

Mission Statement

Washington and Lee University

Washington and Lee University provides a liberal arts education that develops students' capacity to think freely, critically, and humanely and to conduct themselves with honor, integrity, and civility. Graduates will be prepared for life-long learning, personal achievement, responsible leadership, service to others, and engaged citizenship in a global and diverse society.

Summary of Accomplishments: Teaching

Uffelman knows, from giving talks at many universities and conferences, that he is truly fortunate to have Chemistry Department colleagues who are obsessed with hard work, great teaching, exceptional mentoring, and active research. Even more importantly, Uffelman cannot say enough good things about W&L science students. Whether they are first years, sophomores, juniors, or seniors, they always offer him encouragement, kind words, support, and constructive advice. He has had maybe a dozen truly negative course evaluations sprinkled through approximately 1500 student evaluations in 15 years. That is the hallmark of wonderful young people putting their grades aside to be supportive and encouraging. Without such amazing young people, Uffelman would have to approach his work very differently.

Uffelman has demonstrated his breadth of expertise and energy by teaching 17 courses, not counting independent research, during his 15 years at W&L (please refer to the "Additional Documentation"). Uffelman started at W&L in late August of 1993. Remarkably, he taught nine different courses during his first three years, while garnering research funding from the Research Corporation, the American Chemical Society Petroleum Research Fund, and the National Science Foundation. He often worked literally 100-110 hour weeks during the academic year during those first three years and 70 hour weeks during the summers. Uffelman's role was to maintain the Department's "open door policy" regarding student questions, while developing an active research program, while helping the Department make the transition from an antiquated 1930's (inadequately renovated in the early 1960's) facility to a new building in the summer of 1996. With so many different teaching successes, and very little space, the focus in the remainder of this section will be on what Uffelman currently teaches. It should be noted that Uffelman has had a teaching overload in every year but one that he has taught at W&L, and in many years, his teaching overload has been considerable.

Students must *do* chemistry. However, in fall term Chem 111 (General Chemistry), the most important course Uffelman teaches, doing chemistry is difficult. Test results published in the Washington Post in December of 2007 showed that, in spite of heroic efforts by many high school teachers, parents, and students individually, United States high school students now rank 23rd out of 23 industrialized nations in math and science. W&L gets some of the best students in the U.S., but they are a product of a system that needs to be strengthened---W&L has the best of the worst. Our students are intelligent, talented, pleasant, kind, generous, and willing to work hard, but all but a handful of them have no real skills and no true concept of sustained, intense, focused study. Uffelman knows that this situation is the case, or even worse, at institutions ranging from Ivy League universities to community colleges, because he has spoken at an array of other institutions, contributed to NSF PKAL conferences, contributed to the Associated Colleges of the South Keck Science Reform Initiative, and contributed to the NSF CWCS program. However, the 75-100 students that come to W&L's Chem 111 course every year claim that they want to be doctors, dentists, veterinarians, chemists, biologists, geologists, physicists, engineers, etc. If they want to be internationally competitive in a global economy, much has to happen in four short college years.

So, in W&L's team-taught Chem 111 course, attack occurs on several fronts simultaneously. The first day involves Coulomb's law and what Uffelman calls, "The Ugly Bonding Graph." That night, Uffelman memorizes the 75-100 students' first names, and he goes into class the next day and discusses algebraic dimensional analysis and significant figures. He calls on multiple students by name---making it clear that he knows who they all are, right from the start; they are *not* going to be anonymous numbers. The next class involves chemical formulas, and the first lab begins, an experiment in which the students use a vacuum flask, water aspirator, pipet, and test tube to "smoke" a cigarette in a fume hood. They analyze the smoke using thin layer chromatography and gas chromatography-mass spectrometry. Thus, the stage is set for the entire term: a no-holds-barred classroom, recitation, and laboratory experience in basic structure, bonding, and quantum mechanics; basic mathematical problem

solving; and hands-on exposure to about \$600,000 worth of chemical instrumentation, with wet labs, gas labs, and model-building labs thrown in as well. The class is primarily peopled by young freshmen and sophomores, and this kind of agenda forces young students with a weak skill set to make dramatic adjustments to their work habits. He is immensely proud of them, and He tries to be unstinting in letting them know that. It is really important to Uffelman that his students know how much he appreciates their work, even if they are not having success.

Uffelman teaches primarily seniors in Chem 250 (Inorganic Chemistry) and 254 (Bioinorganic Chemistry). Although these linked courses are time-consuming, they are usually easy to teach, because W&L's senior Chemistry majors are nearly uniformly wonderful people and great students. Uffelman focuses on lecturing about things that are not in the textbook, expecting the students to read and understand the textbook on their own. The class typically has 14-24 students, so his lectures involve some pretty aggressive question and answer sessions. In Chem 254 the focus is on writing and oral presentations. The students do two research papers in which they submit a rough draft to a peer, peer edit, submit a revised rough draft to Uffelman, and finally submit a final draft to Uffelman. One of Uffelman's favorite student evaluations from this type of course was, "Uffelman expects us to think all of the d--- time!" Students completing Chem 250 score, on average, in about the top 8% in inorganic chemistry on the American Chemical Society Inorganic Placement Exam, even though Chem 250 is only half of the students' total course.

