UNIVERSITY OF CALIFORNIA, LOS ANGELES **UCLA**

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DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY
P.O. BOX 951569
607 CHARLES E. YOUNG DRIVE, EAST
LOS ANGELES, CALIFORNIA 90095-1569

July 7, 2017

Muriel McClendon, Chair
General Education Governance Committee
ATTN: Myrna Dee Castillo Kikuchi, Program Representative
A-265 Murphy Hall
Mail Code: 157101

Dear Professor McClendon:

Please accept the attached General Education proposal for *Chemistry 3: Material World.* The proposed course is intended to satisfy a Physical Science GE, under the Foundation of Scientific Inquiry. Winter 2018 is the effective term proposed for the course.

Thank you for your consideration of this proposal. If you have any further questions, please feel free to contact me: denise@chem.ucla.edu; (310) 825-4660.

Sincerely,

Denise Mantonya
Undergraduate Operations Manager
UCLA Department of Chemistry & Biochemistry

General Education Course Information Sheet

Please submit this sheet for each proposed course

Department & Course Number Chemistry & Biochemistry 3

Course Title Material World

Indicate if Seminar and/or Writing II course _____

1 Check the recommended GE foundation area(s) and subgroups(s) for this course

Foundations of the Arts and Humanities

- Literary and Cultural Analysis _____
- Philosophic and Linguistic Analysis _____
- Visual and Performance Arts Analysis and Practice _____

Foundations of Society and Culture

- Historical Analysis _____
- Social Analysis _____

Foundations of Scientific Inquiry

- Physical Science X
  With Laboratory or Demonstration Component must be 5 units (or more) _____
- Life Science _____
  With Laboratory or Demonstration Component must be 5 units (or more) _____

2. Briefly describe the rationale for assignment to foundation area(s) and subgroup(s) chosen.

Course content is designed deliberately to showcase how intricately the development of Chemistry has been tied together with arts, politics and economics.

3. "List faculty member(s) who will serve as instructor (give academic rank):
Alex Spokoyny, Assistant Professor

Do you intend to use graduate student instructors (TAs) in this course? Yes X No ____

If yes, please indicate the number of TAs 1-2

4. Indicate when do you anticipate teaching this course over the next three years:

2015-16	Fall		Winter		Spring	
	Enrollment		Enrollment		Enrollment	
2016-17	Fall		Winter		Spring	
	Enrollment		Enrollment		Enrollment	
2017-18	Fall		Winter		Spring	X
	Enrollment		Enrollment		Enrollment	50

5. GE Course Units

Is this an ***existing*** course that has been modified for inclusion in the new GE? Yes ____ No X

If yes, provide a brief explanation of what has changed. _____

Present Number of Units: _____ Proposed Number of Units: _____

6. Please present concise arguments for the GE principles applicable to this course.

❑ General Knowledge	The course will explore general paradigms of how technological development in chemistry and materials science affects our society.
❑ Integrative Learning	Course content is designed deliberately to showcase how intricately the development of chemistry has been tied together with arts, politics and economics.
❑ Ethical Implications	Multiple important topics related to pollution, vaccines, drugs will be discussed focusing on existing ethical conundrums.
❑ Cultural Diversity	The course material will focus on the "global" approach and emphasize the contribution of women and minorities to the development of new paradigms and theories.
❑ Critical Thinking	The course will provide important and relevant case studies focusing on the development of scientific method.
❑ Rhetorical Effectiveness	Lectures, discussion sections as well as the homework assignments will emphasize on case studies and walk the students through the logic of formulating a clear hypothesis, which can be validated by experimental data.
❑ Problem-solving	The course will convey examples emphasizing the scientific method and hypothesis-driven approach behind knowledge creation in chemistry.
❑ Library & Information Literacy	Part of the course narrative will be dedicated towards delineating between primary research publications and scientific journalism and some fallacies and misconceptions associated with both publication forms.

