



Final Report for NCHEA Grants

Within *two weeks* of the completion of the project, a Final Report and all support materials must be submitted to Elisa Grant-Vallone, NCHEA Director.

Please email this Final Report as a Word file (*not* as a pdf) to Elisa Grant-Vallone at evallone@csusm.edu and include items 8, 9, and 10 as email attachments. (If hard copies are the only available versions please mail them.)

Additionally, mail a hard copy of the Final Report and all *original* receipts, W-9 forms, etc. (item #11 on this form) to **Sonia Perez, NCHEA Coordinator, CSUSM Faculty Center, S. Twin Oaks Valley Rd San Marcos, CA 92096**. (We are unable to accept faxes or pdf files; original copies of these documents are required so please save copies for your records.)

1. Today's date: 5/29/18
2. Project Title: Engineering Articulation Retreat
3. Project/Grant Director: Katherine Kantardjieff

ENGINEERING ARTICULATION RETREAT

SPONSORED BY THE NORTH COUNTRY HIGHER EDUCATION ALLIANCE

Purpose:

To bring faculty from the two primary transfer institutions together with CSUSM faculty to review, discuss, and develop academic maps for the software and electrical engineering programs that are slated to launch at CSUSM in 2018.

Desired Outcomes:

1. Shared understanding of articulation challenges and opportunities
2. Alignment of courses and programs
3. Identification of courses to be developed at CCs and/or collaborations to leverage existing resources
4. Academic maps for advising transfer students
5. Strategies for marketing and recruiting transfer students

Agenda:

Time	What	Who
2:00	Welcome; Logistics; Review of Agenda, Purpose, Desired Outcomes	MC, PC, CSUSM Deans
2:15	Introductions	All
2:20	History; How We Got Here	Katherine Kantardjieff, CSUSM
2:30	Overview of HSI-STEM Grant (structure, goals)	Rick Fierro, CSUSM
2:40	Presentation of CSUSM Curricula: SE and EE	Shaun-Inn Wu, CSIS Michael Burin, PHYS
3:00	Breakout 1 - Articulation/Gap Analysis	Two Groups: SE and EE
4:15	Breakout 1 Report Out Resolution/Action Items	
4:30	Breakout 2: Academic Maps/Alignment (2+2)	Two Groups: SE and EE
5:15	Group Discussion: Recruitment/Marketing	All
5:45	Wrap-Up/Action Items/Next Steps	All
6:00	Adjourn	

ENGINEERING ARTICULATION RETREAT

BREAKOUT 1: ARTICULATION/GAP ANALYSIS

Purpose:

Examine alignment of proposed curricula for each program (SE and EE) and resolve discrepancies or gaps.

Resources:

Curriculum Articulation Tables; Course Syllabi

Instructions:

Designate one person in your group to be the time keeper and another to be the recorder who will also report out.

1. Examine the alignment of the lower division core curriculum for the particular (SE or EE) engineering program.
2. For courses that articulate, identify any significant differences in content from the syllabi to optimize the alignment.
3. For courses where articulation is absent, or there are differences in units, suggest ways to resolve this (course modification/course creation)
4. For your report out, be prepared to name/recognize additional courses that may be articulated, briefly describe revisions to syllabi, and identify courses to modify (units) or create.

ENGINEERING ARTICULATION RETREAT

BREAKOUT 2: ACADEMIC MAPS/ROAD MAPS

Purpose:

Generate compatible academic maps for transfer students.

Resources:

Curriculum tables, syllabi, output from Breakout 1, CSUSM roadmaps

Instructions:

Designate a time keeper and a recorder for your group.

