Caltech

WASC Inventory of Educational Effectiveness Indicators July 2015

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation -ABET	Job or grad school placement data	Institutional data	Other			
At the institutional level:	Yes	http://accreditation.caltech.edu/news/objective_outcomes	X	X	X	X	X	X		WHO: Faculty Core Curriculum Steering Committee (CCSC); Faculty Curriculum Committee (CC); Ad Hoc On-Line Curriculum Committee (AHOCC); Faculty Graduate Studies Committee (GSC); Division option representatives; Student & faculty committees from the biennial Student Faculty Conference (SFC) PROCESS: The faculty and student committees for the SFC make recommendations to the Options and	The Faculty Board makes final decisions about changes in the curriculum based on recommendations from the Faculty CC and GSC.	See Visiting Committee review dates in each academic division section below

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										Divisions for changes to the undergraduate curriculum. The faculty committees listed above and the Divisions make their recommendations for changes to the undergraduate and graduate programs to the Faculty Board for review. The CC and GSC certify to the Faculty Board that candidates have completed requirements for a degree. The Faculty Board recommends candidates for degrees to the Board of Trustees to confer the degrees.		
For general education if an undergraduate	Yes	http://accreditation.caltech.edu/news/objective_outcomes	X	X	X	X	X	X		Faculty CCSC and CC Committees, and the student and faculty committees from the	The Faculty Board makes final decisions about changes in the curriculum based on recommendations	See Visiting Committee review dates in each

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institution:										biennial SFC make recommendations for curriculum changes to the Faculty Board for review. The CC certifies to the Faculty Board that candidates have completed requirements for a degree. The Faculty Board recommends candidates for degrees to the Board of Trustees to confer the degrees.	from the Faculty CC and GS and the student & faculty SFC committees. **Undergraduate Core Curriculum Changes were made in 2011 and in Fall 2013.**	academic division section below
Division of Biology and Biological Engineering (BBE)												
B.S. - Biology	Yes	http://www.bbe.caltech.edu/content/undergraduate-aims-and-objectives	X				X	X	Oral presentations, research projects, supervised writing projects (thesis and publications), awards.	Curriculum committee and option (major) representative look at placement rates, publication rates, number of students carrying out research; consult with Biology Undergraduate Student Advisory Committee (BUSAC) on student	The findings are used by curriculum committee and option representative, in consultation with faculty as a whole, to alter the menu of courses, highlight new opportunities for biology-related activity post-graduation (companies, government service, etc); highlight to students the	May 2006; Next: Late Feb. 2016

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										perception of overall experience as a Biology major.	unique research opportunities offered.	
B.S. - Bioengineering	Yes	http://be.caltech.edu/ugrad/index.html		X			X	X	Oral presentations, research projects, supervised writing projects.	The faculty instructors examine the completed work. Findings are shared with the rest of the faculty.	**The Biology Division expanded in 2013 to include Biological Engineering. Bioengineering option was formerly in the Engineering & Applied Science Division**	May 2006; Next: Late Feb. 2016
M.S. - Biology	Yes	http://biologyoption.caltech.edu/grad/index.html					X	X	Faculty advisor, thesis committee and graduate option representative, often in consultation with the dean of graduate studies, evaluate student progress in classes, in the lab, and in public presentation. The questions asked are the following: Is the student thriving intellectually and in the lab? Does he or she have a good level of mastery of their field? Are they highly motivated to continue	Faculty advisor, thesis committee, and graduate option representative, often in consultation with the dean of graduate studies, evaluate student progress and determine if a terminal Master's degree is appropriate. The option representative determines if the student has met the course and unit requirements. A Master's degree is only available to Ph.D. students who decide to	We strive to minimize the number of students who leave with a Master's degree. When it happens, the admissions committee, option representative and thesis committee examine the case to determine where in the process (admissions or post-entry change of student interests, lack of ability etc.) things went wrong.	May 2006; Next: Late Feb. 2016

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									these efforts in a way that is likely to lead to a significant advance in their chosen field? If the answers to one or more questions is no, the possibility of separation with a Master's degree is explored.	leave the program. We do not accept students specifically into a Master's program.		
M.S. - Bioengineering	Yes	http://www.be.caltech.edu/grad/index.html					X	X	Faculty advisor, thesis committee and graduate option representative, often in consultation with the dean of graduate studies, evaluate student progress in classes, in the lab, and in public presentation. The questions asked are the following: Is the student thriving intellectually and in the lab? Does he or she have a good level of mastery of their field? Are they highly motivated to continue these efforts in a way	Faculty advisor, thesis committee, and graduate option representative, often in consultation with the dean of graduate studies, evaluate student progress and determine if a terminal Master's degree is appropriate. The option representative determines if the student has met the course and unit requirements. A Master's degree is only available to Ph.D. students who decide to leave the program. We	**The Biology Division expanded in 2013 to include Biological Engineering**	May 2006; Next: Late Feb. 2016

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									that is likely to lead to a significant advance in their chosen field? If the answers to one or more questions is no, the possibility of separation with a Master's degree is explored.	do not accept students specifically into a Master's program.		
Ph.D. - Biology	Yes	http://biologyoption.caltech.edu/grad/index.html	X		X		X	X	(1) Completion of written and oral candidacy exams defending thesis proposal and demonstrating general knowledge in area of interest to a committee of 4-5 faculty. (2) Yearly thesis committee meetings in which progress is evaluated. (3) Public talks in years 2 and 4 in which thesis project and progress are presented to department. (4) Written thesis evaluated by the thesis committee. (5) Public seminar on thesis work followed by oral	The thesis committee, comprised of the advisor and 3-4 other faculty with expertise in the general area, evaluate progress. This happens during the candidacy meeting, during thesis committee meetings, following public talks in years 2 and 4, and during the thesis defense. The option representative also must sign off on the thesis and composition of the committee	Findings are used to identify new strategies for graduate training (new courses, ways of introducing students to laboratory rotations, research introductions by faculty) that result in better matches between student interests and abilities and resultant training. The admissions committee also evaluates student success in the context of metrics used to admit, with an eye towards fine-tuning our ability to identify students who will thrive at Caltech.	May 2006; Next: Late Feb. 2016

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									exam administered by thesis committee.			
Ph.D. - Bioengineering	Yes	http://www.be.caltech.edu/grad/index.html	X		X		X	X	(1) Completion of written and oral candidacy exams defending thesis proposal and demonstrating general knowledge in area of interest to a committee of 4-5 faculty. (2) Yearly thesis committee meetings in which progress is evaluated. (3) Public talks in years 2 and 4 in which thesis project and progress are presented to department. (4) Written thesis evaluated by the thesis committee. (5) Public seminar on thesis work followed by oral exam administered by thesis committee.	Evaluation of progress happens during the candidacy meeting and thesis defense. The option representative also must sign off on the thesis and composition of the committee.	**The Biology Division expanded in 2013 to include Biological Engineering**	May 2006; Next: Late Feb. 2016

