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Provost Garriga and members of the Faculty Relations Committee:

Thank you for considering my enclosed application for promotion to the rank of Professor. With this letter I will outline my relevant qualifications and accomplishments in accord with the Faculty Policy Manual, *Section 1202: Qualifications for Academic Rank*, *Section 1302 Areas of Review in Promotion Considerations*, and *Section 1701: General Criteria for Evaluation of a Faculty Member*. As per the Promotion Application Form, this cover letter is intended to be my own assessment of how I meet the criteria for tenure identified in the Faculty Policy Manual. I will strive to refer to, without repeating, the information laid out in the application form. For your convenience, I have also placed the full application, including this letter, online in a format that I believe is easy to follow and embedded with cross-links to relevant sections that are meant to augment this otherwise stand-alone document. That document can be found at <http://physics.thomasmore.edu/JChristensen/>.

The first and fourth of the four qualifications listed in Section 1202 are satisfied by my Ph.D., awarded by UK in 1998, and by my 11 years, which is greater than the requisite 5 years, at the rank of Associate Professor. The second (superior teaching ability) and third (distinguished scholarship) of the four qualifications require a little more discussion. In each of these categories, Section 1701 of the Faculty Policy Manual provides some guidance on evaluating these characteristics. In the discussion below, I will pull a few quotes from that description and comment on how I feel I hold up under such evaluation.

The second qualification for consideration of promotion to the rank of Professor (*Section 1202*) is to “*demonstrate superior teaching ability*.” The application asks for descriptions of three aspects of my teaching abilities: **Teaching Effectiveness**, **Innovations in Teaching**, and the **Design of New Courses**. I have been teaching physics and math courses for about twenty years, eleven of which are at Thomas More. Much of my innovation to course structure and content occurred at my previous institution during the first half of my career. However, I continue to reflect, modify, and adjust how I can better connect with students, better evaluate my students, and better enable students to take in the material.

**Teaching Effectiveness.** The anecdotal evidence of classroom interactions indicates to me that if I can convince them that my primary goal is their understanding and their success, then I find that they are much more willing to open up and risk revealing their confusion so that we can work together to fix it. That these anecdotes indicate that I am an effective teacher is reinforced (1) by the thank-you notes I regularly receive from my students, which I have included these in the appendix of my application, and (2) by the patterns in my student evaluations, which I discuss in detail in the application and include for review in the appendix of my application.

The executive summary of this is that my scores average about 3 on a 4-point scale and above 4 on a 5-point scale with a relatively small spread in the numbers. The most common comments are “passionate”, “knowledgeable”, “good sense of humor”, and “takes too long to return graded

homework". Despite the work-flow issue, which is related to my working half-time in administration for the past eight years, I also get comments that I am either the "best teacher" (of the semester or at Thomas More) or sometimes their "favorite teacher".

*Section 1701.2* looks for "...superior classroom performance..." While I think that I have addressed it in the application, let me make an additional point that didn't quite fit into that section but which still speaks to my classroom performance. My teaching style suits my personality. That is not to say that I teach in the manner in which I wish to be taught. Indeed, you will find that many of the comments that I receive in my evaluations are that I can present material in a variety of different ways. From my experience as a student, I find that the students who are able to make fun of the material are usually the ones who are paying attention although they may not be actively participating. For this reason, I try to play with the material and make ridiculous jokes to encourage the students to think how they might make a joke about the material. For example, when dealing with complex numbers and one undistributes the imaginary number  $i=\sqrt{-1}$ , I joke that we are "pulling out an eye!" Or if we toss a ball in the air, then I note that we are "throwing it up" (with requisite retching sounds). Interestingly, the students will go out of their way to find an excuse to use these phrases in subsequent classes. Sometimes it takes a lot of thought to provide oneself with such an opportunity.

*Section 1701.2* also looks for "...classroom organization and development..." There have been a few, I think, isolated instances where my schedule became hectic and the class fell into a bit of disarray. This is revealed in a few of the student evaluation. However, I feel that these are isolated incidents that irritated students sufficiently to comment. I do not think that it is a pattern of disorganization and, as evidence of this, you may note that many of those who complain also include complements about the class and about my instruction. Furthermore, I think that the example of generating a Lab Manual suitable for publishing and providing a detailed schedule for each course syllabus show the level of organization in my work. In addition, I think that my innovations in teaching and the ongoing design of new courses speaks to my efforts in classroom development.

