational pathways to students. The BS in Medicine will allow departments to leverage existing and new courses in novel ways and provide much needed enrollment opportunities

Sincerely,

A handwritten signature in black ink that reads 'Scott Going'.

Scott Going
Professor and head
Department of Nutritional Sciences
College of Agriculture & Life Sciences



THE UNIVERSITY OF ARIZONA
College of Medicine
Tucson

DEPARTMENT NAME

Building Name & Number
Street Address (or PO Box if
necessary)

PO Box #####

City, ST 12345-1234

Ofc: 000-000-0000

Fax: 000-000-0000

URL

May 16, 2020

Todd W Vanderah
Professor and Head
Pharmacology, COM

Dear Todd:

In my role as Interim Director of the Writing Program am writing in support of the College of Medicine-Tucson proposal for a new Bachelor of Science in Medicine.

Several courses listed as required for the proposed major are housed within the Writing Program within the Department of English. The Writing Program offers these courses regularly and is able to accommodate the anticipated enrollment generated from this new degree program.

Sincerely,

Rochelle L. Rodrigo, Ph.D.
Interim Director Writing Program
Associate Professor of Rhetoric, Composition, and the Teaching of English
Continuing Status, Department of English



Core issues to address in revising the proposal for the B.S. in Medicine:
(Responses to the revised proposal are in blue text)

Ability to meet demand of this new major

This is within our purview on CAAC because of the potential size and rapid growth of the program and downstream budgetary issues.

- _Please flesh out your budgetary plan for leadership. We strongly advocate support for a full-time Director and co-Director (Letters of support from the COM would be helpful).
- _Please convey your budgetary plan for escalating the hiring of support staff and student advisors if enrollment exceeds projections. Letters of support would be helpful here as well.

See Section XVI ABOR Requirement: New Resources Required?

We have included a Director and Co-Director (*full support for Director (1.0 FTE) and 0.5 FTE for co-Director with expansion to 1.0 FTE depending on growth/enrollment*) along with a plan for escalation of student advisors, staff and education/technical specialist based on student enrollment. Letters of support are now added from Senior Vice President of the Health Sciences and from the Dean of the COM-Tucson. As an example of the dedication to the UG programs under the COM-T, there has been a recent part time (0.4 FTE) hire of a faculty member from the Department of Physiology to help with our undergraduate programs. This is in addition to supporting the faculty/staff/etc. in the Department of Physiology in the COM-T.

Ability to support the program's unique perspective in educating students

The first two bullet points are critical because they speak to how your program will prepare students differently than other pre-health majors

- Please update where courses are in development and that you have instructors lined up to teach these courses (proposals often convey this information even if not stated directly in the instructions)

We have updated course Directors (in red on application next to each new course) and are finalizing the new course syllabi. The syllabi are being collected for all new courses for submission by the end of December. Several required courses are new and are already offered including (i.e., FCM 201, CMM 410, PSIO 467, IMB 401, MED/PHIL 321, PCOL 406, PSIO 411, PSIO 431, PHCL 412, PATH 415/515, FCM 496D)

- Please convey more information about how students will obtain experience, not just classroom-based discussion, but case-based and clinical reasoning beyond classroom-based discussions, as well as how many students in the major will be able to participate. It doesn't seem feasible to provide clinical on-site experiences for a large number of undergraduates given the necessity of adequate faculty:student ratios and student credentialing that may be required by clinical sites. Or perhaps the primary method for giving hands-on experience is through the capstone type course?

The courses outlined include multiple case-based and clinical reasoning sessions that include 'non-didactic' activities. For example, FCM 201 "Being a Healthcare Professional" (3 units) directed by Dr. Paul Gordon (MD) has **All** 'lectures' use think-pair-share with the use of 'clickers'



November 20, 2020

University of Arizona College Academic Administrators Council
Attention: R. John Koshel, CAAC Chair

Dear Dr. Koshel and College Academic Administrators Council Members:

I am very supportive of the proposal for a new Bachelor of Sciences Degree Program in Medicine. This BS in Medicine program will offer students additional options for earning a degree in the health sciences. I believe these new opportunities will increase student enrollment while increasing the pipeline of students able to fill the demand of healthcare workers in the State. In addition, I expect the program will increase the number of students interested in moving into our professional health-care programs.