One of Uffelman's big endeavors is his course "Science in Art: Technical Examination of 17th Century Dutch Painting". W&L has an unusual 12-week, 12-week, 6-week academic schedule. Uffelman began teaching the Science in Art course in the spring of 1999. He taught the course another two times, and then obtained a grant to visit the Netherlands to plan taking the class abroad. He already knew, from extensive research, what the key museums, labs, and sites were. He formed a partnership with the Center for European Studies at Univeriteit Maastricht, and in the spring of 2005, he took his first 14 students to The Netherlands. He took 17 students in the spring of 2007 and another 14 students in the spring of 2008. The Science in Art class currently consists of two linked intense three-credit courses that meet 15 hours per week for three weeks at W&L and then meet extensively for three weeks in The Netherlands. The course assumes no knowledge of either science or art history and attracts students from all disciplines. The course involves vast amounts of work---over 900 Powerpoint slides of background material, two two-hour tests, and two Powerpoint presentations per student. In The Netherlands six cities, seven major museums, and six major cultural sites are visited, and there are over 20 hours of class in three weeks. Uffelman cannot have students experiment on thirty-million dollar paintings. However, he can do the next best thing. The class sees thousands of original 17th century Dutch paintings at the greatest museums of The Netherlands and Belgium. International experts in art conservation and conservation science are brought to W&L's campus to speak to the students and to meet with them in small groups. In The Netherlands, the students visit the best conservation science and art conservation labs and meet and talk to nearly a dozen internationally recognized leaders in the field. Students see things like the 1669 Rembrandt self-portrait in The Mauritshuis conservation lab with half of the varnish removed. There is no way that a picture in a book substitutes for the real thing. As one student said, "Dr. U, you kept going on and on about still-life paintings, and I didn't want to say anything, but when we were at W&L, I didn't think they were anything special. But now that I am here looking at them in person, they are amazing." Dutch paintings of church interiors and landscapes make a lot more sense if one has actually seen a Dutch church interior or ridden a train through the Dutch country side.

Summary of Accomplishments: Discovery

Uffelman has had 46 students (21 of them women) conduct laboratory research with him in his 15 years at W&L. Of those 46 students, 39 have done summer research with him and of

those 39 roughly half have worked two or more summers. Uffelman believes that, for him personally, research should involve students. Yes, he could be more productive without students, but if research productivity is the principal concern, he should not be at W&L in the first place. Productive groups in his discipline, synthetic inorganic chemistry, typically have 6-12 graduate students, about two or three postdocs, and access to a few million dollars of chemical instrumentation, along with the support staff to keep that instrumentation running effectively. He demonstrated he could work effectively in that environment at Caltech, Carnegie Mellon, and Stanford. As a graduate student (NSF Predoctoral Fellow) at Caltech and then on detached duty at Carnegie Mellon, he initiated a project with Dr. Terry Collins (Thomas Lord Professor of Chemistry and Director, Institute for Green Oxidation Chemistry, at Carnegie Mellon University) that led to dozens of patents and the 1999 Presidential Green Chemistry Challenge Award to Dr. Collins and key members of his research group (Uffelman has a nice plaque in his office that has Vice President Gore's signature on it.). At Stanford, Uffelman was a National Institutes of Health Postdoctoral Fellow in the group of Dr. James P. Collman (George A. and Hilda M. Daubert Professor of Chemistry), where he collaborated on work that led to a new route to the synthesis of biomimetic iron porphyrin complexes. As Dr. Collman's "Head Postdoc", Uffelman was responsible for helping to oversee and consult with eleven graduate students and two undergraduates, and was responsible for maintaining safe laboratory conditions in a crowded laboratory while lab renovation was proceeding.

For a lay audience, the Uffelman group W&L laboratory research is generally geared towards the synthesis of compounds that act as catalysts in the area of Green Chemistry oxidation reactions. In other words, his group strives to make compounds and devise processes that are more environmentally friendly than other systems. He is extending research from his Ph.D. days that has led to dozens of patents on compounds that have demonstrated applications in purifying drinking water, killing anthrax spores, and eliminating harmful environmental estrogens produced in some paper-making processes. [Environmental estrogens are not actual hormones, but chemical compounds that bind to various organisms' hormone receptor sites, altering the body chemistry of those organisms.] His students are trained in multi-step organic syntheses, the insertion of transition metal ions into specialty organic compounds, the study of inorganic catalysts, and the spectroscopy of organic and inorganic complexes. He was the Chemistry Department's Project Director for the \$99,500 NSF-ILI grant (pre-tenure) that enabled the purchase of the \$232,000 400 MHz NMR spectrometer, and he was the Project Director for the recent \$70,000 NSF-MRI grant that enabled W&L to upgrade the NMR with sophisticated gradient inverse probe capability. He has also received significant external grants in the area of "discovery" research from the American Chemical Society PRF fund, the Research Corporation, Hewlett Packard/Agilent, and the Jeffress Memorial Trust.

Not counting meeting abstracts, Uffelman has 25 publications and patents; sixteen of those have been published since he arrived at W&L. All of the publications are in top international journals or books. Most of his publications feature student coauthors. Of the 25 publications, many are directly in the "discovery" area, many are in the "knowledge integration" area (*vide infra*), and some are rather difficult to break down into those two categories. Some of his publications at W&L involve significant collaboration with principal investigators at other institutions. He has two significant pieces of work to write and submit---part of the "problem" is that things in the lab keep working, and so it is difficult to decide where to cut the story into the best pieces.

In the past ten years, Uffelman has presented "discovery" research at ten National American Chemical Society meetings with student coauthors, often taking student coauthors with him. Uffelman's students have presented every summer in the W&L summer research talks, and his students have given numerous research posters at W&L and local institutions.

Summary of Accomplishments: Knowledge Integration

For Uffelman, “knowledge integration” is very hard to separate from “teaching” and “discovery”. Uffelman has won *four* Washington and Lee Class of '65 Excellence in Teaching Awards which involve creative, innovative curriculum development, implementation, and teaching. Eight of his publications would fit the category of “knowledge integration” and a few others would be on the border with “discovery”. Uffelman’s “knowledge integration” has come in the areas of: (1) laboratory development and publications in Chem 111, Chem 241, Chem 242, and Chem 252; (2) pedagogical publications in the area of Green Chemistry and renewable resources; (3) pedagogical publications (with components bordering on “discovery”) in the technical examination of 17th century Dutch painting.

