

Certificate in University Science Teaching (CUST)

<https://hsc.unm.edu/medicine/education/reo/graduate/cust/>

Director: Dr. Yadéeh Sawyer (yesawyer@salud.unm.edu; 505-277-9151)

Aim: Provide a formal training in science communication, education, teaching, and mentoring to the biomedical PhD students. This certification is geared towards students interested in careers with communication, mentoring, and leadership direction (e.g. academic careers; managerial positions). This training process prepares students for their future positions as leaders.

Goals: The Certificate Program in University Science Teaching (CUST) is a formal transcribed program and one of a handful of programs in the country that offers biomedical scientists formal training in education and teaching. Through CUST, participants acquire core competencies by developing a critical background in pedagogical theory, gaining practical teaching and effective communication experience, applying innovative educational approaches, and implementing various assessment methods. Creative, critical thinking, and communication skills are developed, which are highly transferable to research and other arenas.

Upon completion of this program, participants will be better equipped to engage in collaborative, interdisciplinary, and translational research and education projects. Gained skills will also result in increased competitiveness for positions as postdocs and alternative career pathways.

What to Expect:

- This is a 2-3 year program that typically starts in a students' 2nd year (after passing the qualifying exam) and runs through year 3 or 4. Students' 5th year should be dedicated to completing their dissertation.
- Fifteen (15) credit hours are divided among coursework, workshops, hands-on teaching apprenticeships, and an independent scholarly educational project.
 - Many of the required credits are within the scope of the existing BSGP PhD core curriculum requirements (min 3 credits).
 - The program provides flexibility in types of teaching and scholarly projects.
 - Elective credit hours provide the flexibility to tailor the program to meet individual goals and needs.
 - Documentation of teaching activities, along with a statement of teaching philosophy and self-reflective journal are collated in a Teaching Portfolio.
 - CUST graduates have demonstrably enhanced competitiveness to pursue a wide range of careers that require effective communication, teaching, mentoring and assessing others.
- Students will receive an email confirming the completion of their application once received. Admissions decisions generally take two weeks after receipt and are made on a rolling basis throughout the year.

Eligibility requirements:

- The certificate program and individual courses are open to UNM graduate students, with an emphasis towards PhD students in the Biomedical Sciences, who are interested in earning a transcribed certificate. *Other BSGP students are welcome to participate in CUST programming for the experience even if they are not interested in the formal certification process.*
- Learners in the Academic Science Education & Research Training (ASERT) program will enroll in CUST, or courses within it, as Non-Degree Graduate students as part of their postdoctoral position.
- Since completion of CUST requires time and credit hours during the PhD curriculum, enrollment requires agreement and support from the research mentor/faculty advisor.
- *BSGP students:* Passed Qualifying Exams

Additional Information:

- This program is an optional voluntary certificate.
- Program content may include, but is not limited to:
 - Formulation of teaching philosophy statements
 - What is learning?
 - Student assessment
 - Teaching from a scholarly perspective, as well as a target population angle
 - Course design
 - Plan lectures
 - Create syllabi
 - Contextual learning beyond course material
 - Accessible and effective teaching pedagogy
 - How to adapt to the needs of the local population
 - Reflective teaching and communication practices
 - Know the audience
 - How to engage different learning styles
 - Establish learning goals
 - Innovation
 - How to learn and reflect on assessments
 - Study and teaching strategies
 - Student-faculty collaboration
 - Facilitates a community of peer educators and mentors
 - Unify the dichotomy between teaching and research

CUST Curriculum:

Typical Curriculum (Course Descriptions – can be under the Resources section of the website):