I am very aware that there may be a large number of students enrolling into this program. As such, the program will require significant support in terms of staff, student advisors and faculty. Over the past two years we have been steadily increasing our support for student education, including new hires of staff and faculty as well as investing in infrastructure (both on-line and in class) to support undergraduate and graduate education.

Based upon an anticipated large student enrollment into the BS in Medicine program, I pledge to support the needs of the program by working with the Deans of the College of Medicine (Tucson and Phoenix) to ensure appropriate resources are available to support student success and that faculty have dedicated time for both creation and delivery of courses. Our support extends to the Health Sciences Simulation Lab, where we will offer a unique opportunity for “hands-on learning” and support for the clinical opportunities that we want to provide for students.

The distinctive curricular offerings - clinical opportunities, shadowing, simulation, “in-field” studies, etc. - all take significant support and organization, but together they provide a very special experience that utilizes our health care professionals to teach students in a health care professional work environment. We have every intention of creating a “top-notched” BS program that attracts students from all over the State as well as nationally.

For these reasons, I am fully committed to provide financial and infrastructural support of the BS in Medicine program.

Sincerely,

Michael D. Dake, MD
Senior Vice President for Health Sciences

for continuous student involvement, incorporates two panel discussions which focus on questions from students, there is an Interdisciplinary case conference with the other colleges in the Health Sciences, an interprofessional panel discussion based on cases with student input. In addition, this course as well as the design of other courses includes a ‘Group project’ as well as several small groups working on medical cases related to social determinants of health, health disparities and career in health inequities. These projects are presented by each group to the entire class. Finally, this course offers sessions on ‘How Clinicians Think’ which covers multiple fundamentals of clinical reasoning. Under non-COVID times, the course has had access to ‘live’ patient presentations with all intentions of having this return when given permission.

As pointed out by CAAC, our introductory courses will not offer a ‘hands on clinical experience’ simply due to the expected size but will require an ‘off-site’ clinical related report that will require students to investigate, interview, volunteer, etc. at their choice of clinical setting. This can be as wide as the business side of medicine, the direct practice of medicine, nursing, physical therapy, dentistry, retirement-home care, integrative medicine practice, medical law, medical tech, medical device engineering, medical software-design, etc. There will be classroom times of case-based instruction and instructor-led clinical reasoning, for example in a grand rounds format. When the time is appropriate, patient guests, and other guests in the medical field will be invited to a classroom to give students a chance to experience the many careers in medicine. We are currently taking advantage of patient videos for learning opportunities that allow for great discussion in medical care. These videos often involve the family of patients, the clinical team that is taking care of the patients and the environment surrounding care (i.e., insurance, tools, devices, medications, long-term therapy, ethical-issues, health inequities, etc.). As a new simulation lab comes on board in the Health Sciences, we will have small group cases for students to participate with ‘hands-on’ clinical learning.

All our courses and directors of these new courses are required to have ‘clinical experiences’ -- for example, paper cases, video cases, patient and/or health professional guest speakers, shadowing of health professionals, patient simulator technology, etc. -- built in to course curricula. Each course director is challenged with creating new modalities in teaching clinical experiences.

- Recommendation: Color coding in your table of major requirements to better convey how courses support your learning objectives (unless you can think of a better way to convey this information). This will help the committee better see how well you support your learning objectives across the program.

See Section VIII STUDENT LEARNING OUTCOMES AND CURRICULUM MAP

Courses under each of the Learning objectives include required courses as well as added elective courses in each of the themes.

Issues regarding UA Global/name of degree

We find it a plus that this program will aid students in learning medical terms in English and provide pathways for obtaining employment in international hospitals – but crucial to balance these pluses against students and families misunderstanding the level of medical training the degree confers, that the degree does not lead to licensure.

It will be stated clearly in all materials that are used to describe the Program as well as materials used for advertisement/recruitment that the BS in Medicine Program will not include licensure to practice medicine. This will be noted on the website and in all forms of public information including all materials used for UA Global.

