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CSU HSI-STEM

Systemwide Research Project

Transfer Articulation Report

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Transfer Articulation Report

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Background

California is home to 115 campuses in the California Community College (CCC) system, 10 campuses in the University of California (UC) system, 23 campuses in the California State University (CSU) system, and over 90 private higher education institutions. Of the 23 CSU campuses, 21 currently hold Hispanic Serving Institution (HSI) designation, which is defined in Title V of the Higher Education Act as a not-for-profit institution of higher learning with a full-time equivalent (FTE) undergraduate student enrollment that is at least 25 percent Hispanic. In 2016, the Department of Education awarded 91 Title III, Part F, Hispanic-Serving Institutions Science, Technology, Engineering, or Mathematics (HSI-STEM) and Articulation Programs grants, of which 38 were awarded to California community colleges and public and private four-year institutions. The purpose of the Department of Education Title III, Part F, HSI-STEM and Articulation Programs grant is to:

1. Increase the number of Hispanic and other low-income students attaining degrees in the fields of science, technology, engineering, or mathematics; and
2. To develop model transfer and articulation agreements between two-year and four-year institutions in such fields. (U.S. Department of Education, n.d.)

Of the 21 CSUs with HSI designation, 12 CSUs were awarded an HSI-STEM and Articulation Programs grant for the 2016-2021 grant cycle. Ten of these CSU HSI-STEM campuses (see Table 1) are participating in the CSU HSI-STEM Systemwide Research Project, which is led by the Center for Evaluation and Educational Effectiveness (CEEE) at CSU Long Beach (CSULB). To meet the second goal of the grant, campuses have proposed a variety of activities and were required to identify 10 partner CCCs to collaborate with on transfer articulation work. The following report summarizes the activities, challenges, successes, and best practices of these ten campuses in their transfer articulation work as part of their HSI-STEM grant.

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Table 1. Campus Enrollment and Graduation Rate Information from CSU Office of the Chancellor Dashboards.

Campus Name	Cohort	Bakersfield	Channel Islands	Chico	Fullerton	Humboldt	Long Beach	Monterey Bay	Northridge	San Bernardino	Stanislaus
Transfer GPA (All)	2015	2.96	3.01	3.00	3.12	3.07	3.21	2.94	2.99	2.99	3.08
	2016	2.99	3.07	3.02	3.07	3.07	3.18	2.95	3.03	2.99	2.97
	2017	2.96	2.99	3.02	3.14	3.10	3.18	3.14	3.04	3.06	3.01
	2018	3.04	3.01	3.06	3.22	3.11	3.17	3.06	3.03	3.09	3.08
Entering STEM Cohort Size (All)	2015	155	148	356	434	331	458	140	731	369	133
	2016	153	155	280	437	320	545	132	630	286	98
	2017	132	143	266	340	296	632	130	705	290	88
	2018	148	139	323	319	229	751	158	806	342	82
Entering Cohort Size (Hispanic/Latino)	2015	44	64	189	141	165	275	85	248	143	59
Entering Cohort Size (Pell)	2015	81	68	182	218	204	265	70	384	252	77
	2016	93	75	161	220	192	316	64	371	195	67
	2017	88	64	127	178	177	364	65	434	193	50
2-year STEM graduation rate (All)	2015	10.3	14.2	16.6	4.6	10.9	10.0	23.9	6.1	12.7	17.1
	2016	9.8	20.6	16.1	5.5	17.5	10.8	35.2	6.2	14.7	22.3
2-year STEM graduation rate (Hispanic/Latino)	2015	4.5	7.9	11.8	3.6	9.6	10.8	18.4	5.5	13.1	7.7
	2016	6.3	18.6	5.5	5.1	5.5	9.2	27.5	8.1	10.6	19.4
2-year STEM graduation rate (Pell)	2015	13.6	8.8	17.0	5.5	11.3	9.1	27.1	5.5	12.3	16.9
	2016	7.6	21.3	17.4	5.5	17.7	9.5	37.5	6.5	13.3	17.9
3-year STEM graduation rate (All)	2015	28.4	43.2	53.1	32.5	49.8	60.0	60.7	33.9	38.8	44.4
3-year STEM graduation rate (Hispanic/Latino)	2015	24.7	31.8	48.4	31.2	43.5	61.1	57.9	29.7	38.3	41.0
3-year STEM graduation rate (Pell)	2015	32.1	29.4	53.8	34.4	46.6	58.5	65.7	31.6	42.1	41.6

Note. Most recent data available on the CSU Office of the Chancellor (CSUCO) Dashboard as of July 2020 are included in this table.