1. Using the resources noted above, generate academic maps for transfer students that are compatible with the lower division core curriculum for the particular (SE or EE) engineering program.
2. Create the ideal pathway for a real 2+2 program.
3. Make sure that the completed academic map is saved (electronically or a photograph of your flipchart)

Meeting participants: Engineering Articulation Retreat Participants

Project Title: “¡Si Se Puede!” to Close the Equity Gap in Engineering Degree Completion

Topic: Planning

****Important Issues****

- Pathways and roadmaps, and backward mapping
 - o With re-arranging pathways for SE, may be work overload for target population at later upper-division major coursework
- SDSU – priority enrollment for EE for CC students transferring into SDSU
 - o When will this end?
 - o CSUSM will take over formal agreement and create new feeder agreement for Engineering
- Ideal 2+2 pathways vs. Realistic 3+3 pathway for our target population of students
- LDGE – allowing CC students to transfer at CSUSM
 - o LDGE/PreReqs for STEM is over 70 units
 - o Brief discussion of allowing students to finish their LDGE later semesters
 - Concerns of the unbalance workload
- Needs of the students who are not Calc I or Chem 150 ready?
 - o What are we to do with the map that we currently have?
 - o Backwards pathway mapping assistance
- Financial/Financial Aid implications and course load
 - o Amount of courses that a student may be able to take as a STEM major
 - o Realistic with other outside obligations?
 - o Balance with classes, work, and life?
- Review Roadmap for SE and EE as there was a discrepancy or missing course or category on graduation requirements vs. Major requirements.
- There seems to be a large demand from CC students both Hispanic and traditional
 - o Need to be clear about demand and capacity between CSUSM and CCs

Course Articulation

****Software Engineering****

- Clarity for Articulation Agreements
 - o Courses are not considered one-to-one in terms of units and be clear when explaining to students (Action Item)
 - May work together with counselors at community college with pathways advisor at CSUSM
 - o SE- need to finalize articulation of Stats 270 (CC?) – seems to have been done, but need to be ratified (Action Item – MC & ?)

- Math 242 @ CSUSM = Math 103 @ Mira Costa needs to be clarified (Statistics)
- Not a Pre-Req for any class
- Will be further discussed and finalized by Math Department (Action Item – Math Departments MC and CSUSM)
- CS 112/113 @ Mira Costa with CS 211 @ CSUSM (Action Item)
- Re-arrange 3rd and 4th year or transfer into as a 3rd year (Action Item)
 - 5th semester 300 level readiness – community college students have discrepancy
 - Suggested to move 300 level courses to a later semester in the education plan – maybe past 5th semester

****Both****

- Realistic expectations for ALL students from our community (HS, CC, CSUSM) and be prepared for all roadmaps for each

Course MAPS

- A number of important issues and discussions
 - MAP is a blueprint for prepared students and we need to consider our less-than prepared students (Action Item)
 - Roadmap for well-prepared students
 - Roadmap for not-prepared students
 - Ideal student pathways vs. realistic for our direct community
 - Roadmaps seen as obstacles – would like to create a pathway for everyone and point out to what has been accomplished already flowchart (Action Item)
 - CC roadmap same to CSUSM roadmap
 - Workload limitations for our students who reflect our community
 - Properly advising students for a balanced workload and course schedule
 - Question? What if a student wants to take 12 units? What does that pathway look like? What if a student has prior engagements or other obligations, work, family, etc...?
 - Question: Historical timeline for freshmen vs. transfer students to complete CSUSM STEM degree (Action Item – CSUSM)
 - Outreach should start in HS level – Review classes or coursework pathways for STEM at the Junior or Senior level (what does it look like for me at a particular point in my educational position)
 - Start the road map before these classes so students see a realistic path and also see classes that they have already completed in preparation
 - Outreach and recruitment early in HS classes that focus on STEM, Math classes, etc.

