Faculty Annual Activity Report

Brandon Wiggins
2017-2018

1 Teaching Effectiveness

Recognitions

- SUU Influencer Award
- RAD Honors Lecture Series Invited Speaker: *Mushroom clouds and Supernovae*, Nov 29, 2017

Evidence of Creation of A Well-Managed Learning Environment

Class Schedule: Every quiz and test date is provided in the syllabus distributed on day 1 of class.

Homework: This year, I started writing **alternate homework assignments** myself to provide students with problems which better aligned with my teaching priorities. Students were allowed to either complete assignments from the book or my exercises.

> “ *The transparency of this course is why I can get an A.*
>
> *-IDEA Student Evaluation*

Homework is assigned daily and collected as a bundle at the beginning of class the following Monday. I do **not** assign online homework. This is popular with some instructors probably because it cuts down on grading time. Only homework can be among the most frustrating student experiences. Many online homework applications allow students a limited number of attempts which averts risk-taking and exploration which are critical for success in my field. Homework is where mastery is *gained*, not *tested.*

Quizzes: Short quizzes are administered on Mondays and cover the previous week's homework. This permits me to get a quick, robust reading on student comprehension of key topics and guides what I reinforce the following week.

> “ *I felt he truly wanted to make the class as good as he could for everyone.*
>
> *-IDEA Student Evaluation*

Tests: Tests are administered in the testing center over two day periods. Tests are completely composed of worked problems: there are no multiple choice questions on my exams. This is in part due to my emphasis on process in problem solving. A worked problem is often more difficult to grade but allows me to more precisely diagnose causes for student error.

Tests are administered in the testing center. While I enforce a time limit for tests, the testing center does allow students some additional time to complete the test if needed. Some physics problems require multiple attempts before the solution is apparent and this format rewards persistent students.

All tests are graded and returned to students 24 hours after I get them from the testing center. This grading stunt requires me to hand grade about 900 pages of worked problems in a single night.

Labs: Labs are due 24 hours following the end of lab time. Students are required to use lab time effectively and encouraged to turn in lab reports during lab if at all possible.

Lecture: The number one priority during lecture is making sure students are comfortable completing the homework for that night. We break this up with bad puns, terrible jokes and flashy, occasionally high-stake demonstrations. I believe attending lecture should be its own reward. Walter Lewin, a celebrated MIT physics professor lives by the motto "every lecture is an event." I like to surprise students with demonstrations or other activities to help students connect ideas as a continuous story.

Canvas: I used Canvas to post the syllabus, calendar and course grades.

Teaching Philosophy

My teaching philosophy can be summarized in the following points

- Create a **welcoming environment** where students feel comfortable contributing.
- Establish **clear course expectations** to help grade-conscious students plan how to allocate effort.
- Ensure students feel comfortable attempting the homework for that night
- Surprise and delight students with demonstrations and course service.

Some Student Stories

Morgan Taylor returned to LANL this summer to work with Wes Even, Ryan Walleager and Sam Jones on supernova lightcurve modeling in summer 2018. She has received a **1-year post-bachelor research fellowship offer** with pay around $40,000. Morgan is starting her senior year and continues research with Cameron Pace in addition to her work at LANL these past two summers.
Morgan's reputation at LANL has led to an informal request for a chemistry/computer science student from SUU to assist with astro-geo-chemistry simulations of giant impacts in the early solar system.

Agueda Rodriguez, a biology major who used LANL supercomputing codes to model blood flow, was accepted to Oakland University William Beaumont School of Medicine with a **3/4 scholarship over 4 years** to work with Prof. Thomas Guerrero in proton therapy as a form of cancer treatment among other computer/physics research related to medicine. Prof. Guerrero is a previous LANL employee and made a connection with Agueda when he noticed my letter on LANL letterhead and her research in computational fluid dynamics.

Evidence of Creative Teaching Methods and Materials

In this section, I summarize my efforts in contributing three major assets to physics courses at SUU:

- **Introduction of Special Lectures In Unique Locations**
  Part of our 2nd semester classes now take place outside the classroom. I have now lectured in several locations across campus. My infamous buoyancy and pressure lecture now takes place at the SUU swimming pool.
- **New Physics Textbook**
  A new 390-page textbook written through the summer of 2018 now accompanies the PHYS 2010 course.
- **PHYS 2025 Lab Manual**
  Between Fall 2017 and Spring 2018, I rewrote the PHYS 2025 lab manual. This was an extension of the work this last year to rewrite the PHYS 2015 lab manual.

Lectures Across Campus

There is plenty of conversation about the merits of in-classroom instruction compared against the flexibility and inexpensiveness of online course offerings. I believe there is something special about the energy of face-to-face lectures which can't be captured in even the most well-executed online classroom experience. In Spring 2018, I have attempted to push the envelope of my face-to-face instruction experience by attempting to teach physics in a variety of locations and with an over-the-top playfulness and creativity. Far from totally silly or frivolous, these lectures for me represent a critical exploration of the question **"what makes in-classroom instruction so special?"**

Teaching bouyancy and fluids from PEB 102, the SUU swimming pool.

In Spring 2018, I taught fluids from the swimming pool. When conceiving the lecture, I imagined how absurd it might be if I taught from inside the swimming pool itself dressed in a full suit. I used an old suit and worn some 3 additional layers of clothes under it and wore sandals. After the lecture, I rushed home to dry the suit and swimwear to be ready for the next meeting at the pool. This lecture alone required some 10 hours of preparation and planning.

Teaching resonance, sound and standing waves in the Thorely Recital Hall in the music building with a Ruben's Tube. Yes, that is a concert bow tie.

When teaching out-of-classroom, there are numerous logistical challenges that don't occur to you until you sit down to seriously plan it. In many locations including the swimming pool, **there is no whiteboard**, so I usually provide **handouts** to students so that instruction can still be effective. This requires ample planning which doesn't happen in a single morning. Presentations simple composed of discussion and demonstrations are also not effective. Exploiting the unique surroundings with student participation is key to making these lectures powerful. For example, when we studied resonance and sound in the Thorley recital hall, we had two students in each section perform musical numbers after which we discussed standing waves within each instrument.

Yeah, But Do These Crazy Lectures Actually Help?

It's a fair question. These efforts certainly end up *theatrical*, but is this actually *good teaching?*

I'm unsure if I have a compelling answer to this question. Does learning fluids in the pool actually help students understand fluids better? I certainly hope so. Sometimes I think these efforts are simply an extravagant appeal to a students curiosity. They set the tone for the class that surprises and unexpected twists and turns should be an expectation. In my field of research, the feeling of surprise or an inversion of an expectation is the norm, and I sometimes think of these efforts as an attempt to translate that exciting feeling into the lecture setting. I think the lectures also demonstrate that when I have crazy ideas, I actually humor them. It's a critical skill which has helped me in my research and I think it's important that students see that professors pursue those crazy ideas.

A New Textbook For PHYS 2010

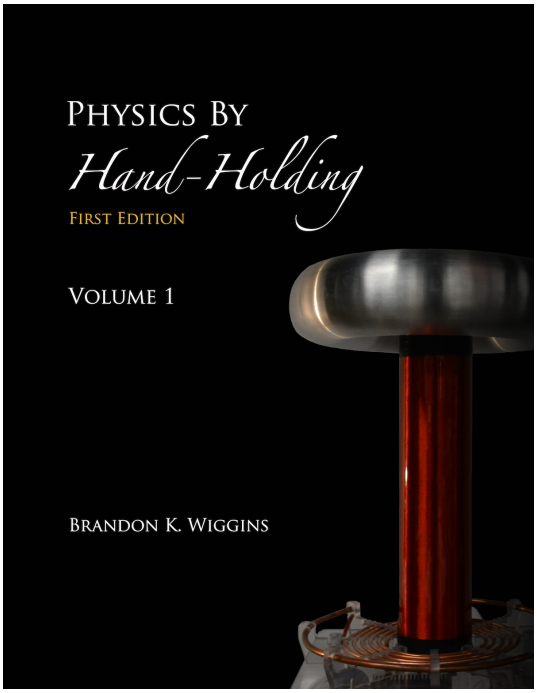
This past summer, **I wrote a 390-page textbook** which will supplant the our current textbook. Students previous paid $290 for College Physics: A Strategic Approach. This textbook option cost students a comparatively modest **$73** through the SUU bookstore. The textbook is also distributed by Amazon, albeit for a higher price.

