

2018-2019 Innovation of the Year Application

Submitted by Kristin Bennes, Glendale Community College

Building a Southwestern Bioscience Workforce: Glendale Community College/Western New Mexico University Partnership for Biotechnology and Cell & Molecular Biology.

Executive Summary

Designed to increase the number of graduates in our AAS in Biotechnology and Molecular Biosciences, the Concurrent Enrollment Partnership between Glendale Community College and Western New Mexico University seamlessly assists a diverse population of students in earning Associate's and Bachelor's degrees, better preparing them for Arizona's workforce and/or higher education.

Team

- Kristin Bennes, Student Services Analyst, GCC, kristin.bennes@gccaz.edu
- Dr. Karen Conzelman, Department Chair, Biology, GCC, karen.ann.conzelman@gccaz.edu
- Dr. James Tuohy, Occupational Program Director, Biotechnology & Molecular Biosciences, GCC, james.tuohy@gccaz.edu
- Dr. Kim Parrish, Biology faculty, GCC, kimberly.parrish@gccaz.edu
- Dr. Angela Schwendiman, Biology faculty, GCC, angela.schwendiman@gccaz.edu
- Dr. Sagarika Dash, Biology faculty, GCC, sagarika.dash@gccaz.edu
- Kelly Lum-Naihe, Biology faculty, GCC, kelly.lum-naihe@gccaz.edu
- Dr. Justin York, Biology faculty, GCC, justin.york@gccaz.edu
- Dr. Erik Gergus, Biology faculty, GCC, erik.gergus@gccaz.edu
- Dr. Anna Cunningham, Biology faculty, GCC, anna.cunningham@gccaz.edu
- Rick Bilbrey, Biology Lab Technician, GCC, richard.bilbrey@gccaz.edu
- Dr. Fernando Camou, Dean of Instruction, GCC, f.camou@gccaz.edu
- Dr. José Herrera, Provost & Vice President of Academic Affairs, Mercy College, (formerly Associate Vice President for Academic Affairs and Dean of the College of Arts and Sciences, WNMU) jherrera@mercy.edu
- Dr. W. Jack Crocker, Provost & Vice President of Academic Affairs, WNMU, William.Crocker@wnmu.edu
- Ashley "Bailey" Pagels, Executive Secretary, College of Arts and Sciences, WNMU, Ashley.Pagels@wnmu.edu
- Joseph Doyle, Undergraduate Research and Grant Coordinator, WNMU, Joseph.Doyle@wnmu.edu
- Cheryl Hain, Director of Financial Aid, WNMU, Cheryl.Hain@wnmu.edu
- Shawna Arnold, Work Study Coordinator, WNMU, Shawna.Arnold@wnmu.edu
- Dr. Zenaido Camacho, Professor of Biology, WNMU, ZenaidoTres.Camacho@wnmu.edu
- Dr. Jeffrey Hill, Chair of the Department of Natural Sciences, WNMU, Jeffrey.Hill@wnmu.edu

Photo



From left to right: Dr. Anna Cunningham, GCC, Kristin Bennes, GCC, Dr. Justin York, GCC, Dr. Karen Conzelman, GCC, Dr. James Tuohy, GCC. Not pictured: Dr. Sagarika Dash, GCC, Kelly Lum-Naihe, GCC, Rick Bilbrey, GCC, and Dr. Fernando Camou, GCC.



From left to right: Ashleigh "Bailey" Pagels, WNMU, Dr. Jeffrey Hill, WNMU, Cheryl Hain, WNMU, Shawna Arnold, WNMU, Joseph Doyle, WNMU, Dr. Kimberly Parrish, GCC, Dr. Erik Gergus, GCC, Dr. Angela Schwendiman, GCC. Not pictured: Dr. José Herrera, Mercy College, Dr. W. Jack Crocker, WNMU, Dr. Zenaido Camacho, WNMU.

Strategic Commitments

The project touches upon all three of the MCCCCD strategic commitments, but the one most clearly aligned is that related directly to economic and workforce development.

Being a Driving Force for Economic and Workforce Development in Arizona and the Southwest

The Glendale Community College (GCC) / Western New Mexico University (WNMU) Concurrent Enrollment Partnership (CEP) for Biotechnology and Cell & Molecular Biology was innovatively designed to respond to changing industry standards and to make a positive impact in our community. Since its inception in 2016, this CEP program better prepares students for the Biosciences workforce by providing an affordable, accessible and high-quality academic plan towards bachelor's degrees in a culture of collaboration, inclusion, and diversity.

For a period of years, GCC's Biotechnology program was seeking solutions to build enrollment. The AAS degree had been developed with input from industry partners looking to hire employees with good lab skills. And while it was highly successful in doing so, over time, the industry in the state began to require a bachelor's degree for entry-level jobs. To better prepare biotech students for employment, a seamless transfer partnership with a robust upper division curriculum was essential. WNMU has proven to be an exemplary public university partner and has worked collaboratively with GCC to create a strong platform for student success. The CEP program has also significantly increased enrollment and completion in AAS degrees in Biotechnology and Molecular Biosciences.

