

# University Design Initiative

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Interim Provost



**COLORADO SCHOOL OF MINES**  
EARTH • ENERGY • ENVIRONMENT

# University Design Initiative: Fit Within Overall Efforts

## Institutional Initiatives:

- Metric-Based Budget Model
  - ▣ Speaks to: **Resource allocation**, programmatic incentives, strategic intent (align resource deployment, expand resource base, drive program development)
  
- Promotion & Tenure Expectations
  - ▣ Speaks to: **Quality**, faculty incentives, strategic intent (faculty scholarship, curriculum development and delivery, institutional and professional service)
  
- Productivity Guidelines
  - ▣ Speaks to: **Quantity**, resource utilization and deployment, strategic intent (sponsored research, student scholarship, curriculum delivery)
  
- University Design
  - ▣ Speaks to: **Strategic Intent**, programmatic priorities (distinctiveness, size, resources, support)

Instructional Load Target (SCH per AY)

Tenured Faculty		Thesis and Dissertation Advisees (as primary advisor)			
		≤ 1	2 - 3	4 - 5	> 5
Annual Research Expenditures	<\$25k	630	525	472	420
	\$25k - \$100k	525	472	367	315
	\$100k - \$200k	472	367	315	262
	\$200k - \$400k	420	315	262	210
	> \$400k	315	262	210	157

### Tenure-Track Faculty

	0
	3

### Teaching Faculty

**6.5 DEMONSTRATION OF ATTAINMENT OF PROMOTION AND/OR TENURE CRITERIA, AND INSTITUTIONAL GUIDELINES FOR REVIEWERS**

**Governing Policies:**  
Section 8, Faculty Handbook – Promotion and Tenure

**Procedures:**  
This section seeks to define clear expectations for CSM faculty members regarding Promotion and Tenure (P&T). It was drafted by a committee of faculty members, including the Provost, and approved by the CSM Faculty Senate on April 26, 2016. Any substantive amendments to this section must be approved by the Faculty Senate, not administrative staff (such as deans, chairs or deans emeriti in working, organizational, etc.) may be made in consultation with the Faculty Senate President.

Reviewers at all levels shall consult this document – in conjunction with pertinent sections of the CSM Faculty Handbook – and use these criteria in evaluating P&T applications. Chair-lines and expectations for each of the various P&T review groups are provided in Section III below. In the event of a conflict between the Handbook and this document, the Handbook shall prevail.

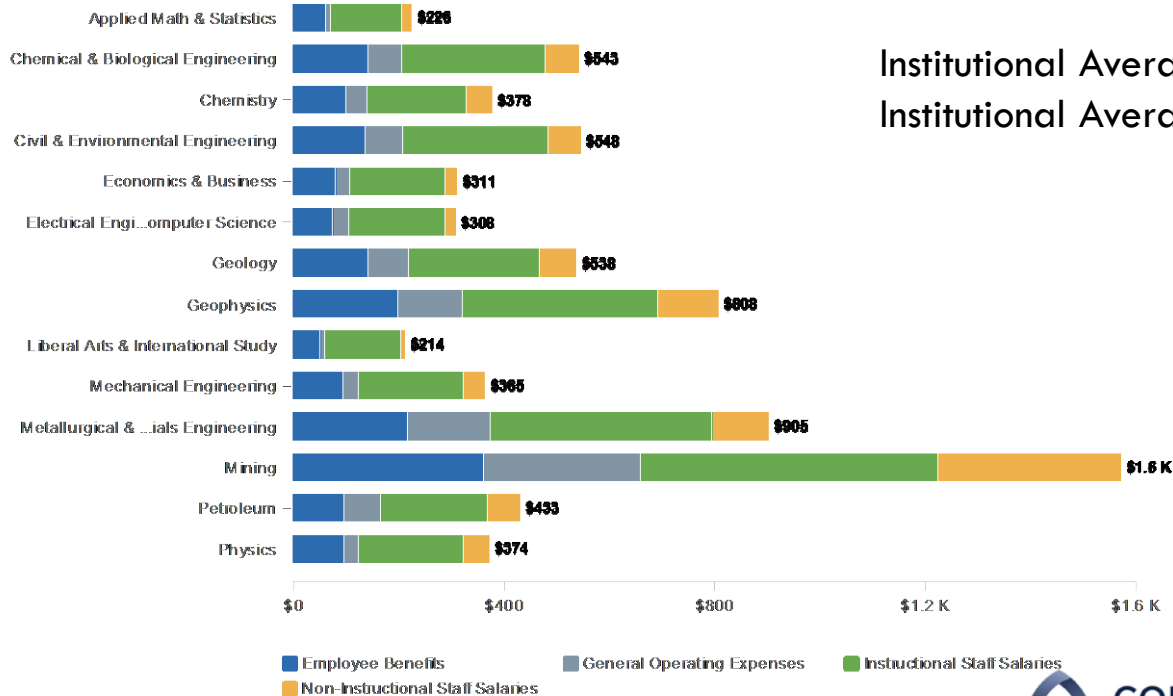
**I. Defining a Path to Excellence**  
Colorado School of Mines (Mines) is committed to excellence and impact through its teaching, scholarship (research) and service. Mines aspires to be a leading, STEM-focused university, known for the uniqueness and quality of its programs, strength of its faculty, success of its graduates, its innovations and entrepreneurial spirit, strong relationships with industry, and the impact that all of these have locally, nationally, and globally.

