

## EXECUTIVE SUMMARY

### UC DAVIS SCHOOL OF MEDICINE CURRICULUM REDESIGN:

#### **Integrated EXplorative Patient- and Learner-Oriented Education (I-EXPLORE) Three-Phase Education (e<sup>3</sup>)**

December 2019

#### **The UC Davis School of Medicine Curriculum**

Within our 50+ year history as a medical school, UC Davis School of Medicine has undergone multiple rounds of curricular revision based on our evolving needs and the changing landscape of medical education. Our last significant curricular changes were 15-20 years ago. The current UCD School of Medicine curriculum:

- Is essentially organized a Flexnerian “2 + 2” model
- Comprises 30+ individual, mostly single-department owned courses across 4 loosely themed blocks in Years 1 & 2
- Ends with a dedicated USMLE Step 1 study period in Year 2

The clerkship-based third year is prefaced by a “Transition to Clerkships” course, followed by clerkships in Surgery, Internal Medicine, Obstetrics/Gynecology, Pediatrics, Psychiatry, and Family Medicine (differently ordered for each student). Longitudinal experiences in Primary Care and Doctoring are also included.

The fourth-year supplies breadth and depth while helping students to select and prepare for residency, ending with a “Transition to Residency” course immediately before graduation.

A map of the current UCD School of Medicine curriculum can be found in [Appendix A](#).

#### **Our Curriculum Redesign Process**

In December 2018, UC Davis Vice Chancellor of Human Health Sciences David Lubarsky and Interim Dean of the School of Medicine Lars Berglund asked Associate Dean for Curriculum and Medical Education Kristin Olson to assemble a diverse curriculum design team (CDT) charged with drafting 2-3 curriculum redesign plans by December 2019. In addition to Associate Dean Olson, the final CDT included 11 faculty and 2 residents representing 10 School of Medicine departments, 2 medical students, and 2 Office of Medical Education staff.

CDT members met twice monthly beginning in March 2019. Each meeting was led by rotating team members who shared evidence (e.g., journal articles and editorials, surveys, external and internal reports, etc.) germane to the monthly topic, prepared presentations, and drafted voting ballots, with Associate Dean Olson taking a facilitator/assistant role throughout the process. Because the discussion was considered an essential component of the design process, CDT

members only cast votes if they were present for the discussion. Proposals advanced if 2/3 or more of the voting members voted in favor. Associate Dean Olson only cast tie-breaking votes, which occurred with <5% of proposals.

Our timeline was ambitious, but unavoidable so given the gravity of the community concerns regarding the curriculum and the upcoming LCME visit in January 2022. Because we had not undertaken significant curriculum redesign in some time, there were many issues to consider in a short period. We needed to proceed quickly and efficiently, while making every effort to be inclusive, open-minded, and transparent about our process. Input was solicited from the broader community via surveys, forums, meetings with department chairs and key department educators, other one-on-one or small group discussions, presentations in committees, email, and a publicly available website.

### **Why Does Our Curriculum Need to Change?**

We have evidence that our current curriculum is not fully achieving its intended purpose:

- Students have increasingly expressed their frustration with the structure, sequence, distribution, and content of the curriculum.
- Average USMLE Step 1 scores began declining several years ago and have since remained several points below the national average.
- Faculty have described the current content sequence as illogical from a knowledge scaffolding standpoint, and have described the process of introducing new content and integrating content across courses and years as needlessly difficult.
- Leadership, faculty, and staff have expressed concern that our aged curriculum makes us less appealing to applicants with their pick of schools.
- External consultants have recommended curricular and structural modifications before our upcoming site visit in January 2022 to ensure compliance with Liaison Committee on Medical Education (LCME) accreditation standards.

### **Guiding Principles in Redesign**

Our guiding principles in redesign were organized around our School of Medicine missions, which together prioritize **collaboration, diversity, community needs, and learner-centered education resulting in patient-centered care**. The specific principles are listed in [Appendix B](#).

We hosted separate UCD School of Medicine community forums individually framed around the principles of a **learner-centered** and **patient-centered curriculum**, which generated dozens of creative and thoughtful suggestions. A summary of these suggestions and how we incorporated them can be found in the full proposal.

### **Our Framework for a New Curriculum**

- **Graduation competencies** will serve as the primary scaffold for the curriculum, allowing for mapping of all courses and sessions. Emphasis will be on competency-based progression through the curriculum, with embedded opportunities for expanded learning or remediation as appropriate for the learner.
- **Three pillars of biomedical science, clinical science, and health systems science** will be horizontally and vertically integrated throughout the curriculum.

