College Curriculum Committee Meeting Agenda
Tuesday, February 18, 2025
2:00 p.m. – 3:30 p.m.
Administrative Conference Room 1901; virtual option via Zoom

Item	Time*	Action	Attachment(s)	Presenter(s)
1. Minutes: February 4, 2025	2:00	Action	#2/18/25-1	Kaupp
2. Report Out from CCC Members	2:02	Discussion		All
3. Public Comment on Items Not on Agenda (CCC cannot discuss or take action)	2:12	Information		
4. Announcements a. Recent CCCCO Approval!	2:17	Information		CCC Team
5. Consent Calendar a. Division Curriculum Committees	2:20	Action	#2/18/25-2	Kaupp
6. New Subject Code: NCAL	2:25	3rd Read/ Action	#2/18/25-3	Kaupp
7. Stand Alone Application: ALTW 218B	2:35	2nd Read/ Action	#2/18/25-4	Kaupp
8. Stand Alone Applications: APRT 140A, 140B, 141A, 141B	2:38	2nd Read/ Action	#2/18/25-5–8	Kaupp
9. GE Application: Area 1B & Area 2: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program	2:41	2nd Read/ Action	#2/18/25-9	Kaupp
10. GE Application: Area 4: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program		2nd Read/ Action	#2/18/25-10	Kaupp
11. GE Application: Area 5: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program		2nd Read/ Action	#2/18/25-11	Kaupp
12. GE Application: Area 7: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program		2nd Read/ Action	#2/18/25-12	Kaupp
13. New Certificate Proposal: Transfer Studies: Cal-GETC	2:51	Action	#2/18/25-13	Kaupp
14. Updating Foothill GE—Criteria	2:56	2nd Read/ Action	#2/18/25-14–22	Kaupp
15. Good of the Order	3:27			Kaupp
16. Adjournment	3:30			Kaupp

**Times listed are approximate*

Consent Calendar:

#2/18/25-2 Division Curriculum Committees 2.18.25

Attachments:

#2/18/25-1 Draft Minutes: February 4, 2025
#2/18/25-3 New Subject Code: NCAL
#2/18/25-4 Stand Alone Application: ALTW 218B
#2/18/25-5–8 Stand Alone Applications: APRT 140A, APRT 140B, APRT 141A, APRT 141B

#2/18/25-9	Foothill General Education Application for Area 1B—Oral Communication & Critical Thinking and Area 2—Mathematical Concepts & Quantitative Reasoning: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program
#2/18/25-10	Foothill General Education Application for Area 4—Social & Behavioral Sciences: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program
#2/18/25-11	Foothill General Education Application for Area 5—Natural Sciences w/ Lab: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program
#2/18/25-12	Foothill General Education Application for Area 7—Lifelong Learning: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program
#2/18/25-13	New Certificate Proposal: Transfer Studies: Cal-GETC
#2/18/25-14–21	Application forms for new Foothill GE pattern
#2/18/25-22	Paul Starer's suggested revisions to Foothill GE application forms (example using Area 1A)

2024-2025 Curriculum Committee Meetings:

Fall 2024 Quarter	Winter 2025 Quarter	Spring 2025 Quarter
~~10/8/24~~	~~1/21/25~~	4/15/25
~~10/22/24~~	~~2/4/25~~	4/29/25
~~11/5/24~~	2/18/25	5/13/25
~~11/19/24~~	3/4/25	5/27/25
~~12/3/24~~	3/18/25	6/10/25

Standing reminder: Items for inclusion on the CCC agenda are due no later than one week before the meeting.

2024-2025 Curriculum Deadlines:

~~*12/2/24*~~	Deadline to submit courses for Cal-GETC approval (Articulation Office).
4/18/25	Deadline to submit curriculum sheet updates for 2025-26 catalog (Faculty/Divisions).
6/2/25	Deadline to submit new/revised courses to UCOP for UC transferability (Articulation Office).
TBD	Deadline to submit course updates and local GE applications for 2026-27 catalog (Faculty/Divisions).
Ongoing	Submission of courses for C-ID approval and course-to-course articulation with individual colleges and universities (Articulation Office).

Distribution:
Ulysses Acevedo (LA), Micaela Agyare (LRC), Chris Allen (Dean, APPR), Jeff Bissell (KA), Sam Bliss (De Anza AVP Instruction), Cynthia Brannvall (FAC), Rachelle Campbell (HSH), Zach Cembellin (Dean, STEM), Anthony Cervantes (Dean, Enrollment Services), Sam Connell (BSS), Robert Cormia (STEM), Stephanie Crosby (Dean, SRC), Cathy Draper (HSH), Angie Dupree (BSS), Kelly Edwards (KA), Gina Firenzi (APPR), Jordan Fong (FAC), Patricia Gibbs Stayte (BSS), Evan Gilstrap (Articulation Officer), Stacy Gleixner (VP Instruction), Ron Herman (Dean, FAC), Kurt Hueg (Administrator Co-Chair), Rose Huynh (LA), Maritza Jackson Sandoval (CNSL), Ben Kaupp (Faculty Co-Chair), Natalie Latteri (BSS), Andy Lee (CNSL), Brian Murphy (APPR), Tim Myres (APPR), Teresa Ong (AVP Workforce), Sarah Parikh (STEM), Eric Reed (LRC), Richard Saroyan (SRC), Amy Sarver (LA), Lisa Schultheis (STEM), Sukhjit Singh (De Anza CCC Faculty Co-Chair), Paul Starer (APPR), Shae St. Onge-Cole (HSH), Kyle Taylor (STEM), Mary Vanatta (Curriculum Coordinator), Nate Vennarucci (APPR), Voltaire Villanueva (AS President), Fiona Wiesner (Foothill Script), Erik Woodbury (De Anza AS President)

Updated 1/22/25

COLLEGE CURRICULUM COMMITTEE

Committee Members – 2024-25

Meeting Date: 2/18/25

Co-Chairs (2)

✔*	Ben Kaupp	408-874-6380	Vice President, Academic Senate (tiebreaker vote only) kauppben@fhda.edu
✔	Kurt Hueg	7179	Associate Vice President of Instruction huegkurt@fhda.edu

Voting Membership (1 vote per division)

✔	Ulysses Acevedo	7507	LA	acevedoulysses@fhda.edu
✔*	Micaela Agyare	7086	LRC	agyaremicaela@fhda.edu
✔	Jeff Bissell	7663	KA	bisselljeff@fhda.edu
✔*	Cynthia Brannvall	7477	FAC	brannvallcynthia@fhda.edu
	Rachelle Campbell	7469	HSH	campbellrachelle@fhda.edu
	Zach Cembellin	7383	Dean—STEM	cembellinzachary@fhda.edu
✔	Sam Connell	7197	BSS	connellsamuel@fhda.edu
✔*	Cathy Draper	7249	HSH	drapercatherine@fhda.edu
✔	Angie Dupree		BSS	dupreeangelica@fhda.edu
	Kelly Edwards	7327	KA	edwardskelly@fhda.edu
✔*	Jordan Fong	7272	FAC	fongjordan@fhda.edu
✔*	Evan Gilstrap	7675	Articulation	gilstrapevan@fhda.edu
✔	Ron Herman	7156	Dean—FAC	hermanron@fhda.edu
✔*	Maritza Jackson Sandoval	7409	CNSL	jacksonsandovalmaritza@fhda.edu
✔*	Andy Lee	7783	CNSL	leeandrew@fhda.edu
	Brian Murphy		APPR	brian@pttc.edu
✔*	Tim Myres		APPR	timm@smw104jatc.org
✔*	Eric Reed	7091	LRC	reederic@fhda.edu
✔	Richard Saroyan	7232	SRC	saroyanrichard@fhda.edu
	Amy Sarver	7459	LA	sarveramy@fhda.edu
✔	Lisa Schultheis	7780	STEM	schultheislisa@fhda.edu
	Shae St. Onge-Cole	7818	HSH	stonge-coleshaelyn@fhda.edu
✔*	Kyle Taylor	7126	STEM	taylorkyle@fhda.edu

Non-Voting Membership (4)

			ASFC Rep.	
✔*	Mary Vanatta	7439	Curr. Coordinator	vanattamary@fhda.edu
			Evaluations	
			SLO Coordinator	

Visitors

Chris Allen*, Paul Starer

** Indicates in-person attendance*

College Curriculum Committee
Meeting Minutes
Tuesday, January 21, 2025
2:00 p.m. – 3:30 p.m.
Administrative Conference Room 1901; virtual option via Zoom

Item	Discussion
1. Minutes: January 21, 2025	Motion to approve **M/S** (Taylor, Draper). **Approved.**
2. Report Out from CCC Members	**Speaker: All** Apprenticeship: Nate Vennarucci serving as in-person proxy; shared working on Foothill GE apps for an additional program. BSS: Connell mentioned BSS faculty meeting taking place right now; Kaupp will serve as in-person proxy after Connell has to leave. Counseling: Jackson Sandoval shared working on Courses not Taught in Four Years list. SRC: Kaupp serving as in-person proxy. No updates to report. FAC: Fong shared working on new noncredit courses. HSH: Draper noted new course proposal on today's agenda. LRC: No updates to report. STEM: Taylor shared C S dept. working on new curriculum; working on Courses not Taught in Four Years list. Hueg mentioned recent noncredit summit and noted follow up meeting will be scheduled to continue exploring ideas generated at summit. Gilstrap shared working on creating new Cal-GETC certificate of achievement. Vanatta noted deadline for curriculum sheets for next year's catalog will be April 18. Expects catalog system to be open for edits no later than March 10, which gives divisions about six weeks, similar to last year's timeline. Also shared COR form in CourseLeaf will be updated very soon to add new Foothill GE Area names, so they will display in next year's catalog. Kaupp mentioned some divisions have received emails from De Anza re: curriculum being developed. Generally, these are just info items. Similarly, when we create curriculum Kaupp shares it w/ De Anza, so faculty might be contacted by De Anza colleagues if they have questions. Kaupp happy to be included in those conversations. Brief discussion occurred re: process of sharing curriculum between the two colleges.
3. Public Comment on Items Not on Agenda	No comments.
4. Announcements a. New Course Proposal	**Speakers: CCC Team** The following proposal was presented: D H 306. Draper noted course will be added to BS degree program; also noted units for course still being discussed within division and might increase when full COR developed. Brief discussion occurred re: lower division vs. upper division coursework.

b. Notification of Proposed Requisites	New prerequisites for MUS 47A, 47B, 47C, 47D; THTR 47A, 47B, 47C, 47D.
5. Consent Calendar a. Division Curriculum Committees	**Speaker: Ben Kaupp** Document includes details about each division CC. Kaupp noted no changes since previous meeting (aside from correction made during previous meeting). Motion to approve **M/S** (Fong, Brannvall). **Approved.**
6. New Subject Code: EDAC	**Speaker: Ben Kaupp** SRC division creating new code of EDAC: Educational Access, which is already being used by De Anza. Will replace current SPED (Special Education) code. SPED 8 is the only active course within the subject code and will change to EDAC 8, effective for the 2025-26 catalog.
7. Certificate Deactivations: Transfer Studies: CSU GE, Transfer Studies: IGETC	**Speaker: Ben Kaupp** Second read of deactivations of two Certificates of Achievement: Transfer Studies: CSU GE, Transfer Studies: IGETC. These transfer GE patterns will no longer be viable eff. fall 2025, so we will no longer be able to offer these related certs. Gilstrap has begun process of creating a similar cert. for Cal-GETC. Motion to approve **M/S** (Brannvall, Draper). **Approved.**
8. New Subject Code: NCAL	**Speaker: Ben Kaupp** Second read of proposal to create new subject code of NCAL: Non-Credit: Adult Learning. Proposed by the Office of Instruction, rather than a specific division, to be used by all divisions for noncredit courses for older adults. Hueg explained "older adults" is one of the state's noncredit categories and noted the state doesn't define any age range for such students. These are primarily enrichment courses. Connell shared feedback from BSS faculty: why is subject code being created?; why can't depts. use their own subject codes?; how will faculty load and/or stacking be affected?; how will courses appear in the catalog if they're within this single subject code, rather than dept.-specific subject codes? BSS faculty discussing topic at meeting taking place right now. Brannvall responded to question of why single code might be created, noting it will allow Foothill to better market these courses as a cross-discipline program for older adults. Hopefully courses can be coded so they'll display under single code as well as under the dept.'s normal code. Latteri asked if "adult learners" just refers to non-traditional adult students. Hueg mentioned some colleges offer large number of these types of courses within a separate noncredit division; Foothill had a noncredit division many years ago, but that is not the current plan. Noted these courses are not workforce/CTE and will not carry same load as credit courses or enhanced noncredit. Clarified that new THTR noncredit courses are workforce/CTE and funded at enhanced noncredit rate. Kaupp sees these courses as "learning for the sake of learning" and without the intent to receive a cert. or degree. Cembellin asked if these courses are open access—Hueg responded, yes, and it's a local decision if we want to set parameters on what we define as an older adult. Brief discussion occurred re: high school students being allowed to take these courses. Hueg explained the idea is to start with approx. 10 courses in specific topics which have community appeal. Kaupp asked where FTES will go if single subject code used—Hueg responded, details such as this haven't been figured out yet, and acknowledged this is a valid question. Brief discussion occurred re: funding and pay rate for noncredit. Hueg noted older adult noncredit

	can't really be mirrored w/ credit courses like workforce/CTE noncredit can. Connell shared BSS faculty believe students find it more valuable to take courses within discipline subject code, and faculty are concerned that this is a major decision being made too quickly. Suggested CCC table item until next CCC meeting, so that more discussion can take place at the division level. Kaupp suggested holding listening sessions so Hueg and Kaupp can meet with faculty to address questions and concerns. Brannvall mentioned discussion of projected demographics in Foothill's service area at noncredit summit. Connell clarified BSS faculty in favor of offering these courses, in general, but the concern is around using the single NCAL code. Allen mentioned helpful slides presented during noncredit summit and suggested they be widely shared. Kaupp will schedule listening sessions and announce in the CCC communiqué. Third read and possible action will occur at future meeting.
9. GE Application: Area 2: MATH 47	**Speaker: Ben Kaupp** Second read of GE application for new Area 2, Mathematical Concepts & Quantitative Reasoning. Because new apps have not yet been created, previous Area V app being used. Gilstrap noted course approved for UC transferability and we are awaiting Cal-GETC approval. *See item 12 for motion/approval details.*
10. GE Application: Area 3: CRWR 9	**Speaker: Ben Kaupp** Second read of GE application for new Area 3, Arts & Humanities. Because new apps have not yet been created, previous Area I app being used. Gilstrap noted course approved for UC transferability and we are awaiting Cal-GETC approval. *See item 12 for motion/approval details.*
11. GE Applications: Area 3: HUMN 15, PHIL 15	**Speaker: Ben Kaupp** Second read of GE applications for new Area 3, Arts & Humanities. Because new apps have not yet been created, previous Area I app being used. Gilstrap noted courses approved for UC transferability and we are awaiting Cal-GETC approval. *See item 12 for motion/approval details.*
12. GE Applications: Area 7: ATHL 34, 34A, 34C, 34F	**Speaker: Ben Kaupp** Second read of GE applications for new Area 7, Lifelong Learning. Because new apps have not yet been created, previous Area VII app being used. Gilstrap noted courses approved for UC transferability; did not submit for Cal-GETC approval, as there is no Cal-GETC area similar to Lifelong Learning. Brief discussion occurred re: using separate course numbers for men's teams and women's teams. Motion to approve items 9-12 **M/S** (Gilstrap, Brannvall). **Approved.**
13. New Certificate Proposal: Artificial Intelligence Empowered Instruction	**Speaker: Ben Kaupp** Proposal for new Artificial Intelligence Empowered Instruction Certificate of Achievement. This cert. would be offered by LINC program (BSS division), and differs from artificial intelligence (AI)-related certs./degrees proposed by STEM division at previous meeting. Brannvall noted general AI-related concerns: racial bias in AI, and pressure from administration to have all disciplines engage w/ AI.

	Cembellin mentioned panel held on racial bias in AI, last year. Fong agreed there is a push for faculty to engage w/ AI. Kaupp agreed there is pressure to engage with how AI will interact with the college, and there are valid concerns, but also believes some concerns have sides which have not yet been fully explored. Noted his students who are neurodivergent have found value in using AI in various ways, such as helping them communicate with their instructors. Brannvall advocated for transparency around AI and wonders if there's a funding influence, given our proximity to tech companies. Hueg responded there is not any funding influence. Kaupp believes curriculum being developed by faculty who are genuinely enthusiastic about the topic. Cembellin noted curriculum development has a lot to do with the labor market, and the desire to provide students with opportunities to stay up to speed with their skills, since AI is already widely used. Believes important to teach students how to ethically use AI. Brannvall stressed belief that AI is not appropriate in every discipline; concerned there is a push from college admin. for faculty in all disciplines to adopt it. Kaupp mentioned related discussions at Academic Senate re: concerns about AI. Reed noted his AI-related curriculum is being created for the reasons outlined earlier by Cembellin. Motion to approve **M/S** (Brannvall, Fong). **Approved.**
14. Cross-List Application: HUMN 15 & PHIL 15	**Speaker: Ben Kaupp** Cross-Listed Course Approval Request for HUMN 15 & PHIL 15—both new courses. Motion to approve **M/S** (Gilstrap, Draper). **Approved.**
15. Stand Alone Application: ALTW 218B	**Speaker: Ben Kaupp** First read of Stand Alone Approval Request for ALTW 218B. Will be permanently Stand Alone. Second read and possible action will occur at next meeting.
16. Stand Alone Applications: APRT 140A, 140B, 141A, 141B	**Speaker: Ben Kaupp** First read of Stand Alone Approval Requests for APRT 140A, 140B, 141A & 141B. All four will be temporarily Stand Alone and included in a new certificate. Vennarucci noted the new cert. will be a two-year program, used as a stepping stone to related five-year program. Vanatta noted courses are reactivations and were previously included in a non-transcriptable cert. Second read and possible action will occur at next meeting.
17. GE Application: Area 1B: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program	**Speaker: Ben Kaupp** First read of GE application, which would approve Foothill GE Area 1B for students who complete the full major requirements for Test, Adjust and Balancing (TAB) Technician, not one individual course. Because new apps have not yet been created, previous Area V app being used. Allen noted that the Apprenticeship programs with previous Foothill GE approval for Area V were granted approval for both new Area 1B and new Area 2 by CCC in December. Division is requesting this app be considered for approval for both Area 1B & Area 2. No members objected to this request; Vanatta will update app for second read. Taylor asked for more info about this apprenticeship program, and Vennarucci provided details, noting a lot of the TAB team's work results in official documentation for buildings; students receive 13 certifications once they've finished the program. Second read and possible action will occur at next meeting.

18. GE Application: Area 4: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program	**Speaker: Ben Kaupp** First read of GE application, which would approve Foothill GE Area 4 for students who complete the full major requirements for Test, Adjust and Balancing (TAB) Technician, not one individual course. Because new apps have not yet been created, previous Area IV app being used. Second read and possible action will occur at next meeting.
19. GE Application: Area 5: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program	**Speaker: Ben Kaupp** First read of GE application, which would approve Foothill GE Area 5 for students who complete the full major requirements for Test, Adjust and Balancing (TAB) Technician, not one individual course. Because new apps have not yet been created, previous Area III app being used. Second read and possible action will occur at next meeting.
20. GE Application: Area 7: Test, Adjust and Balancing (TAB) Technician Apprenticeship Program	**Speaker: Ben Kaupp** First read of GE application, which would approve Foothill GE Area 7 for students who complete the full major requirements for Test, Adjust and Balancing (TAB) Technician, not one individual course. Because new apps have not yet been created, previous Area VII app being used. Second read and possible action will occur at next meeting.
21. Courses not Taught in Four Years	**Speaker: Mary Vanatta** Vanatta distributed list to reps and deans with instructions/deadline on Jan. 28; deadline for Course Deactivation Exemption Request forms is March 7. Bissell asked about grey/italicized courses—Vanatta responded, these are Independent Study courses, which CCC decided a few years ago are exempt from process (but still included for visibility). Bissell asked if division needs to take any action if they're okay with course on the list being deactivated—Vanatta responded, no action needed; some divisions like to document in division CC minutes but that's not required. Will make sure to confirm w/ division that they didn't miss any course(s) on the list, if needed. Starer noted deactivation doesn't mean deletion, and a course can always be reactivated. Vanatta agreed but noted that reactivating a course involves a lot more effort and work/time for multiple people than filling out the form. Kaupp asked the group to be thoughtful when reviewing the list; if a course truly isn't being taught, please consider whether it still needs to remain active.
22. Updating Foothill GE—Criteria	**Speaker: Ben Kaupp** First read of application form for each area of new Foothill GE (eight total). Kaupp previously asked for feedback on drafts shared at previous meeting; forms have been updated to include that feedback. Gilstrap commented on Breadth Criteria paragraph four (which mentions proficiency in math and English); noted Title 5 no longer requires such minimum proficiencies and suggested we remove these references. Kaupp noted this paragraph was updated since previous meeting, based on feedback from Starer. Gilstrap provided further explanation of why Foothill previously enforced minimum proficiencies; we no longer need separate minimum proficiencies because new Foothill GE pattern incorporates them, in response to new Title 5 regulations. Gilstrap also commented on Breadth Criteria paragraph five, specifically the use of the word "proficiency" and whether that's related to those minimum proficiencies. If not, what do we mean by "proficiency"? Taylor asked how Course Sequence Addendum page relates to lab requirement of Area 5. Vanatta clarified addendum will be used for full degree programs applying for GE approval (e.g., Apprenticeship) and

	suggested language be updated to reduce confusion. Kaupp noted his original idea was for addendum to also be used for other types of course sequences, which explains that wording. Kaupp mentioned suggestions from participants on Zoom: remove Breadth Criteria paragraph four; change "proficiency" to a different word (e.g., "competence") since "proficiency" may have specific definition in Title 5; change "Course Sequence Addendum" to "Degree Program Addendum" and update language throughout that page to reflect this. Starer noted these documents are both public facing and internal facing, so even though we no longer require minimum proficiencies we want to ensure students understand they are all equally prepared to succeed in GE courses. Starer also mentioned he'd provided significant suggestions for changes to Course Sequence Addendum, which haven't been applied—Kaupp apologized, noting he'd overlooked those. Vanatta unsure if these forms should be considered public-facing, as they will be added to the COR form in CourseLeaf and not necessarily anywhere students (or those without CourseLeaf access) can easily access. Before adopting CourseLeaf, GE app forms were available on CCC website, because they were not imbedded within the COR form in our previous system; once we adopted CourseLeaf, they were removed. Kaupp believes that even though these are meant to be internal forms, we should assume students might see them. Agyare mentioned Breadth Mapping question re: Information and Digital Literacy, noting definition is based on sunsetted standards from Association of College and Research Libraries. New framework defines info. literacy as more theoretical and based on "threshold concepts." Noted we don't have to change definition but wants to discuss w/ librarians and bring recommendation to discuss at next CCC meeting. Gilstrap thanked Agyare and believes this is important to consider. Taylor mentioned laboratory experience definition on Area 5 form and recommended change; will email language to Kaupp. Second read and possible action will occur at next meeting. Kaupp emphasized that we have an opportunity to re-write these well and do not want to rush the work, so additional reads are likely.
23. Good of the Order	
24. Adjournment	**3:33 PM**

Attendees: Micaela Agyare* (LRC), Chris Allen* (Dean, APPR), Jeff Bissell (KA), Cynthia Brannvall* (FAC), Zach Cembellin* (Dean, STEM), Sam Connell* (BSS), Cathy Draper* (HSH), Kelly Edwards (KA), Jordan Fong* (FAC), Patricia Gibbs Stayte (BSS), Evan Gilstrap* (Articulation Officer), Ron Herman (Dean, FAC), Kurt Hueg* (Administrator Co-Chair), Maritza Jackson Sandoval (CNSL), Ben Kaupp* (Faculty Co-Chair), Natalie Latteri (BSS), Andy Lee (CNSL), Ethan Liang*, Eric Reed (LRC), Paul Starer (APPR), Kyle Taylor* (STEM), Mary Vanatta* (Curriculum Coordinator), Nate Vennarucci* (APPR)
** Indicates in-person attendance*

Minutes Recorded by: M. Vanatta

Foothill College Curriculum Committee Consent Calendar

2/18/25

Division Curriculum Committees

Apprenticeship (APPR) Division Curriculum Committee

- **Chair(s)**: Chris Allen, Brian Murphy, Tim Myres
- **Voting Members**: Tim Myres, Brian Murphy (all apprenticeship ACC members are encouraged to attend)
- **Quorum Requirements**: 2
- **Meeting Schedule**:
    - **Location**: Local 104 Training Center, Fairfield, CA 94534; San Jose Pipes Training Center, San Jose, 95112, Foothill College Sunnyvale Center, Sunnyvale, CA 94089 or via Zoom.
    - **Time and Date**: TBD, 10AM via Zoom
    - **Frequency**: Monthly
- **Agenda Posting**: Posted on the windows facing the entrance doors at the Local 104 Training Center in Fairfield, Pipe Trades Training Center in San Jose and Foothill College Sunnyvale Center.