Physics By Hand-Holding, 1e, Brandon Wiggins, ISBN 978-0-359-03830-5

What is the new textbook?

Physics by Hand-Holding is a new, 390-page physics text for first semester trigonometry-based physics.

This is a *full textbook* with an emphasis on problem-solving strategy.



- 236 original worked examples
- All new problem sets with solutions
- Test preparation materials
- The text is typeset in LaTeX, which formats, numbers and otherwise handles figures and equations. Most figures are generated inside of Tikz inside LaTeX which creates textbook-quality diagrams for problems.

So is this just a pile of lecture notes slapped between two covers?

No. Physics by Hand-holding is a "real" textbook, with readings, worked examples, chapter reviews and problem sets. It's formatting is designed for quick reference and easy access of material. Some features include:

- Highlighted/color coded equations and examples
- Margin notes which emphasize key points

- Public domain or properly licensed figures
- Course-specific materials for PHYS 2010 at Southern Utah University

Every problem, example, diagram and text block have been produced by me, down to the cover art of the book. Some public domain or licensed figures have been used.

It has a high emphasis on problem solving strategy: there are more example problems per page than any other physics text I am aware.

What courses will this be used in?

Physics By Hand-holding will be used in PHYS 2010 courses at Southern Utah University. This text is not intended for general course adoption outside of SUU.

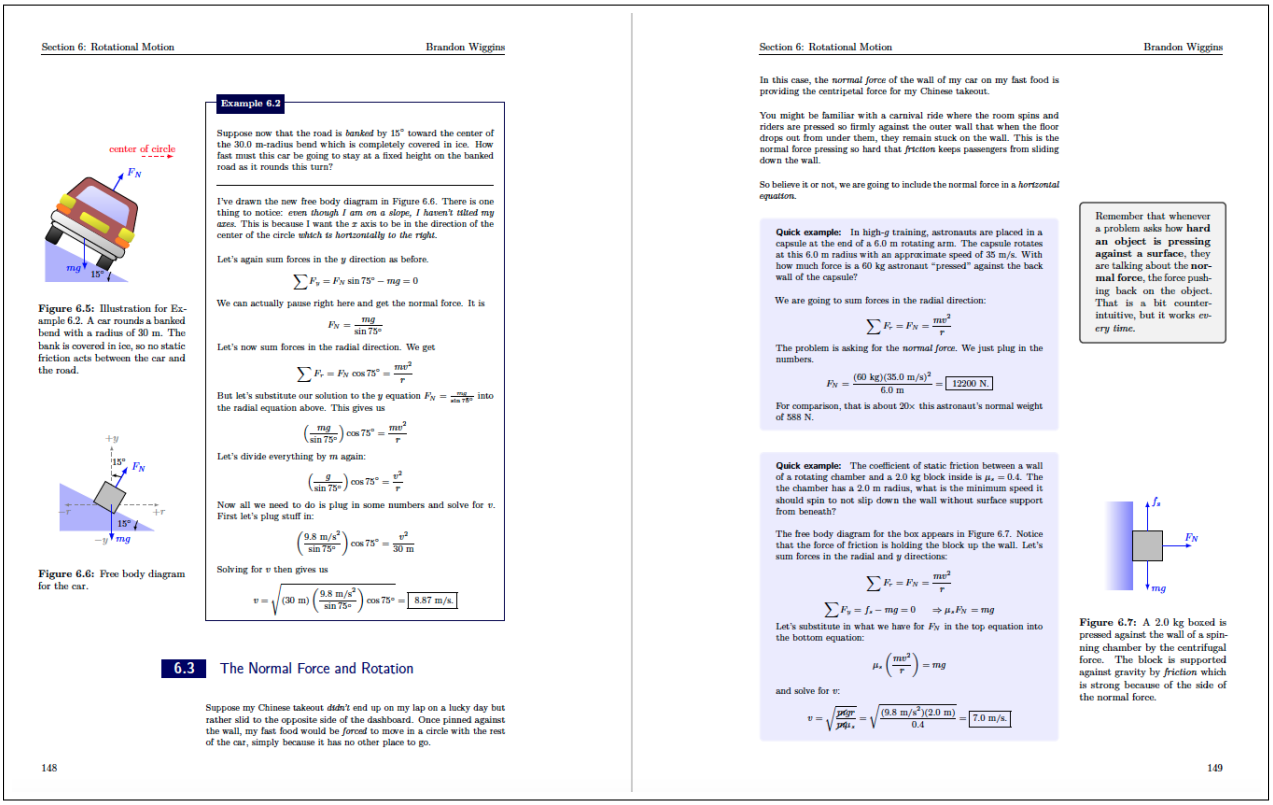
What's In The New Textbook

The text is formatted like a professional textbook. Every figure, example and exercise was created by me. The text includes study helps in the margins, carefully formatted examples which allow students easy access to material they need and equations/figure formatting facilitated by LaTeX.

The text contains many verbose examples, gradually working from very simple problems to more complex ones by the section's end.

A sample page set appears below. This text will be revised with student feedback and so will represent a collaborative effort between me and my students to get an approach which works well for SUU students.

The following pages include the introduction to the text which **discusses its choice of title.**



Section 6: Rotational Motion — Brandon Wiggins

Figure 6.5: Illustration for Example 6.2. A car rounds a banked bend with a radius of 30 m. The bank is covered in ice, so no static friction acts between the car and the road.

Figure 6.6: Free body diagram for the car.

Example 6.2

Suppose now that the road is *banked* by 15° toward the center of the 30.0 m-radius bend which is completely covered in ice. How fast must this car be going to stay at a fixed height on the banked road as it rounds this turn?

I've drawn the new free body diagram in Figure 6.6. There is one thing to notice: *even though I am on a slope, I haven't tilted my axes.* This is because I want the x axis to be in the direction of the center of the circle *which is horizontally to the right.*

Let's again sum forces in the y direction as before.

$$\sum F_y = F_N \sin 75° - mg = 0$$

We can actually pause right here and get the normal force. It is

$$F_N = \frac{mg}{\sin 75°}$$

Let's now sum forces in the radial direction. We get

$$\sum F_r = F_N \cos 75° = \frac{mv^2}{r}$$

But let's substitute our solution to the y equation $F_N = \frac{mg}{\sin 75°}$ into the radial equation above. This gives us

$$\left(\frac{mg}{\sin 75°}\right)\cos 75° = \frac{mv^2}{r}$$

Let's divide everything by m again:

$$\left(\frac{g}{\sin 75°}\right)\cos 75° = \frac{v^2}{r}$$

Now all we need to do is plug in some numbers and solve for v. First let's plug stuff in:

$$\left(\frac{9.8\ \text{m/s}^2}{\sin 75°}\right)\cos 75° = \frac{v^2}{30\ \text{m}}$$

Solving for v then gives us

$$v = \sqrt{(30\ \text{m})\left(\frac{9.8\ \text{m/s}^2}{\sin 75°}\right)\cos 75°} = \boxed{8.87\ \text{m/s}.}$$

6.3 The Normal Force and Rotation

Suppose my Chinese takeout *didn't* end up on my lap on a lucky day but rather slid to the opposite side of the dashboard. Once pinned against the wall, my fast food would be *forced* to move in a circle with the rest of the car, simply because it has no other place to go.