The University expects its promotion and tenure (P&T) document below are aligned with Mines' aspirations and allow for further specification at the College, Department, and Program levels.

# Context: Recognizing Departmental Differences

Cost Per Credit Hour By Account Category By Department

12/21/2017



Institutional Average Cost / SCH: \$398  
 Institutional Average Tuition / SCH: \$750

Example: Cost/SCH



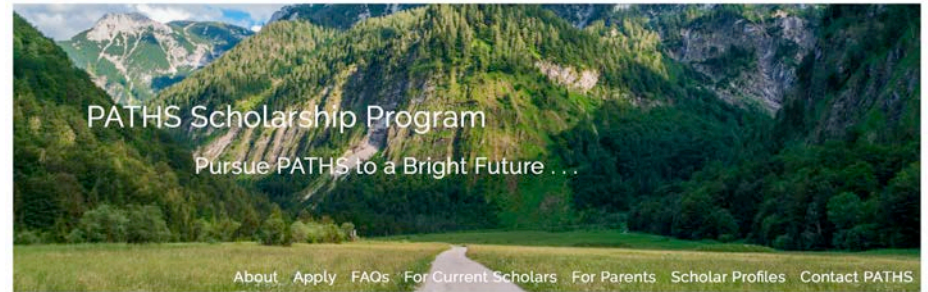
# Context: Promoting Competitive Distinctiveness

## Examples: Distinctive Programs

### GEORGE S. ANSELL DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING

Metallurgical and materials engineering plays a role in all manufacturing processes which convert raw materials into useful products adapted to human needs. The primary goal of the Metallurgical and Materials Engineering program is to provide students with a fundamental knowledge-base associated with materials-processing, their properties, and their selection and application.

The emphasis in the department is on teaching and research focused toward materials processing operations which encompass: the conversion of mineral and chemical resources into metallic, ceramic or polymeric materials; the synthesis of new materials; refining and processing to produce high performance materials for applications from consumer products to automobiles, aerospace and electronics; the development of mechanical, chemical and physical properties of materials related to their processing and structure; and the selection of materials for specific applications.



### About PATHS

Path Ambassadors to High Success (PATHS) is a new scholarship program with funding from the [National Science Foundation](#) (NSF) that offers an exciting opportunity for academically talented, low-income students in Colorado to study Computer Science (CS) at the Colorado School of Mines (Mines). PATHS creates new and strengthens existing pathways for economically challenged, high-potential CS students to thrive at Mines. In addition to providing financial awards, PATHS empowers students through on-campus communities that provide a spectrum of activities, support services, career guidance, and university resources to encourage scholars through successful completion of an undergraduate CS degree. PATHS Scholars who successfully continue with the program will become mentors to new PATHS Scholars in later years. PATHS especially seeks worthy scholars from groups underrepresented in CS and STEM fields, generally, by ethnic/cultural heritage, gender, etc.

