

Meaning of the Degree	Suggestions and References
<p data-bbox="203 233 594 380">This section is about the structure of the degree, its components and its expectations.</p> <p data-bbox="203 380 594 457">This section represents your program's ambition:</p> <ol data-bbox="203 499 651 1087" style="list-style-type: none"> <li data-bbox="203 499 651 604">1. Describe the generic degree and what makes your degree at CPP distinct. <li data-bbox="203 646 651 751">2. Describe how the degree aligns with the university vision, values, and outcomes. <li data-bbox="203 793 651 898">3. Describe your entering students' abilities and your graduates' culminating skills. <li data-bbox="203 940 651 1087">4. Provide a link to your website where those interested can find additional information. 	<p data-bbox="678 233 1567 604">1. The <i>Geology MS Degree</i> program aspires to develop unique skill sets that prepare graduates for competitive PhD programs, employment in the geotechnical industry, or teaching at secondary or community college levels. Through 'learn-by-doing' methods, faculty-mentored research, and exposure to current technology, our students acquire expertise applicable to careers in the Geosciences and related disciplines. Faculty expertise in geophysics, hydrogeology, mineral deposits, and zircon geochronology distinguish us from most other southern California Geology MS programs</p> <p data-bbox="678 625 1567 1108">2. Our graduates apply geologic principles to the solution of hydrologic, geophysical, environmental, geoengineering, or resource management problems facing society. We are dedicated to interdisciplinary learning and practical interactions between students, faculty, and industry or government professionals. Research endeavors of Geology faculty and students are supported by grants from National Science Foundation, USGS National Earthquake Hazards Reduction Program, Southern California Earthquake Center, Department of Education, and JPL/Caltech. Our Geology MS program promotes the University's polytechnic vision to inspire creativity and innovation, embrace local and global challenges, and transform lives. It also addresses the values and outcomes posted on the CPP web site.</p> <p data-bbox="678 1161 1567 1570">3. Entering students should hold Bachelor's degree in Geology or a closely related discipline (e.g., Geotechnical Engineering, Hydrology, Geophysics, Environmental Science) and score in the 50th percentile or better on the verbal and quantitative components on the Graduate Record Examination Aptitude Test. Culminating skills achieved by all MS graduates include quantitative, analytical, and critical thinking abilities, self-discipline, technical-writing skills, confidence in oral presentation, expertise with field and laboratory equipment, ability to conduct original research and synthesize the results, and capability to function effectively in a field setting with limited supervision.</p> <p data-bbox="678 1570 1567 1682">4. For further information, see: http://www.cpp.edu/~sci/geological-sciences/masters-program/index.shtml</p>
<p data-bbox="272 1682 586 1724">Quality of the Degree</p>	
<p data-bbox="203 1724 561 1873">This section is about the alignment of the degree program with the expectations.</p>	<p data-bbox="678 1724 1567 1839">1. The Geology MS curriculum balances classroom theory, modern technology and laboratory application with field experiences that incorporate industry-standard equipment obtained through</p>

