Instructional Program Review 2018/19 (Comprehensive)

Geographic Information Systems

Created on: 09/07/2018 11:06:00 AM PST
Last Modified: 01/31/2019 10:53:53 AM PST

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General Information (Instructional Program Review 2018/19 (Comprehensive))

2018/19 Instructional Program Review

Program Review Data and Resources

Submission Information (REQUIRED)

- Name of Lead Writer: Rachel Russell
- Name of Liaison: Xiaochuan Song
- Department Chair: J. Carlos Toth
- Name of Manager/Service Area Supervisor: Danene Brown
- Is this a CTE program? (State **Yes** or **No**) **YES**

Faculty/staff (REQUIRED)

- Number of T/TT Faculty: 1
- Number of Adjunct Faculty: 3
- Number of sections taught by T/TT Faculty: 4
- Percent of FTEF taught by T/TT Faculty: Spring 18: 70%
- Number of Pro-Rata Faculty: 0

Program Mission (REQUIRED)

The mission of the Geographic Information Systems program is to provide students with skills and knowledge in the models, theories and technologies used to acquire, analyze, manage, and map spatially referenced information. Students will successfully compete for entry-level occupations in GIS or, in fields using GIS, to address social, economic, environmental, academic, business, and logistical information that has a spatial component. The program provides quality instruction, using industry standard technology, equipment and practices.

Program Overview (REQUIRED)

Form: 2018/19 Comprehensive Program Review Instructional Program Overview Section (See appendix)

File Attachments:

1. **GISG Adv Com MINUTES7 Nov 2018.docx** (See appendix)

Curriculum (REQUIRED)

Form: 2018/19 Comprehensive Program Review Instructional Curriculum Section (See appendix)

Outcomes and Assessment (REQUIRED)

Form: 2018/19 Comprehensive Program Review Instructional Outcomes and Assessment Section (See appendix)

Form: "2018/19 Comprehensive Program Review Instructional Program Overview Section"

Created with : Taskstream
Participating Area: Geographic Information Systems

(REQUIRED) Program name

Geographic Information Systems

(REQUIRED) Program strengths

Discuss strengths of the program.

The Geographic Information Systems program is a Career Technical Education program designed to prepare students for entry-level positions and to update the skills of working professions. Our students receive hands-on and project-based training on industry standard software and best practices. We are very proud of our Work Experience, relationship with our regional industry and Advisory Committee, and our dedicated faculty. Additionally, GIS has a history of student success and retention.

GISG students must complete a Work Experience before they can earn their certificate or A.S. This experience gives students hands-on training in the industry to better prepare them for the job market. Supervisor evaluations regularly recognize Mesa’s interns as competent and well prepared on the GIS software. The internship connections in the community continues to grow to reflect the diverse interests/backgrounds of students and the expanding of GIS into many disciplines and industries. Since Spring 2016, 50 students have enrolled in the Work Experience.

The connection to regional employers has helped GIS build a new Advisory Committee. Many of our committee members started as internship supervisors. Our Committee works with faculty to identify emerging industry needs and advise on course sequencing, necessary skills, and new graduate expectations. They also offer much needed feedback on software and hardware acquisitions.

In Fall 2015 a full-time GIS faculty was hired. This faculty member has worked to grow in the internship program, course enrollments, and connections with the industry. GIS faculty are dedicated to preparing our students to succeed as GIS Technicians. All adjuncts are currently working GIS professionals, and several have GIS Professional Certifications. Faculty regularly attend GIS conferences and workshops to keep their skills updated. Additionally, class material is regularly updated to reflect new developments in software, technologies, and methodology. Faculty are members of national, regional and local professional associations.

GIS continues to have relatively high success rates, with an average success rate of 71% from 2014-2018. We are especially proud of our improving average success rates with Latin X students, from a low of 61%in 2014/15 to 71% in 2017/18. Many of our students are working professionals, recent college graduates, or current graduate students learning GIS to get a job, get into grad school, change careers, or advance in their career. Our success rate for students between the ages of 25 – 49 is 73% and this represents 63% of our enrollments. Over the past review term, our retention rate is at 83% and our GPA is 3.06.

Student success highlights:

- A.S Studnent Veteran Nicholas Case won 2018 GeoTech Center’s Geospatial Technology Student Competition. Case was chosen as the second place winner among community and technical colleges and chosen as the winner of the use of open source software.

- Multiple students are now fully employed in the field at firms such as SDG&E, Brian F. Smith & Associates, San Diego Mountain Biking Association, Bristol Site Contractors, LLC, PanGIS, ECorp, Michael Baker Interational.
- Mulitple students have transfered to UCSD geogrpahy and anthropology departments.
- Several studentss have been accepted or started graduate school at SDSU, Penn State, University College London, University of Wyoming.

(REQUIRED) Program challenges

Discuss challenges to the program.

GISG has a few challenges related to 1) sustainable funding for technology, maintaining and updating software and hardware, 2) resources for faculty training in emerging technologies and new instructional strategies, and 3) equity issues.

Currently, the industry standard GIS and remote sensing software licenses must be renewed yearly. There is a lack of sustainable funding for this software. Each year, faculty must apply and be awarded funding through competitive Perkins grant process. Maintaining and updating these licenses, as well as related hardware, servers, and networks is essential to the success of our students, and their preparation on industry standard-software.

With constantly updating technology, it is essential for faculty to remain up-to-date on industry applications and emerging technologies. There are limited resources and support available for faculty training in emerging technologies, such as drone mapping and aerial surveying. Additionally, as interest in online classes grow, there needs to be more resources and training for faculty on online instructional strategies as well as funding for software and hardware for online teaching. Currently, these are all funded through the competitive Perkins process. Ever-evolving technology also presents a challenge for the course/degree revision and development process. The slow state and regional approval process does not allow us to nimbly respond to emerging and new in-demand skills from our regional employers.

There are several equity challenges that remain in the GIS program. There are several groups of students that need attention.

- Black/African American students have an average 48% success rate. We also do not have that many Black/African American students.
- Drop in female success rates: since 2015/16's high of 78% success rate, the success rate has fallen to 68% in 2017/18. Although the average success rate is 72%, this hides the pattern of decline.
- The success rates for students under 24 years old is on average 67%. Traditionally, we do not have that many students that fall in this category, but the rate and drop in success rate is concerning. This low success rate comes primarily from GISG 104 and 110. These are introduction courses and are taken by a variety of students with

different interests and backgrounds, which may contribute to low success rates. GSIG 104 has our lowest course success rate at 59%.

Another equity challenge for GISG is the availability of course software and technologies to students. Students do have free access to the ESRI ArcGIS course software that they can install on their home PC. However, if students do not have a home PC they cannot access the software at home. The software is also difficult to install and requires a fast processor. Newer versions of the software required high graphic cards and hard drive requirements. Additionally, the ENVI remote sensing software is not available for students at home at an affordable rate. This requires students to have to come to campus to use the LRC or the STEM Center. The opening of the STEM Center has been great by allowing students to access the software on Saturdays. Equity for all technology students or students working on expensive software would be greatly improved by a VPN or other network solution that would allow students to access LRC computers from home. While this won't alleviate issues for our students who do not have access to a PC, it will allow students who work full time or have other responsibilities to complete course work outside of the classroom and LRC hours.