When Uffelman joined the faculty in August of 1993, although he was hired as a tenure track inorganic chemist, he started by teaching Organic Chemistry and Organic Chemistry Lab along with upper level inorganic courses. He had great success at this. Uffelman was heavily involved in the organic courses in one way or another for three years. Uffelman replaced several lab experiments because of deteriorating safety issues in the antiquated building in which he started.

When Uffelman became heavily involved in General Chemistry in 1994, he began a process of General Chemistry overhaul with two other colleagues that involved eliminating the old Chem 101 and Chem 122 and replacing them with Chem 111 and Chem 112. Topics were updated, switched from one term to another, eliminated, and topics were added. Uffelman significantly modified several problem sets. In the Chem 111 lab, while one of his colleagues condensed several weeks of qualitative analysis into two weeks of laboratory work, Uffelman generated three weeks of original experiments involving chemical model building, olfaction, and NMR spectroscopy (ultimately featured as an “NSF Highlights” laboratory in the Journal of Chemical Education [JCE]), and two weeks of experiments modified and adopted from NSF-funded initiatives in solid state chemistry at the University of Wisconsin. Since then, he and his colleagues have further integrated \$600,000 of chemical instrumentation into hands-on student use for Chem 111.

Uffelman created a series of new labs for a new lab course, Chem 252, as well as adopting several sophisticated experiments from the research literature and pedagogical literature. Two of these experiments were based on Uffelman’s Ph.D. high-valent Green Chemistry work that brought original research into the undergraduate lab---made possible by microscale glassware and high-field NMR spectroscopy. This was featured in the Journal of Chemical Education. In addition, Uffelman helped one of his Organic Colleagues implement a cross course (Chem 242 and Chem 252) set of experiments based on her Ph. D. work for Nobel Laureate Dr. Robert Grubbs in the area of ring opening metathesis polymerization. These experiments led to a JCE publication for her as well as one for her and Uffelman.

Uffelman’s JCE Green Chemistry experiments led to JCE asking him in 2004 and 2007 to contribute compilations and brief assessments of teaching resources, issues, and commentary available in the areas of Green Chemistry and renewable resources.

Uffelman’s Science in Art course has been a rich area of “knowledge integration”. In addition to reading hundreds of books and articles over the past 30 years on Dutch art and art conservation, Uffelman has researched the paintings conservation archives at The J. Paul Getty Museum and the National Gallery of Art, Washington, DC. He has thus incorporated unpublished conservation science into his course, and he has not only published materials on his course in JCE, but was given permission by The Getty and by NGA to publish some of their unpublished work in JCE. Jeremy Lewis, an editor at Oxford University Press, read Uffelman’s JCE articles on the Science in Art course, and he invited Uffelman to write a book on the subject. The contract has been signed, and Uffelman faces the privilege and daunting task of completing a book in the next fifteen months, without a sabbatical leave, on the “Chemistry of Old Master Paintings”. Through the course, Uffelman has gotten to meet and work with an array

of conservators and conservation scientists at The Getty, the Balboa Art Conservation Center, NGA (DC), the Metropolitan Museum of Art, Winterthur, The Sackler Freer Gallery of Art, Instituut Collectie Nederland (ICN), AMOLF-FOM (Amsterdam), The Mauritshuis (The Hague), SRAL (Maastricht), and private conservators. This has generated great new opportunities for W&L students---the past two summers, a W&L student did research at ICN in Amsterdam under the direction of Dr. Bill Wei. In addition, in the past three years, Uffelman has been invited to give twelve presentations in this area at universities, symposia, and major conferences, and he has two invited lectures at other universities coming up later this fall and a major symposium presentation on this work at the next National American Chemical Society meeting this coming spring.

Uffelman has received several internal and external grants to support the Science in Art work. His most recent involves funding from the Associated Colleges of the South to attend this September's International Council of Museums Committee for Conservation Triennial Meeting in Dehli, India. Uffelman has already spoken to the editors of JCE about an article involving the ICOM-CC meeting, and they are very interested.

The near future poses interesting opportunities and challenges for the Science in Art efforts. W&L is going to a new 12-week 4-week schedule in the 2009-2010 academic year. This means that significant institution wide revision, disposal, and creation of academic courses will be necessary. Uffelman has been one of the so-called "Pioneers", a group of faculty who have led the charge to reimagine and revise the spring term. Uffelman has been part of a Physics/Engineering, Geology, Biology, Chemistry W&L initiative with the NSF MRI program to try to replace the old scanning electron microscope with a new SEM. If Uffelman acquires some much less expensive pieces of equipment along with a new SEM, given the equipment W&L already has, everything would be in place to create an interdisciplinary laboratory-based winter term 12-week course on art conservation science that would precede the students' 4-week spring term trip to The Netherlands. In addition, this would create summer research internship possibilities that would enable W&L undergraduates to do publishable research on the valuable art holdings in University Collections.

Finally, as a segue into service, an important "knowledge integration"/"service" role that Uffelman played in 2006 involved hosting a Rembrandt symposium at W&L celebrating the opening of the new Art and Music Building and the 400th anniversary of Rembrandt's birth. Uffelman coordinated three talks in one afternoon given by internationally known scholars Jaap Boon (head of the MOLART project and the De Mayerne project and recent winner of the prestigious Gilles Holst Medal), Melanie Gifford (Research Conservator for Painting Technology at the National Gallery of Art, Washington, DC and expert on the techniques of Dutch and Flemish painters), and Petria Noble (Royal Picture Gallery *Mauritshuis*---Head of Paintings Conservation).