Business & Social Sciences (BSS) Division Curriculum Committee

- **Chair(s)**: Sam Connell (tenured faculty), Angie Dupree (projected tenure Spring 2026)
- **Voting Members**: Sam Connel, Angie Dupree (all BSS faculty are encouraged to tender advisory votes)
- **Quorum Requirements**: 2 voting members
- **Meeting Schedule**:
    - **Location**: Room 3202
    - **Time and Date**: Mondays at 3:30 pm (and Tuesdays at 3:30 pm when Monday is a holiday)
    - **Frequency**: Monthly in Fall/Winter quarters, Bi-weekly in Spring
- **Agenda Posting**: Posted on the window of the division office (building 3000)

Counseling (CNSL) Division Curriculum Committee

- **Chair(s)**: Maritza Jackson Sandoval, Andrew Lee
- **Voting Members**: Maritza Jackson Sandoval, Andrew Lee, Jue Thao
- **Quorum Requirements**: 2 voting members
- **Meeting Schedule**:
    - **Location**: Room 8311
    - **Time and Date**: 2pm, next meeting 1/28
    - **Frequency**: Monthly
- **Agenda Posting**: Posted on the public bulletin board outside the 8300 Building

Disability Resource Center & Veterans Resource Center (SRC) Division Curriculum Committee

- **Chair(s)**: Richard Saroyan
- **Voting Members**: Richard Saroyan, Ben Kaupp
- **Quorum Requirements**: 2
- **Meeting Schedule**:
    - **Location**: TTW Classroom, 5419

    - **Time and Date**: Mondays, 12PM - Next meeting February 10, 2025
    - **Frequency**: Quarterly
- **Agenda Posting**: DRC Office Window (5400 building)

Fine Arts & Communication (FAC) Division Curriculum Committee

- **Chair(s)**: Jordan Fong, Cynthia Brannvall
- **Voting Members**: Jordan Fong, Cynthia Brannvall (all FAC faculty are encouraged to tender advisory votes)
- **Quorum Requirements**: 2 voting members
- **Meeting Schedule**:
    - **Location**: Room 1801, or via Zoom
    - **Time and Date**: 2pm-3pm, every other Tuesday
    - **Frequency**: Biweekly
- **Agenda Posting**: Posted on the front window of the FAC Division office, Rm 1701

Health Sciences & Horticulture (HSH) Division Curriculum Committee

- **Chair(s):** Rachelle Campbell, Cathy Draper, Shaelyn St. Onge-Cole
- **Voting Members:** All HSH faculty members have voting privileges
- **Quorum Requirements:** 6 voting members
- **Meeting Schedule:**
    - **Location:** HSH Division Conference Room (5212)
    - **Time and Date:** Friday, January 24, 12:00pm – 1:00pm
    - **Frequency:** Monthly
- **Agenda Posting:** Agendas are posted on the HSH Division Office window, 5200 building

Kinesiology & Athletics (KA/ATHL) Division Curriculum Committee

- **Chair(s)**: Jeffrey Bissell (FT Tenure Faculty)
- **Voting Members**: Jeffrey Bissell (FT), Kelly Edwards (FT), & Rita O'Loughlin (FT)
- **Quorum Requirements**: 2
- **Meeting Schedule**:
    - **Location**: Foothill Fitness Center, Rm 2509
    - **Time and Date:** 12:30pm, 3rd Thursdays
    - **Frequency**: Monthly
- **Agenda Posting**: Agenda posted 1 week before meeting in the window of KA/ATHL main office, Rm 2711

Language Arts (LA) Division Curriculum Committee

- **Chair(s)**: Amy Sarver; projected tenure through the 2024-25 AY.
- **Voting Members**: Rachael Dworsky, Ulysses Acevedo, Patricia Crespo-Martin, Julio Rivera-Montanez, Amy Sarver
- **Quorum Requirements**: 2 voting members
- **Meeting Schedule**:
    - **Location**: TBD

    - **Time and Date**: 11:00a.m. 8th week of every quarter (2/28; 5/30)
    - **Frequency**: Quarterly
- **Agenda Posting**: Posted on the bulletin boards near the 6000s bathrooms

Learning Resource Center (LRC) Division Curriculum Committee

- **Chair(s)**: Micaela Agyare (Library, 2024-25) and Eric Reed (Tutoring, Fall 24, Winter 25)
- **Voting Members**: Micaela Agyare, Eric Reed
- **Quorum Requirements**: 2
- **Meeting Schedule**:
    - **Location**: Library Conference Room 3533
    - **Time and Date**: next meeting 2/20/25 11am-12pm
    - **Frequency**: Quarterly
- **Agenda Posting**: Posted on the window of the Library Conference Room, 3533

Science, Technology, Engineering & Math (STEM) Division Curriculum Committee

- **Chair(s)**: n/a
- **Voting Members**: Kyle Taylor, Lisa Schultheis
- **Quorum Requirements**: Simple majority of the voting members
- **Meeting Schedule**:
    - **Location:** PSEC 4402
    - **Time and Date:** Tuesdays 2:00 - 3:30 PM
    - **Frequency:** Every other week (when CCC is not meeting)
- **Agenda Posting**: Outside the STEM Division Office

New Subject Code Proposal

NCAL: Non-Credit: Adult Learning

The Office of Instruction is proposing the creation of a new subject code, Non-Credit: Adult Learning (NCAL), to be used by all divisions for their noncredit course offerings in the category of Courses for Older Adults. Within this single subject code, courses will be grouped in numbers based on their division and/or subject area (e.g., 400-419 for Fine Arts and Communication, 420-439 for Language Arts, etc.).

ALTW F218B : INTERMEDIATE CURRENT EVENTS FOR STUDENTS WITH LEARNING DIFFERENCES

Proposal Type
New Course

Effective Term
Summer 2025

Subject
Adaptive Learning: Transition to Work (ALTW)

Course Number
F218B

Department
Adaptive Learning (A L)

Division
Student Resource and Support Programs (1SR)

Units
2

Former ID

Cross Listed

Related Courses

Maximum Units
2

Does this course meet on a weekly basis?
Yes

Weekly Lecture Hours
2

Weekly Lab Hours
0

Weekly Out of Class Hours
4

Special Hourly Notation

Total Contact Hours
24

Total Student Learning Hours
72

Repeatability Statement
Not Repeatable

Credit Status
Credit

Degree Status
Non-Applicable

Is Basic Skills applicable to this course?
Yes

Basic Skills Level
Does Not Apply

Grading
Letter Grade (Request for Pass/No Pass)

Will credit by exam be allowed for this course?
No

Honors
No

Degree or Certificate Requirement
None of the above (Stand Alone course)

Stand Alone

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Are you requesting Stand Alone approval for the course on a temporary or permanent basis?
• Temporary means the course will be incorporated into a new degree or certificate that is not yet State approved.
• Permanent means there are no plans to add the course to a State approved degree or certificate, nor to the Foothill GE pattern.

Please select
Permanent

The Curriculum Committee must evaluate this application based on the following criteria:

Criteria A. Appropriateness to Mission

The Foothill College Mission states: Believing a well-educated population is essential to sustaining and enhancing a democratic society, Foothill College offers programs and services that empower students to achieve their goals as members of the workforce, as future students, and as global citizens. We work to obtain equity in achievement of student outcomes for all California student populations, and are guided by our core values of honesty, integrity, trust, openness, transparency, forgiveness, and sustainability. Foothill College offers associate degrees and certificates in multiple disciplines, and a baccalaureate degree in dental hygiene.

Please indicate how your course supports the Foothill College Mission:
Basic Skills

Criteria B. Need

A course may only be granted Stand Alone Approval if there is demonstrable need for the course in the college service area. Please provide evidence of the need or demand for your course, such as ASSIST documentation for transfer courses or Labor Market Information for workforce/CTE courses (if LMI is unavailable, advisory board minutes or employer surveys may be submitted). For basic skills courses, assessment-related data or information may be provided. Evidence may be provided in the box below and/or uploaded as an attachment.

Evidence

The Tools for Transition & Work (TTW) program at Foothill College plays a pivotal role in aligning with the College's mission to offer basic skills and workforce education to the community. By focusing on assisting disabled young adults in developing independence, this program directly contributes to empowering students with the essential skills needed to navigate both academic and professional environments. The TTW program's dedication to preparing students for mainstream coursework or initiating a career path exemplifies the college's commitment to inclusivity and support for all learners. This ensures that every member of the community has the opportunity to achieve their educational and vocational goals, thereby enriching the community's workforce with diverse talents and perspectives.

Attach evidence

Need/Justification
The Tools for Transition and Work (TTW) program is a vocational program for students with disabilities who are not yet ready for regular college classes. The Current Events series exists to build a well-rounded student.

Course Description
Building on foundational knowledge from the introductory course on media literacy and presentation skills in current events, this intermediate continuation course dives deeper into the art of persuasive communication and debate. Students will learn to analyze news sources, identify biases, and understand the influence of media on public perception. Emphasis is placed on developing skills to discern credible information, foster critical thinking, and navigate the complexities of the media landscape. The course aims to enhance students' confidence in interacting with media and each other. Students will focus on enhancing their presentation skills with an emphasis on constructing compelling arguments and engaging in informed, respectful disagreement.

Course Prerequisites

Course Corequisites

Course Advisories

Course Objectives
The student will be able to:

1. Practice critical analysis
2. Understand media influence
3. Communicate effectively
4. Consume media ethically
5. Practice persuasive communication
6. Respectfully debate and disagree

Course Content

1. Introduction to media literacy and critical analysis
    1. Overview of course objectives and expectations
    2. Introduction to key concepts: credibility, bias, reliability
    3. Techniques for evaluating media sources
    4. Initial exercises in identifying credible sources
2. Understanding media influence
    1. Examination of media's role in shaping public opinion and societal norms
    2. Discussion on historical and contemporary examples
    3. Case studies on media credibility and bias
    4. Group discussions and analysis of selected news articles
3. Ethical media consumption
    1. Exploration of ethical considerations in media consumption
    2. Case studies on misinformation and its impact
    3. Student-led discussions on ethical dilemmas in media
4. Effective, persuasive, and respectful dialogue
    1. Student-led presentations and discussion

Lab Content
Not applicable.

Special Facilities and/or Equipment
1. An accessible classroom with projector and internet access.
2. When taught online/virtual: students and faculty need internet access with Zoom-capable computer, monitor, and speakers.

Methods of Evaluation

Methods of Evaluation may include but are not limited to the following:
Class participation
Oral presentations
Homework assignments
Group projects

Methods of Instruction

Methods of Instruction may include but are not limited to the following:
Lecture
Discussion
Oral presentations
Use of the internet
Group projects

Representative Text(s)

Please provide justification for any texts that are older than 5 years

Other Materials
No materials are required for this course.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Students read news media articles and provide report in an oral presentation to the class
2. Students read news media articles and perform written analysis of content and bias/truthfulness

Authorized Discipline(s):
Developmental Disabilities: Disabled Students Programs and Services

Faculty Service Area (FSA Code)
DEVELOPMENTAL DISABILITIES

Taxonomy of Program Code (TOP Code)
4930.31 - Living Skills, Disabled

Foothill faculty, through our Academic Senate and Curriculum Committee, ask you to consider the Guiding Principles for Equitable CORs document (available at https://foothill.edu/curriculum/process.html) while creating or revising this COR.

Please describe how you have incorporated principles of equity during this revision:
6/26/24 - This course incorporates personalized learning plans, flexible assessment methods, and accessible materials. The curricular focus on empowerment through choice is intended to help vulnerable students foster autonomy and self-efficacy, while the focus on individuation and ongoing RSI ensures no student goes unheard.

Articulation Office Only

C-ID Notation

IGETC Notation

CSU GE Notation

Transferability
None

Validation Date
7/3/2024

Division Dean Only

Seat Count
30

Load
.044

FOAP Codes:

Fund Code
122010 - DSP&S Special Ed FH

Org Code
131091 - FH Adapt Learning: Trnstn to Work

Account Code
1320

Program Code
493031 - Living Skills, Disabled

APRT F140A : ELECTRICAL BASICS FOR RESIDENTIAL HVAC SERVICE I

Proposal Type
Course Revision

Effective Term
Summer 2025

Subject
Apprenticeship: Pipe Trades, Sheet Metal, Field Ironworkers, Elevators (APRT)

Course Number
F140A

Department
Apprenticeship (A P)

Division
Apprenticeship (1ED)

Units
3

Former ID

Cross Listed

Related Courses

Maximum Units
3

Does this course meet on a weekly basis?
No

Total Lecture Hours per quarter
30

Total Lab Hours per quarter
24

Total Out of Class Hours per quarter
60

Special Hourly Notation

Total Contact Hours
54

Total Student Learning Hours
114

Repeatability Statement
Not Repeatable

Credit Status
Credit

Degree Status
Applicable

Is Basic Skills applicable to this course?
No

Grading
Letter Grade (Request for Pass/No Pass)

Will credit by exam be allowed for this course?
No

Honors
No

Degree or Certificate Requirement
None of the above (Stand Alone course)

Stand Alone

If a Foothill credit course is not part of a state-approved associate's degree, certificate of achievement, or the Foothill GE pattern, it is considered by the state to be a "Stand Alone Course." Per Title 5, local curriculum committees must review and approve proposed Stand Alone courses to ensure that they are consistent with credit course standards (§55002), the community college mission, and that there is sufficient need and resources for the course. To be compliant with state regulations, there must be a completed, approved Stand Alone form on file in the Office of Instruction. Per our local process, the same process of review and approval is used for noncredit Stand Alone courses.

Are you requesting Stand Alone approval for the course on a temporary or permanent basis?

• Temporary means the course will be incorporated into a new degree or certificate that is not yet State approved.
• Permanent means there are no plans to add the course to a State approved degree or certificate, nor to the Foothill GE pattern.

Please select
Temporary

In this case, identify the degree/certificate to which the course will be added:
Service Technician Apprenticeship

What is the specific timeline for program application/approval? (e.g., is your program application locally approved, or is it still in development and if so, what is your anticipated submission date?)
In development

The Curriculum Committee must evaluate this application based on the following criteria:

Criteria A. Appropriateness to Mission

The Foothill College Mission states: Believing a well-educated population is essential to sustaining and enhancing a democratic society, Foothill College offers programs and services that empower students to achieve their goals as members of the workforce, as future students, and as global citizens. We work to obtain equity in achievement of student outcomes for all California student populations, and are guided by our core values of honesty, integrity, trust, openness, transparency, forgiveness, and sustainability. Foothill College offers associate degrees and certificates in multiple disciplines, and a baccalaureate degree in dental hygiene.

Please indicate how your course supports the Foothill College Mission:
Workforce/CTE

Criteria B. Need

A course may only be granted Stand Alone Approval if there is demonstrable need for the course in the college service area. Please provide evidence of the need or demand for your course, such as ASSIST documentation for transfer courses or Labor Market Information for workforce/CTE courses (if LMI is unavailable, advisory board minutes or employer surveys may be submitted). For basic skills courses, assessment-related data or information may be provided. Evidence may be provided in the box below and/or uploaded as an attachment.

Evidence

This course will be a part of a certificate for the service program at Local 104 Training Center.

Attach evidence

Need/Justification
Continuous need exists to advance the skills of the Sheet Metal apprentice and journeyperson through classroom instruction and on-the-job training. These skills are learned and applied on the job in the areas to include: Building Trades Sheet Metal construction, Heating, Ventilation & Air-Conditioning (HVAC) system maintenance, and Energy Management for green construction. These 2, 3 and 5-year programs enable students to master the skills needed to be successful in their industry.

Course Description
Development of basic skills necessary for service technicians to service heating and air conditioning equipment with special emphasis on the basics of electricity and air filtration.

Course Prerequisites
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Residential Service Apprenticeship Program.

Course Corequisites

Course Advisories

Course Objectives
The student will be able to:

1. Describe alternating and direct electrical current.
2. Take voltage, amperage, and ohm readings on simplified electrical circuits.
3. Identify heat-cool, heat only, and cool only thermostats.
4. Identify basic residential gas furnace components and their functions.
5. Demonstrate practical skills in sheet metal and air conditioning service work.
6. Explain replacement and cleaning decisions for common residential air filters.

Course Content

1. Describe alternating and direct electrical current
    1. Definition of electricity and its relationship to the atom
    2. Definitions of A.C. and D.C. current
2. Take voltage, amperage, and ohm readings on simplified electrical circuits
    1. Explanation of voltage, amperage, and ohms
    2. Working safely with electricity
    3. Select and set up a multi-meter to take desired measurements
3. Identify heat-cool, heat only, and cool only thermostats
    1. Identify common thermostats and their functions
4. Identify basic residential gas furnace components and their functions
    1. Identify basic furnace components, functions, and relationship to other components
    2. Explain flow of electricity, combustion air, gas, exhaust, and conditioned air through basic furnace system components
5. Demonstrate practical skills in sheet metal and air conditioning service work
    1. Disconnect and/or lockout, tagout electrical source
    2. Safely open access to circuits as needed
    3. Visual check for electrical hazards, evidence of circuit overloads, disconnections, shorts, or other problems
    4. Practice safe techniques and troubleshooting sequence in using meters and other devices to verify circuit conditions
6. Explain replacement and cleaning decisions for common residential air filters

1. Air filtration fundamentals
2. Document and report to supervisor or customer

Lab Content

1. Identify components of heating and air conditioning equipment
2. Practice safety techniques with electrical systems
3. Perform electrical measurements for servicing

Special Facilities and/or Equipment
Laboratory equipped with air conditioning equipment.

Methods of Evaluation

Methods of Evaluation may include but are not limited to the following:
Results of written quizzes and tests
Satisfactory completion of shop projects
Comprehensive written final examination
Maintenance of a workbook of student's daily work activities

Methods of Instruction

Methods of Instruction may include but are not limited to the following:
Lecture
Discussion
Laboratory
Demonstration

Representative Text(s)

Author(s)	Title	Publication Date
International Training Institute for the Sheet Metal and Air Conditioning Industry	Residential HVAC Service Technician	2007

Please provide justification for any texts that are older than 5 years
This is the standard Sheet Metal textbook/workbook used for this course. Although it is older than 5 years, it is the most current book used when teaching this course.

Other Materials

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Readings from textbook
    1. Ohms and Power Law
2. Writing assignments given in the laboratory
    1. Complete the review item questions referring to electrical meters

Authorized Discipline(s):
Air Conditioning, Refrigeration, Heating

Faculty Service Area (FSA Code)
INDUSTRIAL TECH

Taxonomy of Program Code (TOP Code)
*0956.40 - Sheet Metal and Structural Metal

Foothill faculty, through our Academic Senate and Curriculum Committee, ask you to consider the Guiding Principles for Equitable CORs document (available at https://foothill.edu/curriculum/process.html) while creating or revising this COR.

Please describe how you have incorporated principles of equity during this revision:
April 2024: Harassment awareness training along with Bias & Belonging training has been included in the course.

Articulation Office Only

C-ID Notation

IGETC Notation

CSU GE Notation

Transferability
None

Validation Date
3-26-2010

Division Dean Only

Seat Count
99

Load
.081

FOAP Codes:

Fund Code
115000 - Apprenticeship-Foothill

Org Code
142215 - Apprentice-Bay Area Sheetmetal

Account Code
1320

Program Code
095640 - Sheet Metal, Structural Metal

APRT F140B : REFRIGERATION BASICS FOR RESIDENTIAL HVAC SERVICE

Proposal Type
Course Revision

Effective Term
Summer 2025

Subject
Apprenticeship: Pipe Trades, Sheet Metal, Field Ironworkers, Elevators (APRT)

Course Number
F140B

Department
Apprenticeship (A P)

Division
Apprenticeship (1ED)

Units
3

Former ID

Cross Listed

Related Courses

Maximum Units
3

Does this course meet on a weekly basis?
No

Total Lecture Hours per quarter
30

Total Lab Hours per quarter
24

Total Out of Class Hours per quarter
60

Special Hourly Notation

Total Contact Hours
54

Total Student Learning Hours
114

Repeatability Statement
Not Repeatable

Credit Status
Credit

Degree Status
Applicable

Is Basic Skills applicable to this course?
No

Grading
Letter Grade (Request for Pass/No Pass)

Will credit by exam be allowed for this course?
No

Honors
No

Degree or Certificate Requirement
None of the above (Stand Alone course)

Stand Alone

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• Permanent means there are no plans to add the course to a State approved degree or certificate, nor to the Foothill GE pattern.

Please select
Temporary

In this case, identify the degree/certificate to which the course will be added:
Service Technician Apprenticeship

What is the specific timeline for program application/approval? (e.g., is your program application locally approved, or is it still in development and if so, what is your anticipated submission date?)
In development

The Curriculum Committee must evaluate this application based on the following criteria:

Criteria A. Appropriateness to Mission

The Foothill College Mission states: Believing a well-educated population is essential to sustaining and enhancing a democratic society, Foothill College offers programs and services that empower students to achieve their goals as members of the workforce, as future students, and as global citizens. We work to obtain equity in achievement of student outcomes for all California student populations, and are guided by our core values of honesty, integrity, trust, openness, transparency, forgiveness, and sustainability. Foothill College offers associate degrees and certificates in multiple disciplines, and a baccalaureate degree in dental hygiene.

Please indicate how your course supports the Foothill College Mission:
Workforce/CTE

Criteria B. Need

A course may only be granted Stand Alone Approval if there is demonstrable need for the course in the college service area. Please provide evidence of the need or demand for your course, such as ASSIST documentation for transfer courses or Labor Market Information for workforce/CTE courses (if LMI is unavailable, advisory board minutes or employer surveys may be submitted). For basic skills courses, assessment-related data or information may be provided. Evidence may be provided in the box below and/or uploaded as an attachment.

Evidence

This course will be a part of a certificate for the service program at Local 104 Training Center.

Attach evidence

Need/Justification
Continuous need exists to advance the skills of the Sheet Metal apprentice and journeyperson through classroom instruction and on-the-job training. These skills are learned and applied on the job in the areas to include: Building Trades Sheet Metal construction, Heating, Ventilation & Air-Conditioning (HVAC) system maintenance, and Energy Management for green construction. These 2, 3 and 5-year programs enable students to master the skills needed to be successful in their industry.

Course Description
Development of the basics of refrigeration principles and residential systems for service technicians to service heating and air conditioning equipment.

Course Prerequisites
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Residential Service Apprenticeship Program.

Course Corequisites

Course Advisories

Course Objectives
The student will be able to:

1. Apply practical skills handling refrigerants in HVAC service work, with appropriate safety precautions.
2. Explain the basic refrigeration cycle.
3. Identify and explain functions of basic refrigeration cycle components.
4. Describe and use refrigerant gauges and high vacuum evacuation equipment.
5. Assemble and braze refrigeration piping.