****Brief discussion on developing different roadmaps****

- Frame pathways with graphs, looking at a matrix of all math courses and following a particular roadmap that leads to Engineering Degree at CSUSM
- Pre-Req Tree or Flowchart
- Where are you at? Develop backward mapping according to current level
 - o Students will be able to identify where they are at in the overall idea of achieving CSUSM Engineering degree
 - o What classes you NEED to be taking at your Junior/Senior year in HS if you're thinking about a STEM major
 - o What do I need to do to be prepared?
 - o What do I need to plan?
- Focus on gateway courses – Math and Science
 - o HS students in Integrated math 1, 2, 3 – should be CALC ready and ready to be an engineer or be well prepared as a STEM major
 - o Reach out to HS and CCs gateway courses
- Frequency of course offerings

****Electrical Engineering****

- STEM GE pattern (Action item - MC)
 - o CC students need more than 60 LDGE + lower-division STEM prep classes
 - o Exceeds 60 units which draws them back a year from 4 –year plan
 - o Can we defer LDGE to a later time in their educational pathway?
- EE 280 will be reviewed at Mira Costa (Action Item)
 - o Stephen will send the course description to Erika
 - o Erika will take to Curriculum for Articulation
- PHYS 203 @ CSUSM = PHYS 253 @ MC/PHYS 232PC – “Should Articulate”
 - o Curriculum Officer will review and confirm (Action Item)
- SDSU Engineering program partnered with MC and PC to reserve seats for transfer students
 - o Feeder CCs provided 20 students each to SDSU
 - o Upon approval of CSUSM Engineering, feeder CCs will direct students to CSUSM Engineering vs. SDSU – when will this agreement switch to CSUSM? (Action Item)
 - o Erika will initiate collaboration with Transfer Center Counselor at MC with CSUSM Advisor to clearly layout pathway for feeder CC students to transfer into Engineering at CSUSM

****Both****

- Internships opportunities – where or what would be the best time to do so in terms of the maps?
 - o Connect with Career Center and internships to decide when to have students apply for internships and outside opportunities with professionals in their STEM fields

- Students from underrepresented backgrounds in our local CCs tend to be underprepared for CHEM 150 and Math 160 (Action Item)
 - o CSUSM will be conducting a placement exam to distinguish readiness for CHEM 150
 - o Those who do not pass will be referred to take CHEM 101
 - o Develop a Summer Bridge or Prep for CHEM 150 and Math 160
- There were some omissions in the MAP documents (Action Item – CSUSM)
- Question: Online classes offered for Engineering? (Action Item – CSUSM)
 - o What is the timeline, if any?
- Brief discussion of developing a Summer Bridge program for HS students to be better prepared and exposed to the courses and college level materials if interested in Engineering
 - o Inviting interested students to develop sense of belonging with other students who are interested in Engineering and STEM

****Marketing & Recruitment****

- Clearly explain and define the difference between CS/SE/CE/EE to all students (Action Item – create a document)
- Workshops and presentations formal Events @ STEM Centers at CCs
 - o Collaborate dates and times with coordinators
 - o STEM Center at Palomar is funded by an HSI grant
- STEM Center hosted Conference for middle school and parents
 - o Target population gained interest
- Translated Materials (Spanish) marketing and materials can be sent to PC or used on their campus
 - o Same Marketing materials across all campuses in English and Spanish
- Make sure that marketing targets and appeals to Hispanic and low-income students
- Contact ECHALE STEM programs to reach target student population
- Potentially work and collaborate with industry leaders for internships and partnerships with students and professionals
- Summer Enrichment Program invitation for CSUSM faculty @ CCs to gain more interest and expose students to faculty and build rapport and relationships early
 - o May include a supplemental 3 unit if completed or attended throughout the summer or semester
- Brief discussion of CSSI summer program for incoming freshman students in STEM
- Meet and Greet CSUSM in collaboration with PC and MC
 - o Develop sense of belonging
 - o Interaction with faculty across all campuses meet with all students
- Outreach to HS Junior/Senior level classrooms
- Reach out to students who identify as STEM students or explore what it takes and who is a STEM student?