Summary of Accomplishments: Service

Arguably, Uffelman's most important service is working as an academic advisor. He has always struggled, sometimes unsuccessfully, to keep his advisee total below 30 each year. This presents challenges, because he hates to tell a student no, and gets asked frequently to be a student's advisor because of meeting so many students in Chem 111. Uffelman really enjoys serving as students' advisor, and thinks that service is even more crucial for first year students.

Uffelman regularly referees journal articles for the "discovery" literature and the "knowledge integration" literature, and he regularly referees grant proposals. He regularly serves on tenure committees at W&L and serves as an outside tenure evaluator for other institutions.

Uffelman has served on various committees during his time at W&L, among them: (1) Eight years on the Faculty Executive Committee (members are elected by fellow faculty members and handle student academic petitions, calendar issues, and other matters pertaining

to the academic function of the institution, including policies regarding medical withdrawals, etc.); (2) Nine years on the Public Functions Committee (members coordinate faculty and students in Convocation, Founders Day, Baccalaureate, and Commencement---Uffelman was probably appointed to this committee because, every year, he knows approximately one third of all of the undergraduate students at W&L by name).

He currently serves on four committees that are really valuable: (1) He has been on the Health Professions Committee for several years now, and this is something he finds fulfilling because so many of his terrific students have health professions aspirations. (2) He has just completed his first year serving on the Shepherd Poverty Advisory Committee. The Shepherd Poverty Advisory Committee has value to him because he has lots of great students who participate in the Shepherd Poverty Program, and Dr. Harlan Beckley (SCHEV Outstanding Faculty Award 2002) has done such great work creating this astounding W&L effort. The program has grown over the years to generate not only poverty studies at several universities, but has integrated the work of dozens of students from those universities into practical summer internships serving the poor in areas of health, law, food, etc. Just recently, federal legislation was approved which will expand the program even further among many more institutions. This remarkable effort promises to transform both poverty studies and the concept of student service to communities. Uffelman is hoping to get release time in the near future to help create a course in poverty and environmental health risk factors. (3) He has been serving on the Quality Enhancement Program committee that is preparing the QEP plan for W&L's SACS review. As a significant and vocal supporter of W&L's spring term over the years, Uffelman is helping to shape the report that will be a crucial part of W&L's reaccreditation process. (4) He is serving on a new committee looking at the University's management and objectives for its collections of cultural heritage materials. As an institution with nearly 260 years of history, W&L has significant holdings of paintings, ceramics, photographs, papers, furniture, textiles, archaeological materials, etc. An interdisciplinary committee consisting of members from Art History, the University Library, Archaeology, Chemistry, and the principal University curators is reevaluating how best to display, conserve, and utilize University Collections for the academic mission.

Uffelman has been engaged in both "knowledge integration" and "service" by becoming heavily involved in the National Science Foundation Center for Workshops in the Chemical Sciences. Through his Science in Art course, Uffelman met Dr. Michael Henchman (Brandeis University) and Dr. Patricia Hill (Millersville University). Uffelman invited Dr. Henchman to come speak to his class in the spring of 2005, and Dr. Henchman invited Uffelman to speak at the 2005 NSF CWCS Chemistry in Art Workshop (Dr. Henchman and Dr. Hill have been running those workshops since the mid 1990's). Uffelman was happy to be of use and to meet Dr. Hill, and since then he has helped with the workshops in 2006, 2007, and 2008. In fact, Uffelman and W&L hosted the 2008 NSF CWCS Chemistry in Art Workshop. These workshops bring 25 faculty from around the country to have a one week 12 hour a day intensive experience that gives chemists who have never taught a chemistry in art course the tools to do so. These workshops are an incredible force for creating a united community of scholars that can support each other with ideas, technical advice, letters for tenure and promotion, etc. The number of innovative and exciting courses (not to mention community outreach activities) that have sprung up around the country because of this work is inspiring.

Several years ago, a group of W&L female undergraduates formed a group called WITS (Women in Technology and Science). The WITS women work with middle school girls several times each year by creating interesting laboratory experiences for them at W&L. Uffelman has had the privilege of periodically being able to support those efforts. Furthermore, because a WITS member attended the 2008 NSF CWCS workshop at W&L, WITS labs in art and science will now be possible as a community outreach endeavor.

Personal Statement

For me, teaching is an intensely personal endeavor. For instance, I enjoy working in the Chem 111 lab with students, coaching them through procedures and showing them how to use equipment. It is also a great chance to talk to them about their hometown, their sports, etc. I run two evening help sessions every week in a big classroom so that students can see what questions other students have and see a slower, more deliberate explanation of how problems get analyzed. I spend hours every week in the office with students who either need coaching or a pep talk. I try to remember to offer every student that comes into my office a Danish butter cookie, and that seems to help--I tell students, "There isn't a problem anyone has ever had that can't be made better by a Danish butter cookie." I also tell students, "Never have negative thoughts unless you're thinking about anions." I focus on being consistently upbeat--quick words of encouragement in the hallway that I soon forget are some students' most memorable part of the course. I have learned too that if you are the first "adult" to know a student's name (and with my memory, I often am) you are also often the first person that student will approach with problems like dead parents, sexual assault, depression, attention deficit disorder, etc. I have very cordial relations with the Dean of Students Office. My approach to teaching is probably best summed up on a recent student Chem 111 evaluation, "Dr. Uffelman teaches like a 12 year old kid in 'adult clothes' who is talking about the most exciting stuff he can think of. I mean this in a good way, because he is so energetic, which infects everyone in class."