Research Questions

Ten of the 12 CSU HSI-STEM grantees are collaborating on the CSU HSI-STEM Systemwide Research Project. As part of a larger research and evaluation project, the following questions guide this transfer articulation report:

1. What are the common transfer articulation activities observed across the CSU HSI-STEM grants?
2. How do the CSU HSI-STEM projects and transfer pathway articulation influence Hispanic/Latino and/or low-income student success?
3. What specific transfer articulation practices or activities contribute to Hispanic/Latino and/or low-income student success?
4. What challenges and obstacles do HSI-STEM projects encounter in implementing transfer articulation?

Methods and Data Analysis

The following study includes one-on-one, semi-structured qualitative interviews with 10 of the 12 CSU HSI-STEM and Articulation grantees. These 10 campuses are participating in the CSU HSI-STEM Systemwide Research Project, a research project aimed to examine similarities and differences across the CSU HSI-STEM grantees; the impact the grants are making on Hispanic/Latino STEM student success; and opportunities and challenges in implementation and evaluation.

Campus grant principal investigators (PI) were asked to identify the point-person for the grant's transfer articulation work to participate in the interview. Interviews with these PI-identified individuals were requested, and interviews were then held via Zoom in winter 2020 and lasted approximately 30-45 minutes. Interviewees included the HSI-STEM grant PI, the Project Director, the Director of Advising, and the Transfer Advisor. Interviews took place near the beginning of the fourth year of the campuses' five-year grant, providing enough time to reflect on the grant's implementation. Guiding questions for the semi-structured interviews can be found in Appendix A.

Each interview was then transcribed verbatim using Otter.ai and cross-checked by a research team member for accuracy. An iterative, multi-step approach was utilized throughout the data analysis process (Barbour & Barbour, 2003). Two research team members read through the transcriptions and applied a two-cycle coding method (Miles, Huberman & Saldaña, 2014). In the first cycle of analysis, tags were assigned to "chunks" of data, and in the second cycle, patterns were examined to identify emerging themes. To confirm these patterns, other research team members were consulted to help triangulate findings (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014).

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Findings

Findings from the interviews are organized below by research question.

1) What are the common transfer articulation activities observed across the CSU HSI-STEM grants?

All CSU HSI-STEM campuses are conducting work on transfer articulation as it relates to the second goal of any Department of Education HIS-STEM grant. Across the 10 campuses in the CSU HSI-STEM Systemwide Research Project, four common activities include:

- **Transfer roadmaps:** Creating visual infographics that illustrate CCC and CSU course equivalents, course taking recommendations, and other information; typically, one transfer roadmap reflects a STEM major and information between the CSU and a partner CCC (e.g., requirements and course equivalents between CSULB and East Los Angeles College for biochemistry majors; see Appendix B for an example).
- **Course articulation:** Approving course equivalents between partner CCCs and the CSU. This process typically involves a form from the requesting transfer student, supporting documents (e.g., CCC course syllabi), and approval from the CSU overseeing department chair or instructor.
- **Outreach:** Visiting and coordinating with partner CCCs to provide in-person and virtual information sessions, campus visits, and events for CCC students interested in transferring to the CSU with a STEM major.
- **Articulation summits:** One-day events convening key individuals in transfer articulation work at the CCC and CSU level. In some cases, it also involves individuals such as administrators, transfer advisors, and faculty at nearby private four-year institutions and K-12 leaders. Summits are typically hosted by and held at the CSU.

A key common transfer articulation action was relationship building. While this is not one particular event or tangible item, interviewees stated that efforts to build relationships across sectors was essential in transfer articulation work. Relationship-building aided in the transfer articulation because it helped connect key individuals across institutions and systems (i.e., CCCs, CSUs, UCs, private institutions) to seamlessly provide services to students, such as course articulation and course substitution approvals. When asked who needed to be involved in this work and these relationships, interviewees indicated a number of different individuals at each system (see Table 2).

