UNIVERSITY of WISCONSIN
LA CROSSE

October 28, 2015

Joint Promotion Committee
University of Wisconsin-La Crosse
La Crosse, WI 54601

Dear Joint Promotion Committee members:

It is a great pleasure to write the Department of Physics' Promotion Committee's Recommendation Report recommending Dr. Jennifer Docktor for promotion from Assistant Professor to Associate Professor at the University of Wisconsin-La Crosse (UWL). On Friday, October 2, 2015, the members of the Department's Promotion Recommendation Committee for Associate Professor (Dr. Eric Barnes, Dr. Eric Gansen, Dr. Seth King, Dr. T. A. K. Pillai, Dr. Robert Ragan, Dr. Shauna Sallmen, and Dr. Gubbi Sudhakaran) voted unanimously (**by a vote of 7-0-0**) in favor of Dr. Docktor's promotion to the rank of Associate Professor.

I would like to summarize several of Dr. Docktor's accomplishments that factored into our decision.

Dr. Docktor's principal responsibilities as a faculty member at UWL are as follows:

- teach the freshman-level physical science course for elementary education majors (PHY 106) and introductory algebra-based physics courses (PHY 103 and PHY 104)
- teach the senior-level PHY 469 (Teaching and Learning Science in the Secondary School) course
- establish an active education-related research program that includes undergraduate student participation
- develop the Physics Teacher Education Program and recruit students to the physics program
- provide service to the Department/College/University

Teaching

Dr. Jennifer Docktor came to UWL in the fall of 2011 after a post-doctoral position at the Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, IL. The Department had introduced the new degree program in Physics Education and we were looking for someone with expertise in Physics Education Research (PER) who could develop the new program, teach the physics education courses, and develop a physics education research program. There are a limited number of physicists in the nation with expertise in PER, and we were fortunate to hire Dr. Docktor.

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Since her arrival, Dr. Docktor has taught a variety of courses including the general education course, Physical Science for Educators (PHY 106), which is specifically developed for teacher education students. She has made significant improvements to the course incorporating PER tools, pedagogy, Next Generation Science Standards, and problem solving techniques into the course curriculum. The course is taught in an integrated laboratory-lecture format. This is a challenging course to teach and only a few instructors have been successful in teaching this course. Dr. Docktor has taught this course for the last four years and has received excellent student and peer evaluations and comments. In addition to teaching PHY 106, she has also taught PHY 104 (Fundamental Physics II), both lecture and laboratory, and PHY 469 (Teaching and Learning Science in the Secondary School) developed for secondary Education majors.

Dr. Docktor has re-designed PHY 469 (Teaching and Learning Science in the Secondary School) by connecting course assignments to students' classroom experience and introducing a pre student-teaching portfolio which is modeled after the edTPA (Education Teacher Performance Assessment) to provide students with practice and feedback prior to entering student teaching. This course includes an embedded clinical field experience at local high schools where Dr. Docktor visits each student at their school site to observe them teach and provide feedback. She also observes and mentors secondary science students during their 18-week student teaching experience (9 weeks in a middle school and 9 weeks in a high school). She visits each student teacher at least six times to provide verbal and written feedback on their progress.

Dr. Docktor mentors and advises all Physics Education majors and also trains the future teachers by incorporating them as teaching assistants in her PHY 106 course. She meets with the teaching assistants on a weekly basis to practice physics activities and demonstrations for the upcoming week and trains them by providing additional opportunities to gain teaching experience. The funding for the teaching assistants was provided by a Physics Teacher Education Coalition (PhysTEC) grant for 2012-2015 with Dr. Docktor as the principal investigator. Since her arrival at UWL, we have seen an appreciable increase in the number of students interested in seeking a Physics Education degree.

Dr. Docktor has been involved with in-service teachers for last three years. She received funding for a Mathematics-and-Science-Partnership (MSP) project during 2012-2014 to provide 30 teachers with professional development in physical science. Workshops were held at three weekend seminars (Fridays and Saturdays) during the academic year and a two-week workshop was held during summer. Dr. Docktor served as the lead instructor on the project leadership team.

Dr. Docktor is very conscientious about improving her teaching and has incorporated feedback from students using the Student Assessment of Learning Gains (SALG) reports, assessment results, and weekly journals into the revision of her courses. Dr. Docktor has attended a number of faculty development workshops including the 2011 **Workshop for New Physics and Astronomy Faculty**, sponsored by the American Association of Physics Teachers (AAPT) and the American Physical Society (APS); the **Physics Teacher Education Coalition Conference** sponsored by the AAPT and APS during 2012 through 2015; and the **UW-System Faculty College** in 2014. Dr. Docktor has become an organized, high-quality instructor that the Physics program is proud to have. She has high expectations for her students and goes out of her way to help them. In addition, she has supervised the research work of several students who have presented papers at national and local conferences.