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Section 6: Rotational Motion — Brandon Wiggins

In this case, the *normal force* of the wall of my car on my fast food is providing the centripetal force for my Chinese takeout.

You might be familiar with a carnival ride where the room spins and riders are pressed so firmly against the outer wall that when the floor drops out from under them, they remain stuck on the wall. This is the normal force pressing so hard that *friction* keeps passengers from sliding down the wall.

So believe it or not, we are going to include the normal force in a *horizontal equation.*

Quick example: In high-g training, astronauts are placed in a capsule at the end of a 6.0 m rotating arm. The capsule rotates at this 6.0 m radius with an approximate speed of 35 m/s. With how much force is a 60 kg astronaut "pressed" against the back wall of the capsule?

We are going to sum forces in the radial direction:

$$\sum F_r = F_N = \frac{mv^2}{r}$$

The problem is asking for the *normal force.* We just plug in the numbers.

$$F_N = \frac{(60\ \text{kg})(35.0\ \text{m/s})^2}{6.0\ \text{m}} = \boxed{12200\ \text{N}.}$$

For comparison, that is about 20× this astronaut's normal weight of 588 N.

Remember that whenever a problem asks how **hard an object is pressing against a surface**, they are talking about the **normal force**, the force pushing back on the object. That is a bit counter-intuitive, but it works *every time.*

Quick example: The coefficient of static friction between a wall of a rotating chamber and a 2.0 kg block inside is $\mu_s = 0.4$. The the chamber has a 2.0 m radius, what is the minimum speed it should spin to not slip down the wall without surface support from beneath?

The free body diagram for the box appears in Figure 6.7. Notice that the force of friction is holding the block up the wall. Let's sum forces in the radial and y directions:

$$\sum F_r = F_N = \frac{mv^2}{r}$$

$$\sum F_y = f_s - mg = 0 \quad \Rightarrow \mu_s F_N = mg$$

Let's substitute in what we have for F_N in the top equation into the bottom equation:

$$\mu_s\left(\frac{mv^2}{r}\right) = mg$$

and solve for v:

$$v = \sqrt{\frac{gr\cancel{m}}{\cancel{m}\mu_s}} = \sqrt{\frac{(9.8\ \text{m/s}^2)(2.0\ \text{m})}{0.4}} = \boxed{7.0\ \text{m/s}.}$$

Figure 6.7: A 2.0 kg boxed is pressed against the wall of a spinning chamber by the centrifugal force. The block is supported against gravity by *friction* which is strong because of the side of the normal force.

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Introduction

> *Persons attempting to find a motive in this narrative will be prosecuted;*
> *persons attempting to find a moral in it will be banished;*
> *persons attempting to find a plot in it will be shot.*

You will remember that Mark Twain included those words before his novel *Huckleberry Finn.* I suppose something similar could be said about *this* book but substituting the words *rigor*, *completeness* or *pedagogical correctness.*

This book is **not** aspiring to be the universe's authority on introductory physics. It is not even a *self-contained* treatment of the subject. Rather it's a *resource* designed with the hope of making your experience in physics a bit easier.

When a professor writes a textbook, there is a *lot* to be wary of. Typically, the professor is very proud of it. Often they possess some unhealthy expectation that students will parse and ponder each glorious sentence, appreciating and worshiping their wisdom enshrined between two glossy book covers. More than this, once a professor has written a text for a course, some seem to labor with the impression that their text can run their course for them.

But this book only aims to be a *resource* for assisting you in trigonometry-based physics classes. While it's a bit more *focused* and much less *expensive* than our previous text, I'm under no delusion that it far from perfect. But I *do* believe it's better option than what we were using before.

What Exactly Do You Mean By "Hand-Holding"?

As I prepared notes for my PHYS 2010 course the past few years, I stuck them under the working title "Physics By Hand-Holding." It was a joke between students and me, an acknowledgement that we were committing some type of apparent sin making the discipline approachable.

If I buy a textbook, I expect to be *smarter* after reading it. *That* burden is on the *author*. I paid them hundreds of dollars. I did *not* purchase the book to find out how smart the *author* is, or to learn how *difficult* a subject is. A textbook should make me proficient in its subject with the *least hassle possible.* Full stop.

My impatience with stuffy physics textbooks has led to me adopt a comparatively *explicit* teaching style. This is the kind of textbook-writing which some specific *other* authors might term "hand-holding." True, "hand-holding" is sometimes a derogatory expression for teaching in a way which requires little effort from students. But that is not the intent of this book.

The Philosophy of This Text

The primary goal of this book is to build a student's confidence that they (and anyone!) can solve a physics problem. Once that confidence emerges, a student suddenly finds themselves free to appreciate the principles and patterns which motivate a problem-solving technique. In this sense, we *hand-hold.* We walk students through problem-solving strategies step by step, treating simple problems first and then working toward more complex ones.

If the title sounds academically shameless, it is meant to. This particular book for my classes blatantly attempts to teach trigonmetry-based physics more on a *student's* terms. Often as I wrote this text and looked at my photo rosters for my courses, I asked the question: "in what way could I present this that a *student* would find helpful?"

Changing Times

There is a growing movement in the physics community toward *accessibility* in textbooks. This was not always the case. My shelves are full of books which indulge in high-level abstraction at the reader's expense.

But readers are loosing patience with technical books which play hide-and-seek with the reader. Publishers are noticing a large, untapped market to exploit. It turns out, pages of densely-packed equations usually *aren't* the best way to convey a broad idea to a newcomer of a discipline. Princeton University Press has launched a high-profile physics textbook series under the title *In A Nutshell*, for example, which aims for accessible but rigorous introductions to fields such as quantum field theory, string theory or Einstein's relativity. Because it turns out, people don't like to feel like clueless idiots when they're reading a book.

A. Zee, a prolific author of several landmark physics texts on topics including Einstein's gravity and quantum field theory, begins his 800-page textbook on General Relativity with the following reflection on physics textbooks in general:

> Some textbook writers are simplifiers, others are what I call complicators. In defiance of Einstein's exhortation, many authors strive to make physics as complicated as possible, or so it seems to me. In the research literature, the cause of obscurity may be unintentional or intentional: either the author has not understood the issues involved completely . . ., or the author wants to impress upon the reader the profundity of his or her papers by resorting to obfuscations. But in a textbook?

I aspire to be what Prof. Zee calls a *simplifier.* The most valuable compliment I could ever aspire to in regard to this work is if a student told me they felt this book somehow *simplified* their physics experience.

Another Physics Textbook?

I've had the chance to learn from some wonderful physics texts. I actually still own my introductory physics book. So this begs the question as to what would possess me to write *another* physics textbook for my PHYS 2010 class?

Major physics textbooks must be marketable to large numbers of schools/students and so often attempt to be *everything* to *everyone.* For a textbook company, there is a *wide range* of teaching philosophies to market too, including ones which maintain that figuring out the *application* of physics principles to a particular problem should be left for the student to figure out.

That's great, but it also means that a student or professor will undoubtedly object to the way a particular concept somewhere in the book is presented. *Ideally*, each professor would write their *own* text which closely

reflects the professors priorities and better reflects what students hear in class.

Part of the motivation in writing this was to provide students with a book which used problem-solving strategies in a way similar to what we use in class. Additionally, I can put *course-specific content* in my textbook *unique to PHYS 2010* which would be impossible if we were writing a textbook for broader adoption. This is another way that the textbook moves from being the *master* of the course, to a *resource* which supplements lecture.

Textbooks Aren't Really Meant To Be "Read"

Many textbooks are written seemingly oblivious to the fact that students won't be reading them. Odds are that students will not have time to read 350+ pages of physics textbook during a 15 week semester. At least not when every other class they have has the same expectation.

The trick is preparing a textbook which can be easily used as a quick reference but also connects ideas across a chapter in a meaningful and coherent way. If you don't have the latter piece, you're little better than a physics study guide.

There are a couple of things which this book does to try to help with quick referencing.