Course Content

1. Apply practical skills handling refrigerants in HVAC service work, with appropriate safety precautions
    1. List techniques to keep refrigerant contained in transport, evacuation, and charge operations
    2. Perform checks for ventilation, clean work area, and typical hazards on job sites
2. Explain the basic refrigeration cycle
    1. The British Thermal Unit, BTU
    2. Sensible and latent heat
    3. The refrigeration cycle
3. Identify and explain functions of basic refrigeration cycle components
    1. Components
    2. Airflow in residential systems
4. Describe and use refrigerant gauges and high vacuum evacuation equipment
    1. Use of refrigerant gauges
    2. Evacuation procedures and techniques
    3. Importance of removing moisture from refrigerant systems
    4. Evaluation of vacuum service equipment
5. Assemble and braze refrigeration piping
    1. Safe uses of oxy-acetylene brazing equipment
    2. Charging a refrigeration system

Lab Content

1. Practice safety techniques for measuring and handling HVAC refrigerants
2. Practice safety techniques for use of oxy-acetylene brazing equipment
3. Assemble refrigerant piping

Special Facilities and/or Equipment
Laboratory equipped with air conditioning equipment.

Methods of Evaluation

Methods of Evaluation may include but are not limited to the following:
Results of written quizzes and tests
Satisfactory completion of shop projects
Comprehensive written final examination
Maintenance of a workbook of student's daily work activities

Methods of Instruction

Methods of Instruction may include but are not limited to the following:
Lecture
Discussion
Laboratory
Demonstration

Representative Text(s)

Author(s)	Title	Publication Date
International Training Institute for the Sheet Metal and Air Conditioning Industry	Residential HVAC Service Technician	2007

Please provide justification for any texts that are older than 5 years
This is the standard Sheet Metal textbook/workbook used for this course. Although it is older than 5 years, it is the most current book used when teaching this course.

Other Materials

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Readings from textbook on instruments and gauges
2. Writing assignments given in the laboratory
    1. Make a schematic drawing of a basic refrigeration system with components
    2. Describe the refrigerant properties at each point in the system

Authorized Discipline(s):
Air Conditioning, Refrigeration, Heating

Faculty Service Area (FSA Code)
INDUSTRIAL TECH

Taxonomy of Program Code (TOP Code)
*0956.40 - Sheet Metal and Structural Metal

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Please describe how you have incorporated principles of equity during this revision:
April 2024: Harassment awareness training along with Bias & Belonging training has been included in the course.

Articulation Office Only

C-ID Notation

IGETC Notation

CSU GE Notation

Transferability
None

Validation Date
3-26-2010

Division Dean Only

Seat Count
99

Load
.081

FOAP Codes:

Fund Code
115000 - Apprenticeship-Foothill

Org Code
142215 - Apprentice-Bay Area Sheetmetal

Account Code
1320

Program Code
095640 - Sheet Metal, Structural Metal

APRT F141A : COMPONENTS OF RESIDENTIAL HVAC SERVICE

Proposal Type
Course Revision

Effective Term
Summer 2025

Subject
Apprenticeship: Pipe Trades, Sheet Metal, Field Ironworkers, Elevators (APRT)

Course Number
F141A

Department
Apprenticeship (A P)

Division
Apprenticeship (1ED)

Units
3

Former ID

Cross Listed

Related Courses

Maximum Units
3

Does this course meet on a weekly basis?
No

Total Lecture Hours per quarter
30

Total Lab Hours per quarter
24

Total Out of Class Hours per quarter
60

Special Hourly Notation

Total Contact Hours
54

Total Student Learning Hours
114

Repeatability Statement
Not Repeatable

Credit Status
Credit

Degree Status
Applicable

Is Basic Skills applicable to this course?
No

Grading
Letter Grade (Request for Pass/No Pass)

Will credit by exam be allowed for this course?
No

Honors
No

Degree or Certificate Requirement
None of the above (Stand Alone course)

Stand Alone

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Are you requesting Stand Alone approval for the course on a temporary or permanent basis?

• Temporary means the course will be incorporated into a new degree or certificate that is not yet State approved.
• Permanent means there are no plans to add the course to a State approved degree or certificate, nor to the Foothill GE pattern.

Please select
Temporary

In this case, identify the degree/certificate to which the course will be added:
Service Technician Apprenticeship

What is the specific timeline for program application/approval? (e.g., is your program application locally approved, or is it still in development and if so, what is your anticipated submission date?)
In development

The Curriculum Committee must evaluate this application based on the following criteria:

Criteria A. Appropriateness to Mission

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Please indicate how your course supports the Foothill College Mission:
Workforce/CTE

Criteria B. Need

A course may only be granted Stand Alone Approval if there is demonstrable need for the course in the college service area. Please provide evidence of the need or demand for your course, such as ASSIST documentation for transfer courses or Labor Market Information for workforce/CTE courses (if LMI is unavailable, advisory board minutes or employer surveys may be submitted). For basic skills courses, assessment-related data or information may be provided. Evidence may be provided in the box below and/or uploaded as an attachment.

Evidence

This course will be a part of a certificate for the service program at Local 104 Training Center.

Attach evidence

Need/Justification
Continuous need exists to advance the skills of the Sheet Metal apprentice and journeyperson through classroom instruction and on-the-job training. These skills are learned and applied on the job in the areas to include: Building Trades Sheet Metal construction, Heating, Ventilation & Air-Conditioning (HVAC) system maintenance, and Energy Management for green construction. These 2, 3 and 5-year programs enable students to master the skills needed to be successful in their industry. This course is part of the CA State registered apprenticeship program for the Bay Area Sheet Metal industry.

Course Description
Identifying components and evaluating their status in servicing heating and air conditioning equipment. Discussion of the service technician's approach to field problems.

Course Prerequisites
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Residential Service Apprenticeship Program.

Course Corequisites

Course Advisories

Course Objectives
The student will be able to:

1. Describe residential furnace system, chimney, and flue operation under typical conditions.
2. Demonstrate refrigeration leak detection and repair.
3. Read basic electrical symbols and schematic diagrams.

Course Content

1. Describe residential furnace system, chimney, and flue operation under typical conditions
    1. Service technician's approach to field problems
    2. Chimneys, vents, and flues; typical residential operation, health and safety, PVC, types of drafts
2. Demonstrate refrigeration leak detection and repair
    1. Refrigeration components review
    2. Refrigeration leak detection, brazing, and charging
3. Read basic electrical symbols and schematic diagrams
    1. Symbols and drawing conventions
    2. Overview of controls

Lab Content

1. Work with residential furnaces and air conditioners
2. Identify system component
3. Verify system component functions

Special Facilities and/or Equipment
Laboratory equipped with air conditioning equipment.

Methods of Evaluation

Methods of Evaluation may include but are not limited to the following:
Results of written quizzes and tests

Satisfactory completion of shop projects
Comprehensive written final examination
Maintenance of a workbook of student's daily work activities

Methods of Instruction

Methods of Instruction may include but are not limited to the following:
Lecture
Discussion
Laboratory
Demonstration

Representative Text(s)

Author(s)	Title	Publication Date
Meyer, Leo A. & Associates, Inc.	Servicing Environmental Systems, Workbook 1	current edition
Meyer, Leo A. & Associates, Inc.	Servicing Environmental Systems, Workbook 2	current edition
Althouse, Andrew D., C.H. Turr, and Alfred F. Bracciano	Modern Refrigeration and Air Conditioning	current edition

Please provide justification for any texts that are older than 5 years
These are the standard Sheet Metal textbooks/workbooks used for this course. Although they may be older than 5 years, they are the most current books used when teaching this course.

Other Materials

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Readings from textbook on leak testing a refrigerant system
2. Writing assignments given in the laboratory
    1. Create a schematic diagram of a typical furnace electrical circuit, and suggest and describe troubleshooting sequence for assigned problems

Authorized Discipline(s):
Air Conditioning, Refrigeration, Heating

Faculty Service Area (FSA Code)
INDUSTRIAL TECH

Taxonomy of Program Code (TOP Code)
*0956.40 - Sheet Metal and Structural Metal

Foothill faculty, through our Academic Senate and Curriculum Committee, ask you to consider the Guiding Principles for Equitable CORs document (available at https://foothill.edu/curriculum/process.html) while creating or revising this COR.

Please describe how you have incorporated principles of equity during this revision:
April 2024: Harassment awareness training along with Bias & Belonging training has been included in the course.

Articulation Office Only

C-ID Notation

IGETC Notation

CSU GE Notation

Transferability
None

Validation Date
3-26-2010

Division Dean Only

Seat Count
99

Load
.081

FOAP Codes:

Fund Code
115000 - Apprenticeship-Foothill

Org Code
142215 - Apprentice-Bay Area Sheetmetal

Account Code
1320

Program Code
095640 - Sheet Metal, Structural Metal

APRT F141B : TROUBLESHOOTING DIAGNOSIS & REPAIR FOR RESIDENTIAL HVAC SERVICE

Proposal Type
Course Revision

Effective Term
Summer 2025

Subject
Apprenticeship: Pipe Trades, Sheet Metal, Field Ironworkers, Elevators (APRT)

Course Number
F141B

Department
Apprenticeship (A P)

Division
Apprenticeship (1ED)

Units
3

Former ID

Cross Listed

Related Courses

Maximum Units
3

Does this course meet on a weekly basis?
No

Total Lecture Hours per quarter
30

Total Lab Hours per quarter
24

Total Out of Class Hours per quarter
60

Special Hourly Notation

Total Contact Hours
54

Total Student Learning Hours
114

Repeatability Statement
Not Repeatable

Credit Status
Credit

Degree Status
Applicable

Is Basic Skills applicable to this course?
No

Grading
Letter Grade (Request for Pass/No Pass)

Will credit by exam be allowed for this course?
No

Honors
No

Degree or Certificate Requirement
None of the above (Stand Alone course)

Stand Alone

If a Foothill credit course is not part of a state-approved associate's degree, certificate of achievement, or the Foothill GE pattern, it is considered by the state to be a "Stand Alone Course." Per Title 5, local curriculum committees must review and approve proposed Stand Alone courses to ensure that they are consistent with credit course standards (§55002), the community college mission, and that there is sufficient need and resources for the course. To be compliant with state regulations, there must be a completed, approved Stand Alone form on file in the Office of Instruction. Per our local process, the same process of review and approval is used for noncredit Stand Alone courses.

Are you requesting Stand Alone approval for the course on a temporary or permanent basis?

• Temporary means the course will be incorporated into a new degree or certificate that is not yet State approved.
• Permanent means there are no plans to add the course to a State approved degree or certificate, nor to the Foothill GE pattern.

Please select
Temporary

In this case, identify the degree/certificate to which the course will be added:
Service Technician Apprenticeship

What is the specific timeline for program application/approval? (e.g., is your program application locally approved, or is it still in development and if so, what is your anticipated submission date?)
In development

The Curriculum Committee must evaluate this application based on the following criteria:

Criteria A. Appropriateness to Mission

The Foothill College Mission states: Believing a well-educated population is essential to sustaining and enhancing a democratic society, Foothill College offers programs and services that empower students to achieve their goals as members of the workforce, as future students, and as global citizens. We work to obtain equity in achievement of student outcomes for all California student populations, and are guided by our core values of honesty, integrity, trust, openness, transparency, forgiveness, and sustainability. Foothill College offers associate degrees and certificates in multiple disciplines, and a baccalaureate degree in dental hygiene.

Please indicate how your course supports the Foothill College Mission:
Workforce/CTE

Criteria B. Need

A course may only be granted Stand Alone Approval if there is demonstrable need for the course in the college service area. Please provide evidence of the need or demand for your course, such as ASSIST documentation for transfer courses or Labor Market Information for workforce/CTE courses (if LMI is unavailable, advisory board minutes or employer surveys may be submitted). For basic skills courses, assessment-related data or information may be provided. Evidence may be provided in the box below and/or uploaded as an attachment.

Evidence

This course will be a part of a certificate for the service program at Local 104 Training Center.

Attach evidence

Need/Justification
Continuous need exists to advance the skills of the Sheet Metal apprentice and journeyperson through classroom instruction and on-the-job training. These skills are learned and applied on the job in the areas to include: Building Trades Sheet Metal construction, Heating, Ventilation & Air-Conditioning (HVAC) system maintenance, and Energy Management for green construction. These 2, 3 and 5-year programs enable students to master the skills needed to be successful in their industry. This course is part of the CA State registered apprenticeship program for the Bay Area Sheet Metal industry.

Course Description
Troubleshooting approaches for HVAC equipment problems, with diagnosis and repair. Testing and tracing of circuits; visual evaluations for electrical and mechanical HVAC equipment. Review and practice of all basic skills necessary for A/C residential service technicians.

Course Prerequisites
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Residential Service Apprenticeship Program.

Course Corequisites

Course Advisories

Course Objectives
The student will be able to:

1. Discuss troubleshooting approaches for furnace, air conditioner, and heat pump problems.
2. Perform visual electrical and mechanical evaluations.
3. Test and trace electrical circuits.
4. Describe compressor functions and failures.
5. Change out refrigerant compressors.

Course Content

1. Discuss troubleshooting approaches for furnace, air conditioner, and heat pump problems
    1. Diagnosis and repair of furnaces; electrical and mechanical approaches
    2. Diagnosis and repair of electrical heaters and electric filters
    3. Troubleshooting air conditioning and heat pumps problems
2. Perform visual electrical and mechanical evaluations
    1. Access and visual overview of circuit and mechanical components
    2. Check for wiring disconnections, evidence of malfunction, shorts, and proper mechanical functions of components
3. Test and trace electrical circuits
    1. Initial testing without disconnection
    2. Describe when and how to test for current flow versus continuity equipment usage
4. Change out refrigerant compressors
5. Describe compressor functions and failures
    1. Review of electrical and refrigeration systems; test 1. Condemnation and change-out of compressors

Lab Content

1. Practice troubleshooting of residential HVAC equipment
2. Practice repairing of residential HVAC equipment

Special Facilities and/or Equipment
Laboratory equipped with air conditioning equipment.

Methods of Evaluation

Methods of Evaluation may include but are not limited to the following:
Results of written quizzes and tests
Satisfactory completion of shop projects
Comprehensive written final examination
Maintenance of a workbook of student's daily work activities

Methods of Instruction

Methods of Instruction may include but are not limited to the following:
Lecture
Discussion
Laboratory
Demonstration

Representative Text(s)

Author(s)	Title	Publication Date
International Training Institute for the Sheet Metal and Air Conditioning Industry	Residential HVAC Service Technician	2007

Please provide justification for any texts that are older than 5 years
This is the standard Sheet Metal textbook/workbook used for this course. Although it is older than 5 years, it is the most current book used when teaching this course.

Other Materials

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Readings from textbook on diagnosing residential HVAC system problems using electrical diagrams
2. Writing assignments given in the laboratory
    1. Review questions regarding diagnosing compressor circuit problems

Authorized Discipline(s):
Air Conditioning, Refrigeration, Heating

Faculty Service Area (FSA Code)
INDUSTRIAL TECH

Taxonomy of Program Code (TOP Code)
*0956.40 - Sheet Metal and Structural Metal

Foothill faculty, through our Academic Senate and Curriculum Committee, ask you to consider the Guiding Principles for Equitable CORs document (available at https://foothill.edu/curriculum/process.html) while creating or revising this COR.

Please describe how you have incorporated principles of equity during this revision:
April 2024: Harassment awareness training along with Bias & Belonging training has been included in the course.

Articulation Office Only

C-ID Notation

IGETC Notation

CSU GE Notation

Transferability
None

Validation Date
4/26/10

Division Dean Only

Seat Count
99

Load
.081

FOAP Codes:

Fund Code
115000 - Apprenticeship-Foothill

Org Code
142215 - Apprentice-Bay Area Sheetmetal

Account Code
1320

Program Code
095640 - Sheet Metal, Structural Metal

Note: Because application forms for the new Foothill GE pattern have not yet been created, the existing application form for Area V is being used to apply for both new Area 1B, Oral Communication & Critical Thinking, and new Area 2, Mathematical Concepts & Quantitative Reasoning.

General Education Review Request
AREA V – COMMUNICATION & ANALYTICAL THINKING

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Breadth Criteria:

At Foothill College, the primary objective of the general education requirements is to provide students with the depth and breadth of knowledge and understanding required to be independent, thinking persons who are able to interact successfully with others as educated and productive members of our diverse society. Design and implementation of the general education curriculum ensures that students have exposure to all major disciplines, understand relationships among the various disciplines, and appreciate and evaluate the collective knowledge and experiences that form our cultural and physical heritage. General education courses provide content that is broad in scope and at an introductory depth, and all require critical thinking.

A general education enables students to clarify and present their personal views as well as respect, evaluate, and be informed by the views of others. This academic program is designed to facilitate a process that enables students to reach their fullest potential as individuals, national and global citizens, and lifelong learners for the 21st century.

In order to be successful, students are expected to have achieved minimum proficiency in math (MATH 105) and English (ENGL 1A, 1AH or ESL 26) before enrolling in a GE course.

A completed pattern of general education courses provides students with opportunities to acquire, practice, apply, and become proficient in each of the core competencies listed below.

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).
B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).
B3. Creative, critical, and analytical thinking (reasoning, questioning, problem solving, and consideration of consequence).
B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).
B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Depth Criteria for Area V – Communication & Analytical Thinking:

Communication and analytical thinking curricula foster the ability to communicate knowledge, information, ideas, and feelings, and enhance the ability to evaluate, solve problems, and make decisions.

To accomplish this, a course meeting the Communication and Analytical Thinking General Education Requirement ***must*** offer students the opportunity to:

C1. Apply the analytical skills learned in the course to other disciplines;
C2. Develop competencies in communication or computation, and apply the appropriate technical, interpretive, and evaluative skills;
C3. Read, interpret, and analyze statements and then be able to express them in symbolic form when appropriate;
C4. Clearly and precisely express their ideas in a logical and organized manner using the discipline-appropriate language.

Expected outcomes of a successful course in this area **should** include some or all of the following:

C5. Critically assess other people's ideas; and organize, edit, and evaluate their own ideas in order to articulate a position;
C6. Identify goals when applying analytical skills;
C7. Recognize limitations of applicable methodologies;
C8. Use current technologies for discovering information and techniques for communication, analysis, evaluation, problem solving, decision-making, and presentation.

General Education Review Request
AREA V – COMMUNICATION & ANALYTICAL THINKING

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Please map each appropriate component from the **Course Outline of Record** to the appropriate depth and breadth criteria. You can use any part of your COR including course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

Depth Map: Must include the following:

C1. Apply the analytical skills learned in the course to other disciplines;

Matching course component(s):
Testing Adjusting and Balancing technicians utilize analytical skills through the troubleshooting and problem solving curriculum they are involved with. A core theme of this program is testing for safety, which at its core is entirely problem solving and even anticipating and preventing future catastrophes. For example, students analyze complex HVAC systems and their functions, requiring them to break down systems into components and understand their interrelations. After evaluating data collected from systems, making sense of thermal dynamics and mechanical principles they offer solutions to optimize performance. Students develop reasoning skills by applying scientific principles to real-world scenarios, enhancing their ability to think logically about system functions and outcomes. Students will use a number of different reasoning techniques such as deduction and induction as well as cause and effect and problem solving to make decisions. The analytics explored in this curriculum extends to areas of binary code, mathematics, programming, system diagnostics, sequencing of operations and other technical disciplines.

Examples:
APSM 177B (Year 4, Semester 2, Module 20-2 Direct Digital Control Strategies)
Direct Digital Controls are used to program functions of an HVAC system. These functions range from manipulating the flow of chilled and hot water, to the opening and closing of dampers during a life safety catastrophe through digital programming. Students gain insight into computer usage and data collection, and apply scientific principles of thermal dynamics and mechanical system knowledge to properly adjust and control a system.

APSM 178C (Year 5, semester 1, Module 24-4 Successful foreman attributes)
Students apply principles of leadership, communication and testing adjusting and balancing knowledge to learn how to become a foreperson for a project. Students cover concepts of jobsite safety considerations, managing employees and customers, and project management solutions to be successful.

C2. Develop competencies in communication or computation, and apply the appropriate technical, interpretive, and evaluative skills;

Matching course component(s):
Testing Adjusting and Balancing technician students develop both communication and computation skills backed by their technical and evaluative curriculum. Students learn about HVAC systems and the importance of duct design, focusing on how duct surface area influences airflow and system efficiency. They gain knowledge of allowable leakage rates, which is critical for ensuring system performance and efficiency. Students use measurement data to calculate the surface area of ductwork often communicated through excel. Students interpret and evaluate the data and chart it Excel, which helps them visualize relationships and trends in duct performance metrics. This graphical representation supports more intuitive analysis and decision-making. This involves applying mathematical formulas and principles, demonstrating their technical understanding of geometry and HVAC systems. Another competency that demonstrates this is Learning BlueBeam, which equips students with knowledge of an industry-standard documentation tool, that helps them document project data. This technical skill is crucial for certification processes in construction and cleanroom environments.

Examples:
APSM 172C (Year 3, Semester 2, Module 15-7 Calculating Duct Surface Area)
Students calculate the surface area of duct work in order to confirm an allowable leakage rate of a HVAC system. Measurement data is often applied to spreadsheets so are charted to assist in mathematical

functions programmable in excel. This data is then applied to the process of duct leakage testing and stored in project data.

APSM 176C (Year 3, Semester 4 Module 18-4, ISO Cleanroom Project)
This lesson teaches software used in the construction industry called BlueBeam to document project data used to certify cleanrooms. Students calculate square footage of spaces, and determine number of sample locations to verify against codes.

C3. Read, interpret, and analyze statements and then be able to express them in symbolic form when appropriate;

Matching course component(s):
Testing Adjusting and Balancing technician students write several reports where they must learn to read, interpret and analyze the work of others while getting feedback and interpreting such to produce official reporting documents. Students learn to read electrical drawings, which requires understanding various symbols and notations that represent components, connections, and systems within HVAC setups. Students focus on mechanical drawings, which involve different symbols and notations specific to mechanical systems. This foundational knowledge is crucial for interpreting how different parts of a system interact. With the emphasis being on safety students must learn how to spot areas of potential concern or deficiency and communicate the need for change and corrections. Another way of thinking about this is the technicians must be checking for compliance with project specifications and determine whether equipment is operating correctly based on the electrical layout.

Examples:
APSM 176A (Year 3, Semester 1, Module 13-10 Plans and Spec Reading Electrical Drawings)
Testing adjusting and balancing technicians are required to interpret electrical drawings and report proper functioning of equipment tied to the HVAC system based on project data. Interpreting these drawings involves knowledge of electrical drawing symbols which are then transferred over to official reporting documents. Nomenclature of drawings is also discussed to intelligently communicate potential deficiencies and requests for information.

APSM 176A (Year 3, Semester 1, Module 13-8 Reading Mechanical Drawings)
Students learn to interpret mechanical drawings. Students must be able to recognize symbol-based communications for equipment locations, and project callouts. This skill is essential to learn, and transfer to all years of the program and career.

C4. Clearly and precisely express their ideas in a logical and organized manner using the discipline-appropriate language.

Matching course component(s):
Testing Adjusting and Balancing technician students learn to communicate and express their ideas using universally understood terms of the industry. Students work on projects that are evaluated and received by engineers who rely on the precise communication of the student. As students verify the functional operation of mechanical components, they are required to document their findings accurately. This process involves using precise language and terminology relevant to the HVAC field. In preparation for the certification exam administered by the International Certification Bureau, students must communicate their knowledge effectively and in an organized framework. This involves synthesizing information and presenting it logically during written and verbal evaluation where students must present their thought process and findings.

Examples:
APSM 177A (Year 4, Semester 1, Module 19-All, Title 24 Mechanical Acceptance Test Procedure and Certification Exam)
Students learn the requirements of title 24 Mechanical Acceptance Testing, and document readings verifying the functional operation of components. These documents are included in the commissioning packages for building occupancy. Knowledge is then applied to a certification exam tested through the International Certification Bureau. Logical and accurate reporting of mechanical functioning is critical for project occupancy.

APSM 176C (Year 3, Semester 4, Module 18-6 Federal Standard 209E)
Students maintain documents when calculating square footage of clean rooms and testing locations. These measurements are used for project data and certification of clean rooms.