This endeavor, however, carries immense responsibility. I received a great compliment last year when I sought sanctuary at our local bakery in the middle of the morning. One of the wonderful owners said to me, "One of your students told me that they were so tired the other day, but they felt they had to go to class because they did not want to let down Dr. Uffelman." Many students put immense and often unhealthy pressure on themselves to succeed. The last thing I want a young person thinking is that they could let me down over something as relatively trivial as academic performance. I was recently introduced by a colleague of mine outside W&L to another professional. They said, "Erich is very nice and very intense...." I want students to work hard to be their best, but I *know* I have to watch myself and try to protect them from my own workaholic Caltech/Stanford tendencies. Sometimes students come to me and ask, not in these words, "If I make it hurt more, will I do better?" My job is to show them that if they work effectively, they can do better, get more sleep, eat more regularly, and stay healthy. When I am on my game, I do this well. A number of students have told me I give good pep talks. I am very proud of them, always, and I *always* want them to know that. I know I am doing my job when my former students spontaneously say to me, "Thank you for making me a better student." The highest honor is getting wedding invitations from former students; it is sad that I cannot go to them all, but it is great to send presents and get pictures back.

I think "discovery" is perhaps the ultimate personal endeavor. If I had to confess, as gratified as I am that much of my research has significant applications, my investigations have been about beauty ever since I started doing research as a freshman at Bucknell. I knew at a very early age that I had no talent in drawing or painting. But I discovered I had a talent for designing elegant molecules. Also, beyond loving the beauty of the design and synthesis, I loved the beauty of the physical materials themselves. I discovered a new route to dioxovanadium complexes at the age of 19 (which is probably how I won an NSF Pre-Doctoral Fellowship), but those complexes also formed beautiful gold parallelepiped crystals. When I got to graduate school, I designed an elegant new class of macrocyclic polyamide ligands that changed chemistry's notion of high-valent transition metal complexes and led to catalysts that are improving the environmental impact of chemistry in many applications, but the complexes themselves formed beautiful brown, green, purple, and deep blue crystals depending on the metal. I also enjoyed not just the design of synthetic routes on paper, but the actual physical manipulations of making the complexes. As an NIH Postdoctoral Fellow at Stanford I realized that the key to getting a target compound was, counter-intuitively, to *not* do a convergent

synthesis (which is usually the most efficient technique for producing new molecules). At W&L, I have successfully brought in several pieces of major instrumentation, and I can share the beauty of synthetic inorganic chemistry with my students. My group has been working on some intriguing systems that seem to be effective catalysts. We have some lovely syntheses of interesting iron complexes. As a bonus, some of the complexes make beautiful wine-red crystals, and we have a very important, highly unusual new iron(IV) complex that, in addition to its intellectually fascinating properties, is also a beautiful emerald green. Of course, we want to crystallize it to solve its three-dimensional atomic structure by X-ray crystallography, but I also want to crystallize it because it will look beautiful when it is crystalline.

And beauty and personal involvement draw my students and me to Dutch art. "Knowledge integration" does not even hint at the emotional issues involved with teaching students about art conservation. Students initially approach the paintings naively appreciative of their great beauty. They learn how the paintings have aged and degraded over time. They learn, without instrumentation, how to assess the extent of aging and degradation with their naked eye, and they learn to imagine the appearance of the painting when it was freshly created. This often generates a profound sense of loss in students. I remember standing in Antwerp's Koninklijk Museum voor Schone Kunsten in their magnificent Ruben's room, and a student approached me and sadly said, "Dr. U, I don't think I'll ever be able to look at another painting again without thinking about yellowed varnish, flattened impasto, and degraded colors." I said to her, "It's okay. You're going through a process right now. I've been there. Pretty soon, you will be appreciating the beauty of the art again, but you'll be appreciating it for the wonder of what it actually is and what we still have, rather than a more naïve view of what you thought it was." I vividly remember one of my young men racing to see me as fast as is decorous in the Rijksmuseum in Amsterdam. He had a huge smile on his face, and he said, "Dr. U, you know how I told the class in my PowerPoint about the Dutch capturing the Royal Charles?! THEY'VE GOT THE ARMS OF THE KING OF ENGLAND FROM THE ROYAL CHARLES ON THE WALL IN THE NEXT ROOM!" Moments like that are genuinely priceless.

Personal involvement is also important in my service as University Parliamentarian. W&L went through a period of seven years where, due to a confluence of health and other matters, W&L had five different presidents. I was asked by the third president in that line to serve as Parliamentarian. With that turnover, and with many issues needing resolution, there was frequently the potential for acrimonious debate on the floor of the faculty meetings. I had no prior parliamentary experience, and Robert's Rules of Order is, by University Bylaws, the parliamentary procedure to be followed by the faculty, so I spent a summer studying Robert's and another parliamentary procedure book, in my spare time from summer research. If you stop to think about it, and believe me I have, because W&L is so small, proper Parliamentary procedure is, paradoxically, even more important--people run into each other all over the place on campus, and so it is important for disagreements and debate to be professional and fair. I have been useful at times in consulting with faculty and administrators prior to meetings to try to avoid unnecessary conflict, or to help parties frame their issues in ways that are more likely to lead to civil and productive argument. I have told administrators that they could not do some things they wanted to do; I have told some faculty that they could not do some things they wanted to do; I have interpreted the rules carefully, even when it has meant protecting positions or people with whom I strongly disagree. I was flattered when I heard that a colleague I respect said about me, "Yeah, Erich is the Parliamentarian, and he is distressingly impartial!"