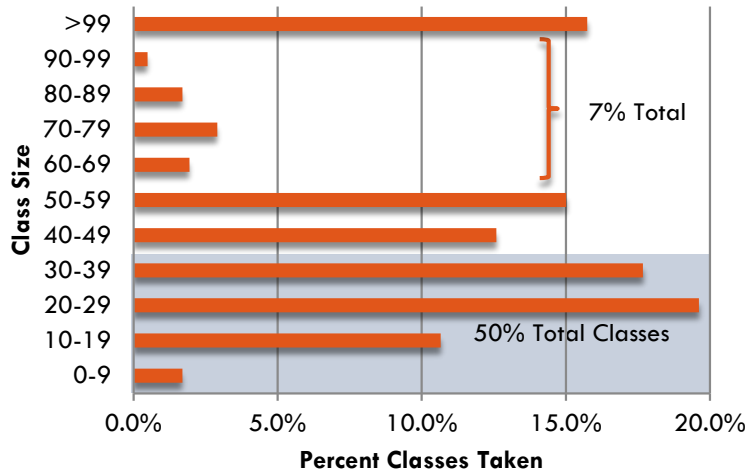


### WELCOME TO ADAPT

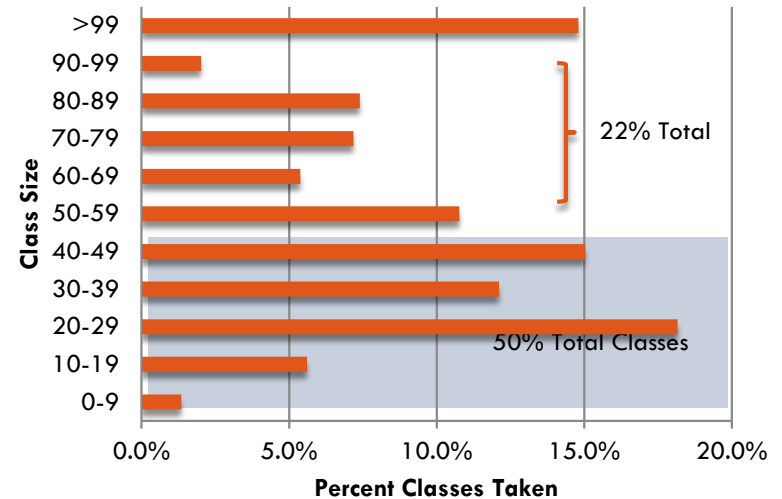
The Alliance for the Development of Additive Processing Technologies (ADAPT) is a membership-based organization that solves challenges in additive manufacturing (AM) using data informatics-driven approaches. We are headquartered at Colorado School of Mines in Golden, Colorado.  
Latest News | Upcoming Events