**Innovations in Teaching.** From 2010-2016, I served half-time as the Director of the Quality Enhancement Plan (QEP), which worked towards increasing the level of critical thinking in our students, in part by making more explicit the critical thinking of our faculty. During this endeavor, I studied some implementation techniques for the classroom that can aid this effort. Some of the innovations that I list in my application are implementations of those techniques. I also describe a class I am teaching now in which I am trying to manage the homework in a different way to encourage more discussion during the class. Finally, I list a few innovations that I have implemented in the years since I submitted my tenure application in 2011.

**Design of New Courses.** In this section, I list two courses that I created recently. One is a course for non-science majors that allows them the opportunity to choose what kinds of physics they want to learn about. If they can give me half of the term to explain the language of physics and lay down a few fundamental principles, then they can control the second half of the term with topics of interest to them and I will discuss the relevant physics in each case. The second is a course for the junior level physics majors. This course is a new preparation for their senior research project that culminates in essentially a grant proposal for their senior project.

*Section 1701.2* "...clearly articulate the subject matter..." There are no complaints in the student evaluations about my clarity and, in contrast, there are a significant number of students who praise my ability to explain. I am also providing letters of recommendation from two faculty members who

have sat in my classes on several occasions. One letter is from Dr. Kim Haverkos, who is a faculty member in the Department of Education, and the other is from Dr. Wes Ryle, who is a member of the Department of Math and Physics with me. Both of them evaluate me on a number of fronts, but both can attest to my teaching ability.

The third qualification for consideration of promotion to the rank of Professor (*Section 1202*) is to “show distinguished scholarship...” The application form for this asks for applicants to list a variety of types of activities that speak to their scholarship, which I have done. However, I am in a bit of a unique situation in that I have been half-time faculty and half-time administration for the past eight years and have dedicated my attention to the service of the institution. The details of this are listed in the Service section of my application. In short, I was Director of the QEP from 2010-2016 in which I was dedicated to the study of critical thinking and the development of local classroom techniques that could be implemented in our courses. In addition to that, I was the Assistant Dean of the College from 2014-2017 during which I climbed the rather steep learning curve in part by being the Assistant Dean and in part by attending some conferences on administration.

*Section 1701.3 “...broad scholarly knowledge...”* I have listed my publications in refereed journals in my Publication List to show my academic depth and I believe my choice of topics for the Astronomy Lecture Series and the broader list of presentations listed as Speaking Engagements under Scholarship shows my academic breadth. Although there is a significant gap in my publications while I focused my career on administrative service to the institution, you may note that I continue to have many presentations. Please also note from my CV that my conference activity has been fairly stable at just over one per year since 2010. The quick take-away is that I have remained active in professional development in new and interesting areas of study, even if those do not happen to be the specific field of my dissertation. These new areas of investigation have been in critical thinking, assessment, SACSCOC reporting, physics education, and, most recently, pedagogy.

Since these activities also contribute to “...broad scholarly knowledge...”, I am including what I think is some additional relevant narrative.

**Critical Thinking and the Classroom.**

In my role as the Director of the QEP, I oversaw the implementation of a plan to make explicit the critical thinking that was happening on campus. This involved researching the various approaches to critical thinking, many of which have been around for several decades. Through this study, our group settled on the model advocated by Richard Paul and Linda Elder: the Paul-Elder model. (Details can be found at <https://www.criticalthinking.org/>.) Investigation of the details of the model involved attending several conferences and a significant amount of study to develop to the level of presenting faculty development workshops. Conveniently the University of Louisville holds a conference every May, called Ideas-to-Action (I2A), which we were able to attend.