(A) STUDENT CONTACT PER WEEK (if not applicable write N/A)

1.	Lecture:	3	(hours)
2.	Discussion Section:	1	(hours)
3.	Labs:		(hours)
4.	Experiential (service learning, internships, other):		(hours)
5.	Field Trips:		(hours)
(A) TOTAL Student Contact Per Week		4	**(HOURS)**

(B) OUT-OF-CLASS HOURS PER WEEK (if not applicable write N/A)

1.	General Review & Preparation:	2	(hours)
2.	Reading	5	(hours)
3.	Group Projects:	1	(hours)
4.	Preparation for Quizzes & Exams:	1	(hours)
5.	Information Literacy Exercises:		(hours)
6.	Written Assignments:	2	(hours)
7.	Research Activity:	1 (Optional)	(hours)
(B) TOTAL Out-of-class time per week		11	**(HOURS)**
GRAND TOTAL (A) + (B) must equal at least 15 hours/week		15	**(HOURS)**

Instructor: Alex Spokoyny
Office: MSB 1505B; E-mail: spokoyny@chem.ucla.edu
Office Hours: Immediately after lectures and by appointment.

Teaching Assistants: TBD

TBD. Material World. (4) Lecture, three hours; discussion, one hour. Requisite: none. Class focuses on most important advances made by humans in developing new molecules and materials, and how these discoveries affect our everyday life. These include development of paints, polymers, metals, fuels, drugs, energetic materials, radioactive substances, poisons and many more. During the course, connections will be made between the interplay of science, history, arts and socio-economic factors driving technological development. Discussion also places emphasis on projected future of these emerging technologies. P/NP or letter grading.

Academic Ethics:

With its status as a world-class research institution, it is critical that the University uphold the highest standards of integrity both inside and outside the classroom. As a student and member of the UCLA community, you are expected to demonstrate integrity in all of your academic endeavors.

Accordingly, when accusations of academic dishonesty occur, The Office of the Dean of Students is charged with investigating and adjudicating suspected violations. Academic dishonesty, includes, but is not limited to, cheating, fabrication, plagiarism, multiple submissions or facilitating academic misconduct.

Title IX in the University policy prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. Students who have experienced sexual harassment or sexual violence can receive confidential support and advocacy at the CARE Advocacy Office for Sexual and Gender-Based Violence, 1st Floor Wooden Center West, CAREadvocate@caps.ucla.edu, (310) 206-2465. You can also report sexual violence or sexual harassment directly to the University's Title IX Coordinator, Kathleen Salvaty, 2241 Murphy Hall, titleix@conet.ucla.edu, (310) 206-3417.

Texts:

Chemistry in the Marketplace by Ben Selinger (mandatory).
The Disappearing Spoon by Sam Kean (mandatory).

Grading:

Midterm Exam – 100 points (~ 25%)
Attendance, Participation – 25 points (6.25%)
Discussion Section – 75 points (18.75%)
*Final Exam – 200 (50 %) Cumulative, **Date TBD**

Scavenger Hunt Extra Credit – **up to 20 points. Essentially, it can be a one-mark grade booster (e.g., B -> B+; A- ->A)**
*** Completion of the Instructor Evaluation Form – 2 points of Extra Credit.

Grading scale is **absolute** (no curve – you are encouraged to study together; percentages are calculated out of total points (400 points) containing the scores for midterm exam, written assignment, discussion section, and final exam). The following demarcations will be applied in calculating your final grade (these will not change):

Excellent	Good	Average	Poor	Fail
A+ (99%) A (94%) A- (89%)	B+ (84%) B (75%) B- (72%)	C+ (70%) C (65%) C- (60%) - Pass	D+(55%) D (50%) D- (45%)	Less than 45%

Calculating Final Grade Example: Mary receives 74 (74%) points for her midterm exam, 160 (80%) points on her final exam, 23 points on her participation and 73 points for discussion section component. Since her final exam grade is higher than midterm (80% > 74%), her midterm score is boosted to 80%. Therefore, without completing her extra credit assignments Mary will receive: 80+160+23+73=336 points, equivalent to 84.0% or B+ as her final grade. Mary decides to complete her extra credit assignments; her team receives 18 points for her scavenger hunt assignment and at the end of the course she submits instructor's evaluation receiving 2 points. Her extra credit totals in 20 points. Her final grade then will be 336+20=356 points (89.0%, A-).

No make-ups and re-grades will be given for midterm and final exams. *If your final exam score will be higher than midterm (%-wise), it will automatically substitute your midterm score (note that the opposite scenario will not apply). Obviously, if you miss your midterm due to any reason, your final exam score will be counted towards it. Missing the final exam will result in a failing grade in the course.