# Context: Ensuring Uniform, High-Quality Student Experience

## Geophysics Graduates

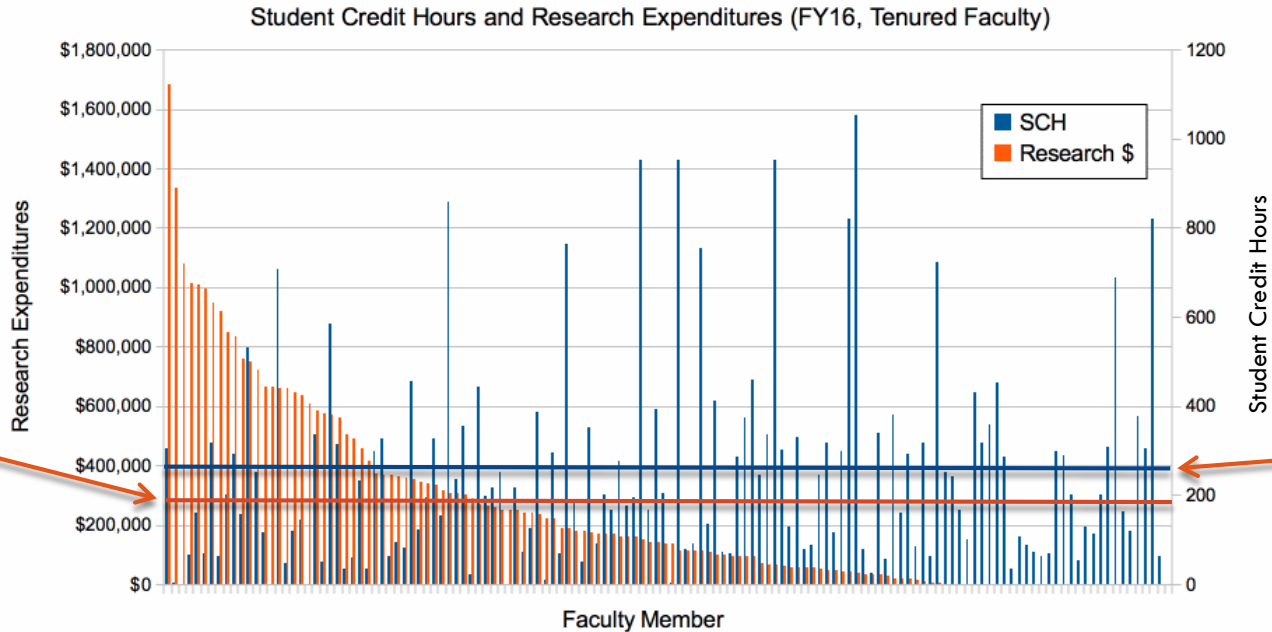


## Mechanical Engineering Graduates



Example: Class Sizes

# Context: Aligning Faculty Expectations



Example: Teaching and Sponsored Research

# University Design Initiative: Process Overview

## Boundary conditions:

- Research aspirations; Top 20 programs in each discipline, or Top 5 programs in more specialized areas
- $\frac{\text{[Aggregate research expenditure goal]}}{\text{[total T/TT faculty]}}$  across similar to or better than average for Top 30 programs
- Proposed staffing requirements consistent with productivity guidelines

President asked Department Heads to engage in a University Design process. Intent: build an aspirational vision for Mines from the ground up.

- Fall 2016 - Department Heads (DH) define aspirational metrics (e.g., faculty size, student size, research productivity).
- Spring 2017 – Financial, enrollment, and productivity models validate overall aspirations can be supported. DHs asked to construct first draft of “Pathways of Distinction” documents.
- Summer 2017 – Provost provides feedback on Pathways documents and builds Faculty Conference as venue to engage broader campus on Pathways discussions.
- Fall 2017 – DHs work with program faculty to revise Pathways documents. Revised models re-validated.
- Spring 2018 – Engage Board on Pathways initiatives proposed by DHs, Provost provide DHs feedback.



# Design Aspirations: Staffing, Research, Advisees, and Finances

## Departmental Design aspirations

	Total Course Credits
Applied Math & Statistics	22,059
Chemical & Biological Engineer	16,081
Chemistry	13,471
Civil & Environmental Enginmg	12,056
Computer Science	14,916
Economics and Business	11,073
Electrical Engineering	8,813
Engineering, Design, Society	8,313
Geology	9,131
Geophysics	3,756
Humanity, Arts, and Social Sci.	18,200
Mechanical Engineering	19,198
Metallurgical & Materials Eng	4,968
Mining	5,096
Petroleum	6,912
Physics	12,737
	186,780

Revenue and Salary Estimates \$150,575,841

	Design Aspirations									
	Student Head Count			Faculty Head Count			Research		Thesis Advisees	
	BS	MS	PhD	TTT	Teaching	PoP	Raw	Per/TTT	Raw	Per/TTT
Applied Math & Statistics	130	80	32	16	12	0	\$1,300,000	\$81,250	40	2.5
Chemical & Biological Engineer	850	25	70	18	8	2	\$7,500,000	\$416,667	77	4.3
Chemistry	100	15	80	20	5	0	\$8,000,000	\$400,000	93	4.7
Civil & Environmental Enginmg	550	150	52	25.5	8	2	\$10,000,000	\$392,157	75	2.9
Computer Science	520	120	32	16	10	0	\$3,200,000	\$200,000	46	2.9
Economics and Business	60	150	25	12	5	1	\$1,000,000	\$83,333	26	2.2
Electrical Engineering	350	120	35	13	5	0	\$2,600,000	\$200,000	40	3.1
Engineering, Design, Society	200	40	0	8	10	8	\$800,000	\$100,000	20	2.5
Geology	140	200	60	18	2	0	\$4,240,000	\$235,556	152	8.4
Geophysics	160	80	60	12	1	1	\$6,500,000	\$541,667	83	6.9
Humanity, Arts, and Social Sci.	0	30	0	15	19	1	\$500,000	\$33,333	0	0.0
Mechanical Engineering	900	200	90	32	8	2	\$10,000,000	\$312,500	109	3.4
Metallurgical & Materials Eng	200	50	90	20	1	0	\$10,000,000	\$500,000	128	6.4
Mining	150	90	55	10	0	4	\$3,500,000	\$350,000	64	6.4
Petroleum	360	60	50	13	3	3	\$6,500,000	\$500,000	87	6.7
Physics	300	28	75	21	7	0	\$7,350,000	\$350,000	89	4.2
	4,970	1,438	806	269.5	104	24	\$82,990,000	\$293,529	1129	4.2
			7,214			397.5				