Dr. Gerald Nosich is involved with the Center for Critical Thinking and presented at I2A. He advocated for some techniques that can improve the critical thinking of students in the classroom. Our initial cohort, including Dr. John Ernst, and I attended some conferences and made plans to implement the techniques in our classrooms. We spent a year learning and planning, while collecting baseline data. We then spent a year implementing the ideas in our classrooms, while meeting weekly to discuss how it was going and evaluating if changes needed to be made. Some of that cross-pollination developed into interesting modifications to other classrooms. Several of us, and I in particular, developed workshops for the broader faculty. I have lost count of how many

workshops and presentations I have made, but the topics I have given workshop on are listed below. Several of the workshops have been given multiple times and in multiple forms. In general, the workshops were to our TMU faculty, although the Paul-Elder Intellectual Virtues talk was presented at I2A. (Many people struggle to see how to use these and I would like to refer you to the comments from Dr. John Ernst.) We had a new cohort every year and the new 7-10 faculty and staff needed to be trained in the model. At first Dr. Ernst and I took on the primary responsibility of those workshops, but then we asked the veterans to spread the word as well. Every summer we had training sessions for the new cohort and every May we had a one- to two-day long series of workshops open to all faculty.

- Paul-Elder Elements of Reason (many iterations)
- Paul-Elder Intellectual Standards (many iterations)
- Paul-Elder Intellectual Virtues (a few times, and off-campus)
- Variety of workshops on using the Paul-Elder model: Grading techniques with Standards (CALD), Rubrics, Using Elements to ask better questions, Close Reading
- Intentionality (“backwards design”)
- Techniques: F&PC (maintaining clarity), CQ (narrative arc), SEE-I (developing understanding)
- Collaborative Learning Topics: Think-Pair-Share, Pair-and-Compare, Talk-Aloud-Solutions, Group Worksheet with Individual Quiz (and other uses of IF-AT forms), Jigsaw groups, Gallery Walks
- Faculty Peer Mentor Applications: Brainstorm, Explain your class (possibly use of the Elements), SLO, Visit each other's classes.
- 5E's: Engage, Explore, Explain, Elaborate, Evaluate.
- Annual training on using the CAT assessment
- CAT-analog questions for your classroom.

**My Fall 2017 Sabbatical.**

My goal with the sabbatical was to create a new style of textbook. The topic of the book is the introductory algebra-based physics course, which I have been teaching nearly every term since Spring, 1998. For about a decade now, faculty have heard that books are moving to an electronic format. There have been vocal marketing initiatives to encourage ebook formats and we are hearing, with increasing frequency, that high school students are coming to us from schools that are exclusively electronic book markets, with the equivalent of “You will soon meet students who have never held a physical book in their hands.” Furthermore, with the push for online courses, a good ebook would complement this trend.

For the past five years, I have considered an eformat for my textbook, but have found them mostly to be the equivalent of a pdf version of a print book. These are awkward to use (even if students are “used to it” because it is all they know), frustratingly slow on older computers, and can be worse to use than a webpage because the full page is an image rather than having quick-loading text supplemented by slow-loading images. I would like to make a physics text that actually makes use of the electronic format. My current thought is to style it after the wiki pages with hyperlinks and cross-referencing. This would not only solve the issues mentioned above (because it could be read in a browser), but I think could allow faculty to teach the material in an order of their choosing, rather than the order set by the author, although that adds a level of complexity in the selection of homework problems.

By fortunate coincidence, Dr. Riehemann attended a math conference and learned about a new software (PreTeXt: write once, read anywhere) that enables mathematicians to do just that! It was a very exciting find. Over the summer of 2017, I researched the software. I joined the Google-group discussion forum for author support and learned about the details. As I moved forward, I realized that it is written by and for mathematicians. As a physicist, I realized it needed some changes and I joined the Google-group discussion forum for developers and began detailed conversation about features that might be incorporated. As the summer drew to a close I realized that I needed a test-bed to discover if this format was actually feasible.