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Ph.D. - Neurobiology	Yes	http://neurobiology.caltech.edu/grad/index.html	X	X			X	X	Publications; grant recipients	The Individual course faculty, the thesis committee, and the Neurobiology program director interpret the evidence.	**New graduate program was launched in Dec. 2013. First graduates expected 2019. Data from graduates will be used in curriculum review.**	May 2006; Next: Late Feb. 2016

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Division of Chemistry and Chemical Engineering (CCE)												
B.S. - Chemistry	Yes	http://cce.caltech.edu/content/undergraduate-program-chemistry	X				X	X		The Executive Officer (EO) in Chemistry and the Chemistry Undergraduate Option Representative (OR). The Chemistry Undergraduate Studies and Curriculum (CUSC) Committee and the quarterly ombuds meetings serve to liaise between students and faculty. The overall accessibility and success of the chemistry program is discussed and	The findings from the TQFR, ombuds meetings, and CUSC meetings are used in an ongoing process of refining the chemistry curriculum requirements, offerings, and outcomes. Small refining changes to the program are made on an ongoing basis.	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**

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										acted upon in a continuous manner with refinements made each year. Another method for feedback and evaluation comes in the form of the biennial SFC. Finally, TQFR data is employed by the EO and Chemistry OR to assess teaching quality and to make refinements in the teaching program on a yearly basis.		
B.S. - Chemical Engineering (ABET accredited)	Yes	http://www.cce.caltech.edu/content/UG-program-chemical-engineering	X	X	X	X		X		The Executive Officer; Option Rep; Academic Advisor; ABET review committee/representatives interpret evidence including TQFR surveys,	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15; Next ABET visit due 2018.**

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										Advisor consults, Student faculty committees, etc. ABET accreditors interpret the success of ABET criteria and program outcomes through review of student work samples and faculty feedback		
M.S. - Biochemistry and Molecular Biophysics	Yes	http://www.cce.caltech.edu/content/graduate-program-biochemistry-molecular-biophysics					X	X		Research Advisor and Option Representative	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**
M.S. - Chemistry	Yes	http://www.cce.caltech.edu/content/masters-degree	X				X	X		Research Advisor and Option Representative Curriculum and course requirements are reviewed regularly by a faculty academic officer.	The Chemistry Graduate Studies Committee (CGSC) regularly evaluates the program to modify the requirements. Significant changes are brought forward to the option and Division faculty for discussion and approval.	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**

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M.S. - Chemical Engineering	Yes	http://www.cce.caltech.edu/content/graduate-program-chemical-engineering	X				X	X	Master's report	Research Advisor and Option Rep	The Chemical Engineering faculty regularly evaluates the courses and program.	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**
Ph.D. - Biochemistry and Molecular Biophysics	Yes	http://www.cce.caltech.edu/content/graduate-program-biochemistry-molecular-biophysics	X				X		Oral defense of thesis; annual meeting of thesis committee; Publications; recipient of grants	Thesis committee meets with student annually to evaluate progress; examines student orally and evaluates thesis. The Option Representative makes recommendations for curriculum changes to option faculty, and implements them.	The Option administration evaluates the program to modify the requirements and enhance the process by which a student obtains their Ph.D. Significant changes are brought forward to the option and faculty for discussion and approval.	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**
Ph.D. - Chemistry	Yes	http://chemistry.caltech.edu/adm_ac/forchemgrads/info_chem.pdf	X				X	X	Three written propositions and oral defense; oral defense of thesis; annual meeting of thesis committee; Fourth year progress review meeting; Publications; recipient of grants	Thesis committee meets with student annually to evaluate progress, examines student orally and	The Chemistry Graduate Studies Committee (CGSC) regularly evaluates the program to modify the requirements, enhance the process by which a student obtains their Ph.D. Significant	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**

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										evaluates written propositions and thesis. Chemistry Graduate Studies Committee, comprised of option faculty and graduate student representatives, reviews and updates overall program; evaluates option wide assessments, makes recommendations for curriculum changes to option faculty, and implements approved changes. Option faculty makes final decisions for changes based on recommendations of the CGSC.	changes are brought forward to the option and Division faculty for discussion and approval.	

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Ph.D. - Chemical Engineering	Yes	http://www.cce.caltech.edu/content/graduate-program-chemical-engineering	X	X	X		X	X	Candidacy report and oral defense. Periodic (annual) meetings with the thesis committee to discuss progress	The entire Chemical Engineering faculty participates in initial evaluation in qualifying examinations, and votes on outcomes for all students. Research advisor and thesis review/candidacy committee review progress and outcomes for individual students, and certify completion of all degree requirements, and examine the student orally on the completion of the thesis.	The Chemical Engineering faculty regularly evaluates the courses and program, and modifies the requirements and procedures to enhance the process by which a student obtains their Ph.D.	Jan. 25-27, 2006; Next Visiting Committee **6/30-7/1/15**

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Division of Engineering and Applied Science (EAS)												
B.S. - Applied and Computational Mathematics	Yes	http://www.cms.caltech.edu/academics/ugrad_acm					X	X		WHO: Option rep. and each student's advisor PROCESS: Rep. & Advisor interpret student's performance during discussions that start as soon as a student is admitted to the ACM option and continue until graduation.	Curriculum and course requirements are reviewed regularly through curriculum committee and effectiveness monitored annually by Option Representative. Revised courses are periodically proposed in response to expressed student interests.	**Mar. 16-18, 2014**
B.S. - Applied Physics	Yes	http://www.aphms.caltech.edu/academics/ugrad_ap	X				X	X	-Summer Undergraduate Research Fellowship (SURF)	WHO: -Faculty Academic Advisor and in some instances the entire APh faculty -APh Option Rep. (faculty member) - Faculty Research Advisor supervises senior thesis and/or research	-To adjust or augment the course curriculum -Help write reference letters (especially in the case of SURF)	**Mar. 16-18, 2014**

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										project <u>PROCESS</u>: -APh Option Representative and Academic Advisors meet face-to-face with undergraduate students on an as-requested basis to help with selection of courses, progress in classes, research projects and future career opportunities. -Research Advisor (or mentor) meets with students on a regular basis ongoing to discuss their research project - Faculty participate in an on-going discussion of		

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										teaching quality and curriculum issues during monthly faculty meeting -Biennial SFC includes an ad hoc committee of APh faculty and students producing an oral and written report on the option which includes data from surveying current students about curriculum issues.		
B.S. - Computer Science (CS)	Yes	http://www.cms.caltech.edu/academics/ugrad_cs	X	X	X		X	X	Each student completes at least one 3-term project sequence including (at least) one large project advised by a faculty member. This includes an oral presentation and a supervised writing project.	-Faculty debrief with random sample of ~5 students each June -Biennial SFC includes an ad hoc CS committee of faculty and students that produce an oral	Curriculum and course requirements are reviewed regularly through curriculum committee and effectiveness monitored annually by Option Representative. Revised courses are periodically proposed in response to expressed student interests. **Several curriculum changes have**	**Mar. 16-18, 2014**