(REQUIRED) External influences

Discuss external influences (Collegewide and beyond).

- Changing political and economic factors leading to declining enrollment
- Changing state funding formula
- Quickly changing and new technologies that should be addressed through curricular changes or additions to support the region work force training needs
- No predictable funding for GIS software at the state or district level

(REQUIRED) Areas of Focus

Describe one or more areas that your department is focusing on. You will refer to this response in the Program Analysis Section.

- Increasing success rates for all students and underrepresented students
- Increasing enrollments
- Updating curriculum, technology, and course materials to reflect changing industry needs and demands
- Working to improve equitable access of software and hardware resources for all students

The Following Questions are for CTE Programs ONLY.

Enter "not applicable" if your program is not CTE.

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(REQUIRED) Describe how the program's industry partners (including advisory committee) assist with program improvement including curriculum advice, obtaining equipment, providing internships and finding or providing other

funding (limit 500 characters) (P.N. 1.b.). Please upload Advisory Committee minutes from the last year here.

Enter "not applicable" if your program is not CTE.

GIS Advisory Committee & Work Experience partners meet regularly to provide input on curriculum, student preparation, current/future technology, & regional workforce needs. All adjunct faculty work in the industry. In 2018, 26 students participated in WE. Partners reconfirmed the need for instruction on the latest release of GIS & Remote Sensing software & hardware. Partners volunteer for guest lectures on GIS in their industry.

(REQUIRED) Describe how your program connects to High Schools, Universities and Continuing Education, creating career pathways in your field. Include articulation, specific projects, collaboration with teachers/professors, etc. (limit 500 characters) (P.N. 3)

Enter "not applicable" if your program is not CTE.

Articulation agreements are in place for Science Connection at Kearny HS, International Studies at San Diego Ed. Complex, Hoover, Madison, Patrick Henry, and Twain HSs. GISG 104 articulates with SDSU & was revised to reflect the state criteria to insure transfer credits to the CSUs. In Fall 2018, faculty met with CSU and USD GIS faculty to discuss Mesa's GIS program. Faculty meeting with Miramar's drone cert. program to discuss potential collaboration.

Form: "2018/19 Comprehensive Program Review Instructional Curriculum Section"

Created with : Taskstream
Participating Area: Geographic Information Systems

(REQUIRED) Program Name

Geographic Information Systems

(REQUIRED) What degrees and certificates are offered?

GIS Technician Certificate of Performance

Geographic Information Systems A.S.

(REQUIRED) How many of each degree and certificate have been earned in the past 4 years?

There have been 11 students earning the A.S. degree in the last 4 years. Currently, our GIS Techician Certificate of Performance is not tracked by the state. According to Cal-PASS Plus, in 2016-17 15 students took more than 12 CTE units.

Full time and faculty met in the Summer of 2018 to tally students who they knew completed the GIS Technician Certificate and counted 23. This was based mostly off of knowledge of students that had completed the work experience and completed the coursework. Rachel Russell (Full-time faculty) began at the district in Fall 2015 and is not sure on completion rates prior to this time period.

Semester	Number of Students meeting requirements for certificate	
Fall 2018	6 anticipated	
Summer 2018	1	
Spring 2018	12	
Fall 2017	7	
Summer 2017	1	
Spring 2017	1	
Fall 2016	6 (?)	
Summer 2016	3 (?)	
Spring 2016	2 (?)	

(REQUIRED) If you have no (or very few) degrees/certificates, what other paths do you offer? (for example, GE, transfer)

GIS is a specialized software and skill set. As it expands across industries, we are seeing a more diverse student population in terms of previous experiences and fields. Our GISG 104 class is a GE course.

Our major hurdle to more students obtaining a certificate is the Work Experience course. This requirement is supported by our advisory committee. However, our students tend to take all the coursework and then never follow up on the work experience. Many of our students are already working full-time in a job that does not lend itself to the use of GIS and therefore have to choose between and income and the certificate program.

(REQUIRED) Have you developed any new courses in the past 4 years? Please give details.

No.

(REQUIRED) Have you made other curricular changes? (for example, renumbering, sequence change, co-reqs or pre-reqs)

I updated GISG curriculum for the 2-year review and 6-year review. There were no major changes to the curriculum at this time.

The Following Questions are for CTE Programs ONLY.

Enter "not applicable" if your program is not CTE.

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(REQUIRED) List any licensure and/or accreditation associated with your program.

Enter "not applicable" if your program is not CTE.

None.

(REQUIRED) Indicate the program TOP codes for your AA, AS, COA and COPs.

Please find TOP Code Link in the Directions.

Enter "not applicable" if your program is not CTE.

220610

(REQUIRED) Indicate the SOC codes and title associated with your program's AA, AS, COA and COPs.

Please find SOC Code Link in the Directions.

Enter "not applicable" if your program is not CTE

17-1021 Cartographers and Photogrammetrists

17-3031 Surveying and Mapping Technicians

15-1199.05 - Geographic Information Systems Technicians

(REQUIRED) Select the sector associated with your program.

Link to sectors list: In process of being developed

- Information & Communication Technologies (ICT)/Digital Media

Form: "2018/19 Comprehensive Program Review Instructional Outcomes and Assessment Section"

Created with : Taskstream
Participating Area: Geographic Information Systems

(REQUIRED) Program name

Geographic Information Systems

(REQUIRED) We are halfway through our 6-year cycle. Is your department/program on target to complete CLO assessment by Spring 2022? Please attach your schedule for CLO assessment, with explanations as needed.

Refer back to Direction #3 on how to attach documents.

We are on track to complete our CLO assessment by Spring 2022. There are 2 classes (GISG 130 and 131) that have had no assessment yet due to low enrollment and cancellation of sections. All objectives will be assessed during the next offering of these courses. There are two classes that are only offered once a year (GISG 113 and GISG 114). In the Spring of 2018, all CLOs for these classes were assessed to ensure they were asssessed by 2022 in case these courses were cancelled in future semesters due to low enrollment.

(REQUIRED) Please list your PLOs.

Students who complete the Geographic Information Systems (GIS) Program will gain facility with:

1. Technological Awareness: Students will be able to evaluate and apply appropriate geo-spatial technologies to support specific industry activities and solutions.
2. Critical Thinking: Students will be able to analyze specific GIS problems or information needs and identify possible solutions, including determination of analytical approach, synthesis of information, resourcefulness, and troubleshooting.
3. Communication: Students will be able to choose the appropriate mode of communication for a specific situation and then communicate ideas, concepts, and solutions through effective written and oral and communication.

(REQUIRED) What progress have you made in your PLO assessment? Please attach your schedule, with explanations as needed.

Refer back to Direction #3 on how to attach documents.

We assess our PLOs in the same cycle as our CLOs. Data from all classes is collected and analyzed.

(REQUIRED) What have your completed assessments revealed about your courses or program?

Our assessments reveal that on average, our students are meeting our benchmarks of 70% passing on the assignment/test/project used as an assessment tool. Full-time faculty hired in 2015 has revised rubrics, course projects, and assignments to better match with the PLOs and CLOs. Additionally, these revisions ensure projects reflect assignments students would have as a GIS Technician.