Discussion Section: Attendance and participation in the discussion section **are mandatory**. TAs will assign you a point grade for the overall performance during week 10 (45 points). There will be 3 homework assignments given during the course (10 points each, 30 points total). No make-ups in attendance and homework will be given. **All communications regarding discussion section grades should be done with your TA directly.**

Lectures: Attendance and participation during class lectures are **mandatory**. We will utilize clicker technology to track your engagement. You need to attend at least 25 lectures to receive full credit (25 points).

Extra Credit: Chemistry Scavenger Hunt. You will be assigned to a team (3-4 students), and together will have to complete an assignment. TAs, your peers, and myself will judge this assignment.

There are 7 tentative topics on the Scavenger Hunt list this year.

1. Build a homemade dye-sensitized solar cell. Demonstrate that it can power a light bulb or any functional device. Spent at least 30 minutes on a 3rd Street Promenade in Santa Monica interviewing random people discussing subjects related to solar cells.
2. Get published in Daily Bruin on a chemistry-related theme.
3. Write an original script related to inorganic chemistry and make a scene (deleted episode) from either a Big Bang Theory or Breaking Bad.
4. Conduct an interview with a taxidermist, make sure to visit their facility and observe him/her in action.
5. Visit West Coast Customs (from Pimp My Ride) and discuss chemistry with the employees and how it relates to their job. Visit their facility.
6. Visit a copper or boron mine. Mine the material yourself.
7. Go to USC campus to a chemistry seminar. Make sure to wear UCLA (both top and bottom) gear all the time during your trip and visit and walk through the entire campus visible to others. Ask a question during the seminar and interview at least two USC students on campus about their experience taking (or not) chemistry classes there.

Each team should complete and hand-in a digital report for 1 assignment to be considered for extra credit in the form of a short video entry (5-6 minutes long). Each video should contain an interview segment(s) of at least one outside expert directly working in the field. For assignments associated with the site or professionals, all team members need to travel to the specific location. For assignment focusing on items, the team needs to acquire and/or prepare them. Up to 4 best videos in the following categories (best visual effects, best script, best interview, best message) as judged by the class peers, TAs and myself will be selected for in-lecture show and prizes. The winning videos will be broadcasted in-class and uploaded to organomimetic.com

Disclaimer: *Proposed extra credit assignment is fully voluntary and the instructor and UCLA bare no responsibility for any action and liability associated with the individuals performing tasks pertinent to the assignments listed.*

	Monday	Wednesday	Friday
Week 1	Lecture 1. Introduction.	Lecture 2. Ancient Alchemy and Wizardry: Is Philosophers Stone Real?	Lecture 3. Ancient Alchemy and Wizardry: Is Philosophers Stone Real?
Week 2	Lecture 4. Hard Stuff.	Lecture 5. Hard Stuff.	Lecture 6. Perishables.
Week 3	Lecture 7. Perishables.	Lecture 8. Chemical Warfare: The Mustard you Cannot Eat.	Lecture 9. Chemical Warfare: The Mustard you Cannot Eat.
Week 4	Lecture 10. Color: Seeing is Believing.	Lecture 11. Color: Seeing is Believing.	Lecture 12. Love and other Drugs.
Week 5	Lecture 13. Love and other Drugs.	Lecture 14. Love and other Drugs.	**Midterm Exam**
Week 6	Lecture 15. Should we be Scared of Nuclear [Medicine]?	Lecture 16. Should we be Scared of Nuclear [Medicine]?	Lecture 17. Should we be Scared of Nuclear [Medicine]?
Week 7	*Lecture 18.* Black Gold and other sources of Energy.	Lecture 19. Black Gold and other sources of Energy.	Lecture 20. Black Gold and other sources of Energy.
Week 8	Lecture 21. Chemical Industry: The Good, the Bad, the Ugly?	Lecture 22. Chemical Industry: The Good, the Bad, the Ugly?	Lecture 23. Chemical Industry: The Good, the Bad, the Ugly?
Week 9	Memorial Day. No Lecture.	Lecture 24. Sustaining Sustainability.	Lecture 25. Sustaining Sustainability.
Week 10	Lecture 26. **Where are we Going?** *Scavenger Hunt Assignment Due.*	Lecture 27. Where are we Going?	Lecture 28. Scavenger Hunt Finale.

