

Abilene Christian University

Goals and Faculty Evaluation

September 1, 2019 - May 1, 2020

Name: Drachenberg, James Lucas
Department(s): Department of Engineering and Physics

2019-2020

	Fall	Spring	Summer
Teaching	60%	60%	%
Research/Scholarship	20%	20%	100%
Service	20%	20%	%
Administrative	%	%	%

Teaching

Teaching Goals for the Year (completed by June 1 by faculty member)

- T1. Redesign EPI lab
- T2. Develop a new course in Classical Mechanics utilizing the latest in active-learning methodology

Reflections on Goals (completed by March 1 by faculty Member)

Overall:

Positives: I successfully met my teaching goals for 2019-2020

Challenges: Teaching an overload with two new preps in Fall 2019 stressed every aspect of my work.

T1. Positives: The redesign of EPI lab was successful. I designed ten original lab exercises and compiled them in a new lab manual. The exercises are far more open-ended than in the previous course, in order to encourage self-discovery and creativity. Student response to the redesigned lab was also overwhelmingly positive.

Challenges: Anytime one teaches a class for the first time, it is a challenge, much less when it is a total overhaul. However, I really have nothing negative to say, here. It went very well.

T2. Positives: I successfully developed the Classical Mechanics course, including the active-learning tools. I compiled a set of original PowerPoint pre-lecture recordings to accompany a set of PowerPoint lecture slides with concept summaries, multiple-choice discussion questions, and long-form "homework-style" example problems. I was happy with the class and look forward to teaching it again in the future.

Challenges: As in T1, there were the usual challenges associated with building a course from scratch. Building the lecture slides and the recordings simultaneously was extremely time consuming and left me a little pressed, when it came to compiling assignments in a timely manner. Nevertheless, I was happy with how they turned out.

Additional Teaching Activities Not Included in Goals:

T3. As a result of discussion with other department faculty, I implemented some computational problems a part of the new Classical course. I drew from material included in the Colorado course designed with physics education research in mind. For the students, I compiled an instructional Jupyter notebook using Python and posted it on my newly created GitHub page. Most students used Maple to tackle the problems rather than Python. In the future, I will strongly encourage (or require) the students to use Python, as a part of a new department computational initiative.

T4. For the Spring 2020 E&M class, I created an original set of PowerPoint lecture recordings from the slides I developed in Fall 2018.

Chair's Evaluation of Goal Completion (completed by April 1)

Not met	Met	Met with Distinction
		X

Exceeded all department hopes and expectations. Six faculty have tried to complete a revision of EP I lab and failed. Jim has done it in just a few years.

Areas of Competence: Faculty are expected to develop competence in each of these areas (completed by April 1 by chair)

	Unsatisfactory	Needs Improvement	Effective	Excellent
Student Satisfaction				X
Classroom Effectiveness				X
Syllabi				X
Integration of Faith/Learning				X
Class/Course Enhancement				X
Student Advising/Mentoring				X
Teaching (Overall rating by chair)				X

Scholarship

Scholarship/Creativity Goals for the Year (completed by June 1 by faculty member)

- SC1. Oversee machining of scintillator tiles for the STAR forward upgrade
- SC2. Develop a new analysis methodology for hadron-in-jet fragmentation functions utilizing machine learning and neural networks
- SC3. Present at least one conference presentation
- SC4. Complete my three-year term as STAR deputy spokesperson
- SC5. Complete oversight of the STAR analysis blinding committee
- SC6. Write an arXiv manuscript documenting the blind analysis procedure

Reflections on Goals (completed by March 1 by faculty Member)

SC1. Positives: During the summer, in tandem with Dr. Isenhower, I helped mentor Lily McIntosh and three other students in developing a machining procedure for the forward upgrade scintillator tiles. I secured from BNL a contract to fund the milling and polishing of the tiles until the NSF MRI was funded. Our team was able to finish the first allotment and as of this writing have received and distributed the next shipment of scintillator plates.

Challenges: Due to constraints from our excessive teaching load during the Fall 2019 semester, our group was not able to supervise student work effectively during the Fall 2019 semester. This dramatically lowering of the efficiency of the polishing work; and, while we finished, we were 2-3 months behind schedule. If we are to perform such research projects, we *cannot* also be expected to teach a load of four courses. To be clear: I will risk neither my professional reputation nor the good name of ACU within the nuclear physics community by trying to do both of these things, again.