One issue that needs to be addressed is that students in online classes miss the benchmarks more frequently than students in hybrid and face-to-face classes.

Second, students must have access to the most up-to-date version of the GIS software and related hardware.

(REQUIRED) If issues or problems were identified, what is your plan for implementing change?

To address the issue with online classes not meeting benchmarks at higher rates, faculty continue to seek out training on- and off-campus to improve the quality of online instruction. The department has also adjusted the frequency of offering the online introduction course to make sure students have opportunities to take the hybrid option if they prefer. Faculty has worked with the STEM Center and with Tutoring to improve students' access to the GIS software and to additional help.

Access to software & hardware is essential for student success and improved progress toward PLOs. Funding will be requested to update software in the classroom, library, and STEM Center. In addition, to provide more hands-on training, funding for tablets will be requested to support GPS data collection that mimics industry standards. GISG is hopeful the new computers in the Business and Technology Building will provide the needed speed and processing power for the demanding, graphics-heavy newest edition of the GIS software.

The GISG department is also looking to work with Campus Technology as well as CISC, WEBD, MULT, and others to explore the possibility of a VPN or similar service for students who cannot download the software because they do not have a computer at home. This would allow students to network into an on-campus computer lab from a public library (or an older, slower computer) and have access to the needed software. GISG feels this will eliminate equity gaps and increase success in online courses.

(REQUIRED) Based on your assessments, have you identified resource needs?

- Budget
- Equipment

Please provide any other comments.

Students must have access to the most up-to-date version of the GIS software. Our advisory committee has mentioned that they are increasingly going to iPads/iPhone/tablet for GPS collection. Additonally, we would like to purchase GNSS bluetooth receivers for better, more accurate data collection. Our students need to get hands-on training on these technical skills to prepare them for jobs in the local industry. Funding will be requested for software and tablets through Perkins and Strong Workforce.

Funding will also be requested through BARC for a program budget increase. We are dependent of Perkins funding for the software we teach on. A more sustainable funding source is needed. Students have presented at the annual international ESRI User

Conference held here in San Diego for the last 2 years. This funding will support the printing of posters. By presenting their maps, students willl demonstrate their mastery of the communication PLO and CLOs, and their GIS technical skills.

Form: "2018/19 Comprehensive Program Review Instructional Program Analysis Section"

Created with : Taskstream
Participating Area: Geographic Information Systems

(REQUIRED) Program name

Geographic Information Systems

(REQUIRED) Using the data dashboards, discuss how students are doing in your program. Please refer to indicators of success, retention, persistence, etc.

Success

GISG has an average success rate of all students in all classes of 71%, compared to Mesa's 72% and the goal of 74%.

In the past 4 years, GISG's success rate has stayed relatively the same from a high of 74% in 2015-2016 is to a low of 68% in 2014-2015. In the previous academic year of 2017-18, the success rate was 69%.

Looking at individual courses, it is clear that courses with higher success rates are the later courses in the program. GISG 113 has a success rate of 85%, GISG 112 is 78%, GISG 270 is 95%, GISG 131 is 78% and GISG 111 is 75%. The classes with lower success rates are GISG 104 with 59% and GISG 130 with 66%. GISG 104 is a general education course that meets the requirements for several A.D.T. degrees. This course will be taught by the full-time instructor in the Spring to see if success rate and persistence increase. GISG 130 only has advisory prerequisites, meaning they have various experience with GIS. This is something to consider in the future.

Our female and male success rates are close, Females at 71% at Males at 70%.

In terms of ethnicity, GISG performs above the equity gap analysis for the following demographics:

- Native American – 83%, +12%
- Filipino- 82%, +11%
- Asian- 76%, +5%
- White 72%, +4%

GISG is underperforming in student success equity gap analysis for Black/African American (25%, -46%) and Latinx (68%, -3%).

Looking at GISG students by age demonstrates the success rates of a variety of ages of students:

- 25-29: 75%, +4%
- 30-39: 75%, +4

Many of our students are recent college graduates, or early career individuals who need additional GIS training for their jobs or to find a job.

GISG needs to improve the success rates of the following age groups:

- 18-24: 64%, -6%
- 40-49: 66%,-5%
- 50+: 67%, -4%

Looking deeper into the 18-24 age group, it appears that success rates for this group are high in GISG 104 and GISG 110, but fall in GISG 111 and following classes. This is something to look into why this group of students is falling behind.

Our first generation students are slightly underperforming at 68% (-3%) while our not first generation college students is 72% (+1%).

The majority of our students have the educational goal of career or vocational training. Their success rate is 79%, or +8% equity gap. The other educational goals we perform well on are Associate's Degree 81% success (+10%) and Basic skills/educational development is 82% (+11). We have lower success rates with B.A. students (54%, -16%), concurrent enrollment is 57% (-14%) and undecided 63% (-8%).

Retention

GISG retention rate is 83% between 2014 and 2018 compared to the College's 85%. The retention rates have fluctuated from a high of 85% in 2016-17 to a low of 81% in 2014-15.

Persistence

Between 2014 and 2018, 67.5% of our students were continuing students. 23.8% of our studnets are First-time Transfer students, 12 % were returning transfer students, and 11% were returning students. Only 0.6% were first time students.

(REQUIRED) How does your program help to prepare students for success beyond your classrooms?

1. GISG incorporates many work-based learning opportunities into our courses. GISG faculty and adjuncts regularly invite regional industry experts to talk about their profession, their use of GIS, and the top skills they are looking for in new GIS Technicians. We encourage students to contact industry professionals about informational interviews and job shadows. One student turned her informational interview into a formal Work Experience the following semester. GISG 270 is our Work Experience Course. Besides on the job trainin, this class to help students prepare resumes and cover letters and use their internship to add to their portfolio. At our second site visit, students area asked one of 3

generic interview questions and are asked to use their internship as a specific example to illustrate their answer.

2. Our Program Learning Outcomes reflect skills in demand by the industry (technical knowledge, communication, critical thinking) and are reviewed by our advisory committee.

3. All GISG classes have semester long projects. These projects are designed to mimic the tasks their employer might ask, and to demonstrate the student's software competency. These projects can then be used a portfolio for the job search.

4. Full-time faculty has received training from New World of Work's 21st Century Skills seminar. Lessons on problem solving and persistence are being incorporated into the classroom.

(REQUIRED) Given your stated area(s) of focus in your program overview section, has your program introduced new or different actions that may have affected changes in these indicators? Please describe.

- Increasing success rates for all students and underrepresented students
    - Attend all related FLEX activities
    - Letting students know about Mesa resources
    - Tracking success rates
    - Meeting with adjuncts to share strategies that work
- Increasing enrollments
    - Faculty is visiting area colleges that lack a full suite of GIS courses to speak with students (UCSD, USD, City College)
    - Attending regional GIS industry meetings to promote program
    - Students presenting at ESRI User Conference
- Updating curriculum, technology, and course materials to reflect changing industry needs and demands
    - Updated Certificate of Performance to Certificate of achievment
    - Introducing ArcGIS Pro and WebMapping into GISG 112, 113, and 114.
    - Researching new hardware
    - Industry advisory committee informs on latest trends and industry needs.
- Working to improve equitable access of software and hardware resources for all students
    - Providing students with free software codes for home PC
    - Working with STEM Center and IRL to have access to GIS software and laptops
    - Working with IT to improve updating and maintence of software
    - Developing online courses.