### Proposed Plans

The CDT created two plans (Blue and Gold) for consideration by our faculty committees. These plans are divided into three phases: pre-clerkship, clerkship, and post-clerkship. Key features of the pre-clerkship plans are compared in the table below. Specific descriptions for each course/block are provided in [Appendix C](#).

Pre-Clerkship	Blue Plan	Gold Plan
Step 1 Location	Before Core Clerkship phase	After Core Clerkship phase
Footprint	91 weeks, beginning August and ending in April 65 weeks core content + 4 weeks of intersessions	74 weeks, beginning August and ending in December 61 weeks core content + 4 weeks of intersessions
Longitudinal Clinical Experience	Begins after Human Architecture (see below)	Begins after Human Architecture (see below)
Summer Break	8 weeks	4 weeks
Proposed Blocks, Sequencing, and Timing		
Human Architecture	8 weeks	7 weeks
Molecular and Cellular Medicine	6 weeks	5 weeks
Pathogens and Host Defense	5 weeks (Hematology not incorporated)	7 weeks (Hematology incorporated)
[Hematology], Cardiology, Pulmonology, and Nephrology	19 weeks (Hematology incorporated)	16 weeks (Hematology not incorporated)
Endocrinology, Gastroenterology, and Reproduction	16 weeks	15 weeks
Skin, Bones, and Capstones	3 weeks (second to last)	3 weeks (last)
Brain and Behavior	8 weeks (last)	7 weeks (second to last)
Transition to Clerkship	1 week (after 8 weeks Step 1 Study)	1 week

## Commonalities Across Both Plans

- Better integration across disciplines increases efficiency (merge, shift, or reduce total hours by ~20%) and limits extraneous cognitive load.
- Weekly schedule is standardized, with [problem-based learning \(PBL\)](#), [team-based learning \(TBL\)](#), and [peer instruction \(PI\)](#) the primary teaching methodologies as shown in this sample schedule:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00 AM	PBL Prep Case 1	SDL time	PBL Case 1	SDL time	PBL Case 2
9:00 AM	PBL Prep Case 2	SDL time	Peer Instruction	SDL time	Peer Instruction
10:00 AM	TBL	ARS Lecture	TBL	SDL time	Peer Instruction
11:00 AM	TBL	ARS Lecture	TBL	SDL time	Peer Instruction
12:00 PM	Lunch	Lunch	Lunch	Lunch	Lunch
1:00-5:00 PM	SDL time	Clinic or Doctoring*	SDL time	SDL time	SDL time

SDL= Self-directed Learning (view online lectures, self-directed learning). \*Clinic and Doctoring (Clinical Skills) can occur on any other PM to divide class evenly across days. All exams will be scheduled on Fridays, whenever possible.

- Advanced biomedical content is shifted to post-clerkship phase.
- Intersession content between coursework allows for customization and includes electives, interprofessional education, specialty exposure, areas of scholarly concentration, and remediation if needed.
- Incorporation of previously underrepresented disciplines/topics such as anesthesiology, urology, otolaryngology, ophthalmology, radiation oncology, physical medicine and rehabilitation, toxicology, and pediatrics expands learner knowledge base.
- Optional lunch-time seminar series is opportunity for faculty to share advances in research and anticipated changes in medicine.

## Proposed Core Clerkship Phase

The clerkships have an identical structure in both the Blue and Gold plans, though there is greater need in the Gold plan to incorporate more biomedical science into this phase. This could be accomplished through team teaching on clerkships, optional evening sessions during clerkships, and/or intersession content.

- 48 weeks of clerkships and intersessions combined and 4 weeks of vacation
  - 7 blocks of 6 weeks each = 42 weeks total of clerkship time
    - Internal medicine
    - Surgery
    - Pediatrics
    - OB/GYN

- Psychiatry
- Family Medicine (can be 4 weeks + 2 weeks of Selectives, if capacity is restricted)
- Selectives (3 x 2 weeks each)
- 6 weeks of intersessions:
  - Biomedical, clinical, health science integration
  - Areas of scholarly concentration
  - Doctoring 3
  - Interprofessional education
  - Thread content
  - Orientation for following clerkship
- **Neurology** becomes a new required 4-week long clerkship in the post-clerkship phase

The Primary Care Continuity Clinic is dissolved in lieu of the longitudinal clinical experience in the pre-clerkship period.