UCLA Course Inventory Management System

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New Course Proposal

Chemistry & Biochemistry 3
Material World

Course Number Chemistry & Biochemistry 3

Title Material World

Short Title MATERIAL WORLD

Units Fixed: 4

Grading Basis Letter grade or Passed/Not Passed

Instructional Format Lecture - 3 hours per week
Discussion - 1 hours per week

TIE Code LECS - Lecture (Plus Supplementary Activity) [T]

GE Requirement Yes

Major or Minor Requirement No

Requisites None

Course Description Class focuses on most important advances made by humans in developing new molecules and materials, and how these discoveries affect our everyday life. These include development of paints, plastics, metals, fuels, drugs, energetic materials, radioactive substances, poisons, vaccines and many more. During the course, connections will be made between the interplay of science, history, arts and socio-economic factors driving technological development. Discussion also places emphasis on projected future of these emerging technologies

Justification Chemistry has been central to the development of every major modern technology we all enjoy as a civilization.Yet, a common misconception among non-practitioners is that chemistry is highly technical & difficult to appreciate on a layman's level. As such, while our department has been sucessful in disseminating chemistry courses to majors, engineers & pre-medical student groups, North Campus majors have not been widely exposed to this subject. This is significant, since the fundamental mission of our university teaching is to educate the future electorate and enable these individuals to make well-informed decisions. While chemistry surrounds essentially every aspect of our life from vaccines to plastics, we tend to overlook explaining fundamental importance of our field to the general non-science audience. This course will break with this status quo by introducing a new general education course that will be target non-STEM majors. Course content is designed to showcase intricately the development of chemistry has been tied together with arts politics & economics.

Syllabus File *material_world_syllabus.pdf* was previously uploaded. You may view the file by clicking on the file name.

Supplemental Information Approved on behalf of Catherine Clarke, Chair, Chemistry & Biochemistry

Grading Structure Midterm Exam ? 100 points (~ 25%)
Attendance, Participation ? 25 points (6.25%)
Discussion Section ? 75 points (18.75%)
*Final Exam ? 200 (50 %) Cumulative, Date TBD
**Scavenger Hunt Extra Credit ? up to 20 points. Essentially, it can be a one-mark grade
booster (e.g., B -> B+; A- ->A)**
*** Completion of the Instructor Evaluation Form ? 2 points of Extra Credit.

Effective Date Winter 2018

Name Title

	Name	Title
Instructor	**Alexander Spokoyny**	**Assistant Professor**

Quarters Taught ☑ Fall ☑ Winter ☑ Spring ☐ Summer

Department **Chemistry**

	Name	E-mail
Contact		
Routing Help	**DENISE MANTONYA**	**dmm@chem.ucla.edu**

ROUTING STATUS

Role: FEC School Coordinator - Castillo, Myrna Dee Figuracion (MKIKUCHI@COLLEGE.UCLA.EDU) - 45040
Status: Pending Action

Role: Dean College/School or Designee - Perez, Kristen Alanah (KPEREZ@COLLEGE.UCLA.EDU) - 3108251894
Status: Approved on 7/6/2017 9:46:15 AM
Changes: No Changes Made
Comments: Approved by Dean García-Garibay, Dean of Physical Sciences, on July 5, 2017. Submitted by Kristen Perez, on his behalf.

Role: L&S FEC Coordinator - Kikuchi, Myrna Dee Castillo (MKIKUCHI@COLLEGE.UCLA.EDU) - 45040
Status: Returned for Additional Info on 6/30/2017 3:10:37 PM
Changes: No Changes Made
Comments: Per supp info section, approved on behalf of Catherine Clarke, Chair, Chemistry & Biochemistry. Routing to Kristen Perez for Phy Sci approval.

Role: Initiator/Submitter - Mantonya, Denise M (DMM@CHEM.UCLA.EDU) - 54660
Status: Submitted on 6/23/2017 3:36:31 PM
Comments: Initiated a New Course Proposal

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Comments or questions? Contact the Registrar's Office at
cims@registrar.ucla.edu or (310) 825-6704