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										and written report -Biennial survey of current students about curriculum issues -Faculty participate in an on-going discussion of teaching quality and curriculum issues during monthly meetings	**ensued since 2010 based on debriefings with students.**	
B.S. - Electrical Engineering (EE) Accreditation Board for Engineering and Technology (ABET - accredited)	Yes	http://ee2.caltech.edu/undergrad/index.html	X	X	X	X	X	X	-Students complete a project and/or a thesis in their senior year over a course of three quarters. The students present their results in a combination of report and oral presentation and obtain a letter grade commensurate with their performance.	-Teaching faculty and lecturers -Faculty advisor assigned to each student - Faculty and students participate in biennial SFC and the breakout EE session to discuss the issues of concern and potential areas of improvement via a written report in	Issues of undergraduate curriculum are discussed in EE faculty meeting on a biweekly basis, taking various sources of information such as student evaluations, student feedback and faculty assessments into account	**Mar. 16-18, 2014** **Next ABET visit due 2018.**

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										conjunction with a detailed oral presentation and subsequent extensive discussions		
B.S. - Engineering and Applied Sciences	Yes	http://eas.caltech.edu/admissions/eas_ugrad	X		X				Capstone design project is required	- Course program is designed in collaboration with the Option Representative, student and advisor - While the program is designed to accommodate interdisciplinary programs of study not accommodated by existing undergraduate degree programs, the student has to document why their course of study does not fit. Exceptions are the	Curriculum and course requirements are regularly reviewed with an eye towards moving common scenarios into appropriate preset undergrad degree programs or to retire tracks which are no longer taken (recent example: engineering and environmental science). The option is taken by very few students.	**Mar. 16-18, 2014**

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										pre-approved tracks of CNS and Materials Science.		
B.S. - Mechanical Engineering (ABET-accredited)	Yes	http://www.mce.caltech.edu/academics/ugrad	X	X		X	X	X		Faculty as a whole: -participate in an on-going discussion of teaching quality and curriculum issues during monthly faculty meeting - Collection and evaluation of end of term course assessments; External advisory committee: -collects and evaluates feedback from students; Student Faculty Conference: -biennially, including an ad	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014** **Next ABET visit due 2018.**