### Proposed Post-Clerkship Phase

The proposed post-clerkship phase differs for the Blue and Gold plans due to the potential shift of Step 1.

Post-Clerkship	Blue Plan	Gold Plan
Length	65 weeks	82 weeks
Required Content	36 weeks	40 weeks
Proposed Requirements		
Emergency Medicine AI	4 weeks at UCDCMC	
Neurology	4 weeks – Advanced Clinical Clerkship	
Inpatient AI	4 weeks in core clerkship department at UCDCMC	
Additional AI	4 weeks (can be away rotation)	
ICU	4 weeks	
Additional elective weeks	16 weeks (4 weeks can apply towards ASC)	20 weeks (4 weeks can apply towards ASC)
Transition to Residency	4 weeks, including specialty-specific biomedical content	
Step 1 Study	Not applicable	8 weeks

AI = Acting Internship; ICU = Intensive Care Unit; ASC = Area of Scholarly Concentration

For separate complete timelines of each plan that incorporate pre-clerkship, clerkship, and post-clerkship phases, please see [Appendix D](#).

A summative comparison of the plans across all phases with the current curriculum is also provided below.

Phase	Current	Blue Plan	Gold Plan
<b>Step 1 Placement</b>	Before clerkships (March-April Year 2)	Before clerkships (March-April Year 2)	After clerkships (Jan-Feb Year 3)
<b>Pre-Clerkship</b>	91 weeks August - April	91 weeks August - April	74 weeks August - December
Content Weeks	71 weeks	65 weeks	61 weeks
Intersessions	None	4 weeks	4 weeks
Longitudinal Clinical Experience	None	Begins Week 9	Begins Week 8
Summer Break	5 weeks	8 weeks	4 weeks
Other Vacation	7 weeks	5 weeks	5 weeks
<b>Clerkship</b>	52 weeks	52 weeks	
Family Medicine	4 weeks	6 weeks	
Internal Medicine	8 weeks	6 weeks	
Ob/Gyn	8 weeks	6 weeks	
Pediatrics	8 weeks	6 weeks	
Psychiatry	8 weeks	6 weeks	
Surgery	8 weeks	6 weeks	
Selectives	4 weeks	6 weeks	
Continuity Clinic	18 half days	Moved to pre-clerkship and increases to approximately 28 half days	
Intersessions	None	6 one-week intersessions	
Vacation	4 weeks	4 weeks	
<b>Post-Clerkship</b>	65 weeks	65 weeks	82 weeks
Required Content	38 weeks	36 weeks	40 weeks
Emergency Medicine AI	4 weeks at UCDMC	4 weeks at UCDMC	
Neurology	None	4 weeks	
Inpatient AI	4 weeks in core dept at UCDMC	4 weeks in core clerkship department at UCDMC	
Additional AI	4 weeks	4 weeks (can be away rotation)	
ICU	No ICU requirement	4 weeks	
Area of Scholarly Concentration (ASC)	4 weeks (optional Doctoring 4 or SPO)	4 weeks (optional)	
Additional elective weeks	20 weeks	12 weeks 16 weeks if no ASC	16 weeks 20 weeks if no ASC
Transition to Residency	2 weeks	4 weeks with specialty-specific biomedical science	

## **VII. Benefits and Drawbacks to Moving USMLE Step 1**

The timing of the USMLE Step 1 study period and exam within the curriculum has been a topic of animated discussion in medical schools across the country. As of 2017-2018, 17 medical schools have shifted USMLE Step 1 from its traditional location at the end of the pre-clerkship phase to the end of the core clerkship phase. An additional four schools allow students to take USMLE Step 1 at any point in the curriculum before graduation.