BGSP Program Year	Required (12 credits total)	# Credits	Electives (3 credits total)
Year 1	BIOM 525 - CMBD Journal Club	2	<ul style="list-style-type: none"> • BIOM 505 - Peer-Observation Training (2 cr) • BIOM 541 – Teacher Training Workshops (1 cr) • BIOM 542 - Teaching Assistant Practicum (3 cr) • BIOM 543 - Independent Educational Immersion for Teaching Scholars (3 cr) • EDPY 572 – Classroom Assessment (3 cr) • EDPY 510 – Principals of Classroom Learning (3 cr) • EDPY 520 – Motivation Theory and Practice (3 cr) • EDPY 630 – College Teaching Seminar (3 cr) • LEAD 529/OILS 541 – The Adult Learner (3 cr) • OILS 583 – Graduate Teaching (1 cr) • Courses within the Certificate in Technical and Professional Communication
	BIOM 530 - CMBD Seminar	2 total (1/semester)	
Year 2	BIOM 540 - University Teacher Training	2	
	BIOM 542 – Teaching Assistant Practicum	3	
Year 3	BIOM 543 - Independent Educational Immersion for Teaching Scholars	3	
Year 4	<i>none</i>	<i>n/a</i>	
Prior to graduation	Teaching Portfolio	<i>n/a</i>	
Continuous	<i>Optional – Monthly Cohort Meetings</i>	<i>n/a</i>	

*** Required Courses. Total Credits = 12.**

- *Year 1 – For the following 2 courses to count towards your CUST requirements, you will be asked to provide a written reflection on what you learned about presenting and teaching from observing the speakers in the BIOM 525 and BIOM 530 courses, as well as other speakers/instructors from your academic journey. This can include, but is not limited to, what worked well, what you learned not to do, and how you envision using this experience in your career moving forward, specifically when you teach for your BIOM 542 requirement.*
 - **BIOM 525* - CMBD Journal Club** (2 Credits; Course/Workshops) – This course is usually completed in the first year, prior to joining CUST as part of the [BSGP core](#).
 - *Description:* This course offers new graduate students experience in oral presentation skills, experience in reading and discussing scientific literature and exposure to research seminars. The format is typically student led discussions.
 - **BIOM 530* - CMBD Seminar** (2 Credits – 2 semesters at 1 credit each; Course/Workshop) - This course is usually completed in the first year, prior to joining CUST as part of the [BSGP core](#).
 - *Description:* This course is a cross-cutting, interdepartmental seminar series offered for graduate credit. Weekly seminars are presented by preeminent scientists on a wide variety of broadly relevant research topics.

- *Year 2 – generally the first CUST semesters:*
 - **BIOM 540* - University Teacher Training** (2 Credits; Course/Workshops)
 - *Description:* An introduction to the principles of how people learn and methods of teaching and assessment. Special workshops provide hands-on experience with effective lecture preparation and tutorial group facilitation for problem-based learning.
 - This 6 week course is offered Spring semesters ONLY. For enrollment, students must request registration overrides directly to the course instructors.
 - This course is open to non-CUST students who are interested in developing these skills and are interested in teaching/education.
 - The preferred approach is for BIOM 540 to precede BIOM 542 (TAing for credit). Exceptions are awarded for BSGP students in Fall and Spring of year 2 on a case-by-case basis. If enrollment in BIOM 542 comes before BIOM 540, students are required to submit a justification to the [SOMREO office](#) on how they feel prepared to TA and/or description of access to educational mentors to help them during their role as a TA.

 - **BIOM 542*+ - Teaching Assistant Practicum** (3 Credits; Teaching Practicum). This course may be repeated a second time as an elective, but the TA role cannot be for duplicate courses.
 - *Description:* Teaching experiences is critical for most faculty positions. BSGP students enrolled in this course earn course credit for serving as teaching assistants (and do not receive financial compensation).
 - TA's are not paid for semesters where they earn course credit. Students must inform the [CUST director](#) and [SOMREO](#) the semester BEFORE they intend to enroll. And, arrangements for teaching assistantships are made on an individual basis and coordinated (including override permissions) through the [SOMREO office](#).. Please note, TA positions have a waitlist.
 - Any student TAing for credit rather than pay must include [CUST director](#) and [SOMREO](#) and reach out to the faculty course director(s) of their choosing and develop a teaching plan. The teaching plan should meet the needs of the faculty course director and focus on teaching skill development for the TA.