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			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										hoc committee of faculty and students producing an oral and written report on the option. Also includes survey of students about curriculum issues.		
M.S. - Aeronautics	Yes	http://www.galcit.caltech.edu/academics/grad http://www.galcit.caltech.edu/academics/grad_an Update in progress to be completed September 2015	x	x	x		x	x	Public presentations at conclusion of required year-long project class	WHO: - Faculty as a whole; - Individual faculty advisors - Curriculum committee - Academic Officer (entire academic program) PROCESS: Collection and evaluation of end of term course assessments; Annual student town hall meeting; Curriculum review	Curriculum and course requirements reviewed regularly through curriculum committee and effectiveness monitored annually by Academic Officer. Revised list of courses satisfying M.S. mathematics requirements to be proposed in response to match of student interests with available courses. Program is noted and effective.	**March 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										meetings		
M.S. - Applied and Computational Mathematics	Yes	http://www.cms.caltech.edu/academics/grad_acm	X				X	X	M.S. awarded upon completion of programs courses. Students are not normally admitted toward an M.S. program unless they are working towards a Ph.D. -End of Year 1-diagnostic exam -End of Year 2-M.S. thesis -Yearly progress letters provided to students	WHO: Individual faculty advisors - Curriculum committee - Academic Officer (entire academic program)	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**
M.S. - Applied Mechanics	Yes	http://www.mce.caltech.edu/academics/grad_am			X		X	X		WHO: -Faculty as a whole -External advisory board -Faculty committee (candidacy examination) -Academic Officer (entire academic program)	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										PROCESS: -Collection and evaluation of end of term course assignments -Student Town Hall Meetings -Curriculum review meetings (Academic Officer) - External advisory committee collects and evaluates feedback from students		
M.S. - Applied Physics	Yes	http://www.aphms.caltech.edu/academics/grad_ap	X	X			X	X	-Advisor Group Presentations -Public Presentations (conferences, seminars, etc.) -Oral candidacy examination -Yearly Progress Meetings with Academic Advisor and Thesis Committee	- Option Rep: Approves each term of courses with first year students to discuss their academic progress until the students have taken the entire required course list - Advisors and	Curriculum and course requirements reviewed regularly through APh faculty meetings to shape best program for incoming class and faculty teaching roles. -Student's advisor and Candidacy Committee provide feedback such as recommendations for additional classes to be	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										chosen candidacy committee give feedback on students' thesis research - Master's Degree earned along the way to Ph.D.	taken, encouragement to continue certain lines of research towards a Ph.D. and in how they can improve in the communication of their research.	
M.S. - Civil Engineering	Yes	http://www.mce.caltech.edu/academics/grad_ce			X		X	X		WHO: -Faculty as a whole -External advisory board -Faculty committee (candidacy examination) -Academic Officer (entire academic program) PROCESS: -Collection and evaluation of end of term course assignments -Student Town Hall Meetings -Curriculum	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										review meetings (Academic Officer) - External advisory committee collects and evaluates feedback from students		
M.S. - Computational and Neural Systems (CNS)	Yes	http://www.cns.caltech.edu/academics/phd.html	X				X	X	Only students who expect to pursue the Ph.D. degree will be admitted to the option. M.S. may be awarded in exceptional cases. M.S. requirements: -satisfy option breadth requirements -complete master's thesis -receive recommendation from committee conducting oral exam	-Faculty committee -CNS option rep	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**
M.S. - Computer Science	Yes	http://www.cms.caltech.edu/academics/grad_cs	X	X	X		X	X	M.S. awarded upon completion of program courses. Students are not normally admitted to an M.S. program unless they are working towards a Ph.D.	-Faculty advisory committee -Computing & Mathematical Science (CMS) faculty -Yearly progress	**Changes this year in how preliminary exams work based on student evaluations.**	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									-End of Year 1: diagnostic exam -End of Year 2: M.S. thesis -Yearly progress letters provided to students	letters prepared by faculty advisors -Yearly progress reports reviewed by CMS faculty as a whole		
M.S. – Computing and Mathematical Sciences (CMS)	Yes	http://www.cms.caltech.edu/academics/grad_cms	X	X	X		X	X	M.S. awarded upon completion of program courses. Students are not normally admitted toward an M.S. program unless they are working towards a Ph.D. -End of Year 1-diagnostic exam -End of Year 2-M.S. thesis -Yearly progress letters provided to students	-Faculty advisory committee -Computing & Mathematical Science (CMS) faculty -Yearly progress letters prepared by faculty advisors -Yearly progress reports reviewed by CMS faculty as a whole	**CMS curriculum changed this year based on debriefings with students.**	**Mar. 16-18, 2014**
M.S. - Control and Dynamical Systems	Yes	http://www.cms.caltech.edu/academics/grad_cds	X	X	X		X	X	M.S. awarded upon completion of program courses. Students are not normally admitted toward an M.S. program unless they are working towards a Ph.D. M.S. degree is only offered for	Faculty advising committee and option representative must approve course plan	Curriculum is established based on the course requirements of the Ph.D. degree.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									those students who do not pursue Ph.D.			
M.S. - Electrical Engineering (EE)	Yes	http://ee2.caltech.edu/graduate/index.html		X	X		X	X	M.S. degree earned along the way to Ph.D.	WHO: -Teaching faculty and lecturers in their teaching capacity. -Faculty advisor assigned to each student - Option Representative	Issues of graduate curriculum are discussed in biweekly EE faculty meeting taking various sources of information into account: student evaluations, student feedback, faculty assessments	**Mar. 16-18, 2014**
Engineer's Degree - Electrical Engineering	Yes	http://ee2.caltech.edu/graduate/index.html			X		X	X	The engineer's degree may be awarded in exceptional cases. -Must have three terms at Caltech, eight terms of graduate residence -To qualify must complete coursework prescribed by supervising committee -Candidate must demonstrate competence	-Division Chair consulted to select supervising faculty committee -Supervising faculty committee -Thesis exam committee	Graduate Studies Committee supervises requirements established by the faculty for all advanced degrees. Proposed changes in programs and courses are recommended to the Faculty Board for review.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									in oral & written English -Thesis is required with committee approval -Final exam may be required at the discretion of the EE option committee			
M.S. - Materials Science	Yes	http://aphms.caltech.edu/academics/grad_ms	X	X	X			X	-Option Rep: approves each term of courses with first year students to discuss their academic progress until the students have taken the entire required course list -Advisors and chosen candidacy committee gives feedback on students' thesis research -M.S. degree earned along the way to Ph.D.	WHO: - Faculty as a whole - Curriculum committee - Individual Advisors -Option Representative - Academic Officer (entire academic program) PROCESS: -Evaluation of required courses and examinations -Faculty participate in an on-going discussion of teaching quality	Curriculum and course requirements reviewed regularly through Materials Science faculty meetings to shape best program for incoming class and available faculty teaching roles. Individual advisors work with student's candidacy committee to ensure student has a thorough knowledge of Materials Science, as well as his/her own research project.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										and curriculum issues during monthly faculty meeting -Final approval from Option Representative to award Master's Degree		
M.S. - Mechanical Engineering	Yes	http://www.mce.caltech.edu/academics/grad_me			X		X	X		WHO: Faculty as a whole -External advisory board -Faculty committee (candidacy examination) -Academic Officer (entire academic program) PROCESS: -Collection and evaluation of end of term course assignments -Student Town Hall Meetings -Curriculum	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										review meetings (Academic Officer) - External advisory committee collects and evaluates feedback from students		
M.S. Medical Engineering	Yes	http://www.mede.caltech.edu/academics/grad	x		x			x	**Master's degree earned along the way to Ph.D.**	WHO: -Teaching faculty and lecturers in their teaching capacity. -Faculty advisor - Option Representative	Issues of graduate curriculum are discussed in monthly MedE faculty meeting taking various sources of information into account: student evaluations, student feedback, faculty assessments **New program launched 2014**	**March 16-18, 2014**
M.S. - Space Engineering	Yes	http://www.galcit.caltech.edu/academics/grad http://www.galcit.caltech.edu/academics/grad_as Update in progress, to be completed September 2015	x	x	x		x	x	Public presentations at conclusion of required year-long project class	WHO: - Faculty as a whole - Individual faculty advisors - Curriculum committee - Academic Officer (entire academic	Curriculum and course requirements reviewed regularly through curriculum committee and effectiveness monitored annually by Academic Officer. Revised list of courses satisfying M.S. mathematics requirements will be proposed in response	**March 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										program) PROCESS: Collection and evaluation of end of term course assessments; Annual student town hall meeting; Curriculum review meetings	to match of student interests with available courses. Program is noted and effective.	
Ph.D. - Aeronautics	Yes	http://galcit.caltech.edu/academics/grad http://galcit.caltech.edu/academics/grad_an Update in progress, to be completed September 2015	x	x	x		x	x	- Master's degree (earned along the way); - Ph.D. qualifying examination (oral questioning, coursework-based); - Ph.D. candidacy exam (student presentation and oral questioning, research-based); - Research colloquium presentations; - Publications and conference presentations; - Final public thesis	WHO: - Faculty as a whole (Master's degree, qualifying examination); - Faculty committee (candidacy examination) - Individual faculty advisors - Curriculum committee - Academic Officer (entire academic program)	Curriculum and course requirements reviewed regularly through curriculum committee and effectiveness monitored annually by Academic Officer. Revised list of courses satisfying advanced mathematics requirements to be proposed in response to match of student interests with available courses. Program is noted and effective.	**March 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									presentation and closed thesis examination	PROCESS: Collection and evaluation of end of term course assessments; Annual student town hall meeting; Curriculum review meetings		
Ph.D. - Applied and Computational Mathematics	Yes	http://www.cms.caltech.edu/academics/grad_acm	X	X	X		X	X	- Ph.D. qualifying examination (written exam, coursework-based); -Colloquium participation; - Final closed thesis examination	WHO: - Faculty as a whole (qualifying examination); - Faculty committee (candidacy examination) - Individual faculty advisors - Curriculum committee - Academic Officer (entire academic program)	Curriculum and course requirements reviewed regularly through curriculum committee and effectiveness monitored annually by the entire faculty.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
Ph.D. - Applied Mechanics	Yes	http://www.mce.caltech.edu/academics/grad_am	X		X		X	X	Oral Candidacy Exam	WHO: -Faculty as a whole -External advisory board -Faculty committee (candidacy examination) -Academic Officer (entire academic program) PROCESS: -Collection and evaluation of end of term course assignments -Student Town Hall Meetings -Curriculum review meetings (Academic Officer)	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**
Ph.D. - Applied Physics	Yes	http://www.aphms.caltech.edu/academics/grad_ap	X	X	X		X	X	-Group presentations -Public presentations (conferences, seminars, etc.) -18 Units of Research Activity	WHO: - Applied Physics Faculty - Curriculum committee - Individual	Curriculum and course requirements are reviewed regularly by Applied Physics faculty to shape the best program for incoming class and available faculty teaching	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									-Yearly Progress Meetings with Academic Advisor and Thesis Committee -Ph.D. Written Thesis -Public Ph.D. Thesis Defense -Closed Thesis Examination	Advisors - APh Option Rep. - Academic Officer <u>PROCESS</u>: -Evaluation of required courses and examinations - Ph.D. candidacy exam (student presentation, oral examination, and proposed research) - Publications and conference presentations - Final public thesis presentation and closed thesis examination	roles. -Thesis/Research Advisor works with student's candidacy committee to ensure student has a thorough knowledge of Applied Physics -Student admitted to candidacy by the Candidacy Committee which includes Thesis/Research Advisor and three other Caltech faculty members -Student submits a written thesis, gives a public thesis presentation, and is examined in a closed thesis examination by their Thesis Committee to earn a PhD.	
Ph.D. - Civil Engineering	Yes	http://www.mce.caltech.edu/academics/grad_ce	X	X			X	X	Oral candidacy exam	<u>WHO</u>: -Faculty as a whole -External advisory board -Faculty committee	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										(candidacy examination) -Academic Officer (entire academic program) PROCESS: -Collection and evaluation of end of term course assignments -Student Town Hall Meetings -Curriculum review meetings (Academic Officer)		
Ph.D. – Computing and Mathematical Sciences	Yes	http://www.cms.caltech.edu/academics/grad_cms	X				X	X	-Oral exam end of Year 1 -Oral candidacy depth exam Year 2 -2-3 articles in top publications -Ability to conduct independent research -public thesis seminar -thesis oral exam	WHO: -Thesis tracking committee-at least yearly meetings -Faculty advisor	**CMS curriculum changed this year based on debriefings with students.**	**Mar. 16-18, 2014**
Ph.D. - Computational Neural Systems	Yes	http://www.cns.caltech.edu/academics/phd.html	X	X	X		X	X	-Oral exam end of Year 1 -Oral candidacy depth exam Year 2 -2-3 articles in top	WHO: -Thesis tracking committee-at least yearly	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									publications -Ability to conduct independent research -public thesis seminar -thesis oral exam	meetings -Faculty advisor	annually by faculty as a whole.	
Ph.D. - Computer Science	Yes	http://www.cms.caltech.edu/academics/grad_cs	X		X		X	X	-Oral exam end of Year 1 -Oral candidacy depth exam Year 2 -2-3 articles in top publications -Ability to conduct independent research -public thesis seminar -thesis oral exam	-Thesis tracking committee-at least yearly meetings -Faculty advisor	**Changes this year in how preliminary exams work based on student evaluations.**	**Mar. 16-18, 2014**
Ph.D. - Control and Dynamical Systems	Yes	http://cms.caltech.edu/academics/grad_cds	X	X	X		X	X	- Preliminary exam at the end of first year of studies - Qualifying exam by the end of year three of studies (research report and oral presentation and examination by faculty)	- CDS faculty serve as a committee of the whole and review results of preliminary exam - CDS option representative approves candidacy committee - Candidacy committee reads and approves candidacy report	Curriculum is discussed and reviewed annually by the CMS department faculty, including integration of courses and exam requirements across the department programs (ACM, CDS, CMS, CS)	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										as well as oral candidacy exam		