Finally, I am serving in two new areas which I particularly value. I learned, in a nice but rather embarrassing way, that out of twenty-one varsity athletic teams, about ten of them asked me to be their faculty mentor. I will be the faculty mentor for the Women's Basketball Team, which will be a real treat, because I know many of the young ladies and their coach, and they are terrific. I have also become the faculty mentor to a fantastic young assistant professor in Biology, and I am already enjoying working with him.

Abbreviated Curriculum Vitae

Erich S. Uffelman (Date of Birth: August 5, 1962)

Education:

2006	Sabbatical leave with Professor M.G. Finn, The Scripps Research Institute
2001	Sabbatical leave with Professor M.G. Finn, The Scripps Research Institute
1991-1993	NIH Postdoctoral Fellow, Professor James P. Collman, Stanford University
1991	Ph.D., NSF Predoctoral Fellow, Chemistry, California Institute of Technology, Professor Terrence J. Collins; Thesis Topic: Macrocyclic Tetraamido- <i>N</i> Ligands that Stabilize High-Valent Complexes of Chromium, Manganese, Iron, Cobalt, Nickel, and Copper
1984	B.S., magna cum laude, Chemistry, Bucknell University

Professional Positions:

2008	Professor of Chemistry, Washington and Lee University
1999-2008	Associate Professor of Chemistry, Washington and Lee University
1993-1999	Assistant Professor of Chemistry, Washington and Lee University

Awards and Fellowships:

2008	Washington and Lee Class of '65 Excellence in Teaching Award
2004	Washington and Lee Class of '65 Excellence in Teaching Award
1999	Certificate for Dr. Terrence Collins' Presidential Green Chemistry Challenge Award
1999	Washington and Lee Class of '65 Excellence in Teaching Award
1996	Washington and Lee Class of '65 Excellence in Teaching Award
1991-1993	National Institutes of Health Postdoctoral Fellow, Stanford University
1984-1987	National Science Foundation Predoctoral Fellowship, California Institute of Technology
1984	ACS Susquehanna Valley Section: Outstanding Senior Chemistry Major
1984	Alpha Chi Sigma Senior Major with Highest Scholastic Standing
1984	Elizabeth M. Oliphant Prize for Highest Class Average in Chemistry or Biological Science
1984	Phi Beta Kappa
1984	Sigma Xi
1983	First Place Seminar in Inorganic Chemistry, ISC Convention at Temple University

Publications and Patents Since 1993 (not including meeting abstracts):

- (25) Uffelman, E. S. "Teaching Science in Art: Technical Examination of 17th-Century Dutch Painting as Interdisciplinary Coursework for Science Majors and Nonmajors" *J. Chem. Educ.* **2007**, *83*, 1617-1624.
- (24) Uffelman, E. S. "A Review of Materials for Teaching Science in Art: Technical Examination of 17th-Century Dutch Painting as Interdisciplinary Course Work for Non-Science and Science Majors" *J. Chem. Educ.* **2007**, October Web Online, 38 pages.
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- (9) Collman, J. P.; Zhang, X.; Lee, V. J.; Uffelman, E. S.; Brauman, J. I. "Regioselective and Enantioselective Epoxidation Catalyzed by Metalloporphyrins," *Science (Washington, D.C.)* **1993**, *261*, 1404-1411.
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Undergraduate Research Students Supervised:

Forty-six at W&L---several for more than one summer or semester (Tamara Hopkins, T. R. Kinsey, Ryan Aday, Matthew Smith, Robert Eison, Anna Mirk, Hilary Rhodes, Jesse Taylor, Holly Layman, Charity Forstmann, Daniel Lee, Anne McElhaney, Jon Doherty, Leonard Rorrer, Carl Schulze, Stephen Hopkins, Michele Connors, Robert Hughes, Alison Cartwright, Ashley Shreves, Tom Stoklasek, Kristen Bonnema, Amy Burke, Gary Davis, Mac Everist, Tanya Watson, Ashley Acker, Bryan Carmody, Andrew Thomas, Marisa Meyer, Johnathan Coleman, Nana Ohene-Baah, Jessica Lloyd, Matthew Reilley, Jared Meyer, Emily Binns, Christopher Diebold, Carly Levin, Scot Pittman, Robert Whitener, Kehvon Clark, Elizabeth Webb, M. Ian Childers, Kendall Massengill, Carolyn Small, and Zachary Haulsee)

Letters of Support (excerpted)

From my perspective, Erich plays an absolutely critical role in taking talented, motivated, but academically-immature freshmen and sophomores and setting them on the road to meeting their stated goals in science and medicine by giving them a firm foundation on which to stand in later work while at the same time building a real confidence in themselves that they can succeed. This to me, ultimately, is our greatest challenge as teachers here, and I don't know anyone who does it better than Erich. From the students' perspective, the two things that they probably will cite is: 1) he will get to know their names (over 100 kids a year) in less than a week from meeting them! (and he'll be very frustrated if it takes longer). 2) He tells absolutely the worst puns you will ever hear in a classroom. The kids groan but they LOVE it. Both of these go a long way toward Erich making a real connection with the kids he teaches. He really cares and his kids know it. **Mike Pleva, Professor of Chemistry, Washington and Lee**

Erich is legendary on campus, far more than so young a professor can usually be! In the English department, he is known as the Chemistry professor who is also an expert on Shakespeare and Jane Austen! (In fact, during his last sabbatical, he sent us detailed reviews of the new Jane Austen films that he had seen in California.) Erich is as dedicated a teacher as I have ever seen. His radical course on Chemistry and Art History, which he has turned into one of the most popular study abroad programs on campus, is amazing. Erich has managed to stay at the cutting edge of a new area in chemistry studies while also maintaining his other research interests and serving as advisor, mentor, and teacher to hundreds of students each year. He is known also as one of the most dedicated recommenders on campus: students routinely ask him for letters of rec to help them with grad school, med school, etc., and Erich does all he can to help them further their career plans. Lastly, I have served with Erich on a number of committees, and he is notable for his direct honesty, his thoughtful comments, and the fact that in all he says, does, and performs, the welfare of his students is his primary concern. We are honored to have him here. **Marc Conner, Professor of English, Washington and Lee**