- Prior to receiving an enrollment override from the [CUST director](#), the student will meet with the CUST director to discuss their project and product expectations.
 - Scholars are evaluated on teaching materials, oral and written communication skills, and project design and tool development. All elements should address the scope of the project and who each element contributes to teaching excellence. This should include, but is not limited to learning goals, assessment, and evaluation.
 - Scholarly projects can be, but are not limited to, directly related to the course the student TA'd for in BIOM 542 or other existing BIOM courses, case development, developing curriculum for a potential new course, developing or modifying an assessment tool, developing a program, or addressing other scholarly topics/issues/challenges, which can potentially be implemented within the BSGP.
 - Students should work with faculty who UNDERSTAND TEACHING PEDGOGY or work with CUST director to ensure they develop a project which, implemented or not, can work in a course or program of their choosing.
 - Students should incorporate knowledge from their previous courses/trainings (e.g. BIOM 540, BIOM 541 [where applicable], and BIOM 542)
 - Course based scholarly projects may include/address, but are not limited to:
 - Students
 - Syllabus – *should include a statement on Diversity, Equity, and Inclusion*
 - Assignments & discussion
 - Assessments and grading tools
 - Sample lectures
 - Evaluations
 - This course is an opportunity for students to find a way to be “unique” in their training to set them apart from other “standard” graduate students.
 - *Examples of past projects:*
 - Advanced Topics: Genome Technology and Bioinformatics (BIOL 519 & CHEM 587) by Emily Alden
 - Course Development and Implementation of (BIOM 505) Special Topics: Advanced Microscopy Methods by William Kanagy
 - Course Development and Implementation of (BIOM 505) Special Topics: Qualifying Exam Prep class by Jesse Young
 - Teaching of a Freshman Learning Communities course
 - Design and implement of a peer-mentoring network for BSGP students by Megan Thursby and Leo Garcia-Montañó (non-CUST student).
 - Design and implementation of a mentoring program for undergraduate research
 - Development of a learning and self-assessment tool to enhance student understanding of a complex topic
 - *Examples of potential projects:*
 - Tutoring Pool – develop a pool that includes resources for tutoring, conduct surveys (to both students and TAs) to assess if tutors are needed, and if so, for which BSGP core courses.
 - For the course the student TA'd for, look at the assessment for the course, or revise a section of the syllabus.
 - Design a recruitment program for the BSGP to recruit regionally and nationally
 - Analyze course evaluations for BIOM courses and propose areas for improvement
- **Teaching Portfolio***: Documentation of all activities described above plus a statement of teaching and education philosophy.

We encouraged CUST students to begin building their teaching portfolio and tracking progress and engagement from the start. They can always go back in and edit the document as their experiences guide.

- List of when certificate required courses were completed (Sem & Yr) and grade earned
- List of other relevant teaching workshops or courses (if any), include a brief reflection of each session.
- Course and instructor of the Teaching practicum (BIOM 542) with evaluation included
- Teaching and education philosophy
 - Students start this within their BIOM 540 course and should develop it as necessary
 - Should include philosophies of inclusion and diversity (as seen in BIOM 540)
- Statement of career goals within Education and Teaching
- Independent Educational Immersion for Teaching Scholars (BIOM 543).
- Address your desired career options within education and teaching, including any requirements to entry necessary.

+ Elective Courses. Total Credits = 3.

- *Elective Courses⁺ – taken at varying points within the CUST program.*
 - **BIOM 505⁺ - Peer-Observation Training (2 Credit)**
 - *Description:* This course provides a format to teach current information in a variety of rapidly advancing areas of biomedical research which are not now provided by existing courses. Subject area varies depending on the need for education in a particular area and the faculty member involved. This course requires completion of 2 [Continuous Professional Learning's](#) (CPL) workshops focused on teaching methodology, participation in the Peer Observation in Support of Effective Teaching ([POSET](#)) program, and both a presentation with associated learning objectives and performing an observation on another peer's teaching/presentation.
 - Upon completion of the course, students must submit a list and brief reflection of the direct benefit for each workshop attended.
 - Restriction: Permission of instructor (contact the [CUST director](#)). Offered upon demand.
 - Typically the POSET observations are done during the monthly CUST meetings. Please coordinate with the CUST director to ensure you are scheduled for this session. The student instructor teaches a mini lesson and the other attendees provide constructive feedback using the [Observer Guidelines and fillable forms, found on the POSET website](#).
 - Upon completion of the course, students must submit a reflection on this process and what they learned that can be applied to their future as educators.
 - It is encouraged to find a peer to also enroll in the course.
 - You must provide the CUST director with documentation of the CPL training, participation in POSET.
 - **BIOM 541⁺ - Teacher Training Workshops (typically 1 credit) – This course may be repeated, but content must be different.**
 - *Description:* This workshop/independent study course emphasizes skill development in education theory and curriculum development or student assessment and feedback through didactic lectures and hands-on experience.
 - The expectation is that for every credit hour the student enrolls in, they commit approximately 3 hours a week for the 16 weeks of the semester (totaling 48 hours per credit per semester), as is expected for any course. This time is spent with a minimum of 15 direct engagement workshop hours per credit hour, and the remaining 33 hours per credit hour are spend preparing, reflecting, and cataloging the student's experience.