Depth Map: should include some or all:

C5. Critically assess other people's ideas; and organize, edit, and evaluate their own ideas in order to articulate a position;

Matching course component(s):
Testing Adjusting and Balancing technician students rely on the ideas of others to perform their responsibilities. Part of this process is in the design review where the students take the ideas of others through initial design drawings and markups of engineers and architects and analyze positions on next steps and where to proceed. For example, where there are concerns over functionality with a design intent a student studying balancing will have to evaluate and assess the intent of the design then re-engineer the method to achieve compliance with pneumatic systems. Essentially this program is training the students to manage a project where they will act as a lead in reviewing design intent and coming from an approach of constructability. Often in this process there is a communication loop where the field team will write Requests for Information to further understand how to make a design constructable.

Examples:
APSM 178B (Year 4, Semester 4, Module 23-7 Pneumatic Control System Operation)
Students learn functioning of pneumatic systems based on submittal data, manuals, project drawings, and properly document and adjust pressures to create variable functioning of thermostats and controlled devices. Knowledge of pneumatic systems is applied throughout the program and into balancing efforts especially in older constructed buildings. This process is applied when performing activities such as balancing a velocity reset control on a VAV, or confirming simple calls for heating and cooling.

APSM 178C (Year 5, semester 1, Module 24-6 Project Management)
Students learn to critically asses design of mechanical systems to achieve design criteria for mechanical system. Additionally, students also gain insight into the project management side which addresses costs of a project, and management solutions for efficiency.

C6. Identify goals when applying analytical skills;

Matching course component(s):
Testing Adjusting and Balancing technician students utilize analytical thinking throughout their program. Part of this thinking approach requires the students to start with a goal and find a process figure out ways of achieving that goal. An example of this is where students learn to establish sound volume goals specific to projects, especially those with stringent acoustic requirements, such as sound studios and theaters. This involves understanding the intended use of the space and the acceptable sound levels for optimal functionality. Students critically analyze different strategies for sound mitigation, weighing their effectiveness and feasibility based on project constraints. This analytical approach helps them refine their goals and make informed decisions about which techniques to implement. An additional example is where students identify specific goals for indoor air quality by understanding ventilation rates, equipment specifications, and regulatory codes.

Examples:
APSM 179B (Year 5, Semester 1 Modules 25-all Sound and Vibration Testing)
Students identify sound volume goals of a project and learn to identify mitigation techniques to minimize an HVAC systems impact to unwanted reverberations. HVAC components contain rotating parts, which transfer sound waves through beams, and surfaces throughout the project. Some projects such as sound studios and theatres have stringent sound vibration concerns, thus requiring special attachment considerations and architectural baffling.

APSM 178A (Year 4, Semester 3, Modules 22-All, Indoor Air Quality)
Students identify goals to achieve in door air quality of mechanical systems. This knowledge requires interactions with ventilation rates dictated by codes, project documents to identify equipment attached to

the HVAC system, and identification of methods to improve the filtration of contaminants in the airstream.

C7. Recognize limitations of applicable methodologies;

Matching course component(s):
Given the nature of this program is centered on testing for safety understanding the limitations of methodologies is at the core of the curriculum. Testing Adjusting and Balancing technician students are often encouraged to critically think about their process. Students learn about the operational limits of different fan types, including factors like airflow capacity, pressure generation, and efficiency. By analyzing these parameters, they can identify when a fan may be undersized for a specific application. Recognizing these limitations helps students understand the implications of inadequate fan performance. Similarly, students study some of the life safety applications and limitations of electrical currents used in an HVAC system. Understanding limits of the system where electrical currents exceed equipment specifications, students can learn how to avoid risks.

Examples:
APSM173C (Year 2 Module 7-4 Fan Principles of Operation)
Students learn to recognize performance limitations of fans to verify proper sizing in an HVAC system. Often fans are undersized which can cause equipment failures from electrical over currents, and poor system performance due to lack of pressure created. Understanding fan sizing also ties to energy consumption, as running equipment at lower speeds, or changing a fan type can address many concerns of excessive energy usage.

APSM 173B (Year 2 Module 6-7 Electrical Motors and Starters)
Students learn the limitations of electrical currents when powering motorized equipment in an HVAC system. Knowledge of limitations of equipment when applying electrical current prevents equipment failure, and life safety issues.

C8. Use current technologies for discovering information and techniques for communication, analysis, evaluation, problem solving, decision-making, and presentation.

Matching course component(s):
Testing Adjusting and Balancing technician students learn to use Excel to compile and organize data collected from various physical readings taken during testing, adjusting, and balancing activities. This involves inputting data into spreadsheets, which helps in systematically analyzing performance metrics. The compiled data is often presented to project managers, engineers, and forepersons. Students learn to create clear, visually appealing reports and charts within Excel to effectively communicate their findings. This practice emphasizes the importance of using technology not only for analysis but also for conveying information in a way that is understandable to various stakeholders.

Examples:
APSM 174B (Year 2 Semester 3, Module 10-(3-7), Excel Training Program)
Students in the Testing Adjusting and Balancing Program learn to use Excel software which is used to compile data taken from physical readings from instruments. Functions are inputted into cell data to calculate known equations related to balancing activities. This data is often presented to project managers, engineers, and forepersons to communicate findings.

APSM 176B (Year 3, Semester 1, Module 14-4 Interplay section 608 Prep Course)
Students use Interplay software to learn procedures to gainEPA608 certification. This certification is a requirement that technicians who maintain, service, repair, or dispose of equipment that could release refrigerants into the atmosphere must be certified.

Breadth Mapping: please indicate all that apply (if applicable)

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).

General Education Review Request
AREA V – COMMUNICATION & ANALYTICAL THINKING

Matching course component(s):
The TAB program emphasizes the development of comprehensive communication skills, including reading, writing, speaking, and listening, crucial for effective collaboration and documentation in the HVAC industry. In APSM 176A, students learn to interpret submittal data and project specifications, synthesizing technical information to ensure that equipment performance aligns with design and regulatory requirements. This process involves both written documentation and verbal discussions to verify system data and manage document storage. Additionally, APSM 171C provides students with CAL OSHA certification training, enhancing their ability to communicate safety protocols effectively on job sites. Through these modules, students acquire a multidimensional communication skill set that prepares them to evaluate information critically, articulate findings, and collaborate with various stakeholders.

B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).

Matching course component(s):
The TAB program focuses on the application of mathematical principles to solve HVAC system challenges through data collection and analysis. In APSM 171B, students explore Fan Laws, utilizing proportional relationships to adjust airflow, electrical flow, and water flow to achieve system balance. These calculations ensure that each component operates within the parameters set by design specifications. Additionally, APSM 172B introduces Pump Laws, where students use testing equipment to measure gallons per minute (GPM) and adjust pump motor speeds accordingly. Through these modules, students build proficiency in interpreting and applying mathematical data to calibrate and optimize HVAC systems, a critical skill for ensuring system efficiency and regulatory compliance.

B3. Creative, critical, and analytical thinking (reasoning, questioning, problem solving, and consideration of consequence).

Matching course component(s):
TAB students must be able to communicate clearly and systematically, utilizing technical language appropriate for HVAC documentation and data reporting. In APSM 174B, students acquire skills in Excel to record and process data collected from testing equipment, learning how to structure data in a way that reflects industry standards and operational requirements. Similarly, in APSM 172C, students perform Duct Leakage Testing, where they organize and document pressure readings to inform adjustments and system improvements. These activities foster precision in data management and enhance students' ability to communicate technical findings in a logical, organized manner essential for accurate reporting and collaboration in HVAC environments.

B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).

Matching course component(s):
The TAB program instills an understanding of the HVAC technician's responsibility to reduce environmental impact and enhance life safety on both local and global levels. In APSM 177C, students conduct energy audits, calculating the energy use index of HVAC systems and identifying optimization strategies that reduce energy consumption. This reflects a commitment to sustainable practices that mitigate environmental impacts. APSM 176C builds on this by examining HEPA filter performance in sensitive environments such as hospitals and laboratories, where proper filtration supports public health and safety. Together, these modules emphasize the technician’s role in promoting environmental stewardship and public welfare, aligning with industry standards for sustainability and safety.

B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Matching course component(s):

General Education Review Request
AREA V – COMMUNICATION & ANALYTICAL THINKING

Requesting Faculty: Gina Firenzi Date: 11/4/24

Division Curriculum Rep: Tim Myres Date: 12/3/24

FOR USE BY CURRICULUM OFFICE:

Approved: _____ Denied: _____ CCC Co-Chair Signature: _____ Date: _____

Note: Because application forms for the new Foothill GE pattern have not yet been created, the existing application form for Area IV is being used to apply for new Area 4, Social & Behavioral Sciences.

General Education Review Request
AREA IV – SOCIAL & BEHAVIORAL SCIENCES

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Breadth Criteria:

At Foothill College, the primary objective of the general education requirements is to provide students with the depth and breadth of knowledge and understanding required to be independent, thinking persons who are able to interact successfully with others as educated and productive members of our diverse society. Design and implementation of the general education curriculum ensures that students have exposure to all major disciplines, understand relationships among the various disciplines, and appreciate and evaluate the collective knowledge and experiences that form our cultural and physical heritage. General education courses provide content that is broad in scope and at an introductory depth, and all require critical thinking.
A general education enables students to clarify and present their personal views as well as respect, evaluate, and be informed by the views of others. This academic program is designed to facilitate a process that enables students to reach their fullest potential as individuals, national and global citizens, and lifelong learners for the 21st century.

In order to be successful, students are expected to have achieved minimum proficiency in math (MATH 105) and English (ENGL 1A, 1AH or ESL 26) before enrolling in a GE course.
A completed pattern of general education courses provides students with opportunities to acquire, practice, apply, and become proficient in each of the core competencies listed below.

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).
B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).
B3. Creative, critical, and analytical thinking (reasoning, questioning, problem solving, and consideration of consequence).
B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).
B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Depth Criteria for Area IV-Social & Behavioral Sciences:

The social sciences embrace a large number of interrelated subjects that examine the relationship of human beings to society.

Courses meeting the General Education Requirement in Social and Behavior Sciences ***must*** include ***all of the following*** student learning outcomes:

S1. Explain the interactions of people as members of societies, cultures and social subgroups;
S2. Exercise critical thinking and analytical oral and/or written skills including consideration of events and ideas from multiple perspectives;
S3. Demonstrate knowledge and application of the scientific method in conducting research and in other methods of inquiry relative to the discipline.

In addition, courses meeting this requirement ***must*** include ***at least three*** of the following student learning outcomes:

S4. Demonstrate appreciation of and sensitivity towards diverse cultures -- their social, behavioral and organizational structure;
S5. Explain world development and global relationships;
S6. Recognize the rights, duties, responsibilities, and opportunities of community members;
S7. Analyze the relationship of business and economic activities to the functioning of society as a whole;
S8. Assess the distribution of power and influence;
S9. Analyze current events and global issues in the context of historic, ethical and social patterns;
S10. Comprehend and engage in social, economic and political issues at the local, national and global level;
S11. Display knowledge of human motivations, behaviors and relationships;
S12. Understand the evolutionary origins of humanity and how this relates to present day human interactions;
S13. Describe how individual interaction with the natural world and external societies shapes and influences human behavior;
S14. Explain the association between psychological well-being, mental processes, emotions & societal functioning.

General Education Review Request
AREA IV – SOCIAL & BEHAVIORAL SCIENCES

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Please map each appropriate component from the **Course Outline of Record** to the appropriate depth and breadth criteria. You can use any part of your COR including course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

Depth Map: Must include the following:

S1. Explain the interactions of people as members of societies, cultures and social subgroups;

Matching course component(s):

Testing Adjusting and Balancing students learn about the historical development of the union movement and union associations as representing labor organizations. As well, they learn the roles of various subgroups in the union movement and specifically about apprenticeship, the collective voice, roles and responsibilities of employers, contractors, and journey workers.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)

Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history such as the Great General Strike of 1934 and other foundational union movements which created the organization.

The section of material on the study of our union's cultural traditions and "standard of excellence" covers the treatment of others – roles and responsibilities of various people in interactions in society. The standard of excellence is emphasized throughout the program and is a common theme.

TAB apprentices analyze historical data and participate in classroom discussions on the topic of Local 104's role in Bay Area labor history. This discussion involves analysis of the labor movement in the bay area from the inception of the Sheet Metal Worker's International Association. Some topics discussed are the Great Strike of 1934 and formation of the Sheet Metal Workers Union Hall and Training Center, which has now been designated a California State landmark.

APSM 171C (Year 1, semester 1, Module 1-1 Course Introduction, Discussion with Business Representatives)

Students learn about related businesses and jobsite practices, engage in discussion with business representatives, and are provided resources to ensure fair and ethical treatment on the jobsite is practiced by subgroups such as employees and employers.

APSM 171C (Year 1, semester 1, Module 1-4 Anti-Harassment Training)

All State Apprenticeship Programs, including the TAB Program, must have policies and training in place on the prevention of harassment, including sexual and other forms of harassment, bias, bystander responsibilities, laws and rights, and procedures. All TAB program students take this training and are assessed on it.

TAB Program students not only receive implicit bias training in specific modules in their program. This training is reinforced at least yearly through onsite job training, where real- world expectations require students to both understand and navigate the power dynamics of the actual world.

Students review the apprentice policies regarding harassment and harassment awareness. After a presentation and discussion, reporting protocols, and definitions of what is considered harassment are discussed and students are provided resources regarding harassment awareness. This course addresses common forms of harassment which impact society as a whole. The course also addresses common forms of harassment seen in minority groups, and methods of reporting.

APSM 171C (Year 1, Semester 1, Modules 1-(5-23) California Occupational Safety and Health Administration

(CAL/OSHA) 30 Hour Training and Qualification)
Students in the Testing Adjusting and Balancing apprenticeship complete the CAL/OSHA 30 program which is designed to promote workplace safety and health and to make workers more knowledgeable about workplace hazards and their rights. This program provides information on worker's rights, employer responsibilities, situational awareness in activities related to live jobsites, and discusses common concerns facing construction workers in the industry which have resulted in injuries and fatalities.

APSM 171B.01 Year 1, Semester 1 (Comet Classes)
Comet classes involve discussion with union organizers and business representatives covering labor issues which the Building Trades are faced with now. This course involves discussions of unfair business practices and case studies such as Silver Towers, which was found to utilize slave labor today. Students gain perspective on unionism and proper methods to report and document such issues.

S2. Exercise critical thinking and analytical oral and/or written skills including consideration of events and ideas from multiple perspectives;

Matching course component(s):
Testing Adjusting and Balancing students exercise critical thinking and analytical oral and/or written skills including consideration of historical and current events and ideas from multiple perspectives such as of various subgroups in the wide-ranging apprenticeship process in terms of the roles and responsibilities of employers, employee/contractors, coworkers, and journey workers, and governmental and overseeing agencies. This includes the consideration of unions and certification agencies that create, mandate, and update important building, health and safety, procedures, laws and/or codes through specific group activities, oral and written tasks, and work/ on the job experience.

APSM 178C (Year 5, semester 1, Module 24-7 Human Relations)
Students learn principles of human interactions in a construction environment. This curriculum is considerate of cultural barriers to communication and provides methods of overcoming these barriers and relating to fellow humans in the world and on the jobsite. Students leave with tools to communicate in many different mediums such as - verbal, written, print reading, diagrammatic, data sets, statistical documentation, communication meetings between many stakeholders, defense of positions based on data/testing results, and communication of findings to project members in various roles such as instructors, supervisors, and sub- contractors. These skills are applied throughout the program with group activities, and work experience.

APSM 178C (Year 5, semester 1, Module 24-11 Supervisory Training)
Students learn the communication skills and project role of a job supervisor. Supervisory training involves communication skills and leadership tools to maintain efficiency and quality of work amongst staff and coworkers. Students apply this skill and consider the perspectives of multiple students in the classroom and the field.

APSM 171B.01 Year 1, Semester 1 (Comet Classes)
Comet classes involve discussion with union organizers and business representatives covering labor issues which the Building Trades are faced with now. This course involves discussions of unfair business practices and case studies such as Silver Towers, which was found to utilize slave labor today. Students gain perspective on unionism and proper methods to report and document such issues.

S3. Demonstrate knowledge and application of the scientific method in conducting research and in other methods of inquiry relative to the discipline.

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students demonstrate knowledge and application of the scientific method in conducting research and other areas in relation to TAB principles specifically in learning about and applying safe workplace practices, including methods of fire prevention and using Personal Protective Equipment (PPE), Occupational Safety and Health Administration (OSHA) and California Occupational Safety and Health Administration (Cal/OSHA) requirements, identifying the various uses of heating equipment, defining and discussing the HVAC and refrigeration industry, its processes, tools, equipment, and measurement devices.

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APSM 171B (Year 1, Semester 2, Module 3-6 Fan Law Basics)
Students apply the scientific method to measure airflow in ducts, developing hypotheses, conducting experiments, and analyzing data to validate their findings. This is accomplished through physical readings of pressure of flow, and proportionally balancing a system to optimize systems performance using known equations of the industry.

APSM 171C (Year 1, Semester 1, Modules 1-(5-23) California Occupational Safety and Health Administration (CAL/OSHA) 30 Hour Training and Qualification)
Students in the Testing Adjusting and Balancing apprenticeship complete the CAL/OSHA 30 program which is designed to promote workplace safety and health and to make workers more knowledgeable about workplace hazards and their rights. This program provides information on worker's rights, employer responsibilities, situational awareness in activities related to live jobsites, and discusses common concerns facing construction workers in the industry which have resulted in injuries and fatalities.

Depth Map: Additionally, must include at least three of the following:

S4. Demonstrate appreciation of and sensitivity towards diverse cultures -- their social, behavioral and organizational structure;

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students demonstrate knowledge and appreciation of and sensitivity towards diverse cultures – their social, behavioral and organizational structure in many ways including through specific Bias and Belonging and anti-harassment training and activities.

APSM 171A (Year 1, Semester 1, Module 2-11 Bias and Belonging)
Students learn about inclusivity and diversity within minority groups and gain tools to address implicit biases. In the course, there is an analysis of societal issues, as well as tools to navigate personal bias.

APSM 171C (Year 1, semester 1, Module 1-4 Anti-Harassment Training)
All State Apprenticeship Programs, including the TAB Program, must have policies and training in place on the prevention of harassment, including sexual and other forms of harassment, bias, bystander responsibilities, laws and rights, and procedures. All TAB program students take this training and are assessed on it.

Students review the apprentice policies regarding harassment and harassment awareness. After a presentation and discussion, reporting protocols, and definitions of what is considered harassment are discussed and students are provided resources regarding harassment awareness. This course addresses common forms of harassment which impact society as a whole. The course also addresses common forms of harassment seen in minority groups, and methods of reporting.

TAB Program students not only receive implicit bias training in specific modules in their program. This training is reinforced at least yearly through onsite job training, where real- world expectations require students to both understand and navigate the power dynamics of the actual world.

S5. Explain world development and global relationships;

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students explain world development and global relationships through learning about and conducting historical research into methods of mechanical control over time and place. Program curriculum regularly draws on historical and contemporary apprenticeship and skills trades work examples from around the globe to understand and develop the sense of our profound interconnectedness and all that we can learn from one another – in a global sense.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history such as the Great General Strike of 1934 and other foundational union movements which created the

organization.

The section of material on the study of our union's cultural traditions and "standard of excellence" covers the treatment of others – roles and responsibilities of various people in interactions in society. The standard of excellence is emphasized throughout the program and is a common theme.

TAB apprentices analyze historical data and participate in classroom discussions on the topic of Local 104's role in Bay Area labor history. This discussion involves analysis of the labor movement in the bay area from the inception of the Sheet Metal Worker's International Association. Some topics discussed are the Great Strike of 1934 and formation of the Sheet Metal Workers Union Hall and Training Center, which has now been designated a California State landmark.

APSM 175C (Year 3, semester 4, Module 16-6, SCST: Features and Designs of Smoke Control Systems)
Students study the science and history of fire control systems in building's HVAC systems. This course involves historical research into methods of mechanical control over time and place, and proper system designs to certify a smoke control system's operation for occupants' safety.

APSM 178A (Year 4, Semester 3, Modules 22-All, Indoor Air Quality)
Students identify goals to achieve indoor air quality of mechanical systems. This knowledge requires interactions with ventilation rates dictated by codes over time and place, project documents to identify equipment attached to the HVAC system, and identification of methods to improve the filtration of contaminants in the airstream.

APSM 171B.01 Year 1, Semester 1 (Comet Classes)
Comet classes involve discussion with union organizers and business representatives covering labor issues which the Building Trades are faced with now. This course involves discussions of unfair business practices and case studies such as Silver Towers, which was found to utilize slave labor today. Students gain perspective on unionism and proper methods to report and document such issues.

S6. Recognize the rights, duties, responsibilities, and opportunities of community members;

Matching course component(s):
The testing Adjusting and Balancing Apprenticeship curriculum recognizes the rights, duties, responsibilities, and opportunities of community members such as apprentices, apprenticeship community members, workers, employers, and clients in situational awareness activities related to live job sites and in required Cal OSHA 30 trainings.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB apprentices analyze historical data and participate in classroom discussions on the topic of Local 104's role in Bay Area labor history. This discussion involves analysis of the labor movement in the bay area from the inception of the Sheet Metal Worker's International Association. Some topics discussed are the Great Strike of 1934 and formation of the Sheet Metal Workers Union Hall and Training Center, which has now been designated a California State landmark.

The section of material on the study of the union's cultural traditions and "standard of excellence" covers the treatment of others – roles and responsibilities of various people in interactions in society. The standard of excellence is emphasized and is a common theme throughout the program.

APSM 171B.01 Year 1, Semester 1 (Comet Classes)
Comet classes involve discussion with union organizers and business representatives covering labor issues which the Building Trades are faced with now. This course involves discussions of unfair business practices and case studies such as Silver Towers, which was found to utilize slave labor today. Students gain perspective on unionism and proper methods to report and document such issues.

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APSM 171C (Year 1, Semester 1, Modules 1-(5-23)
California Occupational Safety and Health Administration (CAL/OSHA) 30 Hour Training and Qualification) Students in the Testing Adjusting and Balancing apprenticeship complete the CAL/OSHA 30 program which is designed to promote workplace safety and health and to make workers more knowledgeable about workplace hazards and their rights. This program provides information on worker's rights, employer responsibilities, situational awareness in activities related to live jobsites, and discusses common concerns facing construction workers in the industry which have resulted in injuries and fatalities.

S7. Analyze the relationship of business and economic activities to the functioning of society as a whole;

Matching course objective(s):
Testing Adjusting and Balancing Apprenticeship students analyze the relationship of business and economic activities to society's functioning in the Project Management process.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history such as the Great General Strike of 1934 and other foundational union movements which created the organization.

The section of material on the study of our union's cultural traditions and "standard of excellence" covers the treatment of others – roles and responsibilities of various people in interactions in society. The standard of excellence is emphasized throughout the program and is a common theme.

TAB apprentices analyze historical data and participate in classroom discussions on the topic of Local 104's role in Bay Area labor history. This discussion involves analysis of the labor movement in the bay area from the inception of the Sheet Metal Worker's International Association. Some topics discussed are the Great Strike of 1934 and formation of the Sheet Metal Workers Union Hall and Training Center, which has now been designated a California State landmark.

APSM 171B.01 Year 1, Semester 1 (Comet Classes)
Comet classes involve discussion with union organizers and business representatives covering labor issues which the Building Trades are faced with now. This course involves discussions of unfair business practices and case studies such as Silver Towers, which was found to utilize slave labor today. Students gain perspective on unionism and proper methods to report and document such issues.

APSM 178C (Year 5, semester 1, Module 24-6 Project Management)
Students learn to critically assess design of mechanical systems to achieve design criteria for mechanical systems. Additionally, students gain insight into the project management side of construction which addresses costs of a project, and management solutions for efficiency. Projects which perform within a controlled budget maintain customer relationships, and positivity in business, employee-client relationships.