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Table 2. *Key Individuals in Transfer Articulation Work.*

At the “Sending” CCC	At the “Receiving” CSU	Other Institutions
<ul style="list-style-type: none"> • Articulation Officers • Transfer Advisors • Counselors • Transfer Center Coordinators • Key STEM Faculty • STEM Deans or Associate Deans • Campus President (when creating Memoranda of Understanding) • MESA Directors • EOPS Directors • STEM Internship Manager or Director 	<ul style="list-style-type: none"> • Articulation Officers • Advisors (STEM and Campus) • STEM Faculty • STEM Department Chairs • STEM Deans or Associate Deans • Admissions • Enrollment Services • Registrar • Director of Transfer Outreach • Academic and Career Advising Centers • Community College Liaison • Campus President (when creating MOU) 	<ul style="list-style-type: none"> • K-12 • Neighboring public four-year institutions • Neighboring private four-year institutions

In summary, while campuses take on many tasks and activities related to transfer articulation, key common activities included transfer roadmaps, course articulation, outreach, and articulation summits. The strand that connected all of these activities was relationship-building, an ongoing and constant effort that involves many individuals at each level.

2) How do the CSU HSI-STEM projects and transfer pathway articulation influence Hispanic/Latino and/or low-income student success?

First, to better understand ways in which CSU HSI-STEM transfer pathway articulation activities could influence students, interviewees identified a few challenges transfer students faced related to transfer articulation at the “sending” community college campus (see Table 3) and at the “receiving” CSU campus (see Table 4). Responses echoed findings from existing research which state that students retake courses, take too many courses, and have prolonged time to degree (Hodara, Martinez-Wenzl, Stevens, & Mazzeo, 2016).

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Table 3. *Challenges STEM Transfer Students Face at the “Sending” CCC.*

Challenge
<ul style="list-style-type: none"> • CCC students often apply to multiple universities, especially universities in different systems (e.g., CSU, UC, private California universities, out-of-state universities). Because they do not know which university they will ultimately attend until near the end of their CCC experience, this makes it difficult for CCC students to determine which classes and which versions of each class to take. • CCC has limited upper-division STEM course offerings. • CCC students are still undecided on their major and “shopping around” for a major. As a result, these students take the wrong version of a class. For example, a biology course that meets the requirements for an Associate’s Degree or to transfer, but does not meet the major requirement at the receiving CSU. • CCC students are sometimes advised to complete as many General Education (GE) courses as possible at the CCC level, which allows them to complete these courses at a less expensive tuition rate and have more completed units at the time of transfer. • CCC students are not completing the proper prerequisites.

Table 4. *Challenges STEM Transfer Students Face at the “Receiving” CSU.*

Challenge
<p>Interim, Before Matriculation Semester</p> <ul style="list-style-type: none"> • Since the articulation appeal process requires faculty approval and signatures, CCC students have difficulty acquiring course articulation approval in the summer before transferring because many faculty members are out of the office in the summer. • As a result of not retrieving timely approval for a course, the incoming CSU student cannot register until the course is approved. • Inability to acquire approval for a course in a timely manner impacts the student’s ability to register during their registration period or take advantage of priority registration. As a result, the student is unable to register for or waitlisted for necessary courses or desired sections. <p>After Matriculating</p> <ul style="list-style-type: none"> • Due to the sequential nature of STEM courses and because some STEM courses (particularly upper-division courses) are only offered in certain semesters, a lapse in course-taking due to issues listed above can “derail” a student from a two- or three-year graduation plan. • At some campuses, students are required to take entire sequence of courses at same institution (e.g., both semesters of general chemistry, both semesters of physics). • In some cases, CCC students have only completed the lecture portion of a course, while the receiving CSU requires the complementary laboratory course. Thus, the CSU student must complete any lab courses required for their major. This may be difficult for the student as there is a gap of knowledge between when the student completed the course and when they are taking the lab portion. • Some CCCs combine a course lecture grade with a laboratory-grade. However, once the student transfers, some CSUs require these grades to be separate. Similar to the point above, the student must now retake any major-required lab courses in order to obtain a separate lab grade. Not only is this additional time, work, and tuition units for a student, it may be difficult for the student as there is a gap of knowledge between when the student completed the course and when they are retaking the lab portion. • In many cases, CSU students are unaware of the course articulation or substitution request process. For example, CSU Northridge indicated that some students were only aware of this process because of the faculty mentorship program within their HSI-STEM grant.