- Students must submit a document at the close of the semester that tracks which workshops or trainings they attended, what did they do to prepare for them, and a thoughtful reflection for both EACH of the workshops or trainings. The final component to the report is a reflection on the overall experience, areas of personal growth, areas for future growth, and how the student will apply each of these learning experiences to their future as an educator. Provide specific examples rather than broad statements.
 - *Guidance on available workshops and trainings:* There are many across campus, as the CUST program is relatively flexible with what counts, as long as the student can justify the benefit within the scope of CUST. But, the [LEO: The Learning Environment Office and the Office of Professional Well-being](#) have a speaker series each semester that addresses educational concepts. The [Center For Teaching and Learning](#) has quite a selection of sessions, so does the [Continuous Professional Learning's \(CPL\) Educational Development Activities](#). For the CPL workshops, registration is required for each session (all the info is on the site) and students will need to make sure to identify as student in the registration so they are not charged a fee. If students see other workshops outside of these two formal programs that you think you'd benefit from, we encourage that, too. And, the Peer-Mentoring Program within BSGP or BSGSS leadership roles can also count if the topics discussed or skills addressed are applicable. Reach out to the faculty sponsor, [Dr. Laura Gonzalez-Bosc](#), for additional information on how to be involved with the Peer-Mentoring Program.
- **BIOM 542*+ - Teaching Assistant Practicum** (3 Credits). These are flow-over or additional credits to those required, students may only earn credit for a total of two unique TA'd courses (see above).
 - **BIOM 543*+ - Independent Educational Immersion for Teaching Scholars** (3 Credits; Individual Project). This course may count towards electives if taken a second time and a second unique project is developed. For example, two completely independent projects, or, the first enrollment is to develop a course and the second enrollment is to teach someone to teach the course, or, start a program and then train somebody to run the program.

The following are additional courses that fit the CUST aim and goals, but students are not limited to the below listed options. Options listed may not be offered each semester. If students find alternative UNM courses they feel would be in line with CUST, they are encouraged to discuss the option with the CUST director. Keep in mind these are full graduate courses and will require work to reflect that. Undergraduate courses cannot count towards this graduate certificate.

Be aware that sometimes students are charged course fees or differential tuition for taking classes outside of BIOM. These fees and differential tuitions are not covered by RA contracts unless written specifically to cover those charges.

- **EDPY 572+ – Classroom Assessment** (3 Credits; Taught through educational psychology program in the College of Education) - Provides educators with skills in assessment and knowledge of issues in measurement and assessment. Skills necessary to understand and communicate large-scale test information are also developed.
- **EDPY 510+ – Principals of Classroom Learning** (3 Credits; Taught through educational psychology program in the College of Education) - Research and theory in learning, particularly cognition, motivation and assessment, with emphasis on educational implications.
- **EDPY 520+ – Motivation Theory and Practice** (3 Credits; Taught through educational psychology program in the College of Education) - The course promotes understanding of

current theories and research in motivation with an emphasis on applications in educational settings. Strategies for establishing motivation-rich environments will be developed.