Since the department lab exercises were designed to lean towards being inquiry-based, with prompting questions and analysis questions that helped students try to figure out what they should measure and what might make a useful graph, etc., this seemed like the perfect place to try to incorporate a ready-made and familiar product into a new format. So at the beginning of August I asked Dr. Jeremy Huber, our sabbatical replacement, if he would be willing to be my guinea pig and he was amenable. I have now created an online lab manual for three courses: The two introductory algebra-based physics labs (<http://physics.thomasmore.edu/Labs/121/> and <http://physics.thomasmore.edu/Labs/122/>), which are taught in service to the Department of Biological Sciences, and my NSC lab for the “Anything Physics” course (<http://physics.thomasmore.edu/Labs/220/>). Once we started down this road, it became clear that we also needed a page for the lab assistant (a physics student worker) to understand how to set up each lab. We had some excel and word files that listed equipment, but they were not reliably clear. This turned into a fairly substantial project, but the result is quite useful (<http://physics.thomasmore.edu/Labs/TMC-lab-setup.html>). Since I worked closely with Dr. Huber on this project, I asked him to write one of my letters of recommendation.

Throughout the efforts with the lab manual, I began converting my early draft textbook into the new format. That had the beginnings of one chapter. Once it was translated, I began writing the book in earnest. I have now essentially completed Part II, Chapter 3 and several sections of Part II, Chapter 4. I am naming the book “Connected Physics” (<http://physics.thomasmore.edu/ConnectedPhysics/frontmatter-1.html>) because the point of writing the book is to enable all of the material to be connected. I would like to draw attention to the way one topic builds on previous material and leads into the next material. The book has links forwards and backwards. As I create the text that requires a forwards or backwards link, I add the link and the placeholder in the “other” chapter. If you read the book, you will find links that go to notes for what will eventually be in that spot.

While this is still a work in progress, I was accepted to present at the national American Physical Society (APS) meeting in the Physics Education category in the textbook subcategory. During the conference, I had some interesting conversations, learned about some resources that had been developed since my last excursion in to the Physics Education division of APS.

### **Physics Scholarship.**

As noted in the previous section, I attended the national APS meeting in April, 2018. Many of the talks I attended were in the Physics Education field. I learned about some resources and just this week attended, with Dr. Haverkos in our Education Department, a webinar about a study on characteristics that make for a thriving Physics Teacher Education program. As I work on the textbook mentioned in the previous section, I hope to also develop some pedagogy for the classroom using some of the QEP techniques and present those at future physics programs.

I otherwise stay active in the field by being an active reviewer for the American Journal of Physics (AJP), which I currently do about once a year. I also subscribe to AJP and The Physics Teacher (TPT) and I hope to incorporate some of the information in those journals into a student research project soon.

Beyond meeting the qualifications, I will address the quality of my contributions during my time at Thomas More by considering the categories listed in Section 1302 of the Faculty Policy Manual (Areas of Review in Promotion Considerations) and linking to the appropriate sections: "The following are areas of activity which may be used when reviewing cases for possible promotion in rank. (1) Professional Recognition [examples], (2) Professional Growth and Development [examples], (3) Departmental Involvement [examples], (4) Extra departmental Involvement in College Affairs [examples], (5) Community/Church and/or Charitable Involvement [examples]..." The discussion of these topics are included in the body of the several sections of this application. In the online version of this letter, I have replaced "[examples]" with links to actual examples from my application.

I would also like to note that while the qualifications for promotion to rank do not list service to the institution, the categories of evaluation do include service and *Section 1701.4* looks for one who can "...actively contribute to the general development of the College...". Throughout my application, I have described my extensive contributions to the category of service to the institution and made an attempt to connect it to the other topics listed in the qualifications for promotion.

Please note that the online version uses the same software that I am using to create my online textbook. I am hoping that this format lends an ease-of-use that helps you read through the document. You may note that some links are colored and others have a dashed underline. Clicking on the former sends you to that location. Clicking on the latter opens a box at the end of that paragraph that pulls the relevant information to you, rather than sending you to it. You should be able to navigate with the [< Prev] and [Next >] keys in the upper right. Please also note that your browser's [Back] button will also do what you expect. Please also note that this software makes it easy to read on a computer, a tablet, or even your phone. If you view it on your phone, please be aware that, when viewing my CV, you might need to turn your phone to landscape mode.

I have also tried to make PDFs available for all portions of the document.

I hope that this clarifies the justification for promoting me to the rank of Professor. If you have any further questions, please do not hesitate to contact me.

Thank you again for your consideration.

Sincerely,



Joseph C Christensen