### **Benefits to moving USMLE Step 1**

- Greater student engagement expected in pre-clerkship curriculum; currently, students are very focused on a “[parallel curriculum](#)” of commercial board review products
- Potential increase in Step 1 scores
- Potential for fewer Step 1 failures
- Shelf exams offer preparation for Step 1, rather than the reverse
- Content overlap of USMLE Step 1 and Step 2CK increases studying efficiency
- Greater emphasis on integrating biomedical science in clerkship/post-clerkship phases

### **Neutral aspects to moving USMLE Step 1**

- Students start clerkships without having consolidated pre-clerkship knowledge by studying for Step 1
- Shortening of pre-clerkship curriculum is balanced with lengthening of post-clerkship phase

### **Drawbacks to moving USMLE Step 1**

- Students complete clerkships without knowing their Step 1 score (and, to some extent, their competitiveness for residencies)
- Students can experience stress later in clerkship year as the Step 1 study period nears
- Incorporating biomedical science in the clerkship year can be challenging
- Summer break in the pre-clerkship curriculum becomes shorter, limiting extramural opportunities
- No clear mandate at UCD School of Medicine for using the time transferred from the pre-clerkship to post-clerkship phase.

Key stakeholders at the national level have been discussing USMLE scoring, its use in undergraduate and graduate education, and whether USMLE Step 1 should become pass/fail or a variant thereof. It is anticipated that a decision will be rendered in the near future (winter 2019-2020) as to whether USMLE scoring should change.

## **VIII. Curricular Oversight and Structural Support**

We propose that all departments share ownership of the 7 pre-clerkship courses/blocks highlighted above. This structure would offer numerous benefits, including increased and improved inclusiveness, collaboration, and integration, through the following mechanisms:

- Foundational and longitudinal content format for all disciplinary areas (which is currently more challenging to offer with many individual courses)
- Spiral learning that builds upon and incorporates prior content
- Assessments with greater integration and complexity, better reflecting the realities of clinical medicine and USMLE exams
- Better usage of our large pool of faculty expertise

### **Course Director Selection**

- A call shall be put out to all faculty, outlining the course content and the course director responsibilities.
- Applicants are reviewed jointly by the CEP chairs and curriculum dean, and finalists are interviewed and selected by the CEP chairs, one CEP representative, and the curriculum dean. (This model is currently in use at the University of California at Los Angeles School of Medicine.)
- Three funded co-course directors: one faculty member from biomedical science, one from clinical science, and one from health systems science.
- CEP is encouraged to select faculty from different departments to serve as course directors, to ensure inclusion and representation of as many departments as possible in overseeing the curriculum.
- Consideration to a call being put out for applicants every three years while recognizing that the “termed out” faculty may stay on if other qualified candidates are not identified.

### **Thread Leaders, Discipline Leaders, and Competency Leaders**

- Thread leaders will be preserved in this model, with funded discipline (anatomy, physiology, pharmacology, pathology, etc.) leaders added as well.
- Discipline leaders will be responsible for collaborating with course directors to ensure that their disciplinary content is appropriately developed over the four years of the curriculum.
- The CEP workgroup will select thread and discipline leaders through a mechanism like that used for course directors.
- Faculty may serve in more than one educational role (e.g., course director and discipline leader, or course director and thread leader) when deemed appropriate.

## **IX. Metrics to Evaluate the New Curriculum**

Establishing metrics for evaluation of the new curriculum will be important from a continuous quality improvement standpoint. We will need to understand the successes within the new curriculum, as well as the curricular components that warrant further revision/refinement. An abbreviated list of proposed institutional metrics includes, but is not limited to:

- Graduation Competencies (GC)

- Map courses and sessions to GC framework.
  - Track and report student attainment of GC milestones.
- LCME Curricular Element Compliance
  - Review curriculum in context of elements most commonly cited.
  - Review curriculum in context of elements most challenging for our institution.
  - Review curriculum in context of elements most recently introduced/modified.
- AAMC Graduation Questionnaire
  - Track and report annual trends.
  - Correlate results with feedback from courses and curricular phases.
- Student Feedback (Faculty, course, and curriculum evaluations)
  - Track and report annual trends, including faculty response.
- Faculty Satisfaction
  - Track and report satisfaction with curriculum (e.g., content, sequence, integration, ease of modifying content, course leadership).
  - Track and report satisfaction with teaching experience (e.g., student engagement and learning, collaboration with other faculty).
  - Track and report satisfaction with institutionally-provided support (e.g., staff, technology tools, faculty development, funding).
- Curricular Content and Delivery
  - Incorporate three pillars, five threads, and core clinical presentations.
  - Align with [USMLE Content Outline](#) and national organization learning objectives and competencies as appropriate.
  - Conduct and report periodic faculty peer review.
  - Monitor quality, type, and number of active learning sessions.
  - Monitor outcomes of early clinical exposure in pre-clerkship phase.
  - Monitor adherence to weekly contact hours policy in pre-clerkship phase.
  - Monitor adherence to duty hours policy in clerkship and post-clerkship phases.
- Student progression and development
  - Monitor student progression through coursework.
  - Monitor student preparedness for clerkships and post-clerkship period, including clinical skills acquisition, and efficacy of any remediation efforts.
  - Monitor student accomplishment of expected clinical encounters/procedures at appropriate levels of responsibility.
  - Monitor outcomes of early specialty exposure in pre-clerkship phase.
  - Monitor formal availability and participation in mentorship and research opportunities.
  - Monitor participation in and outcomes of areas of scholarly concentration.
  - Monitor measures of student wellness in collaboration with Student Affairs.
- Standardized Exam Performance – Step 1, Step 2 CK, Step 2 CS, and CPX
  - Report annual trends in USMLE and CPX performance.
  - Compare average class performance to anticipated class performance.
- Residency and Match Outcomes
  - Report residency match rates for our students.