S8. Assess the distribution of power and influence;

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students assess the distribution of power and influence specifically in required bias and belonging training.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history

such as the Great General Strike of 1934 and other foundational union movements which created the organization.

The section of material on the study of our union's cultural traditions and "standard of excellence" covers the treatment of others – roles and responsibilities of various people in interactions in society. The standard of excellence is emphasized throughout the program and is a common theme.

TAB apprentices analyze historical data and participate in classroom discussions on the topic of Local 104's role in Bay Area labor history. This discussion involves analysis of the labor movement in the bay area from the inception of the Sheet Metal Worker's International Association. Some topics discussed are the Great Strike of 1934 and formation of the Sheet Metal Workers Union Hall and Training Center, which has now been designated a California State landmark.

APSM 171B.01 Year 1, Semester 1, (Comet Class)
Comet class involves a discussion with union organizers and business representatives covering labor issues which the Building Trades are faced with in current days. This course involves discussions of unfair business practices and case studies such as Silver Towers, which was found to utilize slave labor in current times. Students gain perspective on unionism and proper methods to report and document such issues.

APSM 171A (Year 1, Semester 1, Module 2-11 Bias and Belonging)
Students learn about inclusivity and diversity within minority groups and gain tools to address implicit biases. In the course, there is an analysis of societal issues and tools to navigate personal bias.

S9. Analyze current events and global issues in the context of historic, ethical and social patterns;

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students analyze current events and global issues in the context of historic, ethical, and social patterns in learning about case studies of things like "sick building syndrome" and other real-life examples of the necessity of improved building codes or the lack of codes that contribute to health and safety crises and inequalities.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history such as the Great General Strike of 1934 and other foundational union movements which created the organization.

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APSM 178A (Year 4, Semester 3, Module 22-2 VVIAQ)
Students in the Testing Adjusting and Balancing Program learn the effects of poor ventilation in occupied buildings. This involves discussion of topics and studies such as the historical/ethical example of "sick building syndrome" where cognitive functioning is impacted by a poor functioning system.

S10. Comprehend and engage in social, economic and political issues at the local, national and global level;

Matching course component(s):

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S11. Display knowledge of human motivations, behaviors and relationships;

Matching course component(s):

S12. Understand the evolutionary origins of humanity and how this relates to present day human interactions;

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students understand the evolutionary origins of humanity and how this relates to present day human interactions through examination of real-life examples of the historical development of codes and other control systems aimed at improving the human condition.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history such as the Great General Strike of 1934 and other foundational union movements which created the organization.

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APSM 174C (Year 2, Semester 4, Module 12-14, Fire Smoke Damper Certification Exam)
Students study the codes and standards which have been developed for Fire Smoke Dampers in a smoke control system. The evolution of these standards has developed over time as a result of catastrophic fires such as the MGM grand fire, and involves an in-depth study of deficiencies in the HVAC system which caused concerns for life safety.

S13. Describe how individual interaction with the natural world and external societies shapes and influences human behavior;

Matching course component(s):
Testing Adjusting and Balancing Apprenticeship students describe how individual interaction with the natural world and external societies shapes and influences human behavior by examination of the interplay between human behavior and landmark legislation like the Clean Air Act and the role technicians play in upholding procedures aligned with it and other Environmental Protection Agency (EPA) standards.

APSM 171B.01 (Year 1, semester 1, Module 2-4 Union Heritage)
Covers the History of Local 104 in the Bay area. The Union Heritage class discusses the history and importance of unions and the labor movement and how they helped address discrimination against systemically oppressed people from lower, working-class and BIPOC groups. Students learn applied examples of this, such as how the Industrial Workers of the World (IWW) union wanted to abolish capitalism because of its systemic and negative effects on BIPOC people, women, children, and families. TAB students learn about labor movements in history such as the Great General Strike of 1934 and other foundational union movements which created the organization.

The section of material on the study of our union's cultural traditions and "standard of excellence" covers the

treatment of others – roles and responsibilities of various people in interactions in society. The standard of excellence is emphasized throughout the program and is a common theme.

TAB apprentices analyze historical data and participate in classroom discussions on the topic of Local 104's role in Bay Area labor history. This discussion involves analysis of the labor movement in the bay area from the inception of the Sheet Metal Worker's International Association. Some topics discussed are the Great Strike of 1934 and formation of the Sheet Metal Workers Union Hall and Training Center, which has now been designated a California State landmark.

APSM 176B (Year 3, Semester 1, Module 14-4 Interplay section 608 Prep Course)
Students use Interplay software to learn procedures to gain required Environmental Protection Agency – article 608 of the Clean Air Act (EPA608) certification. This certification exemplifies individual interaction with the natural world and how that shapes human behavior because it provides training about how technicians who maintain, service, repair, or dispose of equipment, without knowledge and skill development related to EPA608 standards, could inadvertently release harmful refrigerants into the atmosphere.

S14. Explain the association between psychological well-being, mental processes, emotions & societal functioning.

Matching course component(s):

Breadth Mapping: please indicate all that apply (if applicable)

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research)

Matching course component(s):
Testing, Adjusting and Balancing students demonstrate detailed communication skills (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research) in terms of locating key documents related to the field, processing written submittal data, and verifying measurements against control data. Communication skills are demonstrated and reinforced in in-class settings as well as through onsite job training, where real-world expectations require students to both understand and demonstrate how to effectively communicate in the actual world using data and other high-level skills (for example evaluation, synthesis, and research).

APSM 176A (Year 3, Semester 1, Module 13-4 Submittal Data)
Students in the Testing Adjusting and Balancing Program learn to red submittal data for various pieces of equipment tied to an HVAC system. This process requires multiple levels of communication as it involves verbal or written discussions for locations of documents (shared drives or paper filings), processing of written submittal data regarding performance and functioning, and verification of physical measurements against documented control data.

APSM 176A (Year 3, Semester 1, Module 13-3 Reading Plans and Specifications)
Students must learn to read, analyze and interpret project specifications, to understand design intent and balancing requirements. These project specifications must additional be compared to current codes governing a project. The overall implementation of this skill must also take into account equipment usage and safety concerns to complete a project.

APSM 171C (Year 1, Semester 1, Module 1-11 Managing Safety and Health Programs)
Students go through the process of CAL OSHA certification and learn the process of proper management of safety and health programs on a project. This class builds continually improved on skills of jobsite situational awareness to prevent injuries and fatalities.

B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).

Matching course component(s):
Throughout the program students calculate flow rates taking physical readings and adjusting equipment to

meet design criteria of a project or code. Principles of mechanics show relationships of currents and mechanical movements, and thus mathematic principles are applied to proportion balance hydronic, electric and air flow rates.

APSM 171B (Year 1, Semester 2, Module 3-6 Fan Law Basics)
Students learn the mathematical concept of FAN laws which are used for proportional balancing activities. Measurements taken for flow data of air, electricity, and water share relations proportionally, and are used to adjust systems into balance.

APSM 172B (Year 1, Semester 2, Module 5-5 Pump Laws)
Students learn the mathematical concept of pump laws which are used to balance hydronic systems tied to the HVAC system. Readings taken using testing equipment are used to calculate GPM using a pump curve. Pump motor speeds are proportionally adjusted to meet design criteria based on known mathematical concepts and mechanical relationships. Data is then collected and documented for purpose of verification of the hydronic system.

B3. Clearly and precisely express their ideas in a logical and organized manner using the discipline-appropriate language

Matching course component(s):
Proper documentation and data collection are critical for the Testing Adjusting and Balancing apprentice throughout the apprenticeship. Documentation of project information and jobsite readings are calculated and used as official commissioning documentation for projects. Students throughout the program are challenged to keep logical and repeatable readings, maintaining integrity of a system. Lessons which build on concepts are as follows but not limited to the following:

APSM 174B (Year 2 Semester 3, Module 10-(3-7), Excel Training Program)
Students in the Testing Adjusting and Balancing Program learn to use Excel software which is used to compile data taken from physical readings from instruments. Functions are inputted into cell data to calculate known equations related to balancing activities.

APSM 172C (Year 3, Semester 1, Module 15-2 Duct Leakage Testing)
Students in the Testing Adjusting and Balancing Program learn the process and performance of Duct Leakage Testing. With data gathered from balancing equipment, technicians record data which is used to provide performance metrics critical to make adjustments on an HVAC system.

CAL OSHA certification and learn the process of safety concerns when working in confined spaces. Mechanical systems can incorporate areas of space where oxygen can be displaced. Working in this environment requires careful analysis of surroundings and readings to confirm breathable air in the space. Should there be a safety concern with the measured data, hazard mitigation must research and develop a system to complete job tasks without risking workers.

APSM 171C (Year 1, Semester 1, Module 1-16 Ergonomics)
Students go through the process of CAL OSHA certification and learn the process of safety concerns concerning ergonomics. Testing Adjusting and Balancing students require usage of tools with awkwardly distributed weights such as flow hoods, multi meters, and pitot tubes. Repetitive use of these tools over time can cause pain and is a large cause of reported injuries in the construction industry.

B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).

Matching course component(s):
At the core of the Testing Adjusting and Balancing industry are global concerns for energy consumption, indoor air quality, life safety, and personal safety. Throughout the program students apply principles of reducing an HVAC system's environmental impact through balancing a system to optimal performance. An HVAC system uses the majority of energy in a building so proper system design and balancing is crucial in reducing the environmental impact. Examples of this research and training are not limited to:

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APSM 177C (Year 4, Semester 2, Modules 21-All)
Student's performance the functions of energy auditing and provide data to increase optimization of an HVAC system through design. Students learn the process of gathering building data and calculating the energy use index of a system.

APSM 176C (Year 3, Semester 4, Modules 18-2 Hepa Filters)
Students research the performance data and proper functioning and installation of HEPA filtration used in hospitals, labs and clean rooms. The use of HEPA''s is essential in keeping critical spaces free from contamination.

B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Matching course component(s):
The Testing Adjusting and Balancing Industry compiles and evaluates data used for the balancing and maximizing of a buildings HVAC system. This effort is tied to life safety, indoor air quality, comfort cooling and reporting legal documents tied to the construction of a building. This requires the use of digital devices and access to a buildings automated system to manipulate a sequence of operations of a mechanical system. Knowledge of control programming is also required and used continually throughout the apprenticeship, as new equipment is evaluated. This data is then compiled often into forms and charts filed for a jobs commissioning and occupancy. Classes which performance this function are listed but also not limited to:

APSM 177B (Year 4, Semester 2, Module 20-2 Direct Digital Control Strategies)
Direct Digital Controls are used to program functions of an HVAC system. These functions range from manipulating the flow of chilled and hot water, to the opening and closing of dampers during a life safety catastrophe. Students gain insight into the programming of mechanical systems.

APSM 174B (Year 2 Semester 3, Module 10-(3-7), Excel Training Program)
Students in the Testing Adjusting and Balancing Program learn to use Excel software which is used to compile data taken from physical readings from instruments. Functions are inputted into cell data to calculate known equations related to balancing activities. This data is often presented to project managers, engineers, and forepersons to communicate findings.

Requesting Faculty: Patricia Gibbs Date: 10/27/24

Division Curr Rep: Tim Myres Date: 12/3/24

FOR USE BY CURRICULUM OFFICE:

Approved: _____ Denied: _____ CCC Co-Chair Signature:_____ Date:_____

Note: Because application forms for the new Foothill GE pattern have not yet been created, the existing application form for Area III is being used to apply for new Area 5, Natural Sciences w/ Lab.

General Education Review Request
AREA III - NATURAL SCIENCES

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Breadth Criteria:

At Foothill College, the primary objective of the general education requirements is to provide students with the depth and breadth of knowledge and understanding required to be independent, thinking persons who are able to interact successfully with others as educated and productive members of our diverse society. Design and implementation of the general education curriculum ensures that students have exposure to all major disciplines, understand relationships among the various disciplines, and appreciate and evaluate the collective knowledge and experiences that form our cultural and physical heritage. General education courses provide content that is broad in scope and at an introductory depth, and all require critical thinking.

A general education enables students to clarify and present their personal views as well as respect, evaluate, and be informed by the views of others. This academic program is designed to facilitate a process that enables students to reach their fullest potential as individuals, national and global citizens, and lifelong learners for the 21st century.

In order to be successful, students are expected to have achieved minimum proficiency in math (MATH 105) and English (ENGL 1A, 1AH or ESL 26) before enrolling in a GE course.

A completed pattern of general education courses provides students with opportunities to acquire, practice, apply, and become proficient in each of the core competencies listed below.

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).
B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).
B3. Creative, critical, and analytical thinking (reasoning, questioning, problem solving, and consideration of consequence).
B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).
B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Depth Criteria for Area III - Natural Sciences:

Natural science courses deal with the physical universe, the testable principles that govern its operations, its life forms, and its natural, measurable phenomena. One primary purpose of these courses is to promote an awareness of the methods of scientific inquiry and the power of scientific inquiry to describe the natural world. Emphasis is on understanding and applying the scientific method, which promotes a sense of discovery, fosters critical analysis, and encourages an understanding of the relationships between science and other human activities. A General Education natural science course should exhibit the same methods and skills used by scientists when seeking an understanding of the uncertainty and complexity of the natural world.

A successful General Education Natural Science course ***must*** promote in students:

N1. An understanding of the scientific method, including its attributes and limitations;
N2. The ability to make judgments regarding the validity of scientific evidence;
N3. An understanding of the relationship between hypothesis, experiment, fact, theory and law;
N4. The ability to use inductive and deductive reasoning;
N5. The practice of thinking critically, including evaluating ideas and contrasting opinions;
N6. The ability to evaluate, use and communicate scientific data;
N7. An introduction to current scientific theories within the field of study;
N8. Experience with laboratory activities using laboratory techniques consistent with those employed within the discipline;
N9. Experience applying recognized scientific methodology in laboratory activities.*****

Additional criterion thought to enhance a natural science course include any of the following:

N10. An appreciation of the contributions of science to modern life;
N11. An appreciation of the contributions to science of diverse people and cultures;
N12. An understanding of the interdependence of humans and their environment;
N13. A recognition of how human behavior has altered the environment;
N14. A sense of the history of science and the ideas and experiments that have led to our present understanding.

Be advised that the following criteria for a GE lab is consistent with a definition provided by the National Research Council, 2005:

"Laboratory experiences provide opportunities for students to interact directly with the material world (or with data drawn from the material world), using the tools, data collection techniques, models, and theories of science. This definition includes student

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interaction with astronomical databases, genome databases, databases of climatic events over long time periods, and other large data sets derived directly from the material world. It does not include student manipulation or analysis of data created by a teacher to simulate direct interaction with the material world. For example, if a physics teacher presented students with a constructed data set on the weight and required pulling force for boxes pulled across desks with different surfaces and asked them to analyze these data, the students' problem-solving activity would not constitute a laboratory experience in the committee's definition."

***** To accomplish these goals a laboratory course ***must*** emphasize the methods of scientific inquiry by engaging students in:

NL15. Observation and collection of data through direct interaction with the material world;
NL16. Use of tools, data collection techniques, models and theories of science most prevalent in relevant research laboratories;
NL17. Data may be from large data sets derived directly from the material world, but may not rely exclusively on student manipulation or analysis of data created by a teacher to simulate direct interaction with the material world;
NL18. Analysis and interpretation of data;
NL19. Formulation and testing of hypotheses;
NL20. Communicating effectively through oral and/or written work;
NL21. A minimum of one collaborative activity;
NL22. A minimum of one laboratory unit or the equivalent of 33 hours of laboratory instruction per quarter.

Additional criterion thought to enhance a natural science laboratory include any of the following:

NL23. Keep accurate and complete experimental records;
NL24. Perform quantitative and qualitative measurements;
NL25. Interpret experimental results and draw reasonable conclusions;
NL26. Analyze data statistically and assess the reliability of results;
NL27. Critically evaluate the design of an experiment;
NL28. Design experiments to test hypotheses;
NL29. Work effectively in small groups and teams.

Course Number & Title: **Test, Adjust and Balancing (TAB) Technician Program**

Please map each appropriate component from the **Course Outline of Record** to the appropriate depth and breadth criteria. You can use any part of your COR including course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

Depth Map: Must include the following:

N1. An understanding of the scientific method, including its attributes and limitations;

Matching course component(s):
The TAB program introduces students to the scientific method's principles, focusing on structured hypothesis generation, testing, and analysis within HVAC system functionality. In APSM 174A, for example, students employ problem-solving methodologies to assess and adjust hydronic flow rates, using empirical data to balance flow per specified gallons per minute (GPM) criteria. This hands-on balancing exercise reveals the limitations of hydronic systems in achieving theoretical flow values, reinforcing the scientific method's focus on experimental validation within real-world constraints. Similarly, APSM 173C immerses students in the practical applications of fan performance theory. They evaluate fan sizing and its effects on system pressures, electrical loads, and energy consumption by applying experimental protocols to verify fan capacity against submittal data. These activities cultivate an understanding of how HVAC design elements are grounded in scientific principles, illustrating the method's applicability and its constraints in dynamic environments.

APSM 174A (Year 2 Semester 3, Module 9-1, Balancing a Hydronic System) Students learn the process for quantifying hydronic flow from pumps in an HVAC system.

APSM 173C (Year 2, Semester 1, Module 7-4 Fan Principles of Operation) Students learn to recognize performance limitations of fans to verify proper sizing in an HVAC system.

N2. The ability to make judgments regarding the validity of scientific evidence;

Matching course component(s):
The TAB program develops students' critical assessment skills in evaluating the validity of scientific data, particularly in high-stakes environments like confined spaces and pneumatic control operations. In APSM

171C, for example, students undergo CAL OSHA certification for confined space safety, applying data analysis to verify safe oxygen levels and manage hazardous conditions in mechanically restricted environments. This training builds competencies in interpreting atmospheric measurements and assessing environmental risks, essential for informed decision-making. In APSM 178B, students expand these evaluative skills to pneumatic control systems, examining submittal data and technical specifications to adjust HVAC parameters like airflow and temperature. By performing variable air volume (VAV) balancing and validating system responses, students learn to critically analyze operational data, a key skill for maintaining accuracy and reliability in complex HVAC settings. Such complex analyses are features of the entire TAB program.

APSM 171C (Year 1, Semester 1, Module 1-14 Confined Space Training.) Students go through the process of CAL OSHA certification and learn the process of safety concerns when working in confined spaces.

APSM 178B (Year 4, Semester 4, Module 23-7 Pneumatic Control System Operation) Students learn functioning of pneumatic systems based on submittal data, manuals, project drawings, and properly document and adjust pressures to create variable functioning of thermostats and controlled devices. Knowledge of pneumatic systems is applied throughout the program and into balancing efforts especially in older constructed buildings.

N3. An understanding of the relationship between hypothesis, experiment, fact, theory and law;

Matching course component(s):
TAB students are taught to understand the scientific continuum from hypothesis to established law, emphasizing how scientific principles apply within HVAC contexts. In APSM 173A, students explore electrical theories and laws by working with schematics to diagnose HVAC system components. By testing voltage, current, and resistance through established laws like Ohm's Law, they bridge theoretical principles with practical diagnostics, confirming the underlying scientific consistency in system performance. APSM 173B introduces students to psychrometric theory, where they apply the psychrometric chart to model temperature, humidity, and enthalpy relationships. This theoretical framework enables students to anticipate temperature shifts in conditioned spaces, demonstrating how theory supports predictive accuracy in real-world applications. Together, these modules illustrate the hierarchical relationship of scientific concepts, from hypotheses to validated laws, within the HVAC industry.

APSM 173A (Year 1, Semester 4, Module 6-5 Electrical Schematics Lab Assignment. Students learn the theories and laws relating to electrical systems.

APSM 173B (Year 2 Semester 1, Module 8-5 Psychometrics) Students learn the theories and principles behind the psychrometric chart developed by Carrier.

N4. The ability to use inductive and deductive reasoning;

Matching course component(s):
All TAB students are taught to develop and hone inductive and deductive reasoning skills essential for HVAC troubleshooting and safety assessments. In APSM 171A, students apply these reasoning skills in first aid and CPR training, where they evaluate incident scenes to determine probable injury causes and appropriate responses. This process strengthens their ability to synthesize situational data and draw logical conclusions in real-time. Similarly, in APSM 175B, students apply deductive reasoning within building automation systems by assessing whether HVAC controls align with predefined sequences. Through hands-on troubleshooting of control malfunctions, they use inductive reasoning to hypothesize potential issues based on observed system behavior and deductive reasoning to validate solutions, reinforcing critical thinking in both safety and technical diagnostics.

APSM 171A (Year 1 Semester 1 Module 2-2 and Module 2-3_ Coyne CPR and First Aid.) Students use inductive and deductive reasoning when assessing issues which may require first aid or CPR.

APSM 175B (Year 3, Semester 4, Module 17-6 Building Automation and Controls) Students learn the process of manipulating and accessing the functions of HVAC control systems. The balancer needs to use inductive and deductive reasoning when comparing system control performance to the outline of a sequence of operations.

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N5. The practice of thinking critically, including evaluating ideas and contrasting opinions;

Matching course component(s):
TAB students engage in critical thinking activities and lessons throughout their curriculum of study in the program. This learning requires them to evaluate diverse perspectives and decision-making based on data-driven assessments. In APSM 178C's Human Relations module, students analyze complex jobsite scenarios through simulations, where they weigh differing opinions and collaborate effectively within multidisciplinary teams. This exercise in contrasting viewpoints enhances students' adaptability and interpersonal skills in dynamic construction settings. The Professional Development module builds on this by requiring students to critically assess job tasks and efficiency metrics, synthesizing input from various stakeholders and adjusting work functions accordingly. Together, these modules cultivate a critical mindset, enabling students to evaluate operational effectiveness and improve workflows within the HVAC industry.

APSM 178C (Year 3, Semester 4, Module 24-7 Human Relations) Students learn to evaluate human perspectives through jobsite simulations and scenarios.

APSM 178C (Year 3, Semester 4, Module 24-8 Professional Development) Students learn professional development techniques when running work which includes time management, and evaluation of job functions.

N6. The ability to evaluate, use and communicate scientific data;

Matching course component(s):
TAB students meet this standard in a variety of courses and on the job training. The ability to accurately evaluate, apply, and communicate scientific data, essential for precision in HVAC performance assessments. In APSM 171A, students measure airflow at registers using instruments calibrated to quantify flow rates in cubic feet per minute (CFM), producing data that guides balancing procedures to meet system design specifications. The documentation generated serves as verifiable evidence for commissioning, supporting compliance with industry standards. In APSM 179B, students engage in sound and vibration testing, analyzing acoustic data to address noise mitigation in sensitive environments like theaters. Here, they assess the transfer of sound waves through structural elements, using specialized techniques to apply data-driven solutions for noise reduction. This training develops their proficiency in collecting, interpreting, and presenting scientific data critical for both functional and regulatory aspects of HVAC systems.

APSM 171A (Year 1 Semester 1 Module 2-2 and Module 2-6 Measure Airflow at Registers.) Students evaluate and measure the performance of an HVAC system by measuring and quantifying airflow through register outlets.

APSM 179B (Year 5, Semester 1 Modules 25-all Sound and Vibration Testing) Students identify sound volume goals of a project and learn to identify mitigation techniques to minimize an HVAC system's impact on unwanted reverberations.

N7. An introduction to current scientific theories within the field of study;

Matching course component(s):
TAB students are able to meet this standard in a number of program-specific ways. In APSM 178A, for example, students study indoor air quality (IAQ) principles grounded in current scientific research on air contaminants and human physiological responses. Through analyzing ventilation rates, filtration systems, and regulatory requirements, students learn how controlled airflow and particulate filtration directly affect indoor environments. They are also trained to interpret IAQ data within the context of mechanical codes and engineering best practices, equipping them with the theoretical and practical knowledge necessary to implement solutions that improve air quality and enhance overall system efficacy in various building applications.

APSM 178A (Year 4, Semester 3, Modules 22-All, Indoor Air Quality.) Students identify goals to achieve indoor air quality of mechanical systems. This knowledge requires interactions with ventilation rates dictated by codes, project documents to identify equipment attached to the HVAC system, and identification

of methods to improve the filtration of contaminants in the airstream. The study of indoor air quality involves current data showing human performance in buildings with poor indoor air quality.