Collaborations across the university

You state that you would like to work collaboratively with other programs to allow robust options for students interested in medical education and medical careers. We think this is essential to a larger plan to bring more undergraduates overall to the university. We would love to have more discussion of the topics below.

- Dual degrees
- Certificates: Might certificates be developed later, in areas such as those related to the 4 tracks
- Minors for majors in the life sciences to obtain experience in case-based reasoning, clinical training and other aspects of your program

Thanks for these suggestions. We have already started communication with educational directors in multiple colleges including Applied Humanities (i.e., we are working on a separate emphasis in the BA in Humanities and medicine). Additionally, we have opened discussion in the Applied Sciences and Technology degree program regarding added courses and emphasis.

We are excited to offer dual degree programs with other majors such as Physiology, Molecular and Cellular Biology, Nutritional Sciences, Biochemistry, Law, Care Health and Society, American Indian Studies, Information-Science-Technology, and Spanish.

We will begin work on organizing a minor following successful application for the full Bachelor of Science.

It is also our intent to begin work on offering a certificate that includes more of our “hands on” courses and clinical shadowing/experiences. The certificate will be based on fulfilling a certain number of unit hours in courses that give exposure to clinician/patient interactions and help develop clinical problem solving skills.

We are continuing to reach out to others across campus to develop areas of emphasis under degree programs, share in courses, grow our areas of emphasis, work with other programs for dual degree offerings, etc. We believe that our faculty and college have something to offer that will aid in many of the programs across campus.



THE UNIVERSITY OF ARIZONA
College of Medicine
Tucson

1501 N. Campbell Ave.
P.O. Box 245017
Tucson, AZ 85724

Ofc: 520-626-4555
Fax: 520-626-6252
medicine.arizona.edu

OFFICE OF THE DEAN

November 18, 2020

University of Arizona College Academic Administrators Council
Attention: R. John Koshel, CAAC Chair

Dear Dr. Koshel and College Academic Administrators Council Members:

Thank you for your thoughtful review of the proposed new Bachelor of Sciences Degree Program in Medicine. The premise of the BS in Medicine program is to offer students additional options towards careers in the health sciences, particularly as healthcare providers given the current and predicted shortages both locally in the state of Arizona as well as nationally. We believe that while there may be some risk of overlap with other such offerings, this potential risk is greatly offset by the high likelihood of attracting additional students to UArizona, offering them a more direct exposure and pathway towards becoming healthcare professionals. We strongly believe that by offering this additional option to students in pursuit of these careers in the context of existing programs, there will be an opportunity to expand access to professional careers in this space at UArizona.

We are keenly aware of issues that have been raised regarding this particular offering. For instance, concerns have been raised regarding the possibility of high enrollment that would require significant support in staff, student advisors and faculty as well as other resources. In the past year, we have been steadily increasing the infrastructure for student education, especially for our non-MD undergraduate students, including the hiring of a director for this group of students within the structure of our vice-dean for education, Dr. Kevin Moynahan. These additional hires are designed support both on line and in class educational activities. As we have planned adding resources to this infrastructure, we have taken into consideration mechanisms to flex these up as needed in response to high enrollment in these programs, including the proposed new offering. On behalf of the COM-T, as the person ultimately responsible for making sure our educational programs are successful, I can assure you that we will continue to be responsive to the needs of these programs as they grow with respect to staff, student advisors, faculty, etc. As an example, based on my discussions with the BS in Medicine Design Committee, we plan to provide support for student advisors at approximately one advisor for every 200 to 300 students enrolled. Also, I will be working with several department chairs in the COM-T to help provide salary and other support for their faculty including dedicated time for creating and delivering course content and oversight. Our support will underscore the importance of “hands on learning” and of exposure to clinical opportunities that form part of the uniqueness of this offering. Our overarching goal is to include exposure of students to clinical settings, opportunities to shadow clinical providers, simulations of clinical situations, ‘in-field’ studies, and participation in activities of medical and other healthcare professional societies. These activities will require specific and significant support and organization that leverages daily activities of our clinical faculty and their work environment. In addition, to further provide strength and depth to the offering, we will be working with deans and associate education deans in other Health Science colleges,

as well as other colleges across campus to create new collaborations as well as expanding existing collaborations to develop areas of emphasis in their respective BA/BS programs. We will be working to develop combinations of dual majors, a minor in medicine that may be desirable of other BA/BS programs and to work on a certificate of clinical experiences that may add to students goals of careers in the health-related professions. In fact, we have already initiated several conversations with other colleges towards this end.