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To target these challenges and influence student success, HSI-STEM grants are specifically incorporating transfer articulation activities, such as outreach, events, and collaboration. At these 10 CSUs, nearly one-third to one-half of incoming STEM transfer students identify as either Hispanic/Latino or low-income (see Table 1). Moreover, Hispanic/Latino and low-income STEM graduation rates for STEM transfer students are typically lower than the campus average (see Table 1). Thus, transfer articulation activities that specifically target the challenges specified by the interviewees help Hispanic/Latino and/or low-income STEM transfer students spend less time and money on credits that are not degree applicable; transfer sooner from the CCC to the CSU; and have the support they need at the CSU to persist in a STEM major and graduate within two or three years after transferring.

3) What specific transfer pathway articulation practices or activities contribute to Hispanic/Latino and/or low-income student success?

After identifying the challenges transfer students face (see Table 3 and Table 4), campuses identified key transfer articulation successes as part of the HSI-STEM grant. This included, but is not limited to, the following key successes in the first three years of the grant (2016-2019):

- **Completion of articulation agreements:** The grant allowed time and staffing to complete and submit articulation agreements. CSU Bakersfield, whose HSI-STEM grant had a large focus on transfer articulation work, stated that they completed over 2,000 articulation agreements.
- **Completion of transfer roadmaps:** Roadmaps, often in the visual form of an infographic, can display the following: recommended courses at the CCC level, courses to take at the CSU, prerequisites, and the sequential order of courses. The grant allowed HSI-STEM programs to develop these transfer roadmaps for multiple partner CCCs and CSU majors. See Appendix B for an example of a transfer roadmap developed by CSULB between their campus and East Los Angeles College for biochemistry.
- **Completion of Memoranda of Understanding (MOU):** CSU Chico secured an MOU between their CSU campus and two partner CCCs. This MOU allowed CCC students to enroll in courses at the CSU while paying the CCC tuition rate; this opportunity was offered to qualifying students at the CCC at any level and did not require the student to already be admitted to the CSU. The opportunity allowed students to take a class in a CSU classroom setting, get acclimated to the CSU campus, and network with professors and current CSU students.
- **Engaging in Relationship-building:** The grant allowed programs to coordinate in-person events and summits to assemble key individuals from both sectors, which is an uncommon occurrence due to the siloed nature of higher education work. Campus representatives appreciated the value of interacting with individuals in-person to develop relationships and networks. One campus representative indicated that it helped break down barriers and “ego” associated with articulating courses based on rigor at either level.
- **Building connections and increased collaboration:** As a result of relationship building, particularly from in-person meetings, campuses indicated greater opportunities for collaboration. For example, CSU Channel Islands stated that, due to connections made at in-person articulation meetings, CCC faculty in attendance were invited to adjunct courses

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at the CSU campus. Opportunities to collaborate on research and projects also occurred, as well as a collaboration of professional development workshops and topics, such as culturally-relevant pedagogy.

- **Increase in students transferring with proper prerequisites:** After implementing HSI-STEM transfer articulation activities, multiple campuses indicated that they anecdotally saw more students were entering with the proper prerequisites prior to matriculating at the CSU.
- **Increased staffing opportunities:** Campuses indicated that the HSI-STEM grant provided staffing opportunities that would not have otherwise been possible. CSU Bakersfield said the grant provided the time to tackle a big project that “could have a big impact on future transfer students.” This campus also utilized the grant to hire student workers to support articulation administrative work.
- **Improve transfer graduation rates:** Anecdotally, campuses indicated that STEM transfer graduation rates had improved since the implementation of their HSI-STEM grants. CSU campuses in general have seen increases in graduation rates for both freshmen and transfer students, also likely due to the coinciding CSU Graduation Initiative 2025 (GI 2025). While additional analyses are needed to determine the grant’s specific impact toward these successes, it should be noted that HSI-STEM grants, particularly transfer articulation activities, support and align with GI 2025 goals to increase transfer graduation rates and close achievement gaps for underrepresented, low-income, and first-generation students.