- **EDPY 630+ – College Teaching Seminar** (3 Credits; Taught through educational psychology program in the College of Education) - This course provides an empirically-based theoretical and practical foundation for college-level teaching. Topics include: instructional strategies; teaching technologies; assessment; professional development; ethics; teaching as part of overall professional identity.
- **LEAD 529+/OILS 541+ – The Adult Learner** (3 Credits) – Examines the teaching and learning transaction with adults. Specific attention is on adult life stage development, relevant learning theories and approaches, and learning style issues of cross-cultural populations.
- **OILS 583+ – Graduate Teaching** (1 Credits) – Offered Fall and Spring semesters. Introduces new Teaching and Graduate Assistants to teaching at UNM; reviews various instructional methods, assessment strategies, and pedagogical theories pertinent to teaching in higher education. The course is part of the [Graduate Teaching Academy](#) offered by the Graduate Studies and the Center for Teaching and Learning and consists of 8 workshops held on Friday afternoons.
 - We highly encourage this course for CUST students who are not able to take BIOM 540 prior to the semester they want to TA.
- Courses within the **Certificate in Technical and Professional Communication** (*See below.*) *The courses within this certificate can also be used as electives towards the CUST requirements.*
- **Optional: Monthly Cohort Meetings** – Time (1-hour) & Location is arranged. These meetings are aimed at facilitating conversation and focus on professional development for teaching approaches. The sessions may include, but are not limited to mini-presentations on teaching-pedagogy (i.e. scaffolding - a teaching method that involves gradually shedding the instructor's assistance as students increase their understanding), or practice instruction from fellow CUST students. These meetings are not just for CUST students, but TA's also because the topics we discuss could be of interested in students in TA positions.
- **Additional Requirements:**
 - **Yearly Check-In meetings with the CUST Director**
 - **Include CUST in your [Application for Candidacy \(AOC\)](#) after passing comps.** This is submitted to OGS.
 - *Helpful tips in this process:*
 - This form doesn't work on all internet browsers.
 - When completing the form, you'll indicate CUST as a secondary program under the "doctoral degree plus graduate certificate" option.
 - Additional help on adding CUST can be found at <https://hsc.unm.edu/medicine/education/reo/graduate/bsgp/bsgp-resources.html>

- *Additional Resources & Certificates*

- **Certificate in Technical and Professional Communication**

The courses within this certificate can also be used as electives towards the CUST requirements.

<https://english.unm.edu/grad/prospective-students/programs/gradcerttpc/index.html>.

The Graduate Certificate in Technical and Professional Communication (TPC) prepares certificate-holders to apply enhanced workplace and technical communication skills in their current employment context or in a future context. This 15-credit Certificate can be added in as a part of an existing UNM student's MA or Ph.D. program, effectively as a depth area in TPC (for ENGL graduate students). The Certificate can also be taken as a freestanding credential, ideal for working professionals in science, technology, non-profit administration, engineering, and the military. This Certificate can be completed face-to-face with occasional online courses, or fully online. The Certificate's foundation in social justice and ethics guides the communication outputs students will create, such as reports, feasibility studies, white papers, usability tests, data visualizations, procedures, and more. Applicants to the Certificate program should already hold a Bachelor's degree. The program requires 15 credit hours of coursework to culminate in a final portfolio (submitted to the Program Director) of the students' best work accompanied by a reflective memorandum that considers selected program outcomes. There is no foreign language requirement for the completion of the Certificate.

The 15 credit hours of coursework are distributed across core and distribution requirements as follows, in two tracks (Standard track and Grant and Proposal Writing track)

Standard Track

6 credit hours of core requirements:

- Technical and Professional Communication (ENGL 502)
- Ethics in Technical and Professional Communication (ENGL 535)

9 credit hours of electives, chosen from the following (with other Rhetoric and Writing and other department courses accepted as substitutions with Program Director's approval)

- User-Centered Design and Usability (ENGL 512)
- Editing (ENGL 517)
- Proposal and Grant Writing (ENGL 518)
- Visual Rhetoric (ENGL 519)
- Topics in Professional Communication (ENGL 520)

Grant and Proposal Writing Track

15 credit hours of core requirements:

- Technical and Professional Communication (ENGL 502)
- Proposal and Grant Writing (ENGL 518)
- Ethics in Technical and Professional Communication (ENGL 535)
- Research Methods (ENGL 540)
- Graduate Internship (ENGL 598)