In summary, I would like to assure the committee that the COM-T will make every effort to make sure that the BS in Medicine becomes a 'top-notched' program that attracts students from the state of Arizona, the rest of the nation, as well as from the international community. While I am sure we will experience a 'learning curve' in the process, I am confident that we will ultimately create a superior offering that we can all be proud of. I will certainly provide the necessary support to make this a highly successful venture and remain highly supportive of this initiative.

Once again, thank you for your consideration, and I am available to answer any questions you might have.

Respectfully,

A handwritten signature in black ink, appearing to read "M. Abecassis". The signature is fluid and cursive, with a large initial "M" and a long, sweeping underline.

Michael M.I. Abecassis, MD, MBA
Dean, College of Medicine – Tucson
Professor, Departments of Surgery and Immunobiology

BS in Med Undergraduate Course	Course Name	Syllabus Status	Proposed Course Number	# of units	Notes
	Introduction to Population Health Management	Final	FCM 496E	3 units	Submitted
	Medical Ethics and Professionalism	Final	FCM 401	3 units	Submitted
	Careers in Medical Health Sciences	Final	FCM 296 - Seminar	2 units	Submitted
	History of Medicine	Final	MED 318	3 units	Submitted
	History of Medical Technology	Final	MED 319	3 units	Submitted
	Community Health Field Training Experience	Final	FCM 498	3 units	Course was re-submitted for 3 units (originally 2)
	Addressing Health Disparities through Interprofessional...	Final	FCM 402/502	3 unit summer course	Submitted
	Introduction to Medical Care	Final	MED 101	2 units	Submitted
	Healthcare Professional Well-being	Final	MED 301	1 unit	Submitted
	Virtual Medical Care Training & Education	Final	SURG 401	2 units	Submitted
	Intro to Tech Transfer	Final	PHCL 386	3 units	Submitted
	Difficult Conversations in Patient Care	Final	FCM 303	1 unit	Submitted
	Parallel History of Medicine & Law	Final	MED 320	3 units	Submitted
	Introduction to Medical Devices and Their Utilization	Final	MED 441	3 units	Submitted
	Arts and Community Health: Intercultural Perspectives and Applications: Part I – Foundation	Final	FCM424a	1 unit	Submitted
	Arts and Community Health: Intercultural Perspectives and Applications: Part II – Focus on Disabilities and Client-Centered Practices	Final	FCM424B	1 unit	Submitted
	Arts and Community Health: Intercultural Perspectives and Applications: Part III – Focus on Arts and Aging, Dementia & Brain Health	Final	FCM 424C	1 unit	Submitted

Major Core Degree Requirements:

Syllabi Completed and “On The Books”

FCM 201 *Being a Healthcare Professional* (3 units) (Paul Gordon)
CMM 459 & 461 *Clinical Reasoning and Medical Case Based Learning* (2 units)(Ray Runyan PhD)
CMM 410 *Human Histology: An Intro to Pathology* (3 units) (Helen Amerongen)
OR equivalent *Histology*, CMM 437, and 438 and 439 (1 unit each)
PSIO 467 *Endocrine Physiology* (3 units)(Dawn Coletta and Randi Weinstein)
IMB 401 *Medical Microbiology & Immunology* (4 units) (Nafees Ahmad)
OR PSIO 431 *Physiology of the Immune System* (3 units) (Zoe Cohen)
PHCL 412 *Intro to Pharmacology* (3 units)(Sally Dickinson)
OR PCOL 406 *Comprehensive Human Pharmacology* (5 units) (Richard Vaillancourt)
PATH 415 *Mechanisms of Human Diseases* (3 units) (Mark Nelson)
FCM 496D *Disability Perspectives in Research, Policy, and Practice* (3 units) (Ron Sorensen)