Ph.D. - Electrical Engineering (EE)	Yes	http://ee2.caltech.edu/graduate/index.html	X	X	X		X	X	- M.S. degree (earned along the way); - Ph.D. qualifying examination (oral questioning, coursework-based); - Ph.D. candidacy exam (student presentation and oral questioning, research-based); - Research colloquium presentations; - Publications and conference presentations; - Final public thesis presentation and closed thesis examination	WHO: -Ph.D. advisor -qualify exam committee -Candidacy exam committee -Ph.D. defense exam committee -Teaching faculty and lecturers in their teaching capacity. - Option Representative PROCESS: -The results of the qualifying exam are reported and discussed to the entire EE faculty in a dedicated meeting and the progress of each student is discussed and	Issues of graduate curriculum are discussed in EE faculty meeting on a biweekly basis, taking various sources of information such as student evaluations, student feedback and faculty assessments into account.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										feedback is provided to the student.		
Ph.D. - Materials Science (MS)	Yes	http://aphms.caltech.edu/academics/grad_ms	X	X	X			X	- M.S. earned along the way to Ph.D. -Evaluation of required courses and examinations - Ph.D. candidacy exam (student presentation and oral questioning, research-based); - Publications and conference presentations - Final public thesis presentation and closed thesis examination	WHO: - Faculty as a whole - Curriculum committee - Individual Advisors -M.S. Option Rep. - Academic Officer (entire academic program) PROCESS: -Evaluation of required courses and examinations - Ph.D. candidacy exam (student presentation and oral questioning, research-based); - Publications and conference presentations - Final public	Curriculum and course requirements reviewed regularly through Materials Science faculty meetings to shape best program for incoming class and available faculty teaching roles. Individual advisors work with student's candidacy committee to ensure student has a thorough knowledge of Materials Science, as well as his/her own research project. Student admitted to candidacy based on recommendation from Candidacy Exam, including his/her advisor and three other committee members from Caltech Faculty Student will give a final public thesis defense of all work and	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										thesis presentation and closed thesis examination	a closed thesis examination by Thesis Committee to earn PhD.	
Ph.D. - Mechanical Engineering	Yes	http://www.mce.caltech.edu/academics/grad_me	X		X		X	X	Oral Candidacy Exam	WHO: -Faculty as a whole -External advisory board -Faculty committee (candidacy examination) -Academic Officer (entire academic program) PROCESS: -Collection and evaluation of end of term course assignments -Student Town Hall Meetings -Curriculum review meetings (Academic Officer)	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole.	**Mar. 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
Ph.D. Medical Engineering	Yes	http://www.mede.caltech.edu/academics/grad	X		X		X	X	- Master's degree (earned along the way); - Ph.D. qualifying examination (oral questioning, coursework-based); - Ph.D. candidacy exam (student presentation and oral questioning, research-based); - Publications and conference presentations; - Final public thesis presentation and closed thesis examination	WHO: -Ph.D. advisor -qualify exam committee -Candidacy exam committee -Ph.D. defense exam committee -Teaching faculty and lecturers in their teaching capacity. - Option Representative PROCESS: -The results of the qualifying exam are reported and discussed to the entire MedE faculty in a dedicated meeting and the progress of each student is discussed and feedback is provided to the student.	Curriculum and course requirements are reviewed regularly by Academic Officer and effectiveness monitored annually by faculty as a whole. **New Program launched 2014**	**March 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
Ph.D. - Space Engineering	Yes	http://galcit.caltech.edu/academics/grad http://galcit.caltech.edu/academics/grad_as Update in progress, to be completed September 2015	x	x	x		x	x	- Master's degree (earned along the way); - Ph.D. qualifying examination (oral questioning, coursework-based); - Ph.D. candidacy exam (student presentation and oral questioning, research-based); - Research colloquium presentations; - Publications and conference presentations; - Final public thesis presentation and closed thesis examination	WHO: - Faculty as a whole (for qualifying exam); - Faculty committee (candidacy exam) - Individual faculty advisors - Curriculum committee - Academic Officer (entire academic program) PROCESS: Collection and evaluation of end of term course assessments; Annual student town hall meeting; Curriculum review meetings	Curriculum and course requirements reviewed regularly through curriculum committee and effectiveness monitored annually by Academic Officer. Revised list of courses satisfying advanced mathematics requirements to be proposed in response to match of student interests with available courses. Program is noted and effective.	**March 16-18, 2014**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
Division of Geological and Planetary Sciences (GPS)												
B.S. - Geobiology	Yes	http://www.gps.caltech.edu/content/undergraduate-program	X	X	X		X	X		WHO: Academic Committee, Faculty & Chairman PROCESS: Academic Committee meets with students after Student Faculty Conference (SFC); Chairman and Academic Officer meet with students yearly to discuss academics and quality of life.	Curriculum changes and changes in course requirements after review by Academic Committee; Teaching Quality Feedback Reports (TQFR) provide data to determine course changes or changes in course content to option requirements. Chairman reviews TQFR with individual faculty as needed.	**Oct. 10-12, 2010**
B.S. - Geochemistry	Yes	http://www.gps.caltech.edu/content/undergraduate-program	X	X	X		X	X		WHO: Academic Committee, Faculty & Chairman PROCESS: Academic Committee meets with students after SFC; Chairman and Academic Officer meet with students yearly to discuss academics and quality of life.	Curriculum changes and changes in course requirements after review by Academic Committee; TQFR provide data to determine course changes or changes in course content to option requirements. Chairman reviews TQFR with individual faculty as needed.	**Oct. 10-12, 2010**
B.S. - Geology	Yes	http://www.gps.caltech.edu/content/undergraduate-program	X	X	X		X	X		WHO: Academic Committee, Faculty & Chairman PROCESS: Academic Committee meets with	Curriculum changes and changes in course requirements after review by Academic Committee; TQFR provide data to	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										students after SFC; Chairman and Academic Officer meet with students yearly to discuss academics and quality of life.	determine course changes or changes in course content to option requirements. Chairman reviews TQFR with individual faculty as needed.	
B.S. - Geophysics		http://www.gps.caltech.edu/content/undergraduate-program	X	X	X		X	X		WHO: Academic Committee, Faculty & Chairman PROCESS: Academic Committee meets with students after SFC; Chairman and Academic Officer meet with students yearly to discuss academics and quality of life.	Curriculum changes and changes in course requirements after review by Academic Committee; TQFR provide data to determine course changes or changes in course content to option requirements. Chairman reviews TQFR with individual faculty as needed.	**Oct. 10-12, 2010**
B.S. - Planetary Sciences	Yes	http://www.gps.caltech.edu/content/undergraduate-program	X	X	X		X	X		WHO: Academic Committee, Faculty & Chairman PROCESS: Academic Committee meets with students after SFC; Chairman and Academic Officer meet with students yearly to discuss academics and quality of life.	Curriculum changes and changes in course requirements after review by Academic Committee; TQFR provide data to determine course changes or changes in course content to option requirements. Chairman reviews TQFR with individual faculty as needed.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
M.S. - Environmental Science and Engineering	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X		WHO: Faculty option representative; Academic Committee PROCESS: Approval by the faculty option representative.	The GPS Division does not have a formal M.S. degree program. However, an accumulation of sufficient units for those enrolled in the Ph.D. program will allow for petition of the degree to be granted.	**Oct. 10-12, 2010**
M.S. - Geobiology	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0					X	X		WHO: Faculty option representative; Academic Committee PROCESS: Approval by the faculty option representative.	The GPS Division does not have a formal M.S. degree program. However, an accumulation of sufficient units for those enrolled in the Ph.D. program will allow for petition of the degree to be granted.	**Oct. 10-12, 2010**
M.S. - Geochemistry	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0					X	X		WHO: Faculty option representative; Academic Committee PROCESS: Approval by the faculty option representative.	The GPS Division does not have a formal M.S. degree program. However, an accumulation of sufficient units for those enrolled in the Ph.D. program will allow for petition of the degree to be granted.	**Oct. 10-12, 2010**
M.S. - Geology	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0					X	X		WHO: Faculty option representative; Academic Committee PROCESS: Approval by the faculty	The GPS Division does not have a formal M.S. degree program. However, an accumulation of sufficient units for those enrolled in the	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										option representative.	Ph.D. program will allow for petition of the degree to be granted.	
M.S. - Geophysics	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0					X	X		WHO: Faculty option representative; Academic Committee PROCESS: Approval by the faculty option representative.	The GPS Division does not have a formal M.S. degree program. However, an accumulation of sufficient units for those enrolled in the Ph.D. program will allow for petition of the degree to be granted.	**Oct. 10-12, 2010**
M.S. - Planetary Sciences	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0					X	X		WHO: Faculty option representative; Academic Committee PROCESS: Approval by the faculty option representative.	The GPS Division does not have a formal M.S. degree program. However, an accumulation of sufficient units for those enrolled in the Ph.D. program will allow for petition of the degree to be granted.	**Oct. 10-12, 2010**
Ph.D. - Environmental Science and Engineering	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X	Oral Qualifying Exam; Candidacy petition review; M.S. degree earned along the way (optional); annual meeting with thesis advisory committee; Ph.D. dissertation; publications; special awards.	WHO: Faculty thesis adviser; thesis exam committee; thesis advisory committee; faculty as a whole through seminar presentations. PROCESS: Admissions by faculty	Changes in student program needs are elucidated through meetings with Division Chair and Divisional Academic Officer that are held annually.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										consensus. Annual Progress Review: Division procedures require approval of courses to satisfy candidacy requirements and selection of a thesis advisory committee, and to meet yearly with the thesis advisory committee beginning in the third year. Curriculum planning meetings held with academic advisor.		
Ph.D. - Geobiology	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X	Oral Qualifying Exam; Candidacy petition review; M.S. degree earned along the way (optional); annual meeting with thesis advisory committee; Ph.D. dissertation; publications; special awards	WHO: Faculty thesis adviser; thesis exam committee; thesis advisory committee; faculty as a whole through seminar presentations. PROCESS: Admissions by faculty consensus. Annual Progress Review: Division procedures require	Changes in student program needs are elucidated through meetings with Division Chair and Divisional Academic Officer that are held annually.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										approval of courses to satisfy candidacy requirements and selection of a thesis advisory committee, and to meet yearly with the thesis advisory committee beginning in the third year. Curriculum planning meetings held with academic advisor.		
Ph.D. - Geochemistry	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X	Oral Qualifying Exam; Candidacy petition review; M.S. degree earned along the way (optional); annual meeting with thesis advisory committee; Ph.D. dissertation; publications; special awards	WHO: Faculty thesis adviser; thesis exam committee; thesis advisory committee; faculty as a whole through seminar presentations. PROCESS: Admissions by faculty consensus. Annual Progress Review: Division procedures require approval of courses to satisfy candidacy requirements and selection of a thesis	Changes in student program needs are elucidated through meetings with Division Chair and Divisional Academic Officer that are held annually.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										advisory committee, and to meet yearly with the thesis advisory committee beginning in the third year. Curriculum planning meetings held with academic advisor.		
Ph.D. - Geology	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X	Oral Qualifying Exam; Candidacy petition review; M.S. degree earned along the way (optional); annual meeting with thesis advisory committee; Ph.D. dissertation; publications; special awards	WHO: Faculty thesis adviser; thesis exam committee; thesis advisory committee; faculty as a whole through seminar presentations. PROCESS: Admissions by faculty consensus. Annual Progress Review: Division procedures require approval of courses to satisfy candidacy requirements and selection of a thesis advisory committee, and to meet yearly with the thesis advisory committee	Changes in student program needs are elucidated through meetings with Division Chair and Divisional Academic Officer that are held annually.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										beginning in the third year. Curriculum planning meetings held with academic advisor.		
Ph.D. - Geophysics	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X	Oral Qualifying Exam; Candidacy petition review; M.S. degree earned along the way (optional); annual meeting with thesis advisory committee; Ph.D. dissertation; publications; special awards	WHO: Faculty thesis adviser; thesis exam committee; thesis advisory committee; faculty as a whole through seminar presentations. PROCESS: Admissions by faculty consensus. Annual Progress Review: Division procedures require approval of courses to satisfy candidacy requirements and selection of a thesis advisory committee, and to meet yearly with the thesis advisory committee beginning in the third year. Curriculum planning meetings held with academic	Changes in student program needs are elucidated through meetings with Division Chair and Divisional Academic Officer that are held annually.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										advisor.		
Ph.D. - Planetary Sciences	Yes	http://www.gps.caltech.edu/content/graduate-program-requirements-0	X		X		X	X	Oral Qualifying Exam; Candidacy petition review; M.S. degree earned along the way (optional); annual meeting with thesis advisory committee; Ph.D. dissertation; publications; special awards	WHO: Faculty thesis adviser; thesis exam committee; thesis advisory committee; faculty as a whole through seminar presentations. PROCESS: Admissions by faculty consensus. Annual Progress Review: Division procedures require approval of courses to satisfy candidacy requirements and selection of a thesis advisory committee, and to meet yearly with the thesis advisory committee beginning in the third year. Curriculum planning meetings held with academic	Changes in student program needs are elucidated through meetings with Division Chair and Divisional Academic Officer that are held annually.	**Oct. 10-12, 2010**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										advisor.		