In an effort to answer this research question, data was analyzed across campus interviews and from the multiple successes that campuses identified, two key activities stood out as potential best practices: articulation summits and outreach.

Best Practice: Articulation Summits. Four campuses (CSU Channel Islands, Fullerton, San Bernardino, Stanislaus) organize articulation summits, which are typically one-day, in-person events that convene key individuals such as STEM faculty and transfer articulation advisors, in transfer articulation work at both the CSU and partner CCCs. Often held annually, the purpose of these events is to provide a time and space for all individuals to meet, opportunities to network, and provide consistent information from each sector. While the format of each campus summit differs, many summit agendas begin the day with transfer admission trends, course requirement and campus updates, and transfer articulation updates from both sides. Workshop and breakout session titles include Identifying Transfer Student Challenges and Solutions, Disciplinary Work Group Discussions (e.g., a work group on biology or organic chemistry), and Bottleneck Courses and High-Impact Practices Discussion. They may include panel sessions, such as a faculty panel and a transfer student panel. Lastly, one CSU ends the day with an optional campus tour to show CCC attendees the campus as well as STEM buildings and laboratories as it is uncommon for CCC staff to have visited a CSU campus.

Best Practice: Outreach. Every campus indicated communicating and working with their partner CCCs to create articulation agreements. However, some campuses indicated increased outreach

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efforts to help aid their transfer articulation work. The following section will highlight outreach activities from CSU Bakersfield, located in a more remote area of California.

The campus representative indicated that due to its remoteness, the campus is located in an affordable living area and has many non-impacted STEM majors. The Pathway Development Coordinator, who leads the HSI-STEM transfer articulation work at this campus, went on a “campaign” to visit about 25 CCCs. The individual attended CCC transfer fairs, met staff at campus transfer centers as well as with advisors and STEM faculty, and created appointments and drop-in hours to meet with prospective transfer students. By meeting with students who showed interest in transferring to their CSU with a STEM major, the individual got to know the background of transfer students at each of the CCCs and see who was interested in STEM. These interactions allowed the individual to promote the campus as a viable option for STEM majors. The campus also invited students from a nearby CCC to attend the CSU campus annual engineering cart race event by booking a bus and welcoming CCC STEM students to the campus and participate.

Thus, proactively implementing transfer articulation activities directly mitigates the challenges STEM transfer students face (see Tables 3 and 4). Transfer roadmaps clearly illustrate what courses students need to take at the CCC that are transferable to a CSU major, eliminating confusion and over/undertaking of courses prior to transferring. Course articulation helps eliminate paperwork and time involved in approving student courses, provides more access, and removes much of the “red tape” involved in transfer course equivalency. Outreach helps target prospective students, answering their questions about the campus, majors to select, and provides information on resources and supports for the student once they transfer. Outreach also helps to build a CSU presence at the CCC. Articulation summits contribute to student success by also providing up-to-date consensus on transfer articulation policies, procedures, and requirements. All of these activities help build relationships between the CSUs and their identified partner CCCs. Since such a large proportion of our CSU STEM transfer students are Hispanic/Latino and/or low-income, these transfer articulation activities help influence this population of students by breaking down barriers, providing information, and creating seamless procedures to help aid the transfer process.

4) What challenges and obstacles do HSI-STEM projects encounter in implementing transfer articulation?

Interviewees were asked about the challenges they faced in conducting transfer articulation work as part of their HSI-STEM grant. Analysis of interview data revealed eight key issues (see Table 5).