Peer evaluation of Dr. Docktor's teaching in both lectures and laboratories, and in exit interviews and feedback from students, indicate that she is an excellent instructor. The committee would like to point out that Dr. Docktor's SEI scores and ranking in the Department for the last four years have

improved dramatically. She was ranked #1 in the Department for spring 2015 with an average SEI score of 4.7 out of 5.0. Because of her excellent teaching abilities and expertise in PER, she will be assigned to teach PHY 203 and PHY 204 (General Physics I and II) in the near future. These two courses are calculus-based introductory physics courses taken by the Physics and Physics/ Engineering Dual Degree students. These two courses are taught in the active learning format (instead of the traditional lecture and lab format), and she is ideally suited to teach them.

Since the inception of the Physics Education degree program in 2011, six physics education majors have graduated. Currently, there are eight physics education majors in the program, three of whom will be graduating in Spring 2016.

The following items are specific evidence of Dr. Docktor's outstanding abilities in teaching:

- During the past four years, Dr. Docktor has had several different preparations that include two introductory (PHY 104 and PHY 106) and three upper level (PHY 453, PHY 469, and PHY 498) physics courses.
- Dr. Docktor revised the PHY 106 course by aligning topics and activities to the national science standards and incorporated 40 formative assessment probes into the course.
- Dr. Docktor has completely overhauled the format and content of the PHY 469 course.
- Dr. Docktor observes and mentors secondary science students during their 18-week student teaching experience.
- Peer evaluations of Dr. Docktor's teaching clearly indicate that she is an excellent classroom teacher. She gives clear, well-organized lectures, incorporates demonstrations and examples, and encourages student participation to promote active learning in her courses.
- Dr. Docktor introduced the Student Assessment of Learning Gains (SALG) survey to gather learning-based feedback from students for all her courses. From the assessment report it is clear that students in Dr. Docktor's courses are performing at or above the national average.
- Dr. Docktor actively refines her courses based on feedback from local and national assessment tools.
- Dr. Docktor has developed and incorporated new inquiry-based activities, iClicker questions, and problem-solving exercises into the revision of her courses.
- Dr. Docktor's average SEI score has increased from 3.6 to 4.7 during the past four years.
- In the last four years, Dr. Docktor has mentored eight students in undergraduate research. Her students have presented papers at both local and national conferences.
- Dr. Docktor has attended several Professional Development Workshops offered by the American Physical Society (APS), American Association of Physics Teachers (AAPT), UW System Faculty College, and the Center for Advancing Teaching and Learning (CATL).

The committee is impressed with Dr. Docktor's exceptional level of dedication, organization, and attention to detail in her preparation of classroom materials, documentation of in-class interactions, analysis of student performance on individual test items, and constant course improvements based on these activities.

Scholarship

Dr. Docktor's expertise is in Physics Education Research: the area of physics learning and cognition with an emphasis on physics problem solving. She studies instructional strategies for teaching problem solving, problem solving assessment rubrics, problem categorization, expert-novice differences in visual attention (eye tracking), and the design and use of instructional examples. Another portion of Dr. Docktor's scholarship endeavors are focused on the recruitment, retention, and professional development of teachers in the physical sciences.

Dr. Docktor is the **most prolific scholar** in the Department. Since joining UWL she has published five articles in refereed journals including *Physical Review Special Topics–Physics Education Research* and *The Psychology of Learning and Motivation* (a sixth paper is currently under review). She co-authored a book chapter entitled "Building a Thriving Undergraduate Physics Teacher Education Program at the University of Wisconsin-La Crosse: Recruitment and Retention" in the book *Recruiting and Educating Future Physics Teachers: Case Studies and Effective Practices* edited by C. Sandifer and E. Brewe, American Physical Society (published in August 2015).

Dr. Docktor is a prolific presenter and during the last four years she has given ten invited presentations (which include four at national conferences and six colloquiums at institutions), 14 contributed talks, and 19 contributed posters.

Dr. Docktor has been very successful in garnering external grants: a PhysTEC three-year grant entitled "Revitalizing Physics Teacher Education at the University of Wisconsin-La Crosse" from NSF for $155,639.00 (as PI), a US Department of Education Mathematics and Science Partnership (MSP) three-year grant entitled "A LOT of Science" for $444,188.00 (as Co-PI), and two AAPT (PERLOC) mini grants for $5,000.00. She has active collaborations with PER scientists at the University of Minnesota and the University of Illinois at Urbana-Champaign. Dr. Docktor has also received a UWL Faculty Research Grant for $7,650 for her proposal entitled "Eye Movement Patterns while Studying Multiple Representations of Physics Problems".