- Printed notes in margins highlight key points in adjacent text
- Examples are boxed and color-coded to allow students to quickly find them
- Key equations are highlighted in text
- Frequent subsections to guide students to particular discussions
- Bad examples are shown in strikethrough so that a desperate student flipping through the text for an easy answer won't write down an abomination.

The book is also type-set in LaTeX which handles and the equations, figures, examples, chapter headings and all other formatting options to give the book a uniform look.

Another fact which many writers forget is the mind doesn't normally learn by reading a minutely detailed argument assembled from first principles. In my experience, the brain learns by gaining the broad-brush picture *first* and then filling in exceptions and nuances later on. A colleague might notice that I teaching something which is technically *wrong* or not very *precise* and then go on to be more careful about the topic in subsequent chapters. I believe in "milk before meat" though I could see a colleague claiming I've desecrated something sacred in the effort to establish the "general idea." The physics deities have not struck me dead yet for profaning the discipline, perhaps because I think I clean up after myself okay later on.

Let's hope my luck holds.

Welcome To Physics!

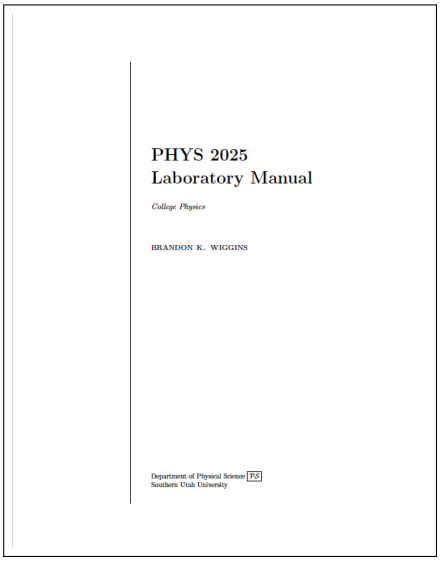
Most textbooks *start* with this message, but I suppose I will just end on it. Welcome to physics! We are glad to have you aboard! Physics is one of the most *fundamental* ways to answer some of the world's most challenging questions. During this semester I hope to show you things you have never seen before. We'll aim to fire your imagination and stretch the realm of what you thought was possible.

But more often, we'll just be trying to have a little fun.

New PHYS 2025 Lab Manual

Between Fall 2017 and Spring 2018, I revamped the PHYS 2025 textbook in a fashion similar to my treatment of the new PHYS 2015 Lab manual. The effort amounted to **about 100 pages** of new lab content with **updated instructions**, **figures** and a **uniform lab format**.

This being said, the roll-out of the labs was far from perfect. The entire project took place **in the space of about 2 weeks.** Though there was significant improvement to the flow of the lab, students still found instructions vague and did not find compelling connections between lab content and lecture material. While the manual represents a significant achievement, there is much work ahead in optimizing the text for 2nd semester SUU physics labs.


PHYS 2025
Laboratory Manual

College Physics

BRANDON K. WIGGINS

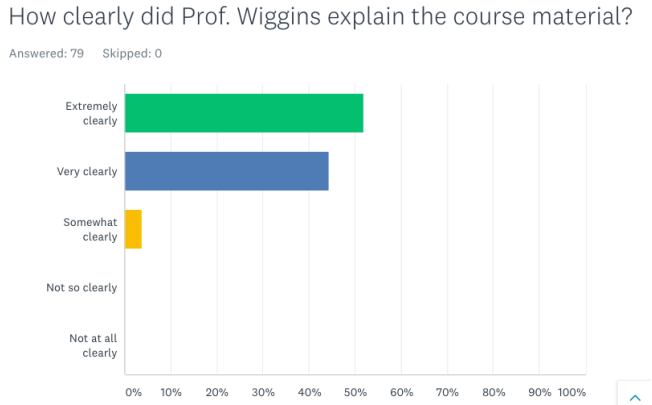
Department of Physical Science
Southern Utah University

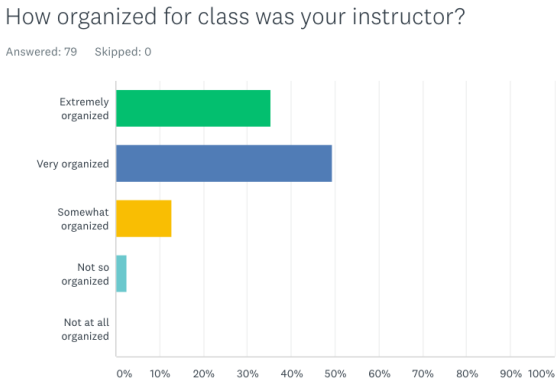
Evidence of Seeking Student Feedback

I carry out **in class surveys** (usually with Survey Monkey) following each test. These surveys help me identify areas of weakness in my approach and allow students to feel they have a voice in how the course is executed. Occasionally students will ask for more standardized test practice or more example problems or even that I be more prompt in answering email. This mid-course feedback is essential for me in gauging the general disposition of the class and that I'm allocating effort in alignment with student needs.

> *"Awesome professor, I really liked that he asked for feedback and actually took it seriously.*
>
> *-IDEA Student Evaluation*

What follows are some sample results I've gained from my polls which often include IDEA student evaluation questions.





In addition to in-class surveys and IDEA evaluations, Jacob Dean evaluated my course. His evaluation, carried out in Spring 2018 follows in subsequent pages.

Department of Physical Science **Teaching Evaluation Worksheet**

Instructor: _____Brandon Wiggins_____ Course: _____PHYS 2020_____

Observer: _____Jacob Dean_____ Date: _____3/7/2018_____

Below is a short list of teaching factors that likely occur within a given class. Use this list as a guide to making observations. For each item, check the appropriate box and make comments as appropriate. Use back of form for narrative and recommendations. Address perceived strengths and weaknesses. Discuss your comments and observations with the instructor.

	Not observed	***More emphasis***	***Accomplished well***	***Comments (or N/A)***
Learning objectives stated clearly.			X	To start the lecture, Brandon stated clearly the objectives of the lecture and connections with former lectures.
Presented material in a logical sequence.			X	Brandon exercised excellent lecture design. The combination of interactive demos involving students, worksheets, and class-engaged discussions resulted in a progressive form of learning for the students. Ultimately, it was clear that this design resulted in students feeling comfortable with the content and discussion thereof, and helped build their confidence in the material. Very impressive.
Lecture was paced appropriately			X	The pacing of the lecture was executed well. This was obvious by occasional scans of the room. The students were right there along with Brandon, never seeming rushed or in a state of disarray. Instead, almost the entire class was attentive and very engaged.
Gave satisfactory answers to student questions.			X	Interestingly very few questions were posed during the lecture, instead only a few clarifications (largely because the students were following along). In these instances, Brandon handled them with ease.
Presented examples to clarify points.			X	Brandon utilized several examples relating circuit diagrams and current flow, to common applications in "real life." In addition, terminology and analogies common to the students were often exploited to relay complex ideas. This seemed to allow the various exemplar circuit diagrams (and concepts crafted therein) to sink in fairly seamlessly.
Related new ideas to familiar concepts.			X	See previous panel.
Restated important ideas at appropriate times.			X	During examples, Brandon presented and restated important logic points and common pitfalls to solving problems in determining current, resistance, and voltage in various circuits.
Encouraged student questions or discussion.			X	The *entire* lecture, Brandon was able to keep the class as a whole involved and interacting. This in part seemed to be enabled by presenting the material *with* the students, and was carried out through working problems together, demos directly involving students, and regular prompts. I was very impressed with the results of his approach, and would like to attempt this in my classes.
Maintained student attention.			X	In short, I have never seen a class so engaged and involved as Brandon's. Particularly, discussing a topic such as circuits! I was truly impressed, and have included more detail on this point in the comments.