<ol style="list-style-type: none"> 1. Describe how your program helps students engage and master the key learning outcomes that represent what your graduates take away from their study. 2. Provide a link to your website where those interested can find information about curricular requirements, learning outcomes, and other aspects of your program. 	<p><i>faculty research grants. High impact practices include field trips, faculty-mentored thesis research, student coauthored presentations at professional conferences, and internships arranged through industry partners. Our applied approach to learning and career training is directed by faculty who provide personal guidance specific to each student. Our students gain valuable and practical skills while learning to work individually and in teams.</i></p> <p><i>2. Our strategic location in one of the world's most geologically dynamic areas provides a natural laboratory to study natural disasters and other active Earth processes, scarce resources, and their historical context. The web links below show our Geology graduate students in action:</i></p> <p>https://www.cpp.edu/~sci/geological-sciences/students/index.shtml</p> <p>https://www.cpp.edu/~sci/geological-sciences/students/geology-field-trips.shtml</p> <p>https://www.cpp.edu/~sci/geological-sciences/students/student-stories.shtml</p> <p>http://www.cpp.edu/~sci/geological-sciences/alumni-and-friends/mylonite-newsletter.shtml</p>
Integrity of the Degree	
This section is about the assurance that the degree is meeting the expectations.	
<ol style="list-style-type: none"> 1. Describe how your faculty members know that their program effectively delivers what its designers promise. 2. Give examples of recent learning outcome assessments, what they demonstrate, and how the department uses its assessment procedures to help students learn. 3. Provide a link to your website where those interested can learn more about your assessment procedures, findings, and 	<ol style="list-style-type: none"> 1. <i>Individual faculty members use direct observations analyzed through embedded exam questions, pre-test/post-test results, and rubrics applied to student presentations and homework sets to evaluate student achievement of learning outcomes. Indirect assessment tools include:</i> <ul style="list-style-type: none"> • <i>One-on-one advising of each Geology major each quarter. New advising worksheets enable students to track progress toward degree. Our personalized advising efforts allow faculty to make suggestions for efficient scheduling, and rectify academic performance problems.</i> • <i>Constructive discussions between MS thesis committee members and students during MS thesis proposals (GSC 600) and MS thesis defenses (GSC 696)</i> • <i>Tracking of MS graduate placement in industry jobs or PhD programs. So far 100% of our MS graduates are gainfully employed or have moved on to very prestigious PhD institutions.</i> • <i>Regular lunchtime seminars that facilitate interaction between Geology faculty and majors</i> • <i>Constructive discussions among Geology faculty about our curricular goals in light of the semester conversion</i>

how your faculty use assessment to help students learn.

2. Program assessment results are discussed in fall and spring faculty meetings. Topics include: anecdotes of student successes and potential curricular roadblocks; progress toward degree; maintenance of Geology teaching standards; course scheduling issues; program revision for semester conversion. Geology faculty collectively develop new mechanisms to improve the MS program. For example, we made several improvements to the MS program functionality during 2015-16. These include new documents to spell out key deadlines, guidelines and policies:

- Implementation of New Student Orientation session during first Fall meeting of GSC 501. Attended by all graduate faculty, the new graduate student cohort, and continuing grad students this meeting outlines the program logistics and path to graduation, including Important Deadlines: <http://www.cpp.edu/~sci/geological-sciences/docs/DeadlinesForGeologyMSstudentsSept2015.pdf>
- Revision of Graduate Contract worksheet: <http://www.cpp.edu/~sci/geological-sciences/docs/GeologyGradContractWorksheetsAll.xlsx>
- Development and promotion of clear guidelines for completing the MS thesis:
Master's Proposal Guidelines--
<http://www.cpp.edu/~sci/geological-sciences/docs/GSC600ThesisProposalECOfinalJune2015.pdf>
Master's Thesis Guidelines and Policies—
<http://www.cpp.edu/~sci/geological-sciences/docs/GSC696MastersThesisGuidelinesAndPoliciesSept2015.pdf>

In addition,

--Each faculty member analyzes data yielded by various assessment tools to gauge student achievement and knowledge gaps that can be addressed in future course offerings.

--We maintain a robust alumni network, including many individuals who work in local geoscience industries and government agencies. Interactions with alumni at our annual reunion are very informative, and commonly lead to job opportunities for our students.

3. The web links below provide additional assessment information and details of our annual **Alumni Newsletter**:

<http://www.cpp.edu/~sci/geological-sciences/docs/MastersMissionObjectivesOutcomes.pdf>

<http://www.cpp.edu/~sci/geological-sciences/docs/GraduateAndSeniorCourseDescriptionsSept2014.pdf>

<http://www.cpp.edu/~sci/geological-sciences/docs/GeologyMSmatrixCoursesVsOutcomes.pdf>

<http://www.cpp.edu/~sci/geological-sciences/alumni-and-friends/mylonite-newsletter.shtml>

A Self-Study Report and Appendices associated with our Spring 2016 academic program review may be accessed at: [Geology MS Self-Study Report April 2016](#) (PDF)

[Appendices For Self Study Report](#) (PDF)

Positive comments by the external evaluators are available upon request.