(REQUIRED) Has your program introduced any new actions specifically focused on issues of equity? Please describe.

The full-time GIS faculty continues to attend a variety of FLEX activities, trainings, and events related to issues of equity and diversity. Faculty seek out a diverse representation of GIS professionals for guest lecturers and advisory committee memebers.

(REQUIRED) Describe the trends in enrollment for your program. What changes might you foresee in the next 2-3 years?

General enrollment trends

- Census enrollments are higher in the Spring.
- Fall enrollments higher in online classes. Spring higher in hybrid classes.
- Growing interest in online classes.
- Having and online and a hybrid course in the same semester often cannibalize each other

Enrollments in GIS have slightly increased over the past few years. I anticipate a similar small, but stead growth. GIS is a smaller, specialized program. We are pulling from a smaller number of students. However, there is a lot of room for growth and efforts continue to be made to find more students.

I believe Spring enrollments will remain higher than Fall enrollments. Many GISG students enter with a degree from another institution. Students graduate in May from a 4-year degree, look for jobs in their field, realize they need GIS to get the jobs they want, return to school in the spring (GISG 110 survey results).

GISG is working to manage enrollments in coming semesters to ensure high fill rates and high success rates.

(REQUIRED) Are there any data sets that are not already provided in the dashboards that you could use to inform your program?

Clearer picture of how we measure persistence.

(REQUIRED) In what ways can the college support your program in our effort to encourage major and career exploration early on in a student's college experience?

Meeting with CTE counselors to educate them on our programs, help identify students who might excel.

The Following Questions are for CTE Programs/Services ONLY.

Enter "not applicable" if your program/service is not CTE.
____

(REQUIRED) For CTE programs ONLY: Provide specific labor market information showing: 1) Number of jobs available or projected in San Diego County 2) Number of other institutions offering the program 3) How many Mesa students completed the program in the last three years 4) The pay rates for those in the industry (limit 500 characters) (P.N.2.A)

Enter "not applicable" if your program is not CTE.

LM data is difficult to track as GIS is an emerging occupation. The EDD state-wide employment forecast 26% growth of workers with GIS skills 2010-2020. Nov. 16 search on Indeed listed 39 jobs in SD counties seeking candidates with ArcGIS software experience. Median hourly wages ranged from $22.46-45.84. Palomar and Southwestern offer a GIS

Technician Certificate. In the past 3 years, 11 students have obtained an AS. CPs are not currently tracked.

(REQUIRED) For CTE Services ONLY: How are CTE students identified and tracked for service? (limit 500 characters) (P.N.2.B)

Enter "not applicable" if your service is not CTE.

not applicable

(REQUIRED) For CTE programs/services ONLY: Upload the report from Launchboard that includes at least three (3) of the following Strong Workforce metrics for your BASELINE year.

Please use the Cal-PASS Plus Launchboard Link available in the Directions.

Refer back to Direction #3 to #6 on how to attach documents.

Strong Workforce Program Metrics
a. Number of Enrollments
b. Number of students Who Got a Degree or Certificate
c. Number of Students Who Transferred
d. Percentage of Students Employed in Two Quarters After Exit
e. Percentage of Students Employed in Four Quarters After Exit
f. Median Earnings in Dollars Two Quarters After Exit
g. Percentage of Students Who Achieved a Job Closely Related to Field of Study
h. Percentage Change in Earrings
i. Percentage Who Attended a Living Wage.

Enter "not applicable" if your program/services is not CTE.

attached

(REQUIRED) For CTE programs/services ONLY Upload the report from the CCCO Perkins site for the College Aggregate Core Indicator Information by 6 digit TOP Code.

Please use the Core Indicator Reports Link available in the Directions.

Refer back to Direction #3 to #6 on how to attach documents.

Enter "not applicable" if your program/service is not CTE.

attached

File Attachments:

1. **GISG CLO Schedule.xlsx** (See appendix)
   GISG CLO schedule
2. **GISG Program Outcome Assessment Schedule.docx** (See appendix)
   GISG PLO Schedule

Program Analysis (REQUIRED)

Form: 2018/19 Comprehensive Program Review Instructional Program Analysis Section (See appendix)

File Attachments:

1. **2016-17 GISG Launchboard Metrics.pdf** (See appendix)
2. **GISG 2018-2019 Core Indicator Report** (See appendix)

Program Goals (REQUIRED)

2018-2019 Goals

Goal

Goal	Mapping
Create new courses and certificates There are unmet GIS work force needs in the region. The faculty will work with the advisory group and professional organizations to identify the courses and certificates. Faculty will work to update existing course offerings to better meet these demands.	**CA- Mesa College Strategic Directions and Goals:** Strategic Goal 1.1, Strategic Goal 3.2, Strategic Goal 4.1, **CTE 2018/19:** Perkins Core Indicator Activity 1, Perkins Core Indicator Activity 2, Perkins Core Indicator Activity 3, Perkins Core Indicator Activity 5, Perkins Core Indicator Activity 6, Perkins Permissive Use 10.3, Perkins Permissive Use 10.7, Perkins Permissive Use 10.9, Perkins Requirement 4, Perkins Requirement 1, Perkins Requirement 3, Perkins Requirement 7, Strong Workforce Recommendation 1, Strong Workforce Recommendation 3, Strong Workforce Recommendation 7, **Institutional Learning Outcomes 2016/17:** Critical Thinking, Information Literacy
Maintain and upgrade hardware	**CA- Mesa College Strategic Directions**

and software All hardware and software need to met industry standards; the hardware and software need to have a stable funding source. The hardware and software need to be installed and maintained in a timely fashion.	**and Goals:** Strategic Goal 1.1, Strategic Goal 1.3, Strategic Goal 1.5, Strategic Goal 1.6, Strategic Goal 3.2, Strategic Goal 3.3, Strategic Goal 4.2, Strategic Goal 6.1, **CTE 2018/19:** Perkins Core Indicator Activity 1, Perkins Core Indicator Activity 2, Perkins Core Indicator Activity 3, Perkins Permissive Use 10.7, Perkins Requirement 4, Perkins Requirement 7, Strong Workforce Recommendation 2, **Institutional Learning Outcomes 2016/17:** Communication, Critical Thinking, Information Literacy, Professional & Ethical Behavior
Create classroom textbook bank This textbook bank will provide students who cannot purchase the textbooks access to these textbooks.	**CA- Mesa College Strategic Directions and Goals:** Strategic Goal 1.2, Strategic Goal 1.3, Strategic Goal 1.4, Strategic Goal 4.1, **CTE 2018/19:** Perkins Core Indicator Activity 1, Perkins Core Indicator Activity 2, Perkins Core Indicator Activity 3, Perkins Core Indicator Activity 6, Perkins Permissive Use 10.7, Perkins Requirement 4, Perkins Requirement 1, Strong Workforce Recommendation 2, **Institutional Learning Outcomes 2016/17:** Information Literacy
Student Success and Completion Overall, our student success rates need to be improved. This is a long term goal where we will be working with our industry partners, CTE grants, and other professional development opportunities to improve student success. With the newly approved Certificate of Achievement, we can better track our graduates and and have an accurate count of degrees earned.	**No Mapping**
Grow enrollments GISG will work with regional academic and industry partners to recruit more students.	**CA- Mesa College Strategic Directions and Goals:** Strategic Goal 1.2, Strategic Goal 1.3, Strategic Goal 1.4, Strategic Goal 1.5, Strategic Goal 1.6, Strategic Goal 3.2, **CTE 2018/19:** Perkins Core Indicator Activity 1, Perkins Core Indicator Activity 2, Perkins Core Indicator Activity 3, Perkins Core Indicator Activity 5, Perkins Core