Department of Physical Science **Teaching Evaluation Worksheet**

	Not observed	***More emphasis***	***Accomplished well***	***Comments (or N/A)***
Responded to problems or question raised in class.			×	In addition to solving problems with the class, during individual/sub-group problem solving he went around to those students to offer help when needed.
Used learning aids to support lecture topics.			×	Brandon is quite clearly a master in this domain. He began the lecture with a demo demonstrating completing a circuit through a ring of people with a Van de Graaff generator as the source. He brought in something like 9 student volunteers and made the experience fun for the entire audience. This grabbed the attention of the students right at the onset. Then, an activity was given for them to attempt on their own, allowing them to work through and identify concepts/problems that were unclear. This sequence helped set the stage for the rest of the lecture where students were able to work through those missing pieces of knowledge, together with Brandon and the rest of the class. To conclude, Brandon setup another rather intricate demo of Kelvins' water dropper that he constructed himself. The demos and activity were very effective, and I am going to incorporate similar strategies into my own future lectures.
Distinguished between fact, opinion, and divergent viewpoints.			N/A	
Demonstrated command of subject matter.			×	Brandon is clearly in command of his subject and the subject matter covered in the lecture. The carefully chosen examples, fluid progression of the lecture, and overall demeanor in class demonstrated that.

Narrative and recommendations:

In lecture, Brandon discussed Ohm's law and current flow through various circuits. He demonstrated these concepts through several carefully chosen examples, each presenting new concepts and challenges. Brandon's jovial and enthusiastic presence during this lecture was captivating as an audience member. This has clearly enabled his students to connect with him and the subject matter on a whole new level compared to comparative classes I have attended. His students were incredibly comfortable, confident, and even having fun, given the environment Brandon has crafted in his classroom. He facilitated this through very organized white board progression, a well-thought out sequence of demos, examples, and discussion, and finally through great rapport with the entire class.

Signatures: _____(Instructor) _____(Reviewer)

Evaluation reviewed on: _____3/7/2018_____(Date)

. IDEA Survey Results

Class	Progress on Objs	Excellent Teacher	Excellent Course	Average	Summary
Fall 2017					
PHYS 2010-01 *Raw*	4.5 **higher**	4.9 **higher**	4.8 **much higher**	4.9 **much higher**	4.7 **higher**
Adj	4.3 **higher**	4.9 **higher**	5.0 **much higher**	5.0 **much higher**	4.7 **higher**
PHYS 2010-02 *Raw*	4.5 **higher**	4.9 **higher**	4.7 **much higher**	4.8 **much higher**	4.7 **higher**
Adj	4.3 **higher**	4.9 **higher**	4.9 **much higher**	4.9 **much higher**	4.6 **higher**
PHYS 2015-01 *Raw*	4.5 **higher**	4.9 **higher**	4.5 **higher**	4.7 **higher**	4.6 **higher**
Adj	4.3 **higher**	4.9 **higher**	4.7 **much higher**	4.8 **higher**	4.6 **higher**
PHYS 2015-02 *Raw*	4.2 **higher**	4.8 **higher**	4.0 **similar**	4.4 **higher**	4.3 **higher**
Adj	4.2 **similar**	4.9 **higher**	4.2 **similar**	4.6 **higher**	4.4 **higher**
PHYS 2015-04 *Raw*	4.2 **similar**	4.9 **higher**	4.7 **higher**	4.8 **higher**	4.5 **higher**
Adj	4.1 **similar**	5.0 **much higher**	5.0 **much higher**	5.0 **much higher**	4.6 **higher**
PHYS 2015-05 *Raw*	4.3 **higher**	4.8 **higher**	4.4 **higher**	4.6 **higher**	4.4 **higher**
Adj	4.2 **similar**	4.8 **higher**	4.4 **higher**	4.6 **higher**	4.4 **higher**
Spring 2018					
PHYS 2020-01 *Raw*	4.4 **higher**	4.9 **higher**	4.6 **higher**	4.8 **higher**	4.6 **higher**
Adj	4.3 **higher**	5.0 **higher**	4.8 **much higher**	4.9 **much higher**	4.6 **higher**
PHYS 2020-02 *Raw*	4.5 **higher**	5.0 **higher**	4.7 **much higher**	4.9 **much higher**	4.7 **higher**
Adj	4.4 **higher**	5.0 **much higher**	5.0 **much higher**	5.0 **much higher**	4.8 **much higher**
PHYS 2025-01 *Raw*	4.3 **similar**	4.9 **higher**	3.7 **similar**	4.3 **similar**	4.3 **similar**
Adj	4.3 **higher**	5.0 **much higher**	3.9 **similar**	4.5 **higher**	4.4 **higher**
PHYS 2025-02 *Raw*	4.3 **higher**	5.0 **much higher**	4.1 **similar**	4.6 **higher**	4.4 **higher**
Adj	4.2 **similar**	5.0 **much higher**	4.4 **higher**	4.8 **higher**	4.5 **higher**
PHYS 2025-03 *Raw*	4.4 **higher**	4.8 **higher**	4.2 **similar**	4.5 **higher**	4.5 **higher**
Adj	4.0 **similar**	4.8 **higher**	4.2 **similar**	4.4 **higher**	4.2 **similar**
PHYS 2215-04 *Raw*	4.1 **similar**	4.7 **higher**	3.8 **similar**	4.3 **similar**	4.2 **similar**
Adj	4.0 **similar**	4.8 **higher**	3.9 **similar**	4.4 **similar**	4.2 **similar**

Note. — Full IDEA survey data available from Brandon Wiggins upon request. Classes inside of double horizontal rules are lecture courses.

Evidence of Thoughtful Reflection on Feedback

PHYS 2010-01: College Physics I

This course received positive feedback from the IDEA surveys. Adjusted IDEA scores for "excellent teacher" and "excellent course" were 4.9 and 5.0 respectively.

"Never offer a 7 a.m. class again. He is the only professor that can keep student's attention this early." The second sentence in this foolish student comment may have doomed me to teach at 7 a.m. again this semester. There were many comments on the class meeting time which I did not request. I look forward to other faculty in the department of equal seniority taking the 7 a.m. bullet next year.

This semester marked the beginning of a **transition away from the incumbent textbook**. I provided some typed notes which I shared in class and even began writing my own homework assignments to better align student effort with my teaching priorities. This effort amounted to a major course overhaul and the roll-out of each of these study assets required many hours of preparation. Students much preferred my resources to that of the textbook, likely because they better align with how I teach. Some student comments suggest some students wished that these documents could have been produced quicker, but this couldn't be helped. We will talk about the culmination of this effort, a **new full textbook for PHYS 2010** in a subsequent section of this report.

> "*He always went above and beyond that of a normal professor to make sure we had what we needed to succeed.*
>
> *-IDEA Student Evaluation*

Students enjoyed the demonstrations, the personal interest I took in the students and the apparent effort I expended to meet the need of students. Students seemed largely satisfied with my efforts in this class.

PHYS 2010-02: College Physics I

Student reviews of my lectures were very positive, with students ranking me and the course 4.9 and 4.9 on IDEA evaluations. There were multiple comments that complicated material seemed easy.

Students commented that they liked:

- demonstrations
- my alternate homework problems
- exam study materials
- clarity in the lectures
- my approachability

Students commented that I should improve:

- the number of office hours (they want more than 5)
- occasionally give more exercise problems of increasing complexity

I will address my plans to address these issues later in this section.

2015-01: College Physics Lab I

The adjusted IDEA scores for excellent teacher and excellent course were 4.9 and 4.7 respectively. My adjusted score for progress on relevant objectives was 4.3. These range in the "higher" to "similar" ranges.

Multiple students mentioned the issue of **timely feedback.** Lab grading fell behind early this semester due to some miscommunication with the lab aide assigned to help with grading for this lab. While the student grader graded exams and returned them on the timescale of weeks, the grader assigned each of the students an "A" regardless of student effort or lab quality. Ultimately, I went back and graded each of the labs myself before distributing these to students. This greatly diminished student feedback this semester in this and other sections. This was improved upon during Spring semester.