**California State Polytechnic University, Pomona
Inventory of Educational Effectiveness Indicators**

College/ Department	Science / Geological Sciences
Program	Geology MS
Have formal learning outcomes been developed? Yes/No	Yes
Where are these learning outcomes published? (e.g., catalog, syllabi, other materials)	Program Learning Objectives are published on the Department Website. http://www.cpp.edu/~sci/geological-sciences/docs/MastersMissionObjectivesOutcomes.pdf Individual Graduate Course learning outcomes are published at: http://www.cpp.edu/~sci/geological-sciences/docs/GraduateAndSeniorCourseDescriptionsSept2014.pdf
Has a Curriculum Map been developed? Yes/No	Yes
Where is this curriculum map published?	The curriculum map is published on the Department Website. http://www.cpp.edu/~sci/geological-sciences/docs/GeologyMSmatrixCoursesVsOutcomes.pdf
What direct evidence/data are used to determine that graduates have achieved stated outcomes for the degree?	Individual faculty members use direct observations analyzed through embedded exam questions, pre-test/post-test results, and rubrics applied to student presentations and homework sets to evaluate student achievement of learning outcomes. Those tools that have been especially informative include: <ul style="list-style-type: none"> • Mapping of specific GSC courses against Program Learning Outcomes • Development of rubrics for the Master’s thesis presentations (GSC 600 and GSC 696) and other courses requiring student presentations (GSC 501, 534, 545, 551, 564, 568, 575, 599) • Pre-test / Post-test analyses conducted in several classes Please also see Self Study Report and Appendices associated with the Spring 2016 Academic Program Review of our MS degree program: Geology MS Self-Study Report April 2016 (PDF) Appendices For Self Study Report (PDF) Positive comments from external evaluators are available upon request
What indirect evidence/data are used to determine that graduates have achieved stated outcomes for the degree?	<ul style="list-style-type: none"> • Advising efforts that include one-on-one advising of each MS student each quarter. New graduate contract worksheets developed during 2014-15 and refined in 2015-16 enable students to track student progress toward degree. Our personalized advising efforts allow faculty to make suggestions for efficient scheduling, and rectify academic performance problems. • Constructive discussions between MS thesis committee members and students during MS thesis proposals (GSC 600) and MS thesis defenses (GSC 696)

	<ul style="list-style-type: none"> • Regular lunchtime seminars that encourage interactions between Geology faculty and MS student cohorts • Tracking of MS graduate placement in industry jobs or PhD programs. So far 100% of our MS graduates are gainfully employed or have moved on to very prestigious PhD institutions.
<p>Who interprets the evidence? What is the process?</p>	<p>Program assessment is discussed in fall and spring meetings of the graduate faculty. Topics include: anecdotes of student successes and potential curricular roadblocks; progress to degree; maintenance of Geology Department teaching standards; scheduling issues; program revision for semester conversion. Geology faculty collectively develop new mechanisms to improve the MS program.</p>
<p>How are the findings used?</p>	<p>We made several improvements have been made to the MS program functionality during 2015-17. These include new documents to spell out key deadlines, guidelines and policies.</p> <ul style="list-style-type: none"> • Implementation of New Student Orientation session during first Fall meeting of GSC 501. Attended by all graduate faculty,, the new graduate student cohort, and continuing grad students this meeting outlines the program logistics and path to graduation, including Important Deadlines: http://www.cpp.edu/~sci/geological-sciences/docs/DeadlinesForGeologyMSstudentsSept2015.pdf • Revision of Graduate Contract worksheet: http://www.cpp.edu/~sci/geological-sciences/docs/GeologyGradContractWorksheetsAll.xlsx • Development and promotion of clear guidelines for completing the MS thesis: Master’s Proposal Guidelines-- http://www.cpp.edu/~sci/geological-sciences/docs/GSC600ThesisProposalECOfinalJune2015.pdf Master’s Thesis Guidelines and Policies— http://www.cpp.edu/~sci/geological-sciences/docs/GSC696MastersThesisGuidelinesAndPoliciesSept2015.pdf • Although no formal assessment data has been tabulated and analyzed, we are pleased with our students’ ability to meet the MS program learning outcomes. One important measure of the program success is that 5 out of 9 of our inaugural class graduated within two years (before September 2014); 9 additional students graduated during the 2014-16 academic years. The Geology MS program is rapidly growing and on track for continued success.