SC2. Positives: Over the summer, I mentored student Roy Salinas in developing machine learning and neural network methods for the hadron-in-jet analysis. During this time, I also developed a traditional analysis for comparison with the novel techniques.

Challenges: During the Fall 2019 semester, I accomplished nothing on this front, as I was consumed with teaching the overload. I won't belabor the point; but it is virtually impossible to progress in research of this level, while carrying a load of four classes.

SC3. Positives: I far exceeded my goal of one presentation, delivering an invited talk at the Fragmentation Functions workshop at Duke in Spring 2019; a contributed talk at INPC in

Glasgow during the summer; and a contributed talk at DNP in Crystal City, VA, in Fall 2019. I wrote conference proceedings for INPC, which should be published, soon.

SC4. Positives: I was able to continue to perform my duties as STAR deputy spokesperson. Challenges: Here again, the time constraints of teaching so heavy a load make performing such a job very difficult. To put it in perspective, my colleagues on the management team receive course releases for such tasks.

SC5. Positives: I was able to continue oversight of the STAR analysis blinding committee.

SC6. Positives: I was able to write the arXiv manuscript and submit it ahead of the Quark Matter conference in the fall.

Additional Scholarly/Creative Activities Not Included in Goals:

SC7. I was heavily involved in the 2019 BNL Nuclear and Particle Physics Program Advisory Committee (PAC) meeting, delivering a presentation on the STAR beam use request and preparing items for other presentations.

SC8. I was able to take a week of data-collecting shifts at BNL during summer 2019, serving as the shift leader.

SC9. I played an integral role in the submission of the renewal for our DOE Medium Energy grant.

Chair's Evaluation of Goal Completion (completed by April 1)

Not met	Met	Met with Distinction
		X

Scholarship/Creativity (Overall rating by chair)

Unsatisfactory	Needs Improvement	Effective	Excellent
			X

Internationally recognized research faculty member and a leader on one of the world's highest rated experiments. Not sure that can be beat by any faculty member at ACU.

Service

Service Goals for the Year (completed by June 1 by faculty member)

- SR1. Oversee McNair activities for Roy Salinas and Kolby Kiesling
- SR2. Participate in physics curriculum committee activities
- SR3. Participate in evaluation of course objectives for EP

Reflections on Goals (completed by March 1 by faculty Member)

SR1. Positives: I was able to oversee the McNair activities for Roy and Kolby, who both finished their projects well.

Challenges: Kolby's project was a bit out of my expertise, and that carried with it some special challenges. However, it was a fun exercise.

SR2. Positives: I was able to participate in regular physics curriculum committee activities.

SR3. Positives: I was able to setup and score the requisite problems for evaluation of EP course objectives. Furthermore, we took an extra set of FCI data from EPI in the Fall 2019 semester.

Additional Service Activities Not Included in Goals:

SR4. I was able to continue assisting with the faculty oversight of SPS activities.

SR5. I set up and coordinated a special Halloween "Spooky Physics" roadshow to Abilene Christian School to perform demos for the 2nd grade classes. SPS was tremendous and performed brilliantly. Dr. Larry Isenhowe and I participated in the demos alongside the students. We received extremely positive feedback and will likely be repeating the experience.

SR6. I joined the Undergraduate Research Festival committee, serving on the Program Committee.

Chair's Evaluation of Goal Completion (completed by April 1)

Not met	Met	Met with Distinction
		X

Service (Overall rating by chair)

Unsatisfactory	Needs Improvement	Effective	Excellent
			X

Does everything asked beyond expectations. Serves distinctively, even if not asked. A true servant.

Summary Assessment by Department Chair**Written Comments**

- Collegiality
Extremely collegial. Exceeds all hopes and expectations.
- Progress toward tenure
Ready for tenure.
- Progress toward promotion
Ready for promotion.
- Constraints on performance
Both scholarship and teaching have largely been affected by the pandemic. To Jim's credit, he has overcome and excelled. Jim volunteered to teach a fourth class, due to the department not having enough faculty. I should have found a way to reject his offer, because I feel it negatively impacted his scholarship and mentoring of students last fall.
- Comment on church membership
Dr. Drachenberg actively participates at his home congregation of Oldham Lane Church of Christ.
- Other
ACU is very fortunate that Dr. Drachenberg has chosen ACU as his place of employment.

 Faculty

 Date

Department Chair

Date