

AS in Stem Foundations

A. Data section

Program Title: Stem Foundations

Enter the exact title that is proposed for the catalog. The title must clearly and accurately reflect the scope and level of the program.

Department offering the degree: Physical Science

Submitted by: Patrick McDougall **Date:** 3.18.24

Type of Program: ☒ Associate in Science (AS) ☐ Associate in Arts (AA)

Use AS for any Science, Technology, Engineering, or Mathematics (STEM) field and for all CTE programs. Use AA for all others.

Program Goal: ☒ Transfer local ☐ Career Technical Education ☐ Other-Designed to Meet Community Needs

TOP Code: 1901.00

TOP code should reflect the main subject matter (or majority of required degree courses). Reference Taxonomy of Programs (TOP) code manual on the curriculum website (vocational TOP codes are denoted by asterisk ()).*

Annual Completers: 15

Enter the number of students projected to be awarded the degree each year after the program is fully established.

Faculty Workload: 2

Enter the number of full-time equivalent faculty that will be dedicated to teaching in the degree during the first full year of operation, regardless of whether they are new or existing faculty List as decimal.

New Faculty Positions: 0

Enter the number of new faculty positions, both part- and full-time. If existing faculty are sufficient, enter zero (0).

New Equipment: 0

If new equipment will be acquired for the degree, estimate (in dollars) the total cost from all sources, including district and state funds. If no new equipment will be needed, enter zero (0).

New/Remodeled Facilities: 0

If new or remodeled facilities will be acquired for the degree, estimate (in dollars) the cost from all sources, including district and state funds. If none, enter zero (0).

Library Acquisitions: 0

If new library and learning resources materials will be acquired for the degree, estimate (in dollars) the cost of all materials. If none, enter zero (0).

Obtain signature of librarian if not zero _____

Program Review Date: Month Aug Year 2030

Enter the month and year of the first schedule review of the degree after it has been approved. For CTE review is every 2 years.

Gainful Employment: ☐ Yes ☒ No

CTE, Yes. Everything else, No.

Distance Education ☐ 0% ☒ 1-49% ☐ 50-99% ☐ 100%

Indicate the extent to which the courses associated with the degree are conducted via distance education.

AS in Stem Foundations Narrative

1. Statement of Program Goals and Objectives

This degree contains some of the courses that will help students prepare for a more specific STEM major (Chemistry, Computer Science, Engineering, Mathematics, and Physics). It is designed for students who know they like STEM but have not decided on a specific program. Students can finish this degree, or move to a specific STEM degree, or earn both degrees.

Upon successful completion of the program, the student will be able to:

1. Demonstrate basic experimental knowledge through data gathering, judging the accuracy and reliability of data, creating informative graphs, and discussing the limitations of experimental designs.
2. Demonstrate good problem-solving habits including estimating solutions and rejecting unreasonable results.
3. Respectfully and ethically collaborate with people in other disciplines from disparate backgrounds.

2. Catalog Description

Many STEM majors share foundational prerequisite coursework. This degree contains some of the courses that will help students prepare for a more specific STEM major (Chemistry, Computer Science, Engineering, Mathematics, and Physics) and make progress toward transferring to a UC or CSU STEM program. The specific requirements for transfer will vary by major and transfer campus, so it is important that students meet with a counselor about their goals in selecting which courses to take for this degree.

3. Program Requirements

	Course	Title	Units	Sub	Option	Sequence
Required Core (students must complete core courses plus one option)			21			
	MATH 28/28s	Precalculus / with Support		4		Year 1/Sem 1
	CHEM 51	Elementary Inorganic Chemistry		5		Year 1/Sem 1
	ENGR 1	Introduction to Engineering		3		Year 1/Sem 1
	MATH 30	Analytic Geometry and Calculus I		5		Year 1/Sem 2
	MATH 31	Analytic Geometry and Calculus II		4		Year 2/Sem 1
Chemistry Option			18			
	CHEM 1	General Chemistry I		5		Year 1/Sem 2
	CHEM 2	General Chemistry II		5		Year 2/Sem 1
	PHYS 41	Physics for Scientists and Engineers I		4		Year 2/Sem 1
	PHYS 42	Physics for Scientists and Engineers II		4		Year 2/Sem 2
Mathematics Option			10-12			
	MATH 32	Analytic Geometry and Calculus III		4		Year 2/Sem 2
	Select one:			3-4		
	MATH 40	Differential Equations			4	Year 2/Sem 2
	MATH 42	Linear Algebra			3	Year 2/Sem 2
	Select one:			3-4		
	CSCI 20	Programming and Algorithms I			3	Year 2/Sem 1
	PHYS 41	Physics for Scientists and Engineers I			4	Year 2/Sem 1
	MATH 18/18s	Introduction to Statistics/with Support			4	Year 2/Sem 1
Physics Option			17			
	CHEM 1	General Chemistry I		5		Year 1/Sem 2
	PHYS 41	Physics for Scientists and Engineers I		4		Year 2/Sem 1
	PHYS 42	Physics for Scientists and Engineers II		4		Year 2/Sem 2
	Select one:			4		