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Table 5. *Challenges in Conducting Transfer Articulation Work.*

Issue	Detail
Changing nature of articulation	Curriculum, course outlines, and degree requirements change constantly at both the CCC and CSU level.
Turnover	While turnover in staffing exists at both the CCC and CSU, CSU HSI-STEM grantees found it difficult to keep track of changes with their CCCs.
Relationship-building	Relationship-building, while deemed extremely worthwhile and essential to transfer articulation work, is a process that requires time and effort from both parties and is an ongoing process.
Time	In addition to the time required for relationship-building, transfer articulation and developing articulation agreements are time-consuming tasks.
Work in silos	While CCC and CSU campuses have made progress in developing relationships between systems, CSU HSI-STEM grantees indicated that a lot of work at their own campus is done in silos. Moreover, data are housed in silos as separate entities, which do not easily allow data necessary for transfer articulation work to “talk” to each other. This includes data housed in offices such as Admissions, Enrollment Services, advising, and college STEM departments.
Website issues	Many CSU HSI-STEM teams indicated using Assist.org and C-ID.net to aid in transfer articulation work. Campuses found that the new interface on Assist.org was difficult to navigate and posed many technological issues.
Freshmen-focused programming	Though the ratio of new freshmen to new transfer enrollment at CSUs is about the same, campuses indicated that most programming is still geared for freshmen and does not reflect current student enrollment. Many CSU campuses do not currently have a transfer center, and those that do have this dedicated space often have new transfer centers.
Campuses in remote areas	CSU campuses located in more remote areas indicated unique challenges to transfer articulation, such as being located far away from their top feeder CCCs, hindering their ability to do outreach and build relationships in person.

While the HSI-STEM grant supported transfer articulation work, challenges still exist. Transfer articulation work is constantly changing and relies on faculty and staff to update and review articulation agreements and policy changes. Campus staffing and leadership turnover also changes at every campus, leaving a need to consistently and constantly work on relationship-building. Because of this, it is important for both CCC and CSU campuses to continue to support a high level of transfer articulation work beyond the end of the grant.

Recommendations

The following recommendations are provided for transfer articulation work:

Hold articulation summits with feeder and nearby CCCs. Campuses rarely have the opportunity to meet across the CSU and CCC sectors to discuss transfer articulation needs and efforts. Holding a one-day meeting can help provide consistent information, build relationships and networks across campus, identify issues and needs at each level, and develop solutions to mitigate these issues, ultimately breaking down barriers to transfer articulation work and increasing student success. The day should begin with information and updates on transfer articulation work, involve key individuals at both campuses, provide time to network and meet each other, provide time for small and large group discussion, time for disciplinary workgroups, and time to hear from faculty, staff, and students during panel sessions. For campuses that are located further away from their top feeder CCCs, virtual webinar summits can be held.

Focus outreach on the “Prospective Transfer Student” before they arrive at CSU. CSU campuses indicated how critical it is to begin transfer articulation outreach *before* the student matriculates to the CSU campus, which includes meeting with CCC transfer center staff, articulation officers, advisors and counselors. Organizing meetings with prospective STEM transfer students toward the beginning of their CCC education, rather than right before they aim to transfer, can help identify potential issues before they occur (e.g., taking the wrong version of a course or taking additional non-transferable courses) and eliminate having to resolve this issue after it has already occurred. This can help increase the number of students who enter CSUs with appropriate prerequisites, decrease the number of unnecessary classes students take at the CCC, and potentially decrease major “swirl” and time to degree.

Utilize data from both the CSU and CCC. As noted in interview data, working in silos was identified as challenge related to data sharing. A positive outcome of relationship-building is breaking down silos and working between offices within a campus. In turn, access to data between departments, colleges, enrollment services, the registrar’s office and transfer centers can help individuals acquire and utilize data to better understand student needs and provide data-driven decision making on policies and practices.

Provide a means to communicate information between the CSU and partner CCCs. Since the landscape of transfer articulation is always changing, it is important that consistent and timely information related to transfer articulation is disseminated. In addition to articulation summits, a LISTSERV can help distribute this information in a timely manner. The LISTSERV should be managed by the CSU HSI-STEM transfer articulation coordinator or a transfer articulation officer. LISTSERV recipients should include all necessary individuals in transfer articulation at both the CCC and CSU (see Table 2). LISTSERV content should include updates on staffing changes, campus and state policy changes, upcoming outreach events and transfer programming, and technological updates and troubleshooting for website, such as Assist.org and C-ID.net.