- Report students who matched into discipline of choice.
- Survey program directors regarding graduate preparedness as interns.
- Survey graduates regarding UME experience and preparation for residency.

#### **X. Next Steps After Plan Selection**

Once a plan is selected, Associate Dean Olson will continue to collaborate with faculty to embark on implementation planning for each stage of the curriculum. Additional resources needed for plan implementation are described in [Appendix E](#). Detailed plans can be found in the full proposal.

## Appendix A. Current UCD School of Medicine Curriculum Map

	July	August	September	October	November	December	January	February	March	April	May	June						
	<b>FOUNDATIONS BLOCK</b>						<b>MECHANISM &amp; DISEASE BLOCK</b>											
Year 1	Gross Anatomy			Human Physiology			Cell and Tissue Biology			Molecular Medicine								
	Population Health and Evidence-Based Medicine			Health and Humanity			Clinical Skills A			Clinical Experiences A								
	Endocrine / Nutrition / Reproduction / Genetics (E.N.R.G)						General Pharmacology			Oncology								
	Microbiology						Immunology			Critical Appraisal of Topics in Population Health								
	Health and Humanity						Clinical Skills A			Clinical Experiences A								
	Clinical Experiences A						Clinical Experiences A			Clinical Experiences A								
	Clinical Experiences A						Clinical Experiences A			Clinical Experiences A								
	<b>BRAIN &amp; BEHAVIOR BLOCK</b>				<b>PATHOPHYSIOLOGY BLOCK</b>													
Year 2	Clinical Neurosciences		Musculoskeletal	Dermatology	Hematology	Pulmonary & Cardiovascular System	Neuroanatomy		Nephrology	Gastroenterology	USMLE Prep Period							
	Psychiatry						Foundations of Bioethics											
	Systemic Pathology						Pharmacology B								Systemic Pathology		Pharmacology C	
	Population Health & System Science						Clinical Skills B								Population Health & System Science		Clinical Skills B	
	Clinical Experiences B		Clinical Experiences B		Clinical Experiences B		Clinical Experiences B											
	Clinical Experiences B		Clinical Experiences B		Clinical Experiences B		Clinical Experiences B											
	Clinical Experiences B		Clinical Experiences B		Clinical Experiences B		Clinical Experiences B											
	Clinical Experiences B		Clinical Experiences B		Clinical Experiences B		Clinical Experiences B											
Year 3	Internal Medicine						OBGYN		Pediatrics		Family Medicine		Enrichment Block					
	Psychiatry						Surgery		Transition to Clerkships									
	Doctoring 3																	
	Primary Care Continuity Clinic																	
Year 4	38 weeks of Required Coursework																	
	4 weeks of Acting Internship Emergency Medicine			4 weeks of Acting Internship Inpatient Core Specialty			4 weeks of Acting Inpatient Any Specialty			4 weeks of Scholarly Project or Special Study Module			20 Weeks of Additional Electives		Transition to Residency			