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
Division of Humanities and Social Sciences (HSS)												
B.S. - Business Economics and Management (BEM)	Yes	http://www.hss.caltech.edu/content/business-economics-and-management	X				X	X	-Biennial Caltech SFC w/ BEM session: students & faculty discuss curricula. -BEM Club: students provide feedback on the option **- 2015: BEM student survey added; conducted by students**	-Faculty option (major) representative; Social Sciences Executive officer -Entire Social Sciences faculty as needed. **-2015 BEM Faculty Ad-Hoc committee was added**	**2015- Social Sciences faculty determined Econ option did not require changes**	Oct. 2005; Visiting Committee due Spring 2016
B.S. - Economics	Yes	http://www.hss.caltech.edu/content/economics-0	X				X	X	This option (major) averages 1-2 students per year. Students work in close contact with the faculty members in the option, and are evaluated constantly.	**-2015 Econ Faculty Ad-Hoc committee was added** -Option representative; Executive Officer --Entire Social Sciences faculty as needed.	**2015- Social Sciences faculty determined Econ option did not require changes**	Oct. 2005; Visiting Committee due Spring 2016
B.S. - English	Yes	http://www.hss.caltech.edu/content/english-1	X		X		X	X		WHO: - Individual faculty - Humanities	**Creation of new Writing Center focusing on the humanities; faculty consultations with Writing Center**	Oct. 2005; Visiting Committee