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Work toward institutionalizing these roles beyond the grant. Interviewees indicated that the HSI-STEM grant provided time and staffing to conduct transfer articulation work, and without the grant, many of the activities would not have taken place. It is critical that this work continues beyond the end of the grant, particularly as many needs remain as the nature of the work is constantly evolving. Campuses should document the work, time, and activities completed in HSI-STEM transfer articulation work to institutionalize positions and work in this area. Additionally, documenting successes, such as relationships, summits, and outreach efforts can further highlight the importance of transfer articulation work beyond grant-funded activities.

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Appendix A

Interview Protocol

1. Please state your name and role on the HSI-STEM grant and your role on transfer articulation.
2. What are the transfer articulation activities your campus is working on as part other HSI-STEM grant?
3. What are some of the issues transfer students experience at your campus as it relates to articulation?
4. Who are the key individuals you collaborate with or work with in the transfer articulation process?
5. Tell me about your experience and how you've worked with your partner community colleges.
6. What are some key successes you've experience in transfer articulation work?
7. What are some of the challenges?
8. Do you have anything else you would like to add?

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Appendix B

Transfer Roadmap Example from CSU Long Beach

Note: The following images serve only as examples. Due to the changing nature of transfer articulation, transfer roadmaps are an ever-evolving document and may not reflect current curriculum.

On the road from ELAC to CSULB Biochemistry, B.S.

Admission Eligibility

Applicants must meet the following requirements by Spring term for Fall admission and by the end of the previous Summer term for Spring admission.

- ✓ Complete the CSU GE requirements in
 - Written Communication
 - Oral Communication
 - Critical Thinking
- ✓ Complete a minimum of 30 semester units or 45 quarter units in course approved to meet CSU General Education (GE) requirements.
- ✓ 60 transferable semester units or 90 transferable quarter units.
- ✓ Major specific requirements at CSULB
- ✓ Minimum college GPA of 2.5 or higher
- ✓ Be in good academic standing

Admission requirements are subject to change. Check the websites for updates. Meet with your campus counselor to stay on track.

Equivalent Course Outline

Graduate with your STEM degree sooner at CSULB by completing the courses listed below at your community college prior to transfer.

Required Major Courses	
ELAC	CSULB
CHEM 101	CHEM 111A General Chemistry
CHEM 102	CHEM 111B General Chemistry
MATH 261	MATH 122 Calculus I
MATH 262	MATH 123-Calculus II

Recommended Courses	
ELAC	CSULB
BIOLOGY 7	BIOL 211 & 213 Introduction to Evolution & Diversity and Introduction to Ecology & Physiology
BIOLOGY 6	BIOL 212 Introduction to Cell & Molecular Biology

Additional Transferable Courses	
ELAC	CSULB
MICRO 20	BIOL 101 Introduction to Human Diseases
BIOLOGY 3	BIOL 200 General Biology
PHYSIOL 1/ BIOLOGY 20	BIOL 207 Human Physiology
ANATOMY 1/ BIOLOGY 20	BIOL 208 Human Anatomy

Helpful Websites

ADMISSION
<http://www.csulb.edu/admissions>

TRANSFER ADMISSION
<https://www.csulb.edu/admissions/fall-2020-transfer-major-specific-requirements-cnsm>

ASSIST
www.assist.org

COLLEGE OF NATURAL SCIENCES & MATHEMATICS
<https://www.csulb.edu/colleges/cnsm>

APPLICATION LINK
<https://www2.calstate.edu/apply>

ASSOCIATE DEGREE FOR TRANSFER PROGRAM
<http://adegreewithaguarantee.com/en-us/abouttheprogram.aspx>

Major Specific Requirements
+
Recommended Courses
+
Additional Transferrable Courses

=

Degree Completion Sooner

*Course sequence must be taken at CC or will not transfer.

CSU HSI-STEM Systemwide Research Project

Transfer Articulation Report



The **Center for Evaluation and Educational Effectiveness (CEE)** works in collaboration with others to promote vibrant educational programs and services and advance social justice locally, regionally, nationally, and internationally. CEE develops collaborative partnerships to:

- Ensure equity, access, and achievement for all populations seeking education.
- Facilitate a learning environment that builds organizational capacity through research, programs, and the services we deliver.
- Establish a focus on shared problem-solving across educational and community sectors.



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