- In the past three years since the partnership began, headcount in GCC's Biotechnology core classes have increased **48%** from the previous three years.
- In 2019 projections indicate a **247%** increase, more than tripling the number, of students graduating from GCC with an AAS in Biotechnology and Molecular Biosciences. The 2019 projection is expected to double again in 2020 resulting in an overall **531%** from previous years' (2013-2018) averages.
- Given the rather short timeline implementing our first cohort in 2016, and the expected chaotic nature and attrition of programs in their first year, we experienced **25%** attrition during the first year with students who changed majors or moved out of state. Of those who remained after the first year, **73%** of the 2016 cohort are on schedule to complete their BS degrees in 2019 and **87%** by 2020. Adjustments were made in the program's second year to increase student success resulting in a projection of **87%** for the original second-year cohort graduating on time.

Building a Thriving Community Through Access and Student Success

In addition to driving workforce development, the program strives to build a thriving community through access and student success. The seamless transfer and affordable

tuition are particularly attractive to underserved populations helping us close gaps in equity. Students in the CEP program receive WNMU in-state tuition rates and as a result save approximately 50% over the cost of a similar degree from an Arizona state university and 75% in savings for those who are part-time, international or DACA students. These savings and additional opportunities for grants and scholarships allow many of our students to earn their BS degrees debt free. Targeted student engagement strategies to support students and increase persistence include: a cohort model, peer mentoring, annual two-day orientation, tutoring and academic support, hands-on lab research opportunities, intrusive advising, class representation, recitation periods, club activities, meet and greets, pot lucks, and program convocation.

Attaining Recognition as an Innovator Among Institutions of Higher Education

This nomination is part of our hope to attain recognition as an innovator among institutions of higher education having created a program that effectively communicates the quality and potential of the Maricopa Community Colleges. The GCC/WNMU CEP is a unique and highly successful model, to our knowledge, no comparable program exists at any other community college in the country.

How the Glendale Community College/Western New Mexico University Partnership for Biotechnology and Cell & Molecular Biology program meets the criteria from the League of Innovation in the Community College and Maricopa Values.

Criteria No. 1: *Quality* - It is evident that the innovation increases quality in the course, program, office, or institution. *Maricopa Value: Education*

- The CEP program has provided an accessible, affordable transfer pathway with built in support for student engagement and success that particularly aids under-represented student populations. The quality of the training and education students receive has been elevated to increasingly prepare them for the workforce and/or higher education. Curriculum was innovatively designed to be rigorous, hands-on, and taught by highly-qualified faculty.

Criteria No. 2: *Efficiency* - There is evidence that the innovation contributes to a more efficient way of doing things. *Maricopa Value: Responsibility*

- The CEP program provides a seamless transfer for students to earn a BS degree maximizing credit by providing an 80/40 transfer model.
- Headcounts in GCC's Biotechnology core classes have increased 48%
- 2019 projections indicate a 247% increase, more than tripling the number, of students graduating from GCC with an AAS in Biotechnology and Molecular Biosciences.

Criteria No. 3: *Cost Effectiveness* - There is evidence that the innovation adds a value to the institution while at the same time containing or reducing costs. *Maricopa Value: Responsibility*

- The college has benefited from new revenues generated by WNMU classroom rentals, increasing student enrollments in Biotech classes, and the incorporation of new GCC classes associated with the program and their resulting tuition revenue.
- Students in the CEP program receive WNMU in-state tuition rates and as a result save approximately 50% over the cost of a similar degree from an Arizona state university and 75% in savings for those who are part-time, international or DACA students. These savings and additional opportunities for grants and scholarships allow many of our students to earn their BS degrees debt free.

Criteria No. 4: *Replication* - The innovation selected can be replicated in other institutions with a minimum of difficulty. *Maricopa Value: Excellence*

- The CEP program is very much in alignment with the MCCCDC areas of Transformation in that it created guided educational pathways to ensure students achieve their goals, closes the achievement equity gap in student success, and works closely with industry to increasing the number of students well prepared to meet immediate and future industry employment needs. It is a pilot worthy of consideration for other occupational programs within any community college.
- We have recently been in conversation with other colleges in the MCCCDC who have or soon will begin new university partnerships that we believe were influenced by the success of our CEP program.

Criteria: No. 5 *Creativity* - The innovation should be as original as possible or the adaptation should be creative. *Maricopa Value: Excellence*

- The CEP program offers an 80/40 transfer model that offers upper division classes in person, not online, and does not suffer in academic rigor or quality. The pathway allows students complete the AAS and transfer the majority of their credits directly into the BS degree.
- A low-cost, even debt-free, pathway to a bachelor's degree is possible given the curriculum design and in state tuition rates negotiated for all program students.
- Courses are intentionally scheduled to maximize peer mentoring and built in academic support with recitation modules.

Criteria No. 6: *Timeliness* - The innovation should not be more than five years old in the institution, but it must have been around long enough to be tested so that it meets most of the criteria. *Maricopa Value: Excellence*

- The CEP program was established in 2016 and has now been fully implemented with three active cohorts. This spring the first students from the first cohort will begin receiving their BS degrees in Cell & Molecular Biology from WNMU.