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										curriculum committee - Executive Officer of the Humanities PROCESS: Evidence gathered from senior thesis tutorial to measure competence in oral/written communication	**Coordinator to improve quality of assignments and feedback; planned implementation of exit survey; annual review of teaching evaluations**	due Spring 2016
B.S. - History	Yes	http://www.hss.caltech.edu/content/history-2	X		X		X	X		WHO: - Individual faculty - Humanities curriculum committee - Executive Officer of the Humanities PROCESS: Evidence gathered from senior thesis tutorial to measure competence in oral/written communication	**Creation of new Writing Center focusing on the humanities; faculty consultations with Writing Center Coordinator to improve quality of assignments and feedback; planned implementation of exit survey; annual review of teaching evaluations**	Oct. 2005; Visiting Committee due Spring 2016

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
B.S. - History and Philosophy of Science	Yes	http://www.hss.caltech.edu/content/history-and-philosophy-science-3	X		X		X	X		WHO: - Individual faculty - Humanities curriculum committee - Executive Officer of the Humanities Process: Evidence gathered from senior thesis tutorial to measure competence in oral/written communication	**Creation of new Writing Center focusing on the humanities; faculty consultations with Writing Center Coordinator to improve quality of assignments and feedback; planned implementation of exit survey; annual review of teaching evaluations**	Oct. 2005; Visiting Committee due Spring 2016
B.S. - Philosophy	Yes	http://www.hss.caltech.edu/content/philosophy-0	X		X		X	X		Who: -Individual faculty - Humanities curriculum committee - Executive Officer of the Humanities	**Creation of new Writing Center focusing on the humanities; faculty consultations with Writing Center Coordinator to improve quality of assignments and feedback; planned implementation of exit survey; annual review of teaching evaluations**	Oct. 2005; Visiting Committee due Spring 2016

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
										PROCESS: Evidence gathered from senior thesis tutorial to measure competence in oral/written communication		
B.S. - Political Science	Yes	http://www.hss.caltech.edu/content/political-science-0	X				X	X	This option has very few students; on average one student every few years. Students work in close contact with the faculty members in the option, and are evaluated on a regular basis.	**-2015 Pol. Sci. Faculty Ad-Hoc committee was added** -Faculty option rep. and Social Sciences Executive Officer --Entire Social Sciences faculty as needed.	**2015- Social Sciences faculty determined Political Science option did not require changes**	Oct. 2005; Visiting Committee due Spring 2016
M.S. - Social Science	Yes	http://www.hss.caltech.edu/content/social-sciences-phd-program	X				X	X	-End of Year 1: comprehensive preliminary examinations -Year 2: present research paper -End of Year 3: present paper -Social Sciences faculty	-Yearly, Social Science faculty meet to evaluate graduate students' performance -Director of Graduate Studies		Oct. 2005; Visiting Committee due Spring 2016

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	Course-embedded work samples	Observations of student performance	External accreditation - ABET	Job or grad school placement data	Institutional data	Other			
									evaluate job market placement data.	maintains contact with students throughout the year		
Ph.D. - Social Science	Yes	http://www.hss.caltech.edu/content/social-sciences-phd-program	X				X	X	-End of Year 1: comprehensive preliminary examinations -Year 2: present research paper -End of Year 3: present paper -Social Sciences faculty evaluate job market placement data.	-Yearly, Social Science faculty meet to evaluate graduate students' performance -Director of Graduate Studies maintains contact with students throughout the year	Findings are used to suggest changes to the Ph.D. program (new courses and changes in requirements) and to redirect and help existing students.	Oct. 2005; Visiting Committee due Spring 2016