	MATH 32	Analytic Geometry and Calculus III			4	Year 2/Sem 2
	MATH 40	Differential Equations			4	Year 2/Sem 2
Computer Science Option			16-17			
	CSCI 10	Computer Architecture and Organization		3		Year 2/Sem 2
	CSCI 20	Programming and Algorithms I		3		Year 1/Sem 2
	CSCI 21	Programming and Algorithms II		3		Year 2/Sem 1
	PHYS 41	Physics for Scientists and Engineers I		4		Year 2/Sem 1
	Select one:			3-4		
	CSCI 22	Discrete Structures			3	Year 2/Sem 2
	PHYS 42	Physics for Scientists and Engineers II			4	Year 2/Sem 2
Engineering Option			20-21			
	CHEM 1	General Chemistry I		5		Year 1/Sem 2
	PHYS 41	Physics for Scientists and Engineers I		4		Year 2/Sem 1
	PHYS 42	Physics for Scientists and Engineers II		4		Year 2/Sem 2
	MATH 40	Differential Equations		4		Year 2/Sem 2
	Select one:			3-4		
	ENGR 8	Statics			3	Year 2/Sem 2
	ENGR 17	Electrical Circuits and Devices			4	Year 2/Sem 2
Program Total			31-42			

	Local GE	CSU GE	IGETC
Required Major Total:	31-42	31-42	31-42
GE Pattern	21	39	37
Double Count	6	6	6
Transferable electives (as needed to reach 60 units)	14-3	0	0
Total Units	60	64-75	62-73

4. Master Planning

The AS in Stem Foundations will belong to the Physical Science Department. This program is a collaborative effort with the Chemistry, Computer Science, Engineering, Mathematics, Physics, and Physical Science Departments. The intent is to offer a program that meets the prerequisites for many programs and can be used by students as a starting point to determine the path they want to take.

5. Enrollment and Completer Projections

Course	Title	Year 1		Year 2	
		Sections	Enrollment	Sections	Enrollment
CHEM 1	General Chemistry I	12	286	12	286
CHEM 2	General Chemistry II	4	85	4	85
CHEM 51	Elementary Inorganic Chemistry	16	382	16	382
CSCI 10	Computer Architecture and Organization	2	47	2	47
CSCI 20	Programming and Algorithms I	10	234	10	234
CSCI 21	Programming and Algorithms II	5	115	5	115
CSCI 22	Discrete Structures	2	46	2	46
ENGR 1	Introduction to Engineering	4	91	4	91
ENGR 8	Statics	1	24	1	24
ENGR 17	Electrical Circuits and Devices	1	17	1	17
MATH 18	Introduction to Statistics	58	1701	58	1701
MATH 18s	Introduction to Statistics with Support	8	173	8	173
MATH 28	Precalculus	10	200	10	200
MATH 28s	Precalculus with Support	8	160	8	160
MATH 30	Analytic Geometry and Calculus I	12	329	12	329
MATH 31	Analytic Geometry and Calculus II	6	169	6	169
MATH 32	Analytic Geometry and Calculus III	2	63	2	63
MATH 40	Differential Equations	2	53	2	53

MATH 42	Linear Algebra	2	42	2	42
PHYS 41	Physics for Scientists and Engineers I	6	127	6	127
PHYS 42	Physics for Scientists and Engineers II	4	84	4	84

6. Place of Program in Curriculum/Similar Programs

The AS in Stem Foundations does not replace any programs at Butte College. It will feed into these existing programs: AS in Chemistry, AA-T in Mathematics, AS in Mathematics, AS-T in Physics, AS in General Physics, AS-T in Computer Science, AS in Computer Science, AS in Engineering or can progress toward transferring to a UC or CSU STEM program.

7. Similar Programs at Other Colleges in Service Area

There are no other Stem Foundation programs in our service area.

Department Chair Signature: _____

(Your signature certifies that all faculty members in the program have discussed this proposal)

Dean Signature: _____

Submit this form to Heather Rau - Office of Student Learning (SAS-214)