Syllabi Completed and Submitted to UACCESS for new course approval

MED 101 *Introduction to Medical Care* (2 units) (Julia Jernberg, MD, Randy Horwitz MD)
FCM 296 *Seminar- Careers in Medical-Health Sciences* (2 unit) (Patricia Lebensohn MD, Paul Gordon MD)
FCM 401 *Medical Ethics and Professionalism* (Patricia Mayer MD and Violet Siwik MD)
additional option PSIO 411 Scientific Methods and Professional Ethics
additional option MED/PHIL 321 Medical Ethics (3 units)
MED 441 *Introduction to Medical Devices and Their Utilization* (3 units)(Marvin Slepian MD, PhD)

Major Core Degree **Elective** Requirements:

Emphases 1- Medical Technology;

Syllabi Completed and “On The Books”

BME 477 *Introduction to Bioinformatics* (instructor consent required) (3 units)
BME 486 *Biomaterial-Tissue Interactions*
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)

Syllabi Completed and submitted to UACCESS for new course approval

PHCL 386 Intro to Tech Transfer in Medicine (3 units)
SUG 401 Virtual Medical Care Training & Education in the Digital Age (2 units)

Syllabi Completed and in the process of being reviewed for submission

BME 4** Technology and Big Data in Individualized Medical Care (Fuad Rahman PhD , Marvin Slepian MD, PhD)
MED 4** Clinical Applications of Medical Technology (Janet Corral PhD, Julia Jernberg MD)

Emphases 2- Basic Medical Sciences;

Syllabi Completed and “On The Books”

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)
IMB 402 Medical Microbiology Basics (1 unit) (Nafees Ahmad)
IMB 404 Medical Virology Basics (1 unit) (Nafees Ahmad)
MCB 301 Molecular Basis of Life (4 units)
MCB 304 Molecular Genetics (4 units)

Emphases 3-Medicine and Society;

Syllabi Completed and "On The Books"

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)(Mona Arora)
FCM 302 Clinical Health Disparities in Sexual and Gender Minority (SGM) Populations (2 units) (Uma Nair)
HIST 373 Politics of Health and Medicine in the Americas: From Historical Roots to Contemporary Development (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)

Syllabi Completed and submitted to UACCESS for new course approval

FCM 496E Introduction to Population Health Management (3 units) (Ron Sorensen MS, MA)
FCM 402/502 Addressing Health Disparities through Interprofessional Clinical-Community Collaboration (3 unit) (Armin)
New MED 318 The History of Medicine (3 units) (Robert Segal MD)

New MED 319 The History of Medical Technology (2 units) (Robert Segal MD)

New MED 320 Parallel History of Medicine and Law (3 units)

Emphases 4- Integrative and Practice-Focused Medicine

Syllabi Completed and "On The Books"

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)

EMD 197 – Emergency Medical Technician (4 units)

EMD 350 – Advanced Emergency Medical Services Systems (3 units)

PHP 205 - Fundamentals of Telehealth (3 units) (Gail Barker)

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)

Syllabi Completed and submitted to UACCESS for new course approval

FCM 242a Arts and Community Health: Intercultural Perspectives and Applications: Part I – Foundation (1 unit) (Yumi Shirai, MD, Jennie Gubner MD)

FCM 424b Arts and Community Health: Intercultural Perspectives and Applications: Part II – Focus on Disabilities and Client-Centered Practices (1 unit) (Yumi Shirai, MD, Jennie Gubner MD)

FCM 424c Arts and Community Health: Intercultural Perspectives and Applications: Part III – Focus on Arts and Aging, Dementia & Brain Health (1 unit) (Yumi Shirai, MD, Jennie Gubner MD)

NSC 2** Fundamental of Precision Nutrition and Wellness (3 units)

FCM 498 Community Health Field Training Experience (2 units) (Ron Sorenson)

FCM 303 Difficult Conversations in Patient Care: The Art of Empathy (1 unit) (Gordon MD & Lebensohn MD)

MED 301 Healthcare Professional Well-being (1 unit) (Mari Anoushka Ricker MD & Patricia Lebensohn MD)

Optional working towards required (to be phased in due to more hands-on courses)

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)

New MED 4** Skills for advancement and work place professionalism in medicine (Zoe Cohen, Tejal Parikh)