Some students commented that labs were mundane or that they wished that labs were better "streamlined." This is *after* the introduction of a new lab book which aimed to accomplish just this. However, there *were* positive comments that it was easy to find how to set up equipment in the new lab book and that labs were "better focused" than other labs. One student commented that this was the best lab they had ever had.

2015-01: College Physics Lab I

Progress on relevant objectives was given an adjusted 4.2, excellent teacher: 4.9 and excellent course a 4.2. This places the lab class in the "similar" to "higher" range.

In this section, I asked students to comment on the new lab manual. Some of their feedback (in their own words) was:

- The book did a good job of explaining the relevance of topics in this lab.
- It felt like they [the labs] were never-ending sometimes
- I liked the LaTeX lab!
- The new lab manual was good, but in some labs the procedure was kind of confusing
- The labs were needlessly tedious.
- I liked the lab book. They were clear and easy to follow.
- The lab book question [sic] was hard to follow for the non-science students.

The goal of the new lab manual was primarily to streamline instructor lab preparation. I was tired of apologizing for a old, dated lab manual. While most of the experiments are similar to the experiments carried out in the previous manual, the goal was to make **lab format uniform, update lab instructions**, **outline clear expectations** and **focus labs on a few key concepts.**

There were no comments that the lab manual *stunk*, an improvement from the previous year. However, I imagine it would be *very* difficult to create a manual students *liked*.

I'm not adverse to labs being *long.* Students should be using all of lab time. Because *I've* noticed an improvement to how smoothly labs unfold now, I'm also not too troubled by labs being thought of as "tedious." I'm encouraged that at least one student found the lab book clear.

PHYS 2015-04: College Physics Lab I

My adjusted IDEA score for progress on relevant objectives was 4.1; My "excellent teacher" and "excellent course" ratings were 5.0 and 5.0 respectively.

Student comments again point to the fact that some labs felt "too long." Students wished for quicker feedback on their labs. This lab section suffered on feedback because of the TA issue discussed in PHYS 2015-01. Students complimented the lab book but two comments suggested instructions were vague.

PHYS 2015-05: College Physics Lab I

Progress on relevant objectives was given an adjusted IDEA score of 4.2; excellent teacher: 4.8 and excellent course 4.4.

Comments for this section were mostly positive. An excellent TA graded labs promptly and consistently which raised morale in this section substantially. Students had mostly positive comments on the lab manual, with one student even commenting that they felt that it made the lab flow "more smoothly."

PHYS 2020-01: College Physics II

Progress on relevant objectives was given an adjusted IDEA score of 4.3; excellent teacher: 5.0 and excellent course 4.8.

Students comments suggest students were impressed by my 24-hour test grade policy. Students mentioned that I care about them collectively and individually. Some students wanted more MCAT prep. There were additional comments that I understood students and worked for their success. Most comments in this section were very positive.

PHYS 2020-02: College Physics II

Progress on relevant objectives was given an adjusted IDEA score of 4.4; excellent teacher: 5.0 and excellent course 5.0.

Most the IDEA comments are very positive. A few students voiced a desire for a few less demos and more example problems in class. Multiple student comments mentioned how "worn down" I was at the end of the semester. I wrote all the problems for my students in this section and some students said they wished they had had these problem sets earlier in the week. Because the problem sets are now written, this will be a moot point in future offerings of this course. One student regretted that there wasn't more movie trailers for tests. Some students wanted a heavier homework load.

Because I literally wrote every single problem which the students worked, there may well have been too few homework problems. More homework problems will be offered the next time this course is given. This being said, the amount of work assigned for a physics class and the difficulty of the subject matter compare well (higher or similar) to the entire IDEA database, IDEA discipline and other courses at SUU for both lectures, so the data **aren't suggestive that I'm too easy on the students.** Some of these comments may be coming from "high flyers."

As part of 2nd semester labs, we introduced a **second new lab book**. This lab book was prepared in a relative hurry compared to the PHYS 2015 lab-book: the writing was done over winter break. The goals of this lab book were similar to the first: streamline labs, adopt a uniform lab format, update figures and improve lab instructions.

PHYS 2025-01: College Physics Lab II

The adjusted IDEA scores for progress on relevant objectives, excellent teacher and excellent course are 4.3, 5.0 and 3.9.

Many student comments were positive. One student suggestions include

- Have labs set up in advance
- Yet quicker feedback on labs
- The equipment was awful and labs were hard to understand
- Some labs didn't seem to connect well to lecture

> "*Prof. Wiggins really took feedback and changed the course to fit our needs.*
>
> *-IDEA Student Evaluation*

Electricity and magnetism labs this semester were carried out with older equipment which has been replaced over the summer. Also keep in mind this is the *first* PHYS 2025 given during a week, which means that equipment issues were always discovered during this section. The resistors and capacitors in our labs, for example, didn't work well which required constant "fishing" by students for working lab equipment. A lot of these issues we expect to resolve themselves with the new equipment.

There were at least two student comments that labs didn't connect well to lecture. If this is the student perception, there is work to be done, but lab topics were taken directly from lecture that week.

In this lab, I tried to accommodate two student requests: faster feedback on labs and more availability to myself during the lab itself. Students recognized these good-faith efforts as captured in the student comment on this page.

PHYS 2025-02: College Physics Lab II

The adjusted IDEA scores for progress on relevant objectives, excellent teacher and excellent course are 4.2, 5.0 and 4.4.

Several student comments include references that the lab was "fun." I'm still trying to process what that means. While students ranked the difficulty of the subject matter of the course "similar" for courses in the IDEA database and at SUU, it does beg the question of whether the course was too light.

PHYS 2025-03: College Physics Lab II

The adjusted IDEA scores for progress on relevant objectives, excellent teacher and excellent course are 4.0, 4.8 and 4.1.

There were some positive comments, but specific student comments include that labs were difficult to follow or inconsistent. There were comments on the promptness of lab feedback. One student comment said they preferred the first semester lab to the second semester lab.

PHYS 2025-04: College Physics Lab II

The adjusted IDEA scores for progress on relevant objectives, excellent teacher and excellent course are 4.0, 4.8 and 3.9.

Again, there were positive comments, but student comments focused again on quicker lab feedback. Several students mentioned that they found the lab enjoyable. But one student comment sums up attitude toward the class: "Labs suck, no matter the subject, they are just more work." One student also comments "This course felt a little thrown together ... This semester felt off but I don' feel it was a bad course." In actuality, 2025 labs *were* thrown together. The lab book for the course was prepared in less than two weeks and in some ways, this lab was a painful way of working out the kinks in the material. While a more organized effort to roll out new, second-semester labs could have been achieved by waiting a year, the old lab book was close to unworkable and I was eager to get started with the transition as soon as possible. I will describe some of the things we have learned in this process in the next section.

Post-Mortem: What Went Well And What Did Not?

As was the case last year, what I thought went well was markedly different than what students thought went well in my courses.

What students place a premium on appears to be my **approach-ability** and my ability to **connect well** with students in and out of the classroom. The silly teaching stunts and even the course structure appear to be secondary to this. No matter how much material we need to cover in a given day, in my class we laugh a lot which is my way of modelling resilience in the face of stress to students. In one IDEA student comment, the student reported that it was this classroom environment which helped them deal with some mental and emotional issues. This is actually *not* my primary goal as an instructor, but students appear to value these interactions above other characteristics of the course. Because of this, inquiries such as "How is your semester going?" and "So what's your major?" now frequently follow as a student leaves my office hours.

Several higher-flying students asked for more complex exercises in homework problem sets. The new textbook which I am adopting this semester certainly includes a selection of these problems. While student feedback on the text is already positive, I imagine I will be perpetually adjusting the PHYS 2010 curriculum and my students and I find better approaches.