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External exams (for example, ABET)*	*Job or grad school placement data*	*Institutional data*	*Other*			
Interdisciplinary Studies (ISP)	Yes	https://deans.caltech.edu/Services/ISP	X	X	X		X	X		The faculty CC and the Dean of Undergraduate Studies have oversight over the program. Also, each student must have at least two advisers, two of whom must be professorial faculty.	Findings are used to determine improvements to the program. **Program was revised for upcoming 2015-16 academic year, per feedback and proposal from the Dean's Advisory Council and independent studies program alumni. Proposal was approved by the Faculty Board.**	See each division

Category	(1) Have formal learning outcomes been developed ? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
Division of Physics, Mathematics, and Astronomy (PMA)												
B.S. - Astrophysics	Yes	http://www.astro.caltech.edu/academics/learning_outcomes.html	X	X	X		X	X	-Annual meetings with Astronomy (Ay) alumni; -TQFR	-Advisors , Option Representative & Ay faculty at monthly meetings, discuss feedback from students and teaching assistants -Students in the program collectively discuss the program biennially at the SFC	Student and TA oral feedback, along with SFC discussion and survey findings are used to improve class teaching and professor assignments and to motivate curriculum changes.	**Oct. 3, 2013**
B.S. - Mathematics	Yes	https://www.pma.caltech.edu/content/undergraduate-program-mathematics	X				X	X	-TQFR -SFC breakout session for math options students -Alumni outcomes are monitored -Residence house ombudsperson for math intro classes provide feedback	-Faculty option rep. meets students periodically to discuss option -Students in the program collectively discuss the program biennially at the SFC	The information gathered is used to improve class teaching and professor assignments and to motivate curriculum changes.	**Oct. 3, 2013**
B.S. - Physics	Yes	https://www.pma.caltech.edu/content/physics-undergraduate-studies	X	X	X		X	X	-End of Term Teaching Quality Feedback Reports (TQFR)	-Option rep. meets with students during biweekly office hours - Students in the program collectively discuss the program	SFC discussion and survey findings are used to improve class teaching and professor assignments and to motivate curriculum changes.	**Oct. 3, 2013**

Category	(1) Have formal learning outcomes been developed ? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										biennially at the SFC		
M.S. - Astrophysics	Yes	http://www.astro.caltech.edu/academics/learning_outcomes.html					X	X	M.S. awarded upon completion of program courses (see Ph.D). Students are not normally admitted toward an M.S. program unless they are working towards a Ph.D. Students must complete qualifying exam and a research project.	WHO: Option Rep plus whole Ay faculty PROCESS: Faculty members meet annually or more often to review student performance in courses and qualifying exams; determine outcomes and determine program modifications.	Changes in programs and courses are initiated by the Division and submitted to the GSC. The GSC then recommends changes in programs and courses to the Faculty Board.	**Oct. 3, 2013**
M.S. - Mathematics	Yes	https://www.pma.caltech.edu/content/graduate-program-mathematics					X	X	M.S. may be awarded in exceptional cases upon completion of program courses. Students are not normally admitted toward an M.S. program unless they are working towards a Ph.D.	WHO: Faculty Option Rep. GSC PROCESS: Advise and supervise scholastic requirements and certify degree candidates to the Faculty Board and	Changes in programs and courses are initiated by the Division and submitted to the GSC. The GSC then recommends changes in programs and courses to the Faculty Board.	**Oct. 3, 2013**

Category	(1) Have formal learning outcomes been developed ? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
										recommend if terminal master's degree should be awarded		
M.S. - Physics	Yes	https://www.pma.caltech.edu/content/physics-graduate-studies	X		X		X	X	M.S. awarded upon completion of programs and courses. Students are not normally admitted toward an M.S. program unless they are working towards a Ph.D. Students must complete oral and written candidacy exams	WHO: Faculty Option Rep. CGS PROCESS: Advise and supervise scholastic requirements and certify degree candidates to the Faculty Board and recommend if terminal master's degree should be awarded	Changes in programs and courses are initiated by the Division and submitted to the GSC. The GSC then recommends changes in programs and courses to the Faculty Board.	**Oct. 3, 2013**
Ph.D. - Astrophysics	Yes	http://www.astro.caltech.edu/academics/learning_outcomes.html	X				X	X	-Extensive research achievement: publications in peer reviewed journals. -Must pass a series of 6 Ay courses, a minimum of 4 Physics or equivalent courses, and at least 9 terms of oral research presentations.	The examining committee reads and evaluates the candidate's published and unpublished work, the Ph.D. thesis and performance in the oral examinations and coursework	Students deemed not to have passed may be required to do additional work. Students and Advisors are required to submit annual progress reports to the Option Rep. and these are discussed by the entire Ay faculty at an annual meeting. The	**Oct. 3, 2013**

Category	(1) Have formal learning outcomes been developed ? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									-Must pass 3 oral exams: qualifying, candidacy and PhD exams, which include both academic and research components. - Feedback also obtained annually, from Ay graduate alumni at national astronomy meetings.		feedback is used to adjust advising strategies, and improve class teaching, motivate curriculum and advisor changes.	
Ph.D. - Mathematics	Yes	https://www.pma.caltech.edu/content/graduate-program-mathematics	X		X		X	X	-Must pass qualifying exam in at least two subjects, end of Year 1 -Before end of Year 3, must pass candidacy exam -Oral presentation to faculty members -Must demonstrate extensive research achievement: publication in a peer reviewed journal -Final written thesis and oral exam	-Thesis advisor consults with student - -Student is assessed each fall by option faculty -Director of Ph.D. program and Executive Officer of Math option also provide guidance upon request -Faculty thesis committee conducts final oral exam on the thesis	Changes in programs and courses are initiated by the Division and submitted to the GSC. The GSC then recommends changes in programs and courses to the Faculty Board.	**Oct. 3, 2013**
Ph.D. - Physics	Yes	https://www.pma.caltech.edu/content/physics-graduate-studies	X				X	X	-Extensive research achievement: publications in peer reviewed journals;	Caltech thesis committee evaluates the thesis in a public	Changes in programs and courses are initiated by the Division and submitted to the GSC.	**Oct. 3, 2013**

Category	(1) Have formal learning outcomes been developed? *Yes/No*	(2) Where are these learning outcomes published (e.g., catalog, syllabi, other materials)?	(3) Other than GPA, what data / evidence is used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?							(4) Who interprets the evidence? What is the process?	(5) How are the findings used?	(6) Date of the last program review for this degree program.
			Culminating projects, papers, thesis	*Course-embedded work samples*	*Observations of student performance*	*External accreditation - ABET*	*Job or grad school placement data*	*Institutional data*	*Other*			
									-Completion of advanced courses in 4 subfields. -Must pass candidacy exam in classical and quantum physics to pass onto the research phase of the degree.	defense.	The GSC then recommends changes in programs and courses to the Faculty Board.	