Criteria No. 7: *Learning* - The results of the innovation have been shared with others for the benefit of students throughout Maricopa. *Maricopa Value: Education*

- Students from any Maricopa Community College may be accepted into the CEP program. Emails regularly go out to faculty and students across the District to share CEP program information.
- Being recognized through the Innovation of the Year Award nomination we hope will allow the CEP program's success to be shared more broadly with other institutions.

Criteria No. 8: *Collaboration* - The innovation successfully demonstrates collaboration, teamwork, and cooperation to ensure continuous process improvement efforts on behalf of students throughout Maricopa. *Maricopa Value: Excellence*

- Innovation, like Democracy, can often be messy and the CEP program has had its share of ups and downs. It has taken a considerable amount of teamwork from across two institutions in bordering states to regularly troubleshoot to solve problems as they arose, and to continue to work together collaboratively just as we have from the beginning, to make improvements. Overall, there many reasons to celebrate, yet still more work to be done to refine and expand upon the CEP program's success.

CEP Program Brochure

Yes! A BS in Cell & Molecular Biology with a Chemistry Minor!

A very affordable and high-quality BS degree in Cell & Molecular Biology for Maricopa students.

Program Highlights

- Established in 1893, WNMU is a solid public university partner, with strong values and a longstanding commitment to student success.
- Our partnership program is accessible, affordable, rigorous and approximately half the cost of similar programs at ASU, NAU, or the U of A. *Many of our students with PELL eligibility are able to graduate debt-free!*
- All upper division science classes are taught in person on the GCC Main Campus.
- Independent research is emphasized, providing students a full year of highly desirable lab experience. Internships are also included.

APPLICATION PROCESS

You may apply at any time for provisional acceptance into the GCC/WNMU CEP for the BS in Cell and Molecular Biology. However, a seat will not be queued until you have registered for your final pre-requisite courses. Following conditional acceptance, you must complete your final pre-requisites with grades of B or higher.



When you successfully complete the CEP program, you will receive the following:

- AA and/or AS degree
- AAS degree in Biotechnology and Molecular Biosciences
- BS in Cell and Molecular Biology
- Minor in Chemistry

Additional Minors are available if desired



For more information, go to advisementblog.wordpress.com

Application is Required

The program is competitive and limited to 24 students per year.

For more information, go to advisementblog.wordpress.com



Program Contacts

Cecily Davis
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or

Sandra Amoroso
sandra.amoroso@gccaz.edu
623-845-4916



PRE-REQUISITE COURSES

- BIO173. Basic Instrumentation & Lab Math
- BIO175. Research Methods
- BIO181. Gen Biology (Majors) I
- BIO182. Gen Biology (Majors) II
- BIO205. Microbiology
- CHM150 or 151. General Chemistry I
- CHM152. General Chemistry II
- ENG101. Freshman Comp I
- ENG102. Freshman Comp II
- MAT150/51/52. College Algebra or higher-level MA course

WHAT'S A MUSTAUCHO?

We call ourselves "Mustauchos" and have a lot of fun with a wild-west, mustache theme. Mustaicho is a combination of the WNMU and GCC mascots: Mustangs and Gauchos. Each cohort in the program also has a western nickname.



Earn your BS in Cell & Molecular Biology on the GCC Campus!



Glendale Community College & Western New Mexico University
Concurrent Enrollment Partnership (CEP) Program

Are you interested in Biology Research, Biotechnology or Medical School?

Glendale Community College (GCC) in partnership with Western New Mexico University (WNMU) offers concurrent Associate and Bachelor degrees in Biotechnology & Molecular Biology on the GCC main campus.



MARICOPA COURSES

- COM100/110/225/230. Speech
- HU: PH1213. Med/Bio Ethics
- SB: with Awareness
- CRE101. Critical Reading or Test Exempt
- MAT212. Brief Calculus or higher-level Mathematics OR CSC100 (C++) OR CSC110 (Java) OR CIS156 (Python) (OR for the BA* SPA202 or higher SPA)
- BIO192. Recitation (Two credits required)
- BIO208. Nucleic Acids Methods
- BIO209. Biomolecular Separations
- BIO210. Advanced Lab Instrumentation
- BIO211. Bio Seminar (Three credits required)
- BIO215. Internship (Six credits required)
- BIO283. Bioinformatics/Scientific Computing
- CHM235. Organic Chemistry I
- CHM236. Organic Chemistry II
- CHM260. Biochemistry
- BIO292. Recitation (Two credits required)
- Literacy, Cultural, and Global or Historical Awareness

WNMU UNIVERSITY COURSES

- BIOL 210. Scientific Writing
- BIOL 301/303. Ecology & lab
- BIOL 360/362. Cell Biology & lab
- BIOL 366/368. Genetics & lab
- BIOL 422. Evolution
- BIOL 465/467. Molecular Genetics & lab
- BIOL 471/473. Majors Microbiology & lab
- BIOL 474. Virology
- BIOL 476/478. Immunology
- BIOL 480 or 4XX. Biometry
- BIOL 486. Senior Project
- BIOL 490. Directed Research
- HU – UD or approved UD
- **Required Orientation (Annually in August)**