Dr. Uffelman is the sort of professor that students remember for the rest of their lives, and whom students try to emulate. He is more generous with his time and support than any other person I have met in my lifetime. Now that I am in the classroom as a teacher, I remember the lessons Dr. Uffelman taught me, not only about chemistry, but also about how to inspire, support, and encourage students, because no one does that better than Dr. Erich Uffelman. **Amy Mayberry, former student.**

Always prepared with a clever pun and some cookies, Dr. Uffelman embodies the essence of the professor wholly committed to the service of his students. Not only is he an incredible teacher who makes a deliberate effort to guarantee his availability both during the day and via email during the evenings to his own students, he befriends and aids pupils from all departments of Washington and Lee University. Incredibly intelligent and avidly interested in all disciplines, Dr. Uffelman uses his intellectual gifts to engage and improve the minds of everyone around him. I recall discussing the nature of chaos theory with him one day after he had answered all of my questions regarding our introductory chemistry material. Another time, his insightful comments into the nature of Greek drama gave me a whole new perspective when approaching my senior honors thesis, which happened to be in the English department rather than in any of the sciences. Even when school is not in session, Dr. U ensures that his students know that he is there for him. During the summer, he'll send out emails to check in or pass on interesting articles from the news. Beyond this, through his genuine compassion and friendship, Dr. Uffelman has maintained such a well developed a network of alumni that even career services would be envious. It is easy for someone as intelligent and articulate as Dr.

Uffelman to earn the respect of his students. However, Dr. U is not just a teacher; he is also a trusted mentor and friend. **Briana Gapsis, W&L class of '09**

I have known and worked closely with Erich Uffelman for a number of years and often cite him as the Model Faculty Member in terms of his commitment to students both inside and outside the classroom... Erich's emphasis is on seeing that everyone succeeds through the rigorous... Erich's level of commitment to classroom instruction is among the best I have seen in Washington and Lee University faculty. His commitment to students does not stop at the classroom experience. Erich is keenly aware that student concerns are the business of all in a University community. Erich understands that we work together as educators to address the needs of students both inside and outside the classroom... While I make it my business to know students, I am no match for Erich Uffelman. **Dawn Watkins, Vice President for Student Affairs and Dean of Students, Washington and Lee**

Dr. Uffelman is one of the best conveyors of information I have ever encountered. He makes even the most complex chemistry seem accessible and digestible. However, what makes him the best professor I've ever had is his uncanny capacity for caring and understanding. Over my four years at Washington and Lee, Dr. Uffelman was my mentor, my support system, my destressor, and most of all, my friend. He came to my performances, cheered on my successes, and made sure in his own way that I was ready for the next stage in my life after Washington and Lee, both academically and emotionally. Dr. Uffelman cared far more about my well-being than my accomplishments in the chemistry department. He helped me to pursue a career in science, but more importantly, he taught me to value my friends, my family, and the joy that comes from doing what you love above all else. **Carly Levin, former student**

Erich is an ideal role model. In addition to his skills in teaching the assigned subject matter, he also integrates professional ethics and career guidance into his daily interactions with students, through both personal example and interactive discussion. Erich is a champion at making chemistry *relevant* to students... **Carla Slebodnick, Department of Chemistry, Virginia Tech**

At the outset let me comment on the breadth of areas that Prof. Uffelman has drawn upon to teach and inspire chemical education. I must admit to having read his articles on Teaching Science in Art from cover to cover. The combination of art restoration and chemical analysis (17th century Dutch paintings in particular) had me hooked even though I'm not an art lover. The premise that combining these two areas in a *rigorous* manner (this is key), instills both the scientist and non-scientist with critical thinking and appreciation skills was compelling and downright enjoyable. The unit on NMR-smell was also exciting. I would have never thought to combine these two concepts (olfaction and spectroscopy), but their union appears to strike a chord with students and stimulate them to think about, and integrate the notions of 3-dimensional structure, stereochemistry, symmetry, spectroscopy, and molecular recognition. This is really creative stuff! **Michel R. Gagné, Department of Chemistry, University of NC**

Erich is one of the best professors I have had in any discipline. He has a passion for learning, and not simply in the academic setting. He truly wants to learn, understand and be exposed to new things, including new ways of thinking or approaching a problem, solution or piece of art. Best of all, he is so passionate that he instills a desire to learn in his students and others around him. His pure enjoyment and interest in learning is contagious. **John Cox, former student**

Prof. Uffelman has contributed to chemical research and teaching at the highest level in his years at Washington & Lee University. Given the quality of his work thus far, I look forward to both his scientific contributions in coming years, and to convincing as many of his students as possible to join my institution for postgraduate study in chemistry. I know that these students

have been trained how to do science, but more importantly, how to think about science at levels both practical and conceptual. He has had an enormously positive impact on students of science at Washington & Lee, and elsewhere around the world. **M.G. Finn, Department of Chemistry, The Scripps Research Institute**

He is by far the most engaging, energetic, and impressive professor I have ever encountered, not only because of his intelligence and wit, but because his genuine concern for each student is apparent by the end of the first class of the semester (by which point he has every student's name memorized). By the end of the year I had changed my major from Biology to Chemistry and Dr. U was my new advisor. I admire Dr. Uffelmann in the utmost and consider him a cherished friend. He truly puts his students first and is always ready to offer a listening ear and a cookie. **Patricia Williams, former student**