- Reach out to Puente Mentors, community mentors/ professional engineers in the industry
- Support Services
- MATH Bridge Programs at MC (Bridges to Success) and PC
- EMPHASIZE – we are committed to their success and supporting our students wherever they are at in their educational career. (student support services)
- Employment outlook locally and need of a local and diverse Engineering workforce, that companies are actually looking for that from CSUSM
- Find HSI professionals – as mentors and guest speakers
- Contact Marketing at PC and MC
 - o Follow up with Patrick Obrien in Counseling for partnerships or collaboration
- Contact Veterans Centers at the community colleges
 - o Appeal to Engineering for target student population
 - Income
 - Flexibility in time
 - Familial obligations
 - STEM fields NEED our target population – diversity
 - o Action Items
 - List of connections of people and programs between campuses

HSI-STEM Planning Group – Engineering Articulation Retreat

Action Items

WHAT	WHO	WHEN
COMMUNICATION		
Communicate when transfer students will be admitted to new programs: SE 2019; EE: 2020	E-Team; CSUSM	May 2018
SDSU MOUs with MC and PC currently considers engineering transfers as “local”; what happens in 2019 to these agreements?	CSUSM	Spring 2018
List of connections and people and programs between campuses	E-team, cognizant deans	Fall 2018
PATHWAYS		
Create realistic pathways for students: 2+2; 3+3	Cognizant faculty, path ways advisors, counselors (Morales/CSUSM will coordinate)	Fall 2018
Create multiple forward and backward roadmaps ; roadmaps for well-prepared students, roadmaps for not so well-prepared students	E-team, pathways advisors, CC counselors, Alliance HS counselors (Morales/CSUSM will coordinate)	Fall 2018
Rearrange 3 rd and 4 th year or transfer into as a 3 rd year; 5 th year 300 level readiness – CC students have a discrepancy; move 300 level courses to 5 th semester and beyond	New SE faculty	Spring 2019 (assuming Fall 2018 start in P2 process at CSUSM)
ARTICULATION		

Clarify articulation agreements: STATS 270 needs ratification MATH 242 CSUSM = MATH 103 MC (statistics) CS 112/113 MC = CS 211 CSUSM CS 112/222/114/210/212 = 20 units vs 12 units at CSUSM	CS Faculty MATH Faculty	Fall 2018
LDGE/Pre-regs >70 units	Cognizant faculty	Fall 2018
EE STEM GE pattern: more than 60 units LDGE and STEM prep courses; can LDGE be deferred?	CSUSM, MC	Fall 2018
EE 280 articulation	MC (Erika) + Stephen Tsui	Fall 2018
PHYS 203 CSUSM = PHYS 253 MC = PHYS 232 PC (should articulate)	Curriculum officers will review and confirm – Stephen reports MC is currently reviewing	Fall 2018
Possibility for online courses for Engineering? Course Match?	E-team CSUSM/ PC currently offers programming courses online	Fall 2018
OUTREACH		
Marketing and recruitment utilizing STEM Centers	E-team CSUSM, CCs, Patrick O'Brien	Spring 2018
HS Outreach	Dean K with Alliance Director (Daniels) at CSUSM	Spring 2018 (strategy); Fall 2018 implementation
Math Outreach	Bridge programs at MC and PC	Fall 2018
HSI Outreach	Dean K, HENAAC, Puente Mentors	Fall 2018
Veteran Outreach: contact vet centers on each campus	E-team CSUSM	Fall 2018
Create summer research and internship opportunities	Career Centers; Office of Internships; Office of Graduate Studies and Research (funding)	Fall 2018
Schedule gateway or bottleneck courses in summer	Fierro, CSIS (CSUSM), new SE faculty (CSUSM) in consultation with CCs (impacts transfer	Spring 2019

	students)		
Create summer bridge program for students underprepared for CHEM and MATH	CSUSM; Credit for Prior Learning (vets) (Kantardjieff/Reily)		January 2019
Create summer bridge program for HS students	Alliance and CSUSM (Kantardjieff/Daniels)		January 2019