Indicator Activity 6, Perkins Permissive Use 10.2, Perkins Permissive Use 10.7, Perkins Requirement 1, Perkins Requirement 7, Strong Workforce Recommendation 11, Strong Workforce Recommendation 2, Strong Workforce Recommendation 3, Strong Workforce Recommendation 8, **Institutional Learning Outcomes 2016/17:** Information Literacy

Action Plans for Non CTE Programs (REQUIRED)

Project Plan for CTE Programs Only (REQUIRED)

Form: 2018/19 Comprehensive Program Review Instructional CTE Project Plan Section (See appendix)

File Attachments:

1. **GISG Adv Com MINUTES7 Nov 2018.docx** (See appendix)
   2018 Advisory Committee Meeting Minutes

Closing the Loop (REQUIRED)

Form: 2018/19 Comprehensive Program Review Instructional Closing the Loop (See appendix)

Form: "2018/19 Comprehensive Program Review Instructional CTE Project Plan Section"

Created with : Taskstream
Participating Area: Geographic Information Systems

(REQUIRED) Program or Service Name

Geographic Information Systems

Strong Workforce

____

(REQUIRED) Description: Describe your project and your project outcomes.

1. GISG book library to be housed in the classroom or in the STEM Center.
    - Reduce equity gap by providing textbooks for student use in the classroom or during office hours.
    - Increase student success in courses and number of degree completions.
2. Open computer lab supported by an instructional lab technican in the BT building.
    - Provide students with an open lab setting to come in and work on projects supported by a ILT or tutor.
    - Provide students with an dual-monitor plug-in area for their laptops.
    - Increase student success and certificate/degree completions.
    - Reduce access issues to expensive remote sensing software.

(REQUIRED) What needs motivate this project?

1. Student textbook costs are rising. Although the GISG program makes every effort find low cost or free educational resources, there are some books we are not able to substitute. Having a classroom library would benefit students who do not have the textbook due to financial reasons. It will aslo provide a resource for faculty and students to explore additional topics or source solutions to complex problems.
2. Usage of the STEM Center by GISG students remains consistent, and GISG will continue to support the STEM Center and encourage studnets to use it on Saturdays. It would be beneficial to have an open lab and ILT within the BT building to serve the Digital Technolgy and Computer Science students. This could also foster a student community and increase student success and completion rates.

(REQUIRED) Risks: Describe the associated risks that may prevent successful completion of your project.

1. Access to funding for textbooks.
2. The main risk for the open lab is having funding for an ILT.

(REQUIRED) Investments: Briefly describe investments you will make and explain how these will result in improved performance in the Strong Workforce Metrics.

1. GISG is requesting funds to purchase a GISG textbook library. Access to textbooks will reduce the cost of taking GIS classes. By remvoing cost concerns, students will have a clearer path to completing more courses and degree completion.
2. GISG, CISC, and other Digital Technology programs will jointly use an open lab. Having an ILT or tutor that can serve as a lab attendent will allow students to have a place within the BT buildng to work on class work or collaborate on projects. Having regular, reliable access to the software will have a positive impact on student success and degree completions. More hands-on time on the industry-specific software will better prepare students for entering the workforce and lead to increased earnings.

(REQUIRED) Major Activities & Outcomes

1. Student success and outcomes will be assessed prior to and after the purchasing of the textbooks. Faculty will keep a record of the number of students using the books.
2. Ideally, the open lab will have a similar sign-in process as the STEM lab. This will allow our departments to track the number of students using the lab and the duration of their stay. Success rates and degree completions will be assess prior to and after the opening of the lab.

Perkins

____

(REQUIRED) Describe the program project's intent and how it addresses SLO's and how it aligns with Program Review. (P.N.1.A) (limit 500 characters).

GISG project intent is to provide training on industry-standard software & state-of-the-art hardware to prepare students for employment as GIS Technicians. This project meets SLOs in Technology Awareness, Critical Thinking, and Communication. This goal aligns with Program Review goals &requests for modernizing curriculum & technology as the GIS industry adopts a graphics-heavy, web-integrated software as well as mobile data collection and WebApp development.

(REQUIRED) Briefly describe program improvement issue(s) concerning the program's TOP code and cite specific examples. Include the specific deficits provided in the Perkins Core Indicator Report (CIR) data for the program by referring to those below the state negotiated levels and special populations (P.N.4.A) (limit 2000 characters).

- The state does not collect data on Certificates of Performance. The CIR only represents A.S. students and doesn't accurately represent the number of students program. All of our data on the Core Indicator report is N/A or N/R. GIS CP was revised to a Certificate of Achievement. This will improve our data tracking and ability to draw conclusions from CIR reports.
- Using 2018-19 Program Review data, GIS enrollment decreased from 319 to 340 over the last year. Overall success rate decreased slightly to 69%. This decrease may be attributed to the growth in online classes. For example, GISG 110 has success rates of 77% for hybrid and 55 % for online only.
- Program Review data tells us that 52% of students enter the program with an AA/AS or BA/BS. Another 17% are taking the course because their current job requires it or

for career advancement. 5% of our students are concurrently enrolled in another University. 72% of our students are 25 and older (40% are 30+). Additionally, GIS is a CTE program, and 53% of our students have a Career/Vocational or Basic Skills/Ed. Development educational objective. In class surveys support this by showing most of our students are looking to earn the certificate or improve skills. These findings are supported by CI 2 (Completions- credentials, certificates, degree, or transfer ready) which is 16% above negotiated level and CI 4 Employment.

(REQUIRED) Briefly describe how the issue(s) will be addressed (objectives) specifically referencing activities in Perkins. Explain how deficits described in the response above will be rectified by planned program improvements (P.N.4.B.1) (limit 2000 characters).

To address deficient technical skills, we will continue to work with campus partners to identify the barriers and challenges students face in online classes. Faculty will look for professional development opportunities to design equitable online GIS classes. Faculty is looking into assessment methods that may work better for teaching GIS online. GIS is requesting funding for faculty to learn new instructional strategies and update technical skills.

GIS students must train on (a) industry standard software & (b) hardware.

- (a)Students must be proficient on industry standard software (ESRI's ArcGIS Platform, ENVI) and our licenses are renewed yearly. Current ESRI license provides unlimited access to online training that faculty use to expose students to emerging GIS technologies & skills. Access to the ENVI Remote Sensing software sets our program apart from others in the area.
- (b)Hands-on training on modern data collection methods will prepare students for the in-demand skills of database management, data editing, & web publishing. GISG is requesting 8 tablets (with cases) for students to learn how to manage and collect GIS data. Industry-standard GNSS receivers will be used to collect accurate positional information.