Dr. Docktor has mentored eight undergraduate students in various PER projects and one of her students presented his results at the 2013 National Conference on Undergraduate Research (NCUR).

Dr. Docktor's scholarship activities involve both pre-service and in-service teachers. She incorporates undergraduates in the Physics Teacher Education Program in her research, and her PhysTEC grant focused on increasing the number of physics-certified teachers graduating from UWL. In addition, for the past three years, with funding provided by an MSP grant, she has organized workshops for and studied the development of thirty in-service teachers in the physics sciences and has presented the results at national and state conferences.

Dr. Docktor was the first recipient of the UWL School of Education **Recognition of Excellence for Outstanding Achievement in Scholarship Award** in April of 2015.

Dr. Docktor also serves as an Invited Manuscript Reviewer for the prestigious *Physical Review*, *Physical Review Letters*, and *Science Education* journals. Recently, Dr. Docktor received the **American Physical Society 2015 Outstanding Referee Award** where she was selected as one of the 142 outstanding referees for the journals *Physical Review* and *Physical Review Letters* from among 65,000 active referees.

The following items are specific evidence of outstanding performance in scholarship:

- Dr. Docktor has published five papers in the refereed journals, *Physical Review Special Topics–Physics Education Research* and *The Psychology of Learning and Motivation* and a book chapter.
- Dr. Docktor has given ten invited presentations (which include four at national conferences and six colloquiums at institutions), 14 contributed talks, and 19 contributed posters.
- Dr. Docktor has incorporated eight undergraduate students into her research.
- Dr. Docktor has secured two large external grants for $599,827.
- Dr. Docktor has received the first UWL School of Education Recognition of Excellence for Outstanding Achievement in Scholarship Award.
- Dr. Docktor serves as an invited manuscript reviewer for *Physical Review*, *Physical Review Letters*, and *Science Education* journals. She has also received the APS 2015 Outstanding Referee Award.

The Physics Department Promotion Committee acknowledges the exceptional scholarly performance from Dr. Docktor and we are proud to have her as our colleague.

Service

Dr. Docktor has done an excellent job serving on various departmental and university committees, and performing professional and community service. She plays a vital role in the Department Assessment committee, serving as the Chair. She has served on various Department committees including Campus Close-up, Five Year Plan, Inclusive Excellence, Distinguished Lecture Series, Recruitment, Search and Screen, and Department Bylaws. In addition, she serves as the Department meeting secretary.

Dr. Docktor is a member of the Secondary Teacher Education Preparation (STEP) committee and School of Education. Since 2012, she has served on the UWL General Education Assessment committee reviewing general education course assessment tasks, rubrics and course-embedded assessment procedures. During the 2014-2015 academic year, she has served on the General Education Assessment subcommittee on software selection.

Dr. Docktor serves as the **Chair of the national American Association of Physics Teachers (AAPT) committee on Graduate Education in Physics** and has performed fifteen service presentations since the fall of 2011.

The following items are specific evidence of outstanding contributions to service:

- Dr. Docktor plays a crucial role in the Physics Department's Assessment Committee and currently serves as its Chair.
- Dr. Docktor served three years on the Distinguished Lecture Series in Physics committee which brings a Physics Nobel Laureate to UWL each year.
- Dr. Docktor has served on the UWL General Education Assessment committee since 2012.

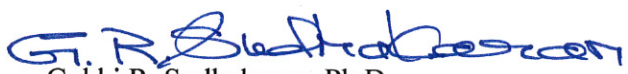
- Dr. Docktor serves on the Secondary Teacher Education Preparation (STEP) Program committee.
- Dr. Docktor is Chair of the national AAPT Committee on Graduate Education in Physics.
- Dr. Docktor is involved in several outreach and professional activities.
- Dr. Docktor has served as an abstract reviewer and was also a moderator for NCUR 2013 hosted by UWL.

The UWL Physics Program received the American Physical Society (APS) award for Excellence in Undergraduate Physics Education for 2013-2016 along with MIT and the Colorado School of Mines. This year, the Physics Department has been ranked #1 in the nation for the highest number of physics degrees granted by Bachelor's Degree-only institutions for the years 2011-2013. The Physics Department faculty and staff have played a vital role in contributing to the success of the UWL Physics Program.

In conclusion, Dr. Docktor has emerged as an excellent teacher and, combined with her outstanding performance in scholarship and service, she has contributed to the success of the UWL Physics Department and to the education of students at UWL.

Dr. Docktor is an exemplary and model faculty that any university would be proud to have. Overall, the committee considers Dr. Docktor as one of the best colleagues we have known and we are fortunate to have her as our colleague. Thus, the Physics Department's Promotion Recommendation Committee unanimously recommends Dr. Docktor for promotion to Associate Professor.

Submitted by:



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