I believe that lectures were carried out well for the most part. As in the previous report, my attention is on labs. Happily, adjusted values for IDEA course summary scores *improved* on average between my first year

teaching and my second year. However, in my PHYS 2025 lab classes, the *opposite* effect is evident. Students on average scored me lower this semester than they had the prior year. Ultimately, I was unhappy with lab feedback during the semester which I think was the biggest point of student dissatisfaction. Students deserve to have labs graded promptly which this year proved to be difficult for reasons we've already discussed. The roll-out of the new PHYS 2025 lab manual may have been too brisk and labs were carried out with old equipment which has since been replaced. The fact that labs were in a transition period is definitely evident in my IDEA evaluations.

In addition, increasing the difficulty and relevance of the labs seems to me an urgent priority. I am cheered by our new lab tech's commitment to rigor and will be acting as a mentor to him as he develops his approach to teaching SUU physics labs.

Teaching Goals

I am not called on to teach physics labs this semester. This is somewhat unfortunate in the sense that I will not be able to demonstrate improvement in teaching labs this coming year. The next time I am scheduled with labs, I will immediately devote time to **training teaching assistants** to grade labs in a way which is consistent with the high expectations of a physics course. I gave too much latitude to teaching assistant this year which resulting in me having to regrade all the labs which in turn created a backlog of ungraded labs.

As far as my assigned lectures go, I'll be working on the following goals.

- **Increasing the rigor of my courses**
  This will be my primary thrust this year. Now that I believe I have a working formula for my lectures, I'm going to increase my expectations. The creation of the new textbook which I have adopted will help with this as it includes more in-depth exercises and additional material not covered when I have taught the course previously.
- **Ensure students feel prepared for standardized exams**
  I'm looking at ways to ensure that skills gained in my class transfer to standardized exams and competency in professional fields. I'm still exploring the methods I might use to do this including incorporating material from standardized tests into the course. I'll be reporting on this in my next FAAR.

Signs of Strain

"I felt bad when he pushed himself so hard to get the tests graded so quickly after receiving them, but it was nice."

"I hope we didn't spread you out too much, it seemed like it took a lot out of you sometimes."

"I could tell you were getting a little worn down..."

The above are IDEA student comments from one of my PHYS 2020 sections in Spring 2018.

In late Spring 2018, physical fatigue set in in a manner visible to even my students. Grading tests within 24 hours, long trips to LANL, and an arguably premature roll-out of yet another lab manual in addition to other innovations in my PHYS 2020 course began taking a measurable toll on my health. In some cases, I even dare to think it may have affected some of my student evaluations as it is difficult to be chipper when one is not healthy or rested. That is neither responsible nor admirable. One thing that I have failed at this past semester is a healthy work-life balance, something I will be earnestly striving to strike this year. This will require a wise strategy for meeting expectations, particularly as I carry a 16 credit hour load this fall.

The 2017-2018 academic year was a *hard year* in many respects. But I believe I have learned lessons that will help me better shoulder my responsibilities in coming years.

2 Scholarship

External Grants

- **$32,648**, Los Alamos National Security (LANS), "Massive Black Hole Formation", SUU PI: **Brandon Wiggins**, Project PI: Joseph Smidt, LANL, Summer 2018, Contract 4333124
- **2.5 hours awarded on the Jansky Very Large Array (VLA)**, "The Water Megamaser in IIZw96", VLA017B-047, Co-I, Observations carried out Dec 2017.
- **50,000 CPU hours on LANL HPC Platforms** to study astrochemistry in the early universe, Co-I.

Peer-Reviewed Publications

- Bayless, A. J., Fryer, C. L., Wollaeger, R., **Wiggins, B. K.**, Even, W., de la Rosa, J., Roming, P. W. A., Frey, L., Young, P. A., Thorpe, R. 2017 "The supernova analysis package SNAP" *The Astrophysical Journal*[1] 864, 101

- Taylor, M., **Wiggins, B. K.** 2018 "Smoothed Particle Hydrodynamics Simulations of Protoplanetary Collisions In The Early Solar System" *Journal of the Utah Academy,* 94, 347

- Staff, J., **Wiggins, B. K.** et al. 2018 "The Role of Dredge-up in Double White Dwarf Mergers" *Astrophysical Journal*, 862, 74

The highlighted publication includes an SUU student co-author.

These publications represent new work not related to my dissertation.

Scholarly Presentations at External Professional Meetings

- "RCB Stars From Double Degenerate White Dwarf Mergers" J Staff, **B. K. Wiggins,** D. Marcello, P. Motl, G. C. Clayton, *231st National Meeting for the American Astronomical Society*, Washington D. C., Jan 11, 2018
  http://adsabs.harvard.edu/abs/2018AAS...23114504S

- "Cosmological Origins of Water" Alexander Gagliano, Morgan Taylor, William Black, Joseph Smidt, **Brandon K Wiggins,** *231st National Meeting for the American Astronomical Society*, Washington D. C., Jan 9, 2018
  http://adsabs.harvard.edu/abs/2018AAS...23115302G

- "The Hydrodynamics of Kiloton Explosions" Tanner Gamble, **Brandon K. Wiggins**, *Conference of the Utah Academy,* April 7, 2018

- "Tidal Disruption Events Around Massive Black Holes", Kyle Christensen, Payton Christiansen, **Brandon K. Wiggins, Conference of Utah Academy,** April 7, 2018

The highlighted presentations/posters include an SUU student co-author.

[1] The Astrophysical Journal is the flagship journal in astronomy and astrophysics.

Papers In Review

- **B.K. Wiggins**, C. L. Fryer, J. M. Smidt, D. H. Hartmann, N. Lloyd-Ronning, "The Location and Environments of Neutron Star Mergers in an Evolving Universe" *The Astrophysical Journal* (in review)

- Kyle Christensen, Payton Christiansen, **Brandon K. Wiggins**, "Tidal Disruption Events Around Massive Black Holes", *Journal of the Utah Academy* (in review)

- Smidt, J., **Wiggins, B. K.,** Samsel, F., Hoch, K., Abram, G., Jones, S., Gagliano, A., Taylor M. "The First Water In The Universe" *SC18* (in review)

The highlighted papers include an SUU student co-author.

LANL Updates

Morgan Taylor returned to LANL this summer to work with Wes Even, Ryan Walleager and Sam Jones on supernova lightcurve modeling in summer 2018. She has received a **1-year post-bachelor research fellowship offer** with pay around $40,000.

I continue to maintain an **active security clearance** and must check in physically with LANL every 90 days. The 10-hour drive one-way is always a lot of fun.

At LANL, I'm leading initiatives to study **astrochemistry in the early universe** and **astro-geochemistry during protoplanetary collisions** through large parallel cosmological and Lagrangian hydrodynamics simulations. In these calculations, we combine three disciplines will be the first of their kind and shed light on the chemical signatures of astrophysical phenomena.

LANL has been impressed with the caliber of SUU students. I have been informally asked to find an **SUU chemistry student** with interests in computational chemistry to model the geochemistry of giant planetary impacts for a summer internship at LANL in Summer 2019.