N8. Experience with laboratory activities using laboratory techniques consistent with those employed within the discipline;

Matching course component(s):
TAB students meet this standard both in program lab environments, but also in the critical environment of the job site where such skills are paramount. In APSM 177A, students undertake Title 24 Mechanical Acceptance Testing, where they perform functional assessments of HVAC components and document their findings. This process develops their skills in data logging and technical reporting, both critical for commissioning and occupancy verification. Additionally, APSM 176C immerses students in the ISO Cleanroom Certification Process, where they apply laboratory methods to manage and verify ventilation requirements in controlled environments. By maintaining cleanroom standards through precision testing and adherence to safety protocols, students gain familiarity with laboratory procedures essential for ensuring both the safety and operational integrity of HVAC systems in high-stakes applications.

APSM 177A (Year 4, Semester 1, Module 19-All, Title 24 Mechanical Acceptance Test Procedure and Certification Exam) Students learn the requirements of Title 24 Mechanical Acceptance Testing, and document readings verifying the functional operation of components.

APSM 176C (Year 3, Semester 4, Module 18-4 ISO Cleanroom Cert Process) Students in the Testing Adjusting and Balancing apprenticeship gain knowledge into the proper procedures for balancing and maintaining the integrity of clean rooms.

N9. Experience applying recognized scientific methodology in laboratory activities.

Matching course component(s):
The TAB program emphasizes the practical application of scientific methodology within laboratory and controlled environments, aligning closely with real-world HVAC standards. In APSM 178A, students approach indoor air quality (IAQ) assessments through systematic evaluation, analyzing ventilation rates and filtration techniques to meet specific IAQ goals. This process emphasizes the scientific method by integrating hypothesis, data collection, and evaluation of results in line with mechanical codes. APSM 176C further strengthens methodological rigor as students perform ISO Cleanroom Certification procedures, applying scientific standards to achieve and document particulate control in cleanroom environments. In APSM 177A, students engage in the Title 24 Mechanical Acceptance Testing, where methodical testing and data recording ensure HVAC compliance for occupancy. These modules collectively ensure students are skilled in scientifically validated techniques critical to high-stakes HVAC operations.

APSM 178A (Year 4, Semester 3, Modules 22-All, Indoor Air Quality.) Students identify goals to achieve indoor air quality of mechanical systems.

APSM 176C (Year 3, Semester 4, Module 18-4 ISO Cleanroom Cert Process) Students in the Testing Adjusting and Balancing apprenticeship gain knowledge into the proper procedures for balancing and maintaining the integrity of clean rooms.

APSM 177A (Year 4, Semester 1, Module 19-All, Title 24 Mechanical Acceptance Test Procedure and Certification Exam) Students learn the requirements of Title 24 Mechanical Acceptance Testing, and document readings verifying the functional operation of components.

Depth Map: <u>Additionally</u>, include <u>any</u> of the following:

N10. An appreciation of the contributions of science to modern life;

Matching course component(s):
TAB students learn the role of their industry in the scientific advancements in HVAC technology and how those advancements have contributed to essential life safety systems in modern buildings. In APSM 174C, students engage with the critical functions of fire smoke dampers (FSD), devices that prevent smoke migration by sealing off specific zones during a fire. They perform installation, testing, and documentation

of FSDs according to NFPA regulations, preparing for certification that ensures life safety compliance. In parallel, the Door Force Testing module trains students to measure and adjust door force with precision instruments, addressing safety in building egress plans by balancing air pressure to accommodate emergency exit requirements. These hands-on modules illustrate how scientifically engineered components and compliance protocols collectively enhance safety in contemporary built environments.

APSM 174C (Year 2, Semester 4, Module 12-14, Fire Smoke Damper Certification Exam) Students apply knowledge in installing, testing, and documenting performance of fire smoke dampers.

APSM 174C (Year 2, Semester 4, Module 12-12, Door Force Testing) Students perform the functions of door force testing, which is directly tied to a building's life safety egress plan.

N11. An appreciation of the contributions to science of diverse people and cultures;

Matching course component(s):
TAB students develop an appreciation of the contributions of diverse cultures and perspectives in advancing workplace safety and scientific practices in the HVAC field. In APSM 171C, students undergo CAL OSHA certification in Managing Safety and Health Programs, where they learn best practices developed from an array of global safety insights. This course fosters an appreciation for the diverse experiences and cultural contributions that have shaped safety protocols, helping students recognize the broader human effort behind modern regulations. Additionally, the HazCom module educates students on hazard communication requirements, drawing from historical safety data and OSHA's decades-long research efforts. By engaging with these standards, students gain respect for the collective scientific knowledge contributed by diverse groups, which continues to shape safe, efficient work environments.

APSM 171C (Year 1, Semester 1, Module 1-11 Managing Safety and Health Programs.) Students go through the process of CAL OSHA certification and learn the process of proper management of safety and health programs on a project.

APSM 171C (Year 1, Semester 1, Module 1-12 HazCom.) Students go through the process of CAL OSHA certification and learn the process of communicating jobsite hazards.

N12. An understanding of the interdependence of humans and their environment;

Matching course component(s):
TAB students develop an awareness of the interconnectedness between human activity and environmental health, particularly in relation to HVAC practices. In APSM 176B, students prepare for EPA Section 608 certification, which authorizes them to responsibly handle refrigerants. This module underscores the environmental impact of refrigerant emissions, reinforcing students' responsibility to protect atmospheric integrity through safe practices. In APSM 171C's Personal Protective Equipment (PPE) module, students learn to assess potential hazards and select appropriate protective gear, emphasizing human health and safety within various work environments. Together, these courses highlight the reciprocal relationship between humans and their surroundings, equipping students to minimize ecological impact while maintaining safety in HVAC operations.

APSM 176B (Year 3, Semester 1, Module 14-4 Interplay Section 608 Prep Course) Students use Interplay software to learn procedures to gain EPA608 certification.

APSM 171C (Year 1, Semester 1, Module 1-10 Personal Protective Equipment.) Students learn the hazards associated with different construction environments and tasks.

N13. A recognition of how human behavior has altered the environment;

Matching course component(s):
The TAB program helps students understand the impact of human activity on environmental health, with a focus on responsible HVAC practices that mitigate negative effects. In APSM 176B, students pursue EPA Section 608 certification, learning to manage refrigerants responsibly to reduce harmful emissions that contribute to atmospheric degradation. This module stresses the consequences of improper refrigerant

handling on global warming, highlighting the HVAC technician's role in environmental stewardship. In APSM 178A's Indoor Air Quality module, students explore how HVAC systems influence indoor environments, studying ventilation and filtration techniques to control contaminants. Through these modules, students gain insight into the direct and indirect ways in which human behavior—particularly in industrial contexts—affects environmental quality, preparing them to implement solutions that reduce ecological harm.

APSM 176B (Year 3, Semester 1, Module 14-4 Interplay Section 608 Prep Course) Students use Interplay software to learn procedures to gain EPA608 certification.

APSM 178A (Year 4, Semester 3, Modules 22-All, Indoor Air Quality.) Students identify goals to achieve indoor air quality of mechanical systems.

N14. A sense of the history of science and the ideas and experiments that have led to our present understanding.

Matching course component(s):
The TAB program provides students with an understanding of the historical milestones in science that inform modern HVAC practices. In APSM 175C, students study smoke control systems, learning to test and document their functionality based on established safety codes. This module includes case studies of historical disasters that led to the development of current safety standards, demonstrating how past events have shaped contemporary HVAC codes and practices. In APSM 172A, students explore foundational electrical principles, examining theories such as Ohm's Law and the development of single-phase and three-phase motors. These modules emphasize the scientific legacy that underpins today's engineering applications, providing students with context on how empirical discoveries and experimental methods have contributed to the safe and effective design of HVAC systems.

APSM 175C (Year 3, Semester 4, Module 16-8, Procedures for Testing Smoke Control Systems.) Students learn the procedures to test and document the operation and functionality of smoke control systems.

APSM 172A (Year 1 Semester 2, Module 4-6 and 4-7 Fundamentals of Electricity and Motors) Students learn the theories and functions of electrical currents, resistance, and motor function. This involves discussion of historical monuments in electrical discoveries such as Ohm's Law, Single phase motor theories, and three-phase motor concepts.

Depth Map: <u>Additionally</u>, must emphasize the following:

N15. Observation and collection of data through direct interaction with the material world;

Matching course component(s):
The TAB programs emphasizes hands-on data collection skills, training students to observe and record precise measurements from physical systems in HVAC settings. In APSM 171B, students learn airflow measurement techniques, conducting duct traverses with specialized equipment to capture airflow readings. These readings are then converted into cubic feet per minute (CFM) values, enabling accurate assessments of system performance. Similarly, APSM 174A teaches students to quantify hydronic flow in gallons per minute (GPM) by analyzing pump performance. Through problem-solving exercises in hydronic balancing, students refine their ability to diagnose and adjust flow rates to match design specifications. These modules instill rigorous observational and data-gathering skills that are fundamental to accurate system analysis and HVAC maintenance.

A**PSM 171B** (BT TAB, Year 1, Semester 1, Module 3-1 Methods of Airflow and Measurements.) Students gain usage of equipment used to measure airflow and perform the functions of a duct traverse.

APSM 174A (Year 2 Semester 3, Module 9-1, Balancing a Hydronic System) Students learn the process for quantifying hydronic flow from pumps in an HVAC system.

N16. Use of tools, data collection techniques, models and theories of science most prevalent in relevant research laboratories;

Matching course component(s):

The TAB program immerses students in the use of specialized HVAC tools and scientific methodologies akin to those found in research laboratories, equipping them with skills essential for precise data collection and system balancing. Throughout the program, students operate instruments like rotating vane anemometers, thermal imaging cameras, CO_2 sensors, and hydrometers to measure airflow, temperature gradients, and fluid dynamics within HVAC systems. These tools enable students to monitor critical variables and make data-driven adjustments to dampers, valves, and other control points. By mastering these techniques, students learn to apply scientific models and theories directly to field operations, bridging laboratory methodologies with practical HVAC diagnostics and optimization.

(APSM 171A, APSM 171B, APSM 172A, APSM 172B, APSM 173A)

N17. Data may be from large data sets derived directly from the material world, but may not rely exclusively on student manipulation or analysis of data created by a teacher to simulate direct interaction with the material world;

Matching course component(s):
The TAB program cultivates students' abilities to work with authentic, large-scale data sets originating from field measurements and submittal documents rather than fabricated data for educational purposes. In APSM 176A, students analyze manufacturer submittal data to confirm that equipment specifications align with tested performance metrics, developing skills in data verification critical for accurate system commissioning. The module on Reading Plans and Specifications further trains students to interpret complex design documentation, where they compare balancing requirements against regulatory codes and project specifications. By engaging with real-world data directly from the material environment, students gain experience in managing authentic datasets, fostering analytical skills essential for effective HVAC diagnostics and compliance.

APSM 176A (Year 3, Semester 1, Module 13-4 Submittal Data) Students in the Testing Adjusting and Balancing Program learn to read submittal data for various pieces of equipment tied to an HVAC system

APSM 176A (Year 3, Semester 1, Module 13-3 Reading Plans and Specifications) Students must learn to read, analyze, and interpret project specifications to understand design intent and balancing requirements.

N18. Analysis and interpretation of data;

Matching course component(s):
The TAB program equips students with essential skills in data analysis and interpretation, critical for evaluating HVAC system performance and compliance. In APSM 176A, students interpret project specifications, analyzing balancing requirements and aligning them with industry codes, safety standards, and equipment usage constraints. This process reinforces the importance of data-driven decision-making in achieving accurate project execution. APSM 174A extends these skills by focusing on hydronic pump performance analysis, where students interpret pump curves and correlate data points such as pressure, head, and flow rates to assess system efficiency. Through these activities, students gain proficiency in extracting meaningful insights from complex datasets, an essential skill for technical problem-solving in HVAC environments.

APSM 176A (Year 3, Semester 1, Module 13-3 Reading Plans and Specifications) Students must learn to read, analyze, and interpret project specifications to understand design intent and balancing requirements.

APSM 174A (Year 2, Semester 2, Module 9-5 Pumps) Students learn to interpret pump data derived from submittals and construction documents.

N19. Formulation and testing of hypotheses;

Matching course component(s):
TAB students follow the protocols of scientific inquiry through hypothesis formulation and experimental testing within HVAC control systems. In APSM 177B, students work with Direct Digital Control (DDC) systems to hypothesize outcomes of specific adjustments, such as modulating water flow or controlling damper positions in response to simulated emergency scenarios. They employ principles of thermodynamics and

mechanical systems to predict system responses, collecting data to validate their hypotheses. This hands-on application of DDC programming and hypothesis testing prepares students to troubleshoot and optimize system functionality, building analytical proficiency in evaluating and confirming the effects of system modifications based on scientific reasoning.

APSM 177B (Year 4, Semester 2, Module 20-2 Direct Digital Control Strategies) Direct Digital Controls are used to program functions of an HVAC system.

N20. Communicating effectively through oral and/or written work;

Matching course component(s):
Clear and precise communication in both oral and written forms, crucial for collaborative work and accurate documentation within the TAB program. In APSM 177C, students conduct energy audits and communicate their findings with various stakeholders, including engineers, contractors, and building owners. This requires proficiency in translating technical data, such as the energy use index, into actionable insights that inform system optimization. Meanwhile, APSM 174B equips students with document creation skills in Microsoft Word, teaching them to prepare formal reports that communicate system performance and operational issues. Mastery of these communication techniques ensures that students can convey complex technical information effectively, fostering collaboration and accountability in HVAC operations.

APSM 177C (Year 4, Semester 2, Modules 21-All) Students perform the functions of energy auditing and provide data to increase optimization of an HVAC system through design.

APSM 174B (Year 2 Semester 3, Module 10-4 Microsoft Word Basics) Students learn functions of Microsoft Word software to learn proper formatting and creation of written documents in the industry.

N21. A minimum of one collaborative activity;

Matching course component(s):
TAB students participate in hands-on group activities, emphasizing safety and teamwork in HVAC operations. In APSM 176B, students perform system refrigeration charging, working in teams to safely evacuate and charge air conditioning units with refrigerant. This collaborative setting allows students to share knowledge, observe safety protocols collectively, and troubleshoot as a unit, reinforcing their technical understanding while developing essential teamwork skills. The activity provides real-world experience in coordinating tasks and managing safety in multi-person operations, reflecting the collaborative demands of the HVAC industry.

APSM 176B (Year 3 Semester 1, Module 14-11 System Refrigeration Charging) Students learn the process of evacuating and charging air conditioning systems with refrigerant.

N22. A minimum of one laboratory unit or the equivalent of 33 hours of laboratory instruction per quarter.

Matching course component(s):
TAB students gain extensive hands-on laboratory experience, equipping them with practical skills required for HVAC testing and data documentation. In APSM 172C, students complete a laboratory-focused unit on Duct Leakage Testing, where they connect testing devices and record pressure readings throughout duct systems. This activity demands precise documentation of air leaks and pressure values, which are essential for adjusting and optimizing HVAC performance. With over 33 hours of dedicated laboratory practice, students develop competency in using diagnostic equipment, analyzing system data, and applying findings to real-world HVAC scenarios, fulfilling essential training requirements.

APSM 172C (Year 3, Semester 1, Module 15-2 Duct Leakage Testing) Students in the Testing Adjusting and Balancing Program learn the process and performance of Duct Leakage Testing. With data gathered from balancing equipment, technicians record data which is used to provide performance metrics critical to make adjustments on an HVAC system.

Depth Map: Additionally, include any of the following:

N23. Keep accurate and complete experimental records;

Matching course component(s):

TAB students learn the importance of meticulous record-keeping, essential for verifying HVAC system performance and meeting compliance requirements. In APSM 177A, students conduct Title 24 Mechanical Acceptance Testing, meticulously documenting operational data for each component. These records, essential for commissioning and building occupancy, are compiled to meet stringent regulatory standards, supporting the certification process. In APSM 172C, students perform Duct Leakage Testing, recording pressure and airflow metrics to evaluate system integrity and identify areas requiring adjustment. This thorough documentation process ensures accurate performance validation and establishes a record trail critical for HVAC system certification and maintenance.

APSM 177A (Year 4, Semester 1, Module 19-All, Title 24 Mechanical Acceptance Test Procedure and Certification Exam) Students learn the requirements of Title 24 Mechanical Acceptance Testing, and document readings verifying the functional operation of components.

APSM 172C (Year 3, Semester 1, Module 15-2 Duct Leakage Testing) Students in the Testing Adjusting and Balancing Program learn the process and performance of Duct Leakage Testing

N24. Perform quantitative and qualitative measurements;

Matching course component(s):
Throughout their program, TAB students learn and practice both quantitative and qualitative measurements, foundational for HVAC diagnostics and system optimization. In APSM 171B, students utilize instruments such as tachometers, stroboscopes, and anemometers to measure fan rotations per minute (RPM), translating rotational speed into quantifiable pressure effects within HVAC systems. Meanwhile, in APSM 172A, students perform electrical measurement exercises, using multimeters to obtain readings for voltage, current, and resistance. These measurements allow students to assess and quantify electrical flow between system components, reinforcing their ability to make precise assessments of both mechanical and electrical parameters in HVAC environments.

APSM 171B (Year 1, Semester 1, Module 3-7 Measure a Fan RPM) Students use testing adjusting and balancing instruments such as a tachometer, stroboscope, and a rotating vane anemometer to read rotations of various types of fans.

N25. Interpret experimental results and draw reasonable conclusions;

Matching course component(s):

N26. Analyze data statistically and assess the reliability of results;

Matching course component(s):
TAB students learn statistical analysis and reliability assessment, essential for ensuring data accuracy in HVAC systems. In APSM 177B, students work with Direct Digital Controls (DDC) to adjust system parameters, analyzing data collected from various operational scenarios. This statistical evaluation allows them to measure the consistency and reliability of DDC-driven system responses. In APSM 177A, students perform Title 24 Mechanical Acceptance Testing, documenting and statistically validating operational data as part of the commissioning process. These exercises reinforce the importance of statistical rigor in data interpretation, enabling students to assess the reliability of their findings and make adjustments that ensure compliance and system efficiency.

APSM 177A (Year 4, Semester 1, Module 19-All, Title 24 Mechanical Acceptance Test Procedure and Certification Exam) Students learn the requirements of Title 24 Mechanical Acceptance Testing, and document readings verifying the functional operation of components

APSM 177B (Year 4, Semester 2, Module 20-2 Direct Digital Control Strategies) Direct Digital Controls are used to program functions of an HVAC system.

N27. Critically evaluate the design of an experiment;

Matching course component(s):

N28. Design experiments to test hypotheses;

Matching course component(s):

N29. Work effectively in small groups and teams.

Matching course component(s):
Teamwork and collaboration skills are essential for all TAB students. In APSM 172C, students conduct Duct Leakage Testing as part of a team, where they work together to connect and operate testing equipment across extensive HVAC systems. This collaborative process demands precise communication and task delegation, as team members measure and document pressure levels from various points within the duct network. By working in small groups, students gain experience in managing logistics, synchronizing data collection, and collectively troubleshooting issues, preparing them for effective collaboration in real-world HVAC projects.

APSM 172C (Year 3, Semester 1, Module 15-2 Duct Leakage Testing) Students in the Testing Adjusting and Balancing Program learn the process and performance of Duct Leakage Testing. With data gathered from balancing equipment, technicians record data which is used to provide performance metrics critical to make adjustments on an HVAC system

Breadth Mapping: please indicate all that apply (if applicable)

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).

Matching course component(s):
The TAB program emphasizes the development of comprehensive communication skills, including reading, writing, speaking, and listening, crucial for effective collaboration and documentation in the HVAC industry. In APSM 176A, students learn to interpret submittal data and project specifications, synthesizing technical information to ensure that equipment performance aligns with design and regulatory requirements. This process involves both written documentation and verbal discussions to verify system data and manage document storage. Additionally, APSM 171C provides students with CAL OSHA certification training, enhancing their ability to communicate safety protocols effectively on job sites. Through these modules, students acquire a multidimensional communication skill set that prepares them to evaluate information critically, articulate findings, and collaborate with various stakeholders.

B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).

Matching course component(s):
The TAB program focuses on the application of mathematical principles to solve HVAC system challenges through data collection and analysis. In APSM 171B, students explore Fan Laws, utilizing proportional relationships to adjust airflow, electrical flow, and water flow to achieve system balance. These calculations ensure that each component operates within the parameters set by design specifications. Additionally, APSM 172B introduces Pump Laws, where students use testing equipment to measure gallons per minute (GPM) and adjust pump motor speeds accordingly. Through these modules, students build proficiency in interpreting and applying mathematical data to calibrate and optimize HVAC systems, a critical skill for ensuring system efficiency and regulatory compliance.

B3. Clearly and precisely express their ideas in a logical and organized manner using the discipline-appropriate language.

Matching course component(s):
TAB students must be able to communicate clearly and systematically, utilizing technical language appropriate for HVAC documentation and data reporting. In APSM 174B, students acquire skills in Excel to record and process data collected from testing equipment, learning how to structure data in a way that reflects industry standards and operational requirements. Similarly, in APSM 172C, students perform Duct

Leakage Testing, where they organize and document pressure readings to inform adjustments and system improvements. These activities foster precision in data management and enhance students' ability to communicate technical findings in a logical, organized manner essential for accurate reporting and collaboration in HVAC environments.

B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).

Matching course component(s):
The TAB program instills an understanding of the HVAC technician's responsibility to reduce environmental impact and enhance life safety on both local and global levels. In APSM 177C, students conduct energy audits, calculating the energy use index of HVAC systems and identifying optimization strategies that reduce energy consumption. This reflects a commitment to sustainable practices that mitigate environmental impacts. APSM 176C builds on this by examining HEPA filter performance in sensitive environments such as hospitals and laboratories, where proper filtration supports public health and safety. Together, these modules emphasize the technician's role in promoting environmental stewardship and public welfare, aligning with industry standards for sustainability and safety.

B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Matching course component(s):

Requesting Faculty: Robert Cormia Date: 11/17/24

Division Curriculum Rep: Tim Myres Date: 12/3/24

FOR USE BY CURRICULUM OFFICE:

Approved: _____ Denied: _____ CCC Co-Chair Signature: _____ Date: _____

Note: Because application forms for the new Foothill GE pattern have not yet been created, the existing application form for Area VII is being used to apply for new Area 7, Lifelong Learning.

General Education Review Request
AREA VII – LIFELONG LEARNING

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Breadth Criteria:

At Foothill College, the primary objective of the general education requirements is to provide students with the depth and breadth of knowledge and understanding required to be independent, thinking persons who are able to interact successfully with others as educated and productive members of our diverse society. Design and implementation of the general education curriculum ensures that students have exposure to all major disciplines, understand relationships among the various disciplines, and appreciate and evaluate the collective knowledge and experiences that form our cultural and physical heritage. General education courses provide content that is broad in scope and at an introductory depth, and all require critical thinking.

A general education enables students to clarify and present their personal views as well as respect, evaluate, and be informed by the views of others. This academic program is designed to facilitate a process that enables students to reach their fullest potential as individuals, national and global citizens, and lifelong learners for the 21st century.

In order to be successful, students are expected to have achieved minimum proficiency in math (MATH 105) and English (ENGL 1A, 1AH or ESL 26) before enrolling in a GE course.

A completed pattern of general education courses provides students with opportunities to acquire, practice, apply, and become proficient in each of the core competencies listed below.

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).
B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).
B3. Creative, critical, and analytical thinking (reasoning, questioning, problem solving, and consideration of consequence).
B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).
B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Depth Criteria for Area VII – Lifelong Learning:

Courses in this area provide students with the skills needed to continue learning after they leave college. Courses focus on the study of humans as integrated intellectual, physiological, social and psychological beings in relation to society and the environment. Full understanding and synthesis of a subject area usually occurs when the skills mastered in a course of study are applied to the context of another discipline. Students are given an opportunity to experience this concept in courses that provide opportunities that bridge subject areas so that students learn to function as independent and effective learners.