## Appendix B. Mission-Oriented Curricular Elements

### Learner-Centered Elements in the New Curriculum

- Increased emphasis on [Step 1-relevant](#) content and assessment methods, such as [peer instruction](#), [weekly formative quizzes](#), and [NBME custom exams](#) and NBME-style highly integrated exams
- Efficiency in learning through more effective integration, minimization of extraneous [cognitive load](#), and [schedule standardization](#)
- Increased time for [self-directed learning](#) and [student wellbeing](#)
- [e-Learning](#) opportunities for increased flexibility (more online lectures in pre-clerkship curriculum and online coursework for the post-clerkship period)
- Customization of student learning experience during [intersessions](#) (“discipline days,” [areas of scholarly concentration](#), increased clerkship “selectives” to choose from, and more opportunities and support for remediation)
- Increased emphasis on [clinical reasoning](#) throughout
- Use [entrustable professional activities](#) as a framework for assessment to allow for more frequent learner feedback and greater clarity surrounding learner progression toward readiness for residency
- Optimize preparedness for residency programs through increased [career advising](#) through direct mentorship and strengthening the curriculum as suggested by internal residency program directors
- Enhance student wellbeing and reduce [burnout](#), and is hypothesized to result in higher USMLE Step 1 scores, through high quality [mentorship](#).
- Addition of neurology as a required clerkship, as petitioned for by our students and faculty ([Appendix 8](#))

### Patient-Centered Elements in the New Curriculum

- Advocating for and [meeting the workforce needs of our communities](#) through training more primary care physicians, specialists, and researchers that directly contribute to serving these communities
- Prioritizing understanding of the [diseases and health care issues of greatest concern for our local communities](#) as outlined in our Community Health Needs Assessment, such as [diabetes mellitus, asthma, cancer, and mental health, and the need for more active living and healthy eating](#)
- Experiencing the “whole patient” perspective – patient signs, symptoms, goals, values, and need for functionality, as well as the family caregiver perspective
- Providing more simulation experiences and standardized patients experiences to better prepare students for caring for clinical experiences
- Incorporating new patient-centered [threads](#): **diagnostic medicine** (including point of care ultrasound), **stages of life** with [fictional families](#) whose health care issues evolve over time (including content relating to pediatrics, geriatrics, sex/gender differences, chronic illness and disability, death and dying), **care for vulnerable populations** (including social determinants of health), and **preventive medicine** (including nutrition, obesity, exercise, sleep, wellness, alcohol, tobacco, and cancer prevention); these will join the already established **pain medicine** thread.

### Combined Learner- and Patient Centered Elements in the New Curriculum

- [Earlier clinical experience](#) beginning in the first year, which is particularly important for the [contextualization](#) of biomedical and health systems science:

- The “third pillar” of health systems science, which encompasses much of the complexity of health care delivery for the patient, learner, and practicing physician.
- Greater emphasis on team-based care and [interprofessional education](#) to prepare learners for our complex health care system.
- Emphasizing [greater compassion and empathy for patients](#), in part through addressing wellness and burnout issues in students.

### **Expanding on Our Strengths**

- Incorporating main campus expertise in topics such as veterinary medicine, agricultural science, global health, public health, social science, and informatics into the new curriculum.
- Capitalizing on our location in Sacramento to offer firsthand experience in health care advocacy and policy, with the state capitol building only a few miles away.
- Offering opportunities for students to fully benefit from our expertise and leadership in primary care and clinical/translational research.

## Appendix C. Pre-Clerkship Blocks for Blue Plan

**Human Architecture and Function:** Gross anatomy, microscopic anatomy (normal histology), clinical history and physical examination skills, and health systems science are merged into one integrated experience. The class may be divided periodically into groups that rotate through different elements of the course, including lecture, cadaveric dissection, and clinical skills training for the corresponding regions of the human body. This approach has the benefit of easing the burden on the current anatomy lab, which is currently at capacity for space. Anatomic prosections may be used in lieu of some dissection experiences, with the potential for assistance in preparing prosections from some surgical specialty departments (e.g., orthopaedic surgery). Embryology and/or radiology content could be shifted out into the organ systems to allow for more longitudinal reinforcement of anatomic concepts and to decompress this course. Advanced concepts in anatomy and microscopic anatomy can be shifted to the post-clerkship period as specialty-specific biomedical science instruction for smaller groups of students. For example, a more detailed understanding of head and neck gross and microscopic anatomy and neuroanatomy could be provided over a week-long period in the post-clerkship phase for students entering otolaryngology, ophthalmology, neurology, or neurosurgery, building upon the more basic anatomy instruction that all students received in the pre-clerkship phase. Weekly schedule standardization does not yet take effect for this segment given the logistical complexity, though recorded lectures, active learning, and half days of free study time are encouraged where feasible. **Total time = 8 weeks, 24 contact hours per week.**