GIS will continue to monitor enrollment and success rates to determine the impact of these upgrades on student success and retention

Perkins for Services ONLY

____

(REQUIRED) Describe the assistance this service will support the success of CTE students (P.N.2.C) (limit 500 characters).

n/a

(REQUIRED) Explain what evaluation measures will show the success of the service (P.N.2.B and P.N.3.B) (limit 500 characters).

n/a

(REQUIRED) Briefly describe the service improvement issue(s) that requires funding (P.N.4.A.2) (limit 2000 characters).

n/a

(REQUIRED) Briefly describe how the service issue(s) will be addressed (objectives) specifically referencing activities. (P.N.4.B.2) (limit 2000 characters).

n/a

Form: "2018/19 Comprehensive Program Review Instructional Closing the Loop"

Created with : Taskstream
Participating Area: Geographic Information Systems

(REQUIRED) Program name

Geographic Information Systems

(REQUIRED) Which one(s) of the following were received in past year?

- Perkins
- Strong Workforce

(REQUIRED) How have these resources benefited your program and your students?

Perkins funds were used to modernize GIS software and hardware; the applications reflect the current industry practices. Using applications used in industry, provides students with current skills and knowledge as they enter a new career path. Modernizing the software is considered essential by the Advisory Committee.

Request Forms

- **BARC & Facilities Requests**
- **Classified Position Request**
- **Faculty Position Request**

Reviewers

Liaison's Review

Form: Instructional Program Liaison's Review 2018/19 (Comprehensive)

Manager's Review

Form: Instructional Program Manager's Review 2018/19 (Comprehensive)

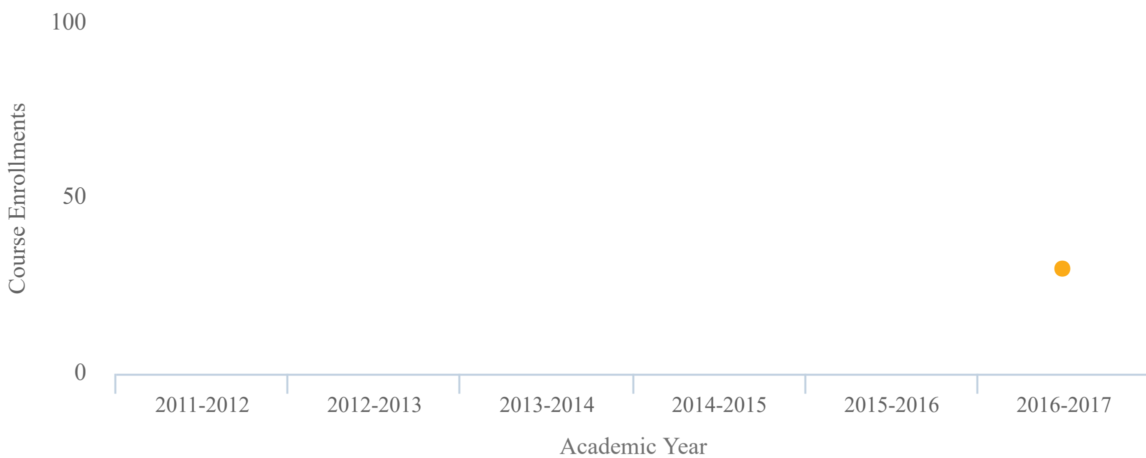
Appendix

Strong Workforce Program Metrics

San Diego Mesa College || Geographic Information Systems (220610) || 2016-2017

NUMBER OF COURSE ENROLLMENTS: 30

122	122	53	397
Microregion Median	Macroregion Median	State Median	Top in State



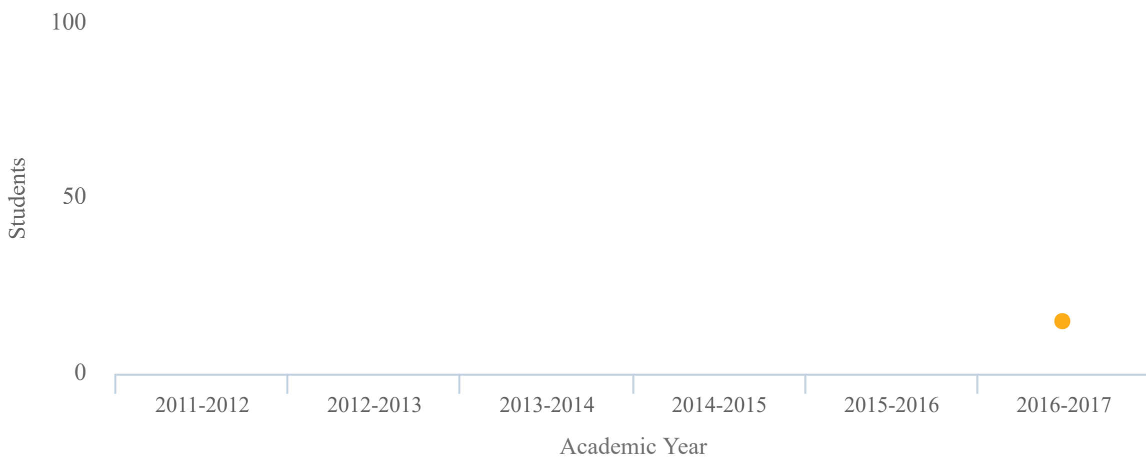
Source: Chancellor's Office Management Information System

Strong Workforce Program Metrics

San Diego Mesa College || Geographic Information Systems (220610) || 2016-2017

COMPLETED 12+ CTE UNITS IN ONE YEAR: 15

15	15	15	46
Microregion Median	Macroregion Median	State Median	Top in State



Source: Chancellor's Office Management Information System

Please note: the Student Success Metrics use a different definition related to the number of CTE units earned by students than the one historically used in the LaunchBoard. The Student Success Metrics only includes students who successfully completed a course with a grade of C or better, rather than students who completed a course with any grade. It also includes courses that have a SAM code of A-C whether or not they have a vocational TOP code, whereas the LaunchBoard identifies CTE courses based on their assignment to a CTE sector. The LaunchBoard will be updated by early 2019 to use the Student Success Metrics definition.