Physical activity courses are given inclusion to this area in recognition of the reality that you have to be healthy and live a long life in order to take advantage of lifelong learning. Foothill College deems that: Physical activity courses are acceptable, if they entail movement by the student and are overseen by a faculty member or coach. These courses can be taken for up to 2 units.

A course meeting the Lifelong Learning General Education Requirement ***must*** help students:

L1. Acquire and demonstrate knowledge, skills, and attitudes that support the application of information across two or more disciplines of study;
L2. Develop practical tools that can be integrated into problem solving and decision making with current day-to-day issues and which can be adapted to future situations;
L3. Identify current issues and concerns that influence health, communication or learning;
L4. Comprehend and apply health and well-being issues to the individual and to society;
L5. Find, evaluate, use and communicate information in all of its various formats and understand the ethical and legal implications of the use of that information.

In addition, a course meeting this requirement ***must*** include ***at least one*** of the following student learning outcomes:

L6. Define career and life planning strategies and resources including goal setting and time management, learning styles and self-awareness, building a positive work ethic and leadership qualities;
L7. Analyze beliefs, attitudes, biases, stereotypes, and behaviors in individuals and communities regarding temporary needs, problems and concerns facing society;
L8. Understand the importance of physical fitness and its impact on an individual's physical and mental health;
L9. Use technology to analyze problems and create solutions.

General Education Review Request
AREA VII – LIFELONG LEARNING

Course Number & Title: Test, Adjust and Balancing (TAB) Technician Program

Please map each appropriate component from the **Course Outline of Record** to the appropriate depth and breadth criteria. You can use any part of your COR including course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

Depth Map: Must include the following:

L1. Acquire and demonstrate knowledge, skills, and attitudes that support the application of information across two or more disciplines of study;

Matching course component(s):
Throughout the Testing, Adjusting and Balancing program, students learn processes that require them to synthesize knowledge from multiple disciplines: they must understand principles of airflow and measurement, apply mathematical formulas, and use technical equipment with precision. In addition, students explore the basics of electric motors—how electricity is used to power HVAC components like fans, compressors, and pumps. This unit integrates principles from electrical engineering and mechanical systems, allowing students to bridge the gap between theoretical knowledge of electricity and its practical application in the real world.

Examples:
APSM 171B (BT TAB, Year 1, Semester 1, Module 3-1 Methods of Airflow and Measurements)
Students gain usage of equipment used to measure airflow and perform the functions of a duct traverse. Readings which are read on meters are then applied to mathematical equations used to quantify the cubic feet per minutes (CFM)of air.

APSM 172A (BT TAB, Year 1, Semester 2, Module 4-3 Fundamentals of Electricity, measurement and motors)
Students learn electrical theory and safety and apply this knowledge directly to physical measurements and documentation. Students also learn basics of motors, and how electricity is applied to power components of an HVAC system.

L2. Develop practical tools that can be integrated into problem solving and decision making with current day-to-day issues and which can be adapted to future situations;

Matching course component(s):
Given that the program of Testing, Adjusting and Balancing centers on safety, this requires a lot of troubleshooting and problem-solving knowledge. Students not only need to learn how a system works but how to fix it when it doesn't. Coursework and knowledge build from previous lessons and each class helps students adapt to future situations including more complex systems. Students develop problem-solving strategies to address issues, which include performing hydronic balancing—adjusting valves and flow rates to achieve the desired system performance as per the engineered design. Students learn to read system data, analyze it against design specifications, and make decisions to bring the system back into balance. When a system is not performing per a design criterion specified from engineered drawings, the testing adjusting and balancing apprentice must trouble shoot functioning of components tied to the system.

Examples:
APSM 173C (Year 2, Semester 1, Module 7-10, Fan Basics)
Students learn about basics of fans as they are applied to the HVAC system. Problem solving is critical when identify reasons for airflow pressure increases or decreases, and many issues are solved by calculating the correct fan size, and verifying the system's readings are being taken at correct points throughout the HVAC system.

APSM 174A (Year 2, Semester 3, Module 9-1, Balancing a Hydronic System)
Students learn the process for quantifying hydronic flow from pumps in an HVAC system. Students apply problem solving when there are issues related to GPM Flow rates being below design criteria and perform hydronic balancing, to achieve a desired flow rate per engineered design.

General Education Review Request
AREA VII – LIFELONG LEARNING

L3. Identify current issues and concerns that influence health, communication or learning;

Matching course component(s):
A central theme of the learning throughout the Testing, Adjusting and Balancing program is the need for safety to encourage health. Throughout the Testing, Adjusting and Balancing (TAB) apprenticeship, students acquire the knowledge and skills to perform functional testing of critical components in HVAC systems, directly impacting the health and safety of building occupants. The program emphasizes both technical competencies and the awareness of how HVAC systems can influence occupant well-being through life safety controls and indoor air quality. Additionally, the ability to document, test, and communicate findings is central to the apprenticeship. Students learn how to report testing results, communicate any issues or adjustments needed, and collaborate with other professionals to maintain building safety standards. This is especially crucial in the context of emergency systems that must be clearly understood.

Examples:
APSM 174C (Year 2, Semester 4, Module 12-14, Fire Smoke Damper Certification Exam)
Students apply knowledge in installing, testing, and documenting performance of fire smoke dampers. Students take a certification exam through the International Certification Bureau, and gain the knowledge to perform functional testing per the National Fire Protection Agency requirements for FSD inspections.

APSM 174C (Year 2, Semester 4, Module 12-12, Door Force Testing)
Students perform the functions of door force testing which is directly tied to a building's life safety egress plan. Students use scientific instruments to measure door force, and balance a systems airflow to accommodate door swing pressure.

L4. Comprehend and apply health and well-being issues to the individual and to society;

Matching course component(s):
The core curriculum of the Testing, Adjusting and Balancing program is to keep people healthy and safe and protect buildings. Students in the apprenticeship are trained to understand the critical relationship between HVAC systems and indoor air quality. As they study proper ventilation techniques and system balancing, they also gain insight into how poor air quality can affect both individual health and society at large. For instance, inadequate ventilation in a building can lead to a range of health issues, from respiratory problems to more serious long-term effects. By learning to assess, test, and adjust HVAC systems, students are equipped with the knowledge to prevent these issues and promote healthier living and working environments.

Examples:
APSM 176C (Year 3, Semester 4, Module 18-4 ISO Cleanroom Cert Process)
Students in the Testing Adjusting and Balancing apprenticeship gain knowledge into the proper procedures for balancing and maintaining the integrity of clean rooms. Clean rooms are part of the HVAC industry with critical requirements for ventilation which can range from critical life safety protocols, to protection of resources such as computer chips or medical supplies. Students not only learn to maintain the integrity of the room, but learn proper safety procedures when encountering this physical environment.

APSM 178A (Year 4, Semester 3, Module 22-2VVIAQ)
Students in the Testing Adjusting and Balancing Program learn the effects of poor ventilation in occupied buildings. This involves discussion of topics and studies such as "sick building syndrome" where cognitive functioning is impacted by a poor functioning system.

L5. Find, evaluate, use and communicate information in all of its various formats and understand the ethical and legal implications of the use of that information.

Matching course component(s):
Testing, Adjusting and Balancing students learn to locate relevant technical data, such as manufacturer specifications for HVAC components, national and local codes (e.g., Title 24), and industry standards. Students are trained to critically assess and use the data they collect, comparing it to design specifications and standards.

Additionally, students in the Testing, Adjusting and Balancing program learn the process of testing systems and reporting readings for contract documents. These contract documents are included in the legal documents verifying functioning of life safety systems, and ventilation requirements per a design.

Examples:
APSM 177A (Year 4, Semester 1, Module 19-28, Title 24 Mechanical Acceptance Test Certification Exam)
Students learn the requirements of title 24 Mechanical Acceptance Testing, and document readings verifying the functional operation of components. These documents are included in the commissioning packages for building occupancy. Knowledge is then applied to a certification exam tested through the International Certification Bureau.

APSM 175C (Year 3, semester 4, Module 16-8, Procedures for testing Smoke Control Systems)
Students learn the procedures to test and document the operation and functionality of smoke control systems. Documents used to record data, are critical in identifying the operational functioning of an engineered design for a building. These documents are used to communicate system sequence of operation to life safety workers, and are essential in commissioning and occupancy of buildings.

Depth Map: Additionally, must include at least one of the following:

L6. Define career and life planning strategies and resources including goal setting and time management, learning styles and self-awareness, building a positive work ethic and leadership qualities;

Matching course component(s):
The Testing, Adjusting and Balancing program builds a curriculum that prepares students for their future roles as project managers and eventually foreman roles. Students are introduced to a variety of career and life planning strategies, leadership qualities, and project management principles to help them excel in their future roles as forepersons or project managers in their respective fields. Students are taught to define both professional and personal career goals, breaking them down into manageable steps that align with their larger aspirations. They are encouraged to consider factors like skill development, certifications, and work experience. Students are shown how to allocate time effectively to balance work, study, and personal life. They apply this by managing their schedules to ensure they complete both their technical training and theoretical coursework on time. The students learn to exhibit qualities such as punctuality, dedication, and accountability. They are encouraged to lead by example on job sites, where they are expected to motivate their teams, set high standards, and maintain a strong commitment to safety and quality.

APSM 178C (Year 5, semester 1, Module 24-4 Successful foreman attributes)
Students apply principles of leadership, communication and testing adjusting and balancing knowledge to learn how to become a foreperson for a project. Students cover concepts of jobsite safety considerations, managing employees and customers, and project management solutions to be successful.

APSM 178C (Year 5, semester 1, Module 24-6 Project Management)
Students learn the processes and efficiencies associated with managing a project. Project management delves into the time management, job communication strategies and managing employees. Students work towards completing the apprenticeship program and becoming qualified journeypersons.

L7. Analyze beliefs, attitudes, biases, stereotypes, and behaviors in individuals and communities regarding temporary needs, problems and concerns facing society;

Matching course component(s):

L8. Understand the importance of physical fitness and its impact on an individual's physical and mental health;

Matching course component(s):

L9. Use technology to analyze problems and create solutions.

Matching course component(s):

General Education Review Request
AREA VII – LIFELONG LEARNING

Throughout the entirety of the Testing, Adjusting and Balancing Program, students use industry specific scientific technologies and instruments to gather readings used for commissioning data. These tools range from rotating vane anemometers, flow hoods, wet and dry bulb sensors, thermal imaging cameras, CO2readers, pitot tubes, hydrometers, and more. These readings are then used to adjust system volume controls such as dampers or valves, and balance the flow of hydronic, air, and refrigerant systems.

The use of these tools is not limited to the following classes: (APSM 171A, APSM 171B, APSM 172A, APSM 172B, APSM 173A)

Breadth Mapping: please indicate all that apply (if applicable)

B1. Communication (analytical reading, writing, speaking, and listening skills including evaluation, synthesis, and research).

Matching course component(s):
The TAB program emphasizes the development of comprehensive communication skills, including reading, writing, speaking, and listening, crucial for effective collaboration and documentation in the HVAC industry. In APSM 176A, students learn to interpret submittal data and project specifications, synthesizing technical information to ensure that equipment performance aligns with design and regulatory requirements. This process involves both written documentation and verbal discussions to verify system data and manage document storage. Additionally, APSM 171C provides students with CAL OSHA certification training, enhancing their ability to communicate safety protocols effectively on job sites. Through these modules, students acquire a multidimensional communication skill set that prepares them to evaluate information critically, articulate findings, and collaborate with various stakeholders.

B2. Computation (application of mathematical concepts, and/or using principles of data collection and analysis to solve problems).

Matching course component(s):
The TAB program focuses on the application of mathematical principles to solve HVAC system challenges through data collection and analysis. In APSM 171B, students explore Fan Laws, utilizing proportional relationships to adjust airflow, electrical flow, and water flow to achieve system balance. These calculations ensure that each component operates within the parameters set by design specifications. Additionally, APSM 172B introduces Pump Laws, where students use testing equipment to measure gallons per minute (GPM) and adjust pump motor speeds accordingly. Through these modules, students build proficiency in interpreting and applying mathematical data to calibrate and optimize HVAC systems, a critical skill for ensuring system efficiency and regulatory compliance.

B3. Clearly and precisely express their ideas in a logical and organized manner using the discipline-appropriate language.

Matching course component(s):
TAB students must be able to communicate clearly and systematically, utilizing technical language appropriate for HVAC documentation and data reporting. In APSM 174B, students acquire skills in Excel to record and process data collected from testing equipment, learning how to structure data in a way that reflects industry standards and operational requirements. Similarly, in APSM 172C, students perform Duct Leakage Testing, where they organize and document pressure readings to inform adjustments and system improvements. These activities foster precision in data management and enhance students' ability to communicate technical findings in a logical, organized manner essential for accurate reporting and collaboration in HVAC environments.

B4. Community and global consciousness and responsibility (consideration of one's role in society at the local, regional, national, and global level in the context of cultural constructs and historical and contemporary events and issues).

Matching course component(s):
The TAB program instills an understanding of the HVAC technician's responsibility to reduce environmental impact and enhance life safety on both local and global levels. In APSM 177C, students conduct energy audits, calculating the energy use index of HVAC systems and identifying optimization strategies that reduce energy consumption. This reflects a commitment to sustainable practices that mitigate environmental

impacts. APSM 176C builds on this by examining HEPA filter performance in sensitive environments such as hospitals and laboratories, where proper filtration supports public health and safety. Together, these modules emphasize the technician's role in promoting environmental stewardship and public welfare, aligning with industry standards for sustainability and safety.

B5. Information competency (ability to identify an information need, to find, evaluate and use information to meet that need in a legal and ethical way) and digital literacy (to teach and assess basic computer concepts and skills so that people can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities).

Matching course component(s):

Requesting Faculty: Gina Firenzi Date: 10/19/24

Division Curriculum Rep: Tim Myres Date: 12/3/24

FOR USE BY CURRICULUM OFFICE:

Approved: _____ Denied: _____ CCC Co-Chair Signature: _____ Date: _____

Program Change Request

New Program Proposal

Date Submitted: 11/20/24 11:48 am

Viewing: **Transfer Studies: Cal-GETC, Certificate of Achievement**

Last edit: 01/30/25 8:33 am

Changes proposed by: Evan Gilstrap (20258703)

In Workflow

1. **1GU Curriculum Rep**
2. **Curriculum Coordinator**
3. College Curriculum Committee Chair
4. Authors
5. 1GU Curriculum Rep
6. Curriculum Coordinator
7. College Curriculum Committee Chair
8. FHDA Board of Trustees

Approval Path

1. 01/29/25 12:56 pm
   Andrew Lee (leeandrew): Approved for 1GU Curriculum Rep

Basic Information

Faculty Author(s)	**Users** Evan Gilstrap
Department	Counseling
Division	Counseling and Student Services
Title of Degree/ Certificate	Transfer Studies: Cal-GETC
Type of Award	Certificate of Achievement
Workforce/CTE Program:	No
Effective Catalog Edition:	2025-2026
Distinct curriculum sheet?	Yes

New Degree or Certificate Proposal

Which academic departments will be involved in the creation of this new degree/certificate? Are any new departments being created?

The Counseling Department will be involved in creating this certificate of achievement. There are no new departments being created for this certificate of achievement.

Does De Anza offer a similar degree or certificate?

No, not at this time; however, they will create a similar certificate. Almost all California Community Colleges have a certificate of achievement in transfer general education. De Anza currently has certificates of achievement in IGETC and CSUGE Breadth similarly to Foothill. Since IGETC and CSUGE Breadth will no longer be viable transfer GE patterns, I imagine De Anza will also create a certificate of achievement in Cal-GETC as well.

What is the educational need for this new degree/certificate?

Due to legislation AB 928, the state has moved to a singular lower division transfer general education pattern (Cal-GETC). Since we are mandated to adopt the Cal-GETC pattern, thus making IGETC and CSUGE Breadth non viable transfer pathways, we need to offer the Cal-GETC certificate of achievement as an option to our students.

How does the degree/certificate align with Foothill's Strategic Vision for Equity?

This certificate of achievement aligns with Foothill's Strategic Vision for Equity by addressing the completion phase. Under Issue 13 (Across the California Community College System, all students are not succeeding in comparable rates at reaching their educational goals), Goal 52 (Completion), this certificate of achievement will help increase students who earn a Chancellor's Office approved certificate and ADTs.

Comments and other relevant information for discussion:

Almost all California Community Colleges offer this certificate of achievement.

Reviewer Comments

General Education Review Request
AREA 1A - English Composition

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:

Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:

Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 1A - English Composition:

English Composition courses focus on developing students' proficiency in written communication to meet the demands of academic, professional, and real-world contexts. These courses emphasize two essential intellectual skills: comprehension and written expression at the college level. Students engage with diverse texts to extract meaning, analyze patterns, evaluate information, and synthesize ideas. Writing assignments require students to consider audience and purpose, employ effective rhetorical and structural techniques, provide evidence-based arguments, and refine their work through iterative drafting and revision.

The curriculum aims to cultivate clear, articulate, and persuasive communication while introducing students to the aesthetics and power of the written word. By mastering these skills, students gain the confidence and ability to express themselves effectively in academic and professional settings.

General Education Review Request
AREA 1A - English Composition

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 1A - English Composition. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 1A - English Composition

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Comprehension and Analysis**
   Read and comprehend college-level texts, including the ability to interpret, analyze, evaluate, and synthesize information from expository, narrative, and argumentative prose.
   - Matching course component(s):

2. **Text-Based Writing**
   Write extended compositions totaling a minimum of 6,000 words, grounded in college-level readings, academic subject matter, and class discussions.
   - Matching course component(s):

3. **Critical Thinking in Writing**
   Recognize and evaluate ideas, distinguish between facts, inferences, opinions, and assumptions, and draw and assess conclusions.
   - Matching course component(s):

4. **Thesis and Argument Development**
   Formulate an arguable thesis appropriate to the audience and purpose, and substantiate it through logical organization, supporting evidence, and clarity of expression.
   - Matching course component(s):

5. **Research and Documentation**
   Conduct research using print and electronic media, and accurately attribute sources through textual citations and MLA documentation.
   - Matching course component(s):

General Education Review Request
AREA 1A - English Composition

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Argumentation Principles**
   Understand and apply principles of written argumentation, including induction and deduction, counterarguments, and concessions.
   - Matching course component(s):

2. **Syntactical and Structural Variety**
   Recognize and implement varied syntactical, rhetorical, and structural devices to enhance written communication.
   - Matching course component(s):

3. **Drafting and Revision**
   Utilize a sequential process of multiple drafts and revisions to produce clear, articulate, and grammatically correct compositions.
   - Matching course component(s):

4. **Audience and Purpose Awareness**
   Demonstrate an understanding of audience and purpose in crafting written works tailored to specific contexts and goals.
   - Matching course component(s):

5. **Aesthetic Appreciation of Writing**
   Explore the aesthetics and power of written expression, appreciating how language can evoke emotion, convey ideas, and inspire action.
   - Matching course component(s):

General Education Review Request
AREA 1A - English Composition

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: ____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 1B - Oral Communication & Critical Thinking

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 1B - Oral Communication & Critical Thinking:
Courses in Oral Communication & Critical Thinking develop students' abilities to articulate ideas, evaluate arguments, and engage in reasoned decision-making. These courses emphasize the clear and logical expression of knowledge, information, and ideas, while fostering critical thinking skills to analyze, interpret, and respond to diverse viewpoints. Through oral presentations, discussions, and analytical exercises, students learn to communicate effectively and assess the validity of arguments and methodologies.

The curriculum promotes confidence, clarity, and ethical responsibility in communication, preparing students to participate actively and thoughtfully in academic, professional, and civic contexts.

General Education Review Request
AREA 1B - Oral Communication & Critical Thinking

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 1B - Oral Communication & Critical Thinking. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 1B - Oral Communication & Critical Thinking

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Effective Oral Communication**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

2. **Critical Evaluation of Ideas**
   Critically assess the ideas of others, organize and refine their own ideas, and articulate a well-reasoned position.
   - Matching course component(s):

3. **Analytical Thinking**
   Analyze and evaluate arguments, identifying underlying assumptions, strengths, weaknesses, and implications.
   - Matching course component(s):

4. **Ethical and Responsible Communication**
   Demonstrate an understanding of the ethical responsibilities associated with effective communication and argumentation.
   - Matching course component(s):

5. **Problem-Solving Through Communication**
   Apply communication and critical thinking skills to resolve problems and make informed decisions.
   - Matching course component(s):

General Education Review Request
AREA 1B - Oral Communication & Critical Thinking

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Listening and Interpretation**
   Develop active listening skills to accurately interpret and respond to spoken messages.
   - Matching course component(s):

2. **Rhetorical Strategies**
   Utilize rhetorical techniques to adapt messages to diverse audiences and purposes.
   - Matching course component(s):

3. **Collaborative Communication**
   Engage effectively in group discussions, demonstrating teamwork and interpersonal communication skills.
   - Matching course component(s):

4. **Cultural Awareness**
   Recognize and respect cultural differences in communication styles and adapt accordingly.
   - Matching course component(s):

5. **Application Across Disciplines**
   Apply oral communication and critical thinking skills to analyze problems and arguments in other academic disciplines.
   - Matching course component(s):

General Education Review Request
AREA 1B - Oral Communication & Critical Thinking

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: _____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 2 - Mathematical Concepts & Quantitative Reasoning

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 2 - Mathematical Concepts & Quantitative Reasoning:

Courses in Mathematical Concepts & Quantitative Reasoning equip students with the skills needed to understand and analyze numerical, graphical, and symbolic information. These courses emphasize mathematical reasoning, problem-solving, and the ability to apply quantitative concepts to real-world contexts. Students develop competencies in interpreting data, identifying patterns, and solving problems using mathematical models and tools.

The curriculum promotes logical thinking, precision, and accuracy, enabling students to make informed decisions in academic, professional, and everyday situations.

General Education Review Request
AREA 2 - Mathematical Concepts & Quantitative Reasoning

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 2 - Math Concepts & Quantitative Reasoning. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 2 - Mathematical Concepts & Quantitative Reasoning

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Mathematical Reasoning**
   Apply mathematical reasoning to analyze and solve problems using numerical, graphical, or symbolic methods.
   - Matching course component(s):

2. **Data Analysis and Interpretation**
   Read, interpret, and analyze data presented in various forms, including graphs, charts, and tables.
   - Matching course component(s):

3. **Application of Quantitative Methods**
   Use quantitative methods to model real-world situations and predict outcomes.
   - Matching course component(s):

4. **Logical and Systematic Problem-Solving**
   Develop logical and systematic approaches to problem-solving, including identifying goals and constraints.
   - Matching course component(s):

5. **Communication of Quantitative Ideas**
   Clearly express quantitative ideas and solutions using appropriate mathematical language and notation.
   - Matching course component(s):

General Education Review Request
AREA 2 - Mathematical Concepts & Quantitative Reasoning

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Technology in Quantitative Reasoning**
   Use current technologies and tools for quantitative analysis and problem-solving.
   - Matching course component(s):

2. **Interdisciplinary Application**
   Apply mathematical concepts and reasoning to solve problems in other academic disciplines.
   - Matching course component(s):

3. **Limitations of Mathematical Models**
   Recognize the limitations of mathematical models and methodologies in solving complex problems.
   - Matching course component(s):

4. **Critical Evaluation of Data**
   Assess the reliability, validity, and significance of data used in quantitative arguments.
   - Matching course component(s):

5. **Ethics in Quantitative Analysis**
   Evaluate the ethical implications of quantitative analysis and data presentation.
   - Matching course component(s):

General Education Review Request
AREA 2 - Mathematical Concepts & Quantitative Reasoning

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: _____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 3 - Arts & Humanities

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 3 – Arts & Humanities:
The Arts & Humanities encompass courses that encourage students to analyze and appreciate works of cultural, historical, literary, aesthetic, and philosophical importance. These courses explore a wide range of human expression across time, emphasizing the significance of historical and cultural contexts in which such works are created and interpreted. By examining these works, students gain a deeper understanding of the human condition, fostering an appreciation of diverse values, achievements, and perspectives. These courses also aim to enrich students' personal and professional lives by engaging them in artistic, cultural, and intellectual communities.