**Molecular and Cellular Medicine:** Genetics, biochemistry, physiology, pharmacology, general pathology, clinical skills and experiences, and health systems science (including health and humanity) are merged into one integrated course. Basic, foundational principles are taught here in preparation for the longitudinal exploration of organ-specific molecular and cellular medicine in the organ systems. The afternoon longitudinal clinical preceptor experience begins during this course, alternating with clinical skills content one half-day every other week. Weekly schedule standardization of active learning on MWF mornings. The first week-long intersession occurs immediately after this course. **Total time = 6 weeks, 24 contact hours per week.**

**Pathogens and Host Defense.** Basic, foundational principles are taught here in preparation for the longitudinal exploration of organ-specific medical microbiology, immunology, and pharmacology. Health systems science content (including health and humanity) is included as well. Afternoon clinical preceptor experiences alternate with clinical skills content one half-day every other week. Weekly schedule standardization occurs with active learning on MWF mornings. **Total time = 5 weeks, 24 contact hours per week.**

**Winter break** lasts two weeks, followed by the second week-long intersession at the start of January.

**Hematology, Cardiology, Pulmonology, and Nephrology.** Full integration of biomedical science (“normal”), clinical science (“abnormal”), and health systems science (including health and humanity) occurs in this course for hematology, cardiology, respiratory, and renal topics. Relevant genetics, biochemistry, physiology, pathology, pathophysiology, pharmacology, immunology, microbiology, and threads are included. Afternoon clinical preceptor experiences alternate with clinical skills content one half-day every other week. Weekly schedule standardization occurs with active learning on MWF mornings. The third week-long intersession occurs midway through this course, immediately before **spring break**. **Total time = 19 weeks, 24 contact hours per week.**

**Summer break** – 8 weeks long (an increase of 3 weeks) with a timing shift to June and July. This is to align better with the traditional summer break and allow for more national, regional, and local summer extracurricular opportunities for our students, including in research.

**Endocrinology, Gastroenterology, and Reproduction.** Full integration of biomedical science (“normal”), clinical science (“abnormal”), and health systems science (including health and humanity) occurs in this course for endocrinology, gastroenterology, and reproduction. The male GU system is incorporated into reproduction. Relevant genetics, biochemistry, physiology, pathology, pathophysiology, pharmacology, immunology, microbiology, and threads are included. Afternoon clinical preceptor experiences alternate with clinical skills content one half-day every other week. Weekly schedule standardization occurs with active learning on MWF mornings. The fourth week-long intersession occurs midway through this course. **Total time = 16 weeks, 24 contact hours per week.**

**Skin, Bones, and Capstones.** Full integration of biomedical science (“normal”), clinical science (“abnormal”), and health systems science (including health and humanity) occurs in this course for musculoskeletal and dermatologic medicine. Relevant genetics, biochemistry, physiology, pathology, pathophysiology, pharmacology, immunology, microbiology, and threads are included. Embedded throughout this course are occasional capstone cases that bring together multiple systems, particularly with musculoskeletal or dermatologic manifestations. Afternoon clinical preceptor experiences alternate with clinical skills content one half-day every other week. Weekly schedule standardization occurs with active learning on MWF mornings. **Total time = 3 weeks, 24 contact hours per week.**

**Winter break** lasts two weeks.

**Brain and Behavior.** Full integration of biomedical science (“normal”), clinical science (“abnormal”), and health systems science (including health and humanity) occurs in this course for neuroanatomy, neuroscience, psychiatry, and bioethics. Head, neck and eye disease is incorporated. Relevant genetics, biochemistry, physiology, pathology, pathophysiology, pharmacology, immunology, microbiology, and threads are included. Embedded throughout this course are occasional capstone cases that bring together multiple systems, particularly with neurologic, otolaryngologic, or ophthalmologic manifestations. Afternoon clinical preceptor experiences alternate with clinical skills content one half-day every other week. Weekly schedule standardization occurs with active learning on MWF mornings. **Total time = 8 weeks, 24 contact hours per week.**