Dr. Uffelmann is one of those select professors who I (and, I'm confident, countless other students) can say truly made a difference in my undergraduate experience. He is exactly the type of faculty member that small schools should strive to employ in fulfilling their promises of providing a unique, focused, and excellent environment for top notch students. This is due not only to his superior teaching skills but also his genuinely caring approach to students. The time Dr. Uffelmann must put into making himself available to support individual students is incredible and has lasting, positive effects on one's self-confidence in "finding their ways" and on their perception of care and support available from the University. I can't express this adequately enough. **Elizabeth Spencer, former student**

Erich's work with 17th c. Dutch painting and the chemistry of painting conservation is a model of what interdisciplinary course work can be at a small liberal arts college. The rigor he brings to both subjects, the depth of learning that goes on, and the exposure our students have received to some of the best practices in the field have made these courses models for the university. The student evaluations sing his praises and so do all of us here in the Art Department... I think one of the most important aspects of Erich's work has been the impressive group of scholars he has brought to campus and the level of interaction they have had with our students. The interest in conservation has led to more than one art history thesis for us and I expect that several of our students will eventually go into this field. The stimulation is also there for the faculty. I will long remember the group of scholars he assembled for the 400th anniversary of Rembrandt's birth. They not only did a public symposium, but also, like others he has brought to campus, they met with classes and individual faculty. Erich has done an amazing amount of research and networking to get to know all these people and our students and faculty have been the direct beneficiaries... But one of the most impressive things in all this is the way that Erich has managed to bridge the divide between science and the arts. Rather than "two cultures" we have learned through his example and his brilliant teaching, that there is a great overlap in the disciplines and much to learn from each other. That seems to me to be the epitome of the liberal arts experience and no one embodies it better than Erich. **Pamela H. Simpson, Professor of Art, Washington and Lee**

Erich has the most comprehensive chemistry knowledge of anyone in the department. Once Erich learns something, that knowledge is cemented in the massive data banks of his brain. This applies not only to factual chemistry or art knowledge, but also to remembering legions of student and faculty faces and names. In my opinion the best outcome for students in Chem 111 [his fall course] is not their enhanced chemistry knowledge, but the organizational skills, study techniques, and the habit of getting help during office hours that is inculcated in the successful students. Erich is the primary instigator of this outcome, and since I teach these students a year later, I am grateful for it. **Lisa T. Alty, Chair of Chemistry, Washington and Lee**

Additional Documentation

Courses Currently Taught (Not Counting Research Courses): Chem 111 (General Chemistry), Chem 250 (Intermediate Inorganic Chemistry), Chem 252 (Inorganic Chemistry Laboratory), Chem 254 (Bioinorganic Chemistry), Chem 350 (Advanced Inorganic Chemistry), Univ 202 (Science in Art) Art 380 (Seminar in 17th Century Dutch Art)

Courses Previously Taught (Not Counting Research Courses): Chem 206 (Survey of the Periodic Table), Chem 207 (Synthesis of Inorganic Complexes), Chem 241 (Organic Chemistry Lecture), Chem 242 (Organic Chemistry Lecture), Chem 241L (Organic Chemistry Laboratory), Chem 242L (Organic Chemistry Laboratory), Chem 243L (Organic Spectroscopy Laboratory), Chem 295 (Special Topics in Solid State Chemistry), Chem 297A (Materials of 17th Century Dutch Art), Chem 297B (Instrumental Methods in Art Conservation)

Selected Course Load Data (Not Counting Office Hours, Help Sessions, etc.):

Academic Year 1994-1995 (representative load for first few years)

Fall term Chem 111 (136 students) six hours per week
Chem 241 lab (77 students) 4x4 =16 hours per week [for safety, 2 faculty per lab]
Chem 421 (2 students) research lab four hours per week
Chem 422 (1 student) research lab four hours per week
Winter term Chem 206 (36 students) three hours per week
Chem 242 lab (67 students) 4x4 =16 hours per week [for safety, 2 faculty per lab]
Chem 421 (one student) four hours per week
Spring term Chem 207 (26 students) six hours per week
Chem 350 (3 students) six hours per week
Chem 422 (2 students) research lab eight hours per week

Academic Year 2007-2008

Fall term Chem 111 (98 students) six hours per week [team taught---two faculty do six hours each]
Chem 111 lab (48 students) 2x4 = 8 hours per week [for safety, 2 faculty per lab]
Chem 421 (2 students) research lab four hours per week
Winter term Chem 250 (17 students) three hours per week
Chem 254 (17 students) two hours per week
Chem 421 (1 student) research lab four hours per week
Spring term Univ 202/Art 380 (14 students) 15 hours per week at W&L for three weeks;
40-60 hours per week in The Netherlands for three weeks

Grants Awarded Since 1993 (Excluding Annual Summer Glenn Grants):

- (16) Associated Colleges of the Andrew W. Mellon Faculty Renewal Grant--- "Whose Culture Should Be Preserved?" Awarded May, 2008---\$5,000
(15) Jeffress Research Grant Renewal---"¹H-¹⁵N HMBC Spectroscopy of Complexes Relevant to Green Chemistry" Awarded July, 2007---\$10,000
(14) Washington and Lee University---Class of '63 Lecture Series, "Recent Developments in Art Conservation and Conservation Science: Considering the Works of Rembrandt and Other Master Painters." A symposium featuring Jaap Boon (AMOLF-FOM, Amsterdam), Melanie Gifford (National Gallery of Art, Washington, DC), Petria Noble (The Mauritshuis, The Hague) October 30, 2006---\$10,000
(13) Jeffress Research Grant Renewal---"¹H-