Courses meeting the Arts & Humanities requirement must incorporate a multidisciplinary approach (drawing from two or more of the following: history, literature, philosophy, religion, language, and the arts) and address central questions about the meaning and experience of human life.

General Education Review Request
AREA 3 - Arts & Humanities

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 3 - Arts & Humanities. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 3 - Arts & Humanities

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Significant Works and Contexts**
   Acquire knowledge and understanding of significant artistic, literary, or philosophical works and the historical and cultural contexts in which they were created and interpreted.
   - Matching course component(s):

2. **Knowledge of the Human Condition**
   Deepen knowledge of the human condition through systematic inquiry into consciousness, values, ideas, and ideals.
   - Matching course component(s):

3. **Appreciation for Human Life and Creations**
   Develop appreciation for what is significant about human life and its creations.
   - Matching course component(s):

4. **Ethical and Aesthetic Judgments**
   Make reasoned judgments that reflect ethical and aesthetic human values.
   - Matching course component(s):

5. **Analytical and Affective Responses**
   Develop the ability to respond to artistic and literary works both analytically and affectively through writing or other forms of artistic expression.
   - Matching course component(s):

General Education Review Request
AREA 3 - Arts & Humanities

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Ambiguities and Value of Language**
   Understand the ambiguities, vagaries, and value inherent in human language.
   - Matching course component(s):

2. **Nonverbal Communication in the Arts**
   Appreciate nonverbal communication in the visual and performing arts.
   - Matching course component(s):

3. **Interpretations of Artistic Expression**
   Recognize the variety of valid interpretations of artistic expression.
   - Matching course component(s):

4. **Shared Humanity Across Cultures**
   Appreciate shared humanity within the context of diverse cultures.
   - Matching course component(s):

5. **Critical Evaluation of Human Creations**
   Critically evaluate ideas, information, and opinions as they relate to the products of human intellect and imagination.
   - Matching course component(s):

General Education Review Request
AREA 3 - Arts & Humanities

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: _____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 4 - Social & Behavioral Sciences

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 4 - Social & Behavioral Sciences:
The Social and Behavioral Sciences encompass a wide range of interrelated disciplines that explore the complex relationships between individuals and societies. These fields investigate human behavior, social structures, cultural norms, and institutions, examining how these elements shape and are shaped by historical, economic, political, and environmental forces. The Social and Behavioral Sciences seek to provide students with a deeper understanding of the dynamics of human interaction and the diverse factors influencing societal development.

By analyzing patterns of human thought and action, this area fosters critical thinking and global awareness, equipping students to engage with pressing social issues in informed and meaningful ways. Students will explore topics such as identity, equity, governance, power, and cultural exchange, gaining tools to critically evaluate the challenges and opportunities facing societies today and in the future.

General Education Review Request
AREA 4 - Social & Behavioral Sciences

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 4 - Social & Behavioral Sciences. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 4 - Social & Behavioral Sciences

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Interactions of People and Societies**
   Explain the interactions of people as members of societies, cultures, and social subgroups.
   - Matching course component(s):

2. **Critical Thinking and Multiple Perspectives**
   Exercise critical thinking and analytical oral and/or written skills, including consideration of events and ideas from multiple perspectives.
   - Matching course component(s):

3. **Application of the Scientific Method**
   Demonstrate knowledge and application of the scientific method and other methods of inquiry relative to the discipline.
   - Matching course component(s):

4. **Understanding Power and Influence**
   Assess the distribution of power and influence within social, economic, and political systems.
   - Matching course component(s):

5. **Engagement with Social Issues**
   Comprehend and engage in social, economic, and political issues at the local, national, and global levels.
   - Matching course component(s):

General Education Review Request
AREA 4 - Social & Behavioral Sciences

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Diverse Cultures and Sensitivity**
   Demonstrate appreciation of and sensitivity toward diverse cultures, including their social, behavioral, and organizational structures.
   - Matching course component(s):

2. **Global Development and Relationships**
   Explain world development and global relationships in historical and contemporary contexts.
   - Matching course component(s):

3. **Psychological and Social Dynamics**
   Explain the association between psychological well-being, mental processes, emotions, and societal functioning.
   - Matching course component(s):

4. **Historical and Ethical Contexts of Behavior**
   Analyze current events and global issues in the context of historic, ethical, and social patterns.
   - Matching course component(s):

5. **Human Behavior and the Natural World**
   Describe how individual interactions with the natural world and external societies shape and influence human behavior.
   - Matching course component(s):

General Education Review Request
AREA 4 - Social & Behavioral Sciences

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: _____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 5 - Natural Sciences (with Lab)

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 5 – Natural Sciences (with Lab):
Natural Sciences courses focus on exploring the physical universe, its life forms, and the measurable natural phenomena that govern its operations. These courses emphasize the scientific method as a means of discovery and understanding, fostering critical thinking, data analysis, and an appreciation of the interconnectedness between science and human activity.

Laboratory components complement lectures by providing hands-on experiences where students directly interact with the material world, utilize scientific tools, and apply theoretical concepts to real-world scenarios. Together, lecture and lab experiences promote a comprehensive understanding of scientific principles, preparing students to analyze complex systems and contribute to solving pressing scientific and societal challenges.

General Education Review Request
AREA 5 - Natural Sciences (with Lab)

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 5 - Natural Sciences (with Lab). Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 5 - Natural Sciences (with Lab)

Depth Mapping

Mandatory Depth Outcomes (Lecture)

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Scientific Method**
   Develop an understanding of the scientific method, including its attributes and limitations.
   - Matching course component(s):

2. **Judging Evidence**
   Build the ability to evaluate the validity of scientific evidence.
   - Matching course component(s):

3. **Scientific Concepts**
   Foster an understanding of the relationship between hypothesis, experiment, fact, theory, and law.
   - Matching course component(s):

4. **Reasoning Skills**
   Cultivate the ability to use inductive, deductive, and model-based reasoning to solve problems.
   - Matching course component(s):

5. **Critical Thinking**
   Encourage the practice of critical thinking, including evaluating ideas, contrasting opinions, and drawing reasoned conclusions.
   - Matching course component(s):

General Education Review Request
AREA 5 - Natural Sciences (with Lab)

Optional Depth Outcomes (Lecture)

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Appreciation of Science in Modern Life**
   Develop an appreciation of the contributions of science to modern life.
   - Matching course component(s):

2. **Diversity in Science**
   Recognize contributions to science by diverse people and cultures.
   - Matching course component(s):

3. **Human-Environment Interdependence**
   Understand the interdependence of humans and their environment.
   - Matching course component(s):

4. **Impact of Human Behavior**
   Recognize how human behavior has altered the environment.
   - Matching course component(s):

5. **History of Science**
   Explore the history of science, including the ideas and experiments that have shaped the scientific method.
   - Matching course component(s):

General Education Review Request
AREA 5 - Natural Sciences (with Lab)

Mandatory Depth Outcomes (Lab)

Laboratory components must align with the following definition of laboratory experience (adapted from the National Research Council's (2005):

Laboratory experiences provide opportunities for students to interact directly with the material world (or with data drawn from the material world), using the tools, data collection techniques, models, and theories of science. This definition includes student interaction with astronomical databases, genome databases, databases of climatic events over long time periods, and other large data sets derived directly from the material world. It does not exclusively include student manipulation or analysis of data created by a teacher to simulate direct interaction with the material world.

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Direct Interaction**
   Engage in observation and data collection through direct interaction with the material world.
   - Matching course component(s):

2. **Scientific Tools and Techniques**
   Use tools, data collection techniques, models and model-based reasoning, and theories consistent with those employed in research laboratories.
   - Matching course component(s):

3. **Data Analysis with Authentic Data Sets**
   Work with data derived directly from the material world (e.g., large data sets such as astronomical, genome, and climate databases) and avoid exclusive reliance on teacher-created data.
   - Matching course component(s):

4. **Hypothesis Testing**
   Formulate and test hypotheses using recognized scientific methodologies.
   - Matching course component(s):

5. **Communication & Collaboration**
   Communicate findings effectively through oral and/or written work independently and as a member of a team.
   - Matching course component(s):

General Education Review Request
AREA 5 - Natural Sciences (with Lab)

Optional Depth Outcomes (Lab)

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Experimental Records**
   Maintain accurate and complete experimental records.
   - Matching course component(s):

2. **Quantitative and Qualitative Measurements**
   Perform accurate quantitative and qualitative measurements.
   - Matching course component(s):

3. **Interpreting Results**
   Interpret experimental results and draw reasonable conclusions.
   - Matching course component(s):

4. **Statistical Data Analysis**
   Analyze data statistically and assess the reliability of results.
   - Matching course component(s):

5. **Evaluating Experiment Design**
   Design and conduct, as well as critically evaluate the design of experiments for validity and reliability.
   - Matching course component(s):

General Education Review Request
AREA 5 - Natural Sciences (with Lab)
Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: ____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 6 - Ethnic Studies

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 6 - Ethnic Studies:
Ethnic Studies examines the histories, experiences, cultures, and contributions of racially and ethnically marginalized groups within the United States. These courses explore systems of power and privilege, resistance, and resilience, focusing on how race and ethnicity intersect with other aspects of identity such as gender, class, sexuality, and ability. Ethnic Studies emphasizes critical thinking, self-reflection, and civic engagement, equipping students to challenge systemic inequities and contribute to a more inclusive and equitable society.

Through the study of race and ethnicity, students develop a deeper understanding of the historical and contemporary struggles for social justice and equity, gaining tools to analyze, understand, and act on issues that shape diverse communities.

General Education Review Request
AREA 6 - Ethnic Studies

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 6 - Ethnic Studies. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 6 - Ethnic Studies

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Historical and Cultural Contexts**
   Analyze the histories and cultures of racially and ethnically marginalized groups in the United States, emphasizing their contributions and experiences.
   - Matching course component(s):

2. **Systems of Power and Oppression**
   Examine how systems of power, privilege, and oppression shape social structures and individual experiences.
   - Matching course component(s):

3. **Intersectional Analysis**
   Explore how race and ethnicity intersect with other aspects of identity, such as gender, class, sexuality, and ability, to shape lived experiences.
   - Matching course component(s):

4. **Social Justice and Equity**
   Identify and evaluate movements for social justice and equity, both historically and in contemporary contexts.
   - Matching course component(s):

5. **Critical Thinking and Self-Reflection**
   Develop critical thinking and self-reflective skills to analyze personal and societal biases and their impact on diverse communities.
   - Matching course component(s):

General Education Review Request
AREA 6 - Ethnic Studies

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Community Engagement**
   Participate in activities or discussions that connect classroom knowledge to real-world issues impacting diverse communities.
   - Matching course component(s):

2. **Media and Representation**
   Analyze the role of media and popular culture in shaping perceptions of race and ethnicity.
   - Matching course component(s):

3. **Comparative Studies**
   Compare the experiences of racially and ethnically marginalized groups within and across historical and geographic contexts.
   - Matching course component(s):

4. **Cultural Expression**
   Explore artistic, literary, and cultural expressions as forms of resistance and resilience among marginalized groups.
   - Matching course component(s):

5. **Policy and Advocacy**
   Examine the role of public policy in perpetuating or addressing racial and ethnic inequities, and propose strategies for advocacy and change.
   - Matching course component(s):

General Education Review Request
AREA 6 - Ethnic Studies

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: ____ CCC Co-Chair Signature: _____Date: _____

General Education Review Request
AREA 7 - Lifelong Learning

Course Number & Title:

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Overview:
Foothill College's General Education curriculum provides students with a well-rounded education, fostering critical thinking, communication, and interdisciplinary understanding. Faculty play a central role in ensuring GE courses align with these goals and prepare students for academic, professional, and civic success.

This form guides instructors in demonstrating how their course meets the learning outcomes for its designated GE area. Instructors should explain how their course develops analytical and communication skills, integrates diverse perspectives, and fosters interdisciplinary connections. Your contributions help maintain a rigorous and relevant GE curriculum that supports student achievement.

Breadth Criteria:
Foothill College's General Education curriculum equips students with broad and deep knowledge, preparing them to be independent thinkers and engaged members of a diverse society. GE courses encourage intellectual curiosity, interdisciplinary exploration, and critical engagement with the world.

Students gain exposure to a range of disciplines, including the arts, humanities, natural sciences, social sciences, and mathematics. This breadth fosters connections across fields and deepens understanding of cultural, social, and physical environments.

All GE courses emphasize critical analysis and ethical reasoning, challenging students to evaluate complex issues, articulate perspectives, and engage thoughtfully with diverse viewpoints. The curriculum also promotes equity, inclusion, and global awareness, ensuring students are prepared to contribute meaningfully to an interconnected world.

~~To succeed in GE coursework, students are encouraged to develop strong foundational skills in quantitative reasoning and communication. While no specific prerequisites are required, proficiency in mathematics (MATH 105 or equivalent) and English (ENGL 1A, 1AH, or ESLL 26) is recommended.~~

A completed GE pattern enables students to acquire, apply, and demonstrate competence in essential academic and professional competencies.

Depth Criteria for Area 7 - Lifelong Learning:
Courses in Lifelong Learning empower students with the knowledge, skills, and attitudes necessary to adapt and thrive in an ever-changing world. These courses focus on the holistic development of individuals as integrated intellectual, physiological, social, and psychological beings in relation to their communities and the environment. Lifelong learning emphasizes the ability to apply acquired knowledge across disciplines, encouraging students to think critically, solve problems, and make informed decisions in diverse contexts.

A key component of this area is experiential learning, where students are provided opportunities to bridge disciplines and apply skills in real-world settings. These experiences foster independence, adaptability, and effectiveness as lifelong learners.

Foothill College also recognizes the importance of physical activity in supporting lifelong learning. Physical activity courses are included in this area, provided they involve movement overseen by a faculty member.

General Education Review Request
AREA 7 - Lifelong Learning

Course Number & Title:_____

Indicate if this is: ☐ **a course, or** ☐ **a sequence of multiple courses**

Instructions for Mapping Course Components to Criteria

Please follow the steps below to demonstrate how your course (or degree program) fulfills the Breadth and Depth criteria for General Education Area 7 - Lifelong Learning. Use specific components from the Course Outline of Record (COR), such as course outcomes, expanded content, methods of instruction/evaluation, and/or lab content.

If mapping a degree program, please indicate from which course in the sequence you are sourcing COR components.

Breadth Mapping

For each of the following competencies, indicate if and how your course or degree program meets the requirement and provide corresponding course component(s) from the COR.

1. **Communication**
   Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
   - Matching course component(s):

2. **Computation**
   Application of mathematical concepts or principles of data collection and analysis to solve problems.
   - Matching course component(s):

3. **Critical Expression**
   Clearly and precisely express ideas in a logical and organized manner using discipline-appropriate language.
   - Matching course component(s):

4. **Community and Global Awareness**
   Consideration of one's role in society at local, national, and global levels in the context of cultural constructs and historical/contemporary issues.
   - Matching course component(s):

5. **Information and Digital Literacy**
   The set of integrated abilities that includes: the reflective discovery of information, the understanding of how information is produced and valued, the use of information in creating new knowledge, the ethical participation in communities of learning, and the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.
   - Matching course component(s):

General Education Review Request
AREA 7 - Lifelong Learning

Depth Mapping

Mandatory Depth Outcomes

Your course must address all the following outcomes. For each outcome, map the corresponding course component(s) from the COR.

1. **Cross-Disciplinary Application**
   Acquire and demonstrate knowledge, skills, and attitudes that can be applied across two or more disciplines of study.
   - Matching course component(s):

2. **Practical Problem-Solving Tools**
   Develop practical tools for problem-solving and decision-making that address current issues and adapt to future situations.
   - Matching course component(s):

3. **Health and Well-Being Awareness**
   Comprehend and apply principles of health and well-being to individuals and society, fostering physical and mental wellness.
   - Matching course component(s):

4. **Ethical and Effective Information Use**
   The set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning.
   - Matching course component(s):

5. **Critical Analysis of Contemporary Issues**
   Identify and analyze current issues that influence health, communication, and learning within diverse communities.
   - Matching course component(s):

General Education Review Request
AREA 7 - Lifelong Learning

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or sequence must address **at least two** of the following outcomes. For each selected outcome, map the corresponding course component(s).

1. **Career and Life Planning**
   Define career and life planning strategies, including goal setting, time management, learning styles, and self-awareness, while fostering leadership and a positive work ethic.
   - Matching course component(s):

2. **Bias and Social Awareness**
   Analyze beliefs, attitudes, biases, stereotypes, and behaviors in individuals and communities, especially regarding contemporary societal challenges.
   - Matching course component(s):

3. **Physical Fitness and Mental Health**
   Understand the importance of physical fitness and its impact on an individual's physical and mental health.
   - Matching course component(s):

4. **Technology Integration**
   Use technology effectively to analyze problems and create innovative solutions in personal, academic, and professional contexts.
   - Matching course component(s):

5. **Interpersonal and Communication Skills**
   Develop skills for effective communication, teamwork, and collaboration in diverse personal, academic, and professional settings.
   - Matching course component(s):

General Education Review Request
AREA 7 - Lifelong Learning

Degree Program Addendum

If you are submitting a complete degree program (sequence of courses) to fulfill the requirements for this General Education Area, please provide a justification for why a sequence is being proposed instead of a single course. This justification must clearly demonstrate how the sequence, taken as a whole, meets the **Breadth** and **Depth** criteria outlined for this area.

The justification should also touch on how the sequence of courses:

Integrates learning outcomes (The sequence is designed as a cohesive program where learning outcomes are distributed across courses to achieve the required breadth and depth.)

and provides

Progressive development (The sequence builds skills or knowledge progressively, with later courses dependent on foundational learning established in earlier ones.)

Instructions for Mapping Degree Programs

1. Identify which courses in the sequence address specific **Mandatory Depth Outcomes** and **Optional Depth Outcomes**.
2. Provide a clear explanation of how each course contributes to fulfilling the **Breadth** criteria, noting any overlaps or unique contributions within the sequence.
3. Ensure the justification highlights the interdependence and integration of the courses within the sequence.

Example:
Course A introduces foundational concepts in literature and philosophy, addressing Depth Outcomes 1 and 3. Course B expands on these foundations through artistic and historical analysis, addressing Depth Outcomes 2, 4, and 5. Together, the sequence fulfills all mandatory outcomes and optional outcomes 1 and 3.

Requesting Faculty: _____ Date: _____

Division Curriculum Rep: _____ Date: _____

FOR USE BY CURRICULUM OFFICE:

Approved: ____ Denied: _____ CCC Co-Chair Signature: _____Date: _____

GE Application Instructions for Faculty – Area 1A: English Composition

This guide provides step-by-step instructions to assist faculty in completing the General Education (GE) application for Area 1A: English Composition. If, after reading this guide, you still have questions about how to complete the application, reach out to (fill in this area)

Step 1: Breadth Requirements

The GE pattern's breadth requirements are common to all applications. You should map your course or program to as many applicable breadth criteria as possible; however, it's understood that not all courses will align with every criterion. As you respond to the prompts in the application that speak to the breadth requirements, consider the criteria below to inform your responses.

Breadth Criteria:

- **Communication**: Analytical reading, writing, speaking, and listening skills, including evaluation, synthesis, and research.
- **Computation**: Application of mathematical concepts, and/or using principles of data collection and analysis to solve problems.
- **Creative, Critical, and Analytical Thinking**: Reasoning, questioning, problem-solving, and consideration of consequences.
- **Community and Global Consciousness and Responsibility**: Consideration of one's role in society at the local, regional, national, and global levels in the context of cultural constructs and historical and contemporary events and issues.
- **Information Competency and Digital Literacy**: Ability to identify an information need, find, evaluate, and use information to meet that need in a legal and ethical way; teaching and assessing basic computer concepts and skills so that individuals can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities.

These criteria highlight the broad academic skills students should develop and refine across all classes and disciplines. They are not specific to a single course, discipline, or program. As you complete this section of the application, it is useful to think of how your discipline, course, or program integrates these broad skills into the content and instruction as a means of helping students achieve success.

Step 2: Depth Criteria for Your Course

Each GE area has specific Depth Criteria designed to ensure courses or programs provide rigorous learning experiences aligned with the disciplinary inquiry of the academic field. As you complete this application, consider how your course or program meets these criteria in the application.

Providing specific, concrete examples can strengthen your application. Artifacts such as texts, syllabi, assignments, and rubrics can enhance your submission.

Depth Criteria for Area 1A - English Composition

Courses in this area focus on developing students' abilities to engage in effective written communication and critical reading. These courses emphasize comprehension, argumentation, research, and rhetorical awareness.

Mandatory Depth Outcomes

Your course or program should address all the following outcomes. For each, map the corresponding component(s) from the Course Outline of Record (COR) and/or program elements:

1. **Comprehension and Analysis**: Read and comprehend college-level texts, including the ability to interpret, analyze, evaluate, and synthesize information from expository, narrative, and argumentative prose.
2. **Text-Based Writing**: Write extended compositions totaling a minimum of 6,000 words, grounded in college-level readings, academic subject matter, and class discussions.
3. **Critical Thinking in Writing**: Recognize and evaluate ideas, distinguish between facts, inferences, opinions, and assumptions, and draw and assess conclusions.
4. **Thesis and Argument Development**: Formulate an arguable thesis appropriate to the audience and purpose, and substantiate it through logical organization, supporting evidence, and clarity of expression.
5. **Research and Documentation**: Conduct research using print and electronic media and accurately attribute sources through textual citations and MLA documentation.

Optional Depth Outcomes

In addition to the mandatory outcomes, your course or program should address at least two of the following outcomes. For each selected outcome, map the corresponding course component(s):

1. **Argumentation Principles**: Understand and apply principles of written argumentation, including induction and deduction, counterarguments, and concessions.
2. **Syntactical and Structural Variety**: Recognize and implement varied syntactical, rhetorical, and structural devices to enhance written communication.
3. **Drafting and Revision**: Utilize a sequential process of multiple drafts and revisions to produce clear, articulate, and grammatically correct compositions.
4. **Audience and Purpose Awareness**: Demonstrate an understanding of audience and purpose in crafting written works tailored to specific contexts and goals.
5. **Aesthetic Appreciation of Writing**: Explore the aesthetics and power of written expression, appreciating how language can evoke emotion, convey ideas, and inspire action.

Step 3: Demonstrate How Your Course Meets the GE Criteria

To complete the GE application, you should provide evidence that your course or program aligns with both the Breadth and Depth criteria outlined above. Turn to the following as you respond to the prompts in the application:

Use Course Outline of Record (COR) Components

- Reference course outcomes, expanded content, methods of instruction, evaluation criteria, and/or lab content from the COR.
- If applying for a program, indicate which course provides the referenced COR components.

Explain Course Alignment with GE Breadth and Depth Criteria

- Describe how your course fosters strong written communication, research abilities, and analytical reading skills.
- Explain how students develop critical evaluation, problem-solving, and argumentation skills in the course.
- Demonstrate how ethical reasoning and diverse perspectives are integrated into the curriculum.

Provide Specific Examples from Your Course

- Detail assignments, activities, or assessments that develop key GE competencies.
- Explain how students demonstrate proficiency in written communication, rhetorical awareness, and argumentation.

Mapping Programs (if applicable)

If submitting a complete program for acceptance in this GE area, please describe it and how it broadly meets the GE pattern standards for breadth and depth.

In addition to the guidelines provided above, faculty submitting a program for acceptance in this GE pattern should work with a Foothill discipline faculty member to respond to the application prompts.

Your responses should

- **Clearly demonstrate** how the program, taken as a whole, meets the Breadth and Depth requirements for this GE pattern
- **Integrate Learning Outcomes**: Show how the program is designed as a cohesive whole where learning outcomes are distributed across courses to achieve the required breadth and depth for this GE pattern.
- **Provide Progressive Development**: Show how the program builds skills or knowledge progressively, with later courses building upon foundational learning established in earlier ones.