Appendix D. Curriculum Plan Timelines

Blue Plan

Blue Plan	August				September				October				November				December				January				February				March				April				May				June				July																																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																																									
Year 1	Pre-Clerkship Phase																																																																																												
	Human Architecture (8 wks)								Molecular and Cellular Medicine (6 wks)							Intercession	Pathogens and Host Defense (5wks)							Winter Break	Intercession	Hematology, Cardiology, Pulmonology, and Nephrology (19weeks)														Intercession		Spring Break		Hematology, Cardiology, Pulmonology, and Nephrology (19 weeks)														Summer Break (8 wks)																																			
Year 2	Pre-Clerkship Phase																																																																																												
	Endocrinology, Gastroenterology, and Reproduction (16 wks)								Intercession	Endocrinology, Gastroenterology, and Reproduction (16 wks)														Skin, Bones, and Capstones (3 wks)			Winter Break	Brain and Behavior (8 wks)							Step 1 Study Period (8 wks)														Transition to Clerkship (1 wk)	Internal Medicine							Intercession	Surgery																																			
Year 3	Clerkship Phase																																																																																												
	Intercession	Pediatrics							Intercession	Ob/Gyn							Intercession	Psychiatry							Winter Break	Intercession	Family Medicine							Intercession	Selectives							Break	Post-Clerkship Phase																																																		
Year 4	Post-Clerkship Phase																																																																																												
	Year 4 36 weeks Required + Step 2 CK & CS																					Winter Break	Year 4 36 weeks Required + Step 2 CK & CS																																																																						

Gold Plan

Gold Plan	August				September				October				November				December				January				February				March				April				May				June				July																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																								
Year 1	Pre-Clerkship Phase																																																																											
	Human Architecture (7 wks)							Molecular and Cellular Medicine (5 wks)							Intercession	Pathogens, Host Defense, and Blood (7wks)							Winter Break	Cardiology, Pulmonology, and Nephrology (16 weeks)														Intercession		Spring Break		Cardiology, Pulmonology, and Nephrology (16 weeks)														Summer Break (4 wks)				Endocrinology, Gastroenterology, and Reproduction (15 wks)							Intercession									
Year 2	Pre-Clerkship Phase																																																																											
	Endocrinology, Gastroenterology, and Reproduction (15 wks)								Brain and Behavior (7 wks)														Intercession	Skin, Bones, and Capstones (3 wks)			Transition to Clerkship (1 wk)	Winter Break	Internal Medicine							Intercession	Surgery							Intercession	Pediatrics							Intercession	Ob/Gyn							Summer Break (2 weeks)		Intercession														
Year 3	Clerkship Phase																																																																											
	Intercession	Psychiatry							Intercession	Family Medicine							Intercession	Selectives							Winter Break	Post-Clerkship Phase																																																		
Year 4	Post-Clerkship Phase																																																																											
	Year 4 39 weeks Required + Step 1 + Step 2 CK & CS																					Winter Break	Year 4 39 weeks Required + Step 1 + Step 2 CK & CS																																																					

## Appendix E. Anticipated Resource Needs

### Needed Resources

- Turning Point clickers and subscription for Peer Instruction (starting with 2020-2021); staff assistance with Peer Instruction on Friday mornings
- Curriculum mapping software and staff/faculty time to identify and enter information
- Teaching awards/recognition for faculty and residents who create positive learning environments or excel in educational innovation/integration
- Problem-Based Learning facilitator training (external consultants)
- Direct funding for faculty time for pre-clerkship, clerkship, and post-clerkship course directors, thread leaders, discipline leaders, scholarly mentors
- Modification of faculty course, thread, and discipline leader funding formula to incorporate more than course hours (with greater emphasis on elements such as integration, active learning/innovation, and peer evaluation)
- Continued funding for academic coaches and master educators
- Interim funding/protected time for faculty to help develop new curriculum
- Dean or Director of Institutional Effectiveness (assessment and evaluation)
- Director of Workplace Based Assessment (EPAs) (facilitates incorporation into the curriculum)
- Director of Interprofessional Education (works with SOM, SON, and allied health programs to create and implement curricular content)
- Director of Electives (consults with elective and selective course directors, assists with course approval process, informs/consults with students about options)
- Director of Regional Affiliate Engagement (clinical site recruitment and retention, site visits, and faculty development)
- Course, faculty, and student evaluation updates before the new curriculum is implemented (to allow for pre- and post-comparisons)
- Reserved office space for Davis-based faculty to share for office hours and coursework preparation as needed

### Optional Resources

- Additional Step 1 preparatory resources (e.g., AMBOSS or Osmosis) for potential curricular incorporation
- Scribe training (completion before matriculation, as in ACE-PC)
- CME offset funding for community preceptors to benefit from reduced/free UCD CME content, including in pain medicine