\$41,414,065 \$11,986,260 \$3,688,080

Total Salaries \$57,088,405

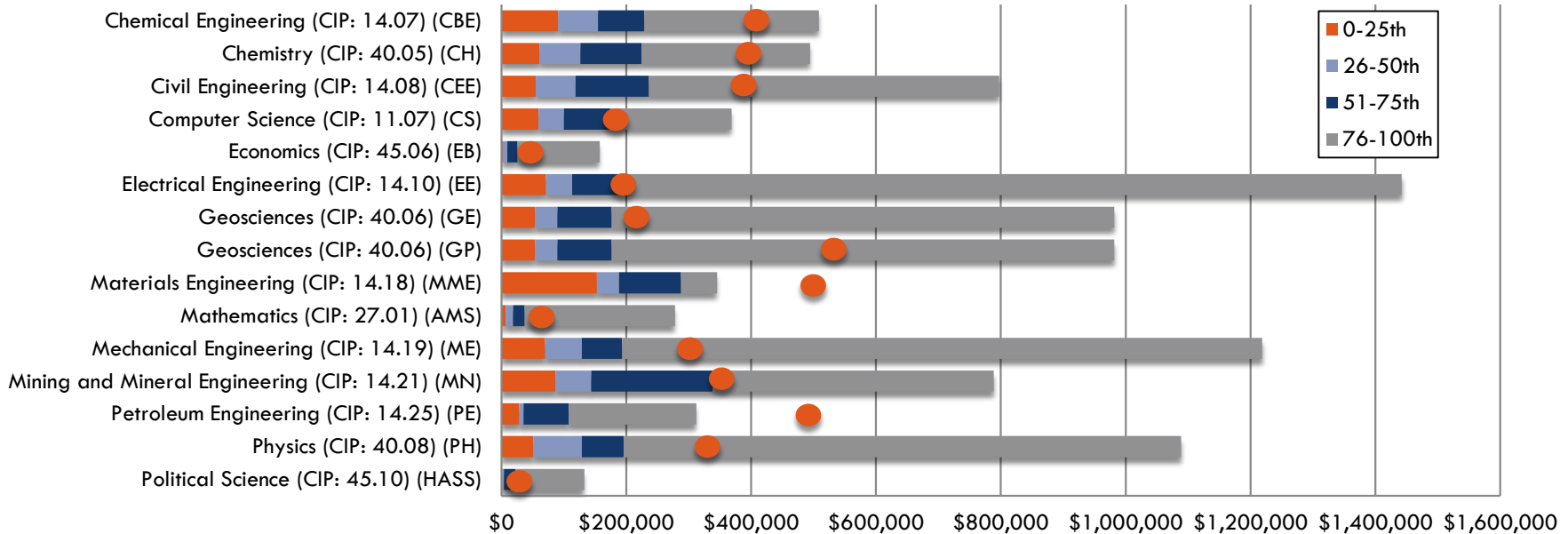
Fraction Revenue used for Salaries 0.38





# Aspirational Research Productivity: Peer Comparison

## Delaware Survey: R1/R2, PhD Granting, Expenditures per TTT (FY16)



# Pathways of Distinction: Overarching Questions

- How will offerings (scholarship, research, and curricular) supported by the Department be differentiated from similarly named offerings elsewhere?
- How will these offerings connect to other programs at Mines?
- What will the Department do to contribute to the institutional objective of increase undergraduate student success?
- How will the Department grow its graduate population?
- Could defining a broadly interdepartmental, campus-level institute enable the Department to align itself more fully with the institutional mission? If so, what would be the nature of this institute?