Student Presentations At On-Campus Venues

My research students are well-represented at on campus venues. Our presentations/posters for the 2017-2018 academic year are:

- Morgan Taylor, A. Gagliano, B. Wiggins, "The cosmological origins of water" (poster) COSE Science Symposium, Nov 13 2017

- Morgan Taylor, B. Wiggins (Morgan gave the talk because I had to run) "Simulations of Protoplanetary Collisions" (talk) COSE Science Symposium, Nov 13 2017

- Morgan Taylor, B. Wiggins "Astrochemistry, The Formation of Water In the Early Universe" (talk) COSE Science Symposium, Nov 13 2017

- Kyle Christiansen, Payton Christensen, "Accretion Disk Morphology and Tidal Disruptions in Massive Black Hole Growth" (poster) COSE Science Symposium, Nov 13 2017

- Hubert Dayish, B. Wiggins "Fluid Dynamics Simulations of Flow in Biological Systems" Festival of Excellence, April 3, 2018

- Allie Maughan, Dillon Maughan, Kendal Maughan, B. Wiggins "Parking Problmes at SUU: Aerial Drone Footage and Statistics" Festival of Excellence, April 3, 2018

- Payton Christensen, Kyle Christiansen "Tidal Disruptions Around Black Holes" Festival of Excellence, April 3, 2018

- Austin Martinez, B. Wiggins "3D Modeling of an Acute Supraspinatus Tear in a Skeletally Mature Individual" Festival of Excellence, April 3, 2018

- Tanner Gamble, B. Wiggins "Sun Fire on Earth: The Hydrodynamics of Kiloton Explosions" Festival of Excellence, April 3, 2018

3 Service

Awards and Honors

- Utah Commission on Service and Volunteerism **Volunteer Recognition Certificate** from the Office of the Lt. Governor of the State of Utah, Spencer J. Cox
- Preformed half-time show for an SUU Men's Basketball game with the SUU Tesla Coil.

Preforming with the tesla coil at a Men's Basketball Halftime at the invitation of President Wyatt.

Service to University including Department, College, University, or State Committees

- **Applied Math Major Committee Member** (successful, Applied Math Major on 2018-2019 course catalog); presented major proposal to board of trustees, university president, provost
- **Skaggs Committee Member**, ranked Skaggs proposals on April 4, 2018
- COSE Homecoming parade banner designer
- **Physical Science Faculty Senator**, elected April 2018

Service to the Profession including Service on Regional or National Committees

- Astrophysical Journal[2] **Referee**, 1 article
- **External PhD thesis reviewer**, Sapienza University of Rome and ICRANet, "Accretion in Compact Stars: Hypercritical accretion in the Induced Gravitational Collapse and the Post-Merger Evolution of White Dwarf Mergers", Laura Marcela Becerra Bayona and Dr. Jorge Rueda
- **Session Moderator**, Conference of the Utah Academy, April 7, 2018

Service To Community

I serve as the **advisor of the SUU chemistry club**[3] Activities related to this duty prefixed accordingly in the bullets below.

- Bread and Soup Night, Tesla Coil, Mar 6, 2018
- Red Riot recruiting event, Mar 23, 2018
- Chemistry Club: Iron County Water Fair (4 chemistry shows, Mar 12, 13 2018)
- Welcome Week Activity Coordinator: Potions Class, Aug 20, 2017
- North Elementary Science Assembly (1 physics show, first external musical Tesla Coil debut)
- Native American Science Night at Dixie Middle School (3 chemistry/physics shows)

[2]The Astrophysical Journal is the flagship journal in astronomy and astrophysics.
[3]Wipe that smile off your face.

- Chemistry Club: SUU Reading Night at Cedar City Library
- SUU Chemistry Club, Chemistry Show, Enterprise High School Science Fair
- SUU Chemistry Club, SUU Career and Internship Fair
- SUU Chemistry Club, Orchestra of Southern Utah's Children's Jubilee
- SUU Chemistry Club, STEAM Festival
- SUU Chemistry Club, Homecoming parade
- Physics Demo Day with Mrs. Monson at Cedar High School (Dec 3, 3 physics shows)
- Iron Springs Elementary STEM night, Mar 21, 2018, 4 Chemistry Shows
- Iron Spring Elementary STEM night, Mar 21, 2018, 4 Science of Electricity Shows
- Science Olympiad Event Coordinator, Mission Impossible, Mar 24, 2018
- SUU Science and Engineering Fair, Special Event Coordinator, Science of Lightning: SUU Tesla Coil, Mar 30, 2018
- SUU Science and Engineering Fair Judge, Mar 30, 2018
- ALCC Colloquium Presenter, For The Love of Physics: Why Scientists Do What They Do, April 11, 2018
- Fiddlers Elementary Assembly, Wonders of Physics science shows, April 17, 2018

4 Collegiality

I'm grateful for my professional relationships with my colleagues here at SUU. I strive to offer optimism and good humor in day-to-day interactions. I believe strongly that being cheerful even in apparently bleak situations has power to make challenges more manageable. I'm eager to learn from my colleagues and am grateful for the mentor-ship and valuable advice I have recieved from those around me.

Collegiality To Colleagues

- Taught work and energy to Rhett Zollinger's PHYS 2210 class in Spring 2018 when Rhett was on travel
- My wife and I cleaned out the physics lab over Christmas break

Collegiality To Students

- All tests returned within 24 hours of me receiving them from the testing center
- 22 unique, non-templated letters of recommendation prepared for SUU students. This is up by more than a factor of 2 in my previous years to teaching.
- Purchased yet more seating for my office at the beginning of the 2017-2018 school year. Between the futon and the bench, my office will now seat 6 students at a time.
- I make it a point to greet students when I see them across campus and inquire about how things are going.

SUU SOUTHERN UTAH UNIVERSITY

Vice President for Student Affairs

Dear Brandon Wiggins,

Congratulations on being named an **SUU Influencer**! This is a unique and special award given the method by which you received this recognition.

Each year we ask our recent graduates, "Which faculty or staff member had the most positive impact on you during your SUU experience?" One of our recent graduates listed YOU as the one individual who had the most positive impact on their SUU experience. For this reason we honor you as an "SUU Influencer" and present you with this certificate.

We would like to thank you for your dedicated work and for taking the time to change the lives of our students. You embody what makes SUU and our students great!

Congratulations,

Dr. Jared Tippets
Vice President for Student Affairs

Brandon Street
Director of Career & Professional Development

351 W. University Blvd., Cedar City, UT 84720 *Phone: 435.586.7710* *Fax: 435.865.8393*

SUU SOUTHERN UTAH UNIVERSITY
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April 30, 2018

Dr. Brandon Wiggins
Physical Science
SC 020
351 W. University Blvd.
Cedar City, Utah 84720

Dear Brandon,

The Southern Utah University Honors Program strives to create meaningful educational experiences for its students, an effort that would be impossible without the support of exceptional faculty and staff. We want to express our gratitude for your willingness to contribute and create academic opportunities for our students. By mentoring an individualized honors contract for Austin Martinez, you have certainly allowed them to pursue a unique learning opportunity in addition to allowing them to earn honors credit towards their graduation.

We understand that mentoring a quality honors contract requires considerable time and effort in addition to your already full teaching load, scholarly work, committee assignments, and other responsibilities. This fact serves as a testament to the dedication that you have for your students and your enthusiasm for teaching. Again, thank you for your commitment to supporting the academic endeavors of our honors students.

Sincerely,

Jayci Bash, MPA
Director
Honors Program

Patrick Clarke, Ph.D.
Dean
School of Integrative and Engaged Learning

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Honors Program
Southern Utah University
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Cedar City, Utah 84720

Dear Dr. Wiggins,

Thank you for your RAD Lecture presentation "Mushroom Clouds and Supernovae: The Imprint of Nuclear Physics in Science and the World" this past November. We enjoyed your perspective on atomic and nuclear power in relation to ongoing nuclear developments and the universe.

Your presentation assisted us in fulfilling two primary learning outcomes of the SUU Honors Program: our mission to understand issues from diverse perspectives and understand how scholars in different disciplines observe and interpret the world. We were grateful for your patience with the technical difficulties that took place. It was the best attended RAD Lecture of the year and your preparation made it well worth the while of everyone who attended.

The Southern Utah University Honors Program always aims to connect students with the university's best faculty. Our program recognizes you as an exemplary member of the faculty on our campus and we enjoyed including you in our 2017-2018 RAD Lecture series.

We hope that you will continue to be involved with the SUU Honors program. Our students benefit from your mentorship and expertise.

Thank you!

Sincerely,

Rebekah Smith
Vice President
Honors Student Council

Jayci Bash
Honors Director