Strong Workforce Program Metrics

San Diego Mesa College || Geographic Information Systems (220610) || 2016-2017

COMPLETED 48+ CTE CONTACT HOURS IN ONE YEAR: 0

0	0	0	13
Microregion Median	Macroregion Median	State Median	Top in State

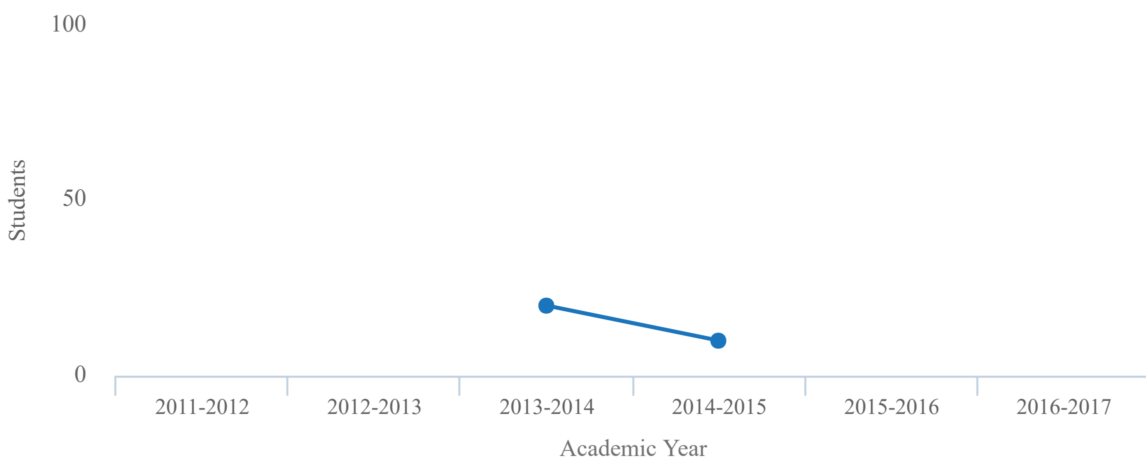
Strong Workforce Program Metrics

San Diego Mesa College || Geographic Information Systems (220610) || 2016-2017

NUMBER OF STUDENTS WHO GOT A DEGREE OR CERTIFICATE: *

There were fewer than ten students, so this metric has been suppressed.

13	13	16	28
Microregion Median	Macroregion Median	State Median	Top in State



Source: Chancellor's Office Management Information System

College Core Indicator Information by 6-Digit TOP (2018-2019)

Perkins IV, Title I, Part C Local Application

Agreement # _______ **District/College: SAN DIEGO/SAN DIEGO MESA**

220610 - Geographic Information Systems

Instructions: Print out forms. Complete and sign bottom of last page.

Cohort Year CTE Enrollments: 0 **CTE Headcount: 0**

(includes CTE enrollments above introductory level only) **(CTE students enrolled above introductory level only)**

Core Indicator 1 Technical Skill Attainment			**Negotiated Level**		**College Performance**	**Percent Above or Below Negotiated Level**
	Count	Total	State	District		
1 CTE Cohort*	7	9	91.00	86.40	77.78	N/A
2 Non-Traditional			91.00	86.40	N/R	N/R
3 Displaced Homemaker			91.00	86.40	N/R	N/R
4 Economically Disadvantaged	2	2	91.00	86.40	100.00	N/A
5 Limited English Proficiency			91.00	86.40	N/R	N/R
6 Single Parent			91.00	86.40	N/R	N/R
7 Students with Disabilities			91.00	86.40	N/R	N/R
8 Migrant			91.00	86.40	N/R	N/R

Core Indicator 2 Completions - Credential, Certificate, Degree or Transfer Ready			**Negotiated Level**		**College Performance**	**Percent Above or Below Negotiated Level**
	Count	Total	State	District		
9 CTE Cohort*	9	9	88.00	87.84	100.00	N/A
10 Non-Traditional			88.00	87.84	N/R	N/R
11 Displaced Homemaker			88.00	87.84	N/R	N/R
12 Economically Disadvantaged	2	2	88.00	87.84	100.00	N/A
13 Limited English Proficiency			88.00	87.84	N/R	N/R
14 Single Parent			88.00	87.84	N/R	N/R
15 Students with Disabilities			88.00	87.84	N/R	N/R
16 Migrant			88.00	87.84	N/R	N/R

Core Indicator 3 Persistence and Transfer			**Negotiated Level**		**College Performance**	**Percent Above or Below Negotiated Level**
	Count	Total	State	District		
17 CTE Cohort*	9	9	90.00	90.00	100.00	N/A
18 Non-Traditional			90.00	90.00	N/R	N/R
19 Displaced Homemaker			90.00	90.00	N/R	N/R
20 Economically Disadvantaged	2	2	90.00	90.00	100.00	N/A
21 Limited English Proficiency			90.00	90.00	N/R	N/R
22 Single Parent			90.00	90.00	N/R	N/R
23 Students with Disabilities			90.00	90.00	N/R	N/R
24 Migrant			90.00	90.00	N/R	N/R

* If no district target is available then state targets will be used.

College Core Indicator Information by 6-Digit TOP (2018-2019)

Perkins IV, Title I, Part C Local Application

Core Indicator 4 Employment			Negotiated Level		College Performance	Percent Above or Below Negotiated Level
	Count	Total	State	District		
25 CTE Cohort*	6	7	72.00	72.00	85.71	N/A
26 Non-Traditional			72.00	72.00	N/R	N/R
27 Displaced Homemaker			72.00	72.00	N/R	N/R
28 Economically Disadvantaged			72.00	72.00	N/R	N/R
29 Limited English Proficiency			72.00	72.00	N/R	N/R
30 Single Parent			72.00	72.00	N/R	N/R
31 Students with Disabilities			72.00	72.00	N/R	N/R
32 Migrant			72.00	72.00	N/R	N/R

Core Indicator 5a Nontraditional Participation			Negotiated Level		College Performance	Percent Above or Below Negotiated Level
	Count	Total	State	District		
33 CTE Cohort*			25.00	23.08	N/R	N/R
Non-Traditional			25.00	23.08	N/R	N/R
Displaced Homemaker			25.00	23.08	N/R	N/R
Economically Disadvantaged			25.00	23.08	N/R	N/R
Limited English Proficiency			25.00	23.08	N/R	N/R
Single Parent			25.00	23.08	N/R	N/R
Students with Disabilities			25.00	23.08	N/R	N/R
Migrant			25.00	23.08	N/R	N/R

Core Indicator 5b Nontraditional Completions			Negotiated Level		College Performance	Percent Above or Below Negotiated Level
	Count	Total	State	District		
34 CTE Cohort*			29.00	26.45	N/R	N/R
Non-Traditional			29.00	26.45	N/R	N/R
Displaced Homemaker			29.00	26.45	N/R	N/R
Economically Disadvantaged			29.00	26.45	N/R	N/R
Limited English Proficiency			29.00	26.45	N/R	N/R
Single Parent			29.00	26.45	N/R	N/R
Students with Disabilities			29.00	26.45	N/R	N/R
Migrant			29.00	26.45	N/R	N/R

*Note: Students meeting criteria for for this indicator with 12+ CTE units in a discipline (one course is above intro) in 3 years. See cohort specifications for full criteria.

The DR notation indicates privacy requirements - EDD requires that counts less than six not be displayed. N/A (Not Applicable) indicates denominators 10 or N/R (Not Reported) indicates categories where no participants were reported. These performance indicators include all vocational programs whether or not they are supported with Perkins Title IC Funds. For more detailed reports, see Core Indicators 'Summary' and 'Detail' Reports. Shaded areas are for your information and are not included as accountability measures.

By totaling each positive, negative, N/A, N/R outcome in the last column from items 1 - 34, I certify and acknowledge that performance in the 34 Core Indicator categories is as follows:

________ of the 34 are at or above the District negotiated level(s);
________ of the 34 are below the District negotiated level(s);
________ of the 34 are list as (N/A, N/R)

Department Chair (or authorized Designee) :____

* If no district target is available then state targets will be used.

SAN DIEGO MESA COLLEGE
SCHOOL OF BUISNESS AND TECHNOLOGY
GEOGRAPHIC INFOMRATION SYSTEMS ADVISORY COMMITTEE MEETING
WEDNESDAY, NOVEMBER 7, 2018, 5:00 PM ROOM K105

MINUTES

Members Present
Rick Hendrickson, Michael Baker International
Timo Luostarinen, Qualtrics Solutions
Kevin Highland, City of Encinitas

Faculty/Staff Present:
Rachel Russell
Robert Flamenbaum

Members Excused
Robin Gilson, City of San Diego
David VanPelt, City of Encinitas

Faculty/Staff Excused:
Casey Cook
Michelle Kinzel

1. **CALL TO ORDER**
The meeting was called to order at 5:05 PM by Rachel Russell and introductions were made.
2. **APPROVAL OF MINUTES**
T. Luostarinen motioned to approve minutes, R. Hendrickson seconded. Minutes were approved.
3. **PROGRAM OVERVIEW AND UPDATES**
   a. ENROLLMENT
   R. Russell provided an overview on 2017-18 statistics on enrollment, student success, and student characteristics. She discussed ongoing efforts to attract more students, particularly in the 18-24 age group. Student successes over the past year was presented including 7 students with maps at the ESRI User Conference Map Gallery, a student who won the National Geospatial Technology Center of Excellence Student Competition, and highlighted students who became employed in the industry over the past year.
   B. GRANT PROPOSALS: PERKINS 2018-19, STRONG WORKFORCE
   R. Russell reviewed funding received for the 2018-19 academic year for software licenses, desktop computers, and instructional laptop to support ArcGIS Pro. Status of the budget augmentation was never communicated.
   C. NEW BUILDING: OCCUPANCY SPRING 2019
   R. Russell discussed new GIS facilities in the new building and plans for GIS lab grand openings.
4. **CURRENT AND RELEVANT CURRICULUM INFORMATION**
   A. UPDATE: CERTIFICATE OF ACHIEVEMENT APPROVED AT STATE LEVEL
   R. Russell updated the Committee on the changes from the CP to CA. Evaluations office will be coming to GISG 112 class this fall to get students started on the application for graduation. With the CA approval, work can start to update course outlines and offerings. The A.S. was updated to include JavaScript as a programming language as requested by the committee last year.
   B. UPDATE: REMOTE SENSING CERTIFICATE PROPOSAL
   R. Russell reviewed that no major changes have been made to the RS proposal, however, she has been in contact with Miramar's Drone pilot certificate program to figure out how to connect the programs as suggested by the Committee last year.
   C. NEW CA COMMUNITY COLLEGE FUNDING FORMULA
   R. Russell briefly discussed the new funding formula for community colleges and how this will impact the GISG students, including ensuring students that entered the program in the last year will be able to complete coursework this spring. Growing course fill rates and enrollments are prioritized to keep course periodicity and time to completion. A schedule for the next 3 years to modify course periodicity, overlap, and offering type has been presented to the Dean and VPI.

D. PROPOSED CERTIFICATE SUPPLY CHAIN MANAGEMENT

R. Russell reviewed interest from Supply Chain Management Certificate program at Mesa's interest in including at least GISG 110.

E. MIRAMAR- A CERTIFICATE OF ACHIEVEMENT FOR REMOTE PILOT PROGRAM

R. Russell reviewed conversations with Miramar's drone program that would have students taking GISG 110 and GISG 130.

ACTION: Work will continue with Mirarmar and new certificates to help boost enrollments and course fill rates.

5. NEW BUSINESS

A. DISCUSSION/CURRENT AND FUTURE TRENDS AND NEEDS

The following questions were posed to the committee:

i. What skills do you expect an employee with a Certificate/A.S. level students to have when entering the workforce?
K. Highland discussed the need for basic editor support, using the Collector App, and basic map making skills. T. Luostarinen suggested more training on QC methods, editing, understanding the difference between ArcServer and ArcSDE. R. Hendrickson suggested experience reading "as built", and conversion between GIS and AutoCad, a familiarity with topology, joins and relates, installing and configuring licenses. All committee members mentioned the importance of 21st Century Skills such as collaboration, professional communication, general professionalism, resilience, thinking about results, and (independent) problem solving. The committee discussed report writing and creating Crystal Reports.

ii. What emerging technologies, tools, and skills are important to prepare students for the industry?
R. Russell wanted to know specifically about data collection methods and tools. All committee members were seeing a rise in data collection on tablets and smart phones using Bluetooth GNSS receivers. All committee members mentioned the use of ESRI's Collector App and Survey 123 in their company or using these apps to create data collection tools for clients.

DECISION: R. Russell will look into acquiring these devices to give students hands-on training for the technology and software they would use in the real world.

iii. R. Russell discussed the need for Python or Programming in GIS class. Currently, Python and SQL are taught in upper level classes. Committee affirmed the benefit Python for students.

iv. GIS in the Web environment was stressed by all members, including ArcGIS Online, the Collector App, Portal for ArcGIS, and publishing services, and Widgets in AppBuilder. R. Flamenbaum suggested finding a way to build a server environment at Mesa so students could gain more experience in Portal.

ACTION: R. Russell will start to incorporate more WebGIS/ArcGIS Online into GISG 113 and other courses as appropriate and building a Portal environment for students to practice.

B. OTHER BUSINESS

R. Russell asked committee members about software. All committee members work primarily on ESRI products, including ArcGIS Pro, Collector, and Survey 123. ENVI was recommended as the remote sensing software.

R. Russell encouraged committee members to recommend any female or underrepresented GIS professionals that would be willing to speak in class about their experience. Additionally, she suggested if any of their colleagues need outreach credit for GISP certification to contact her for opportunities to guest lecture in class.

6. **NEXT MEETING**
   a. Tentatively early October 2019
7. **ADJOURNMENT**
   a. R. Russell adjourned the meeting at 6:05 pm

		2017-18		
Program	Course	**Tech Awareness**	**Critical Thinking**	**Communication**
GIS	104	SPRING		
GIS	110	FALL		
GIS	111	FALL		
GIS	112	FALL		
GIS	113	SPRING	SPRING	SPRING
GIS	114	SPRING	SPRING	SPRING
GIS	130	cancelled		
GIS	131	Fall 2017?		

2018-19			
Tech Awareness	**Critical Thinking**	**Communication**	**Tech Awareness**
	FALL		
	FALL		
	FALL		
	SPRING		
	SPRING		
FALL	FALL	FALL	
FALL	FALL	FALL	

2019-2020		2020-2021	
Critical Thinking	Communication	Tech Awareness	Critical Thinking
	Fall/Spring	Fall/Spring	
	FALL	FALL	
	SPRING	SPRING	
	FALL	FALL	
	FALL/SPRING	FALL/SPRING	
	SPRING	SPRING	
	FALL	FALL	
	SPRING	SPRING	

	2021-2022		
Communication	**Tech Awareness**	**Critical Thinking**	**Communication**
		FALL	SPRING
		FALL	SPRING
		FALL	FALL
		FALL/SPRING	FALL/SPRING
		SPRING	SPRING
		FALL	FALL
	SPRING	SPRING	SPRING

GISG Program Learning Outcome Assessment Schedule

2017-2018	Technological Awareness
2018-2019	Critical Thinking
2019-2020	Communication
2020-2021	Technological Awareness
2021-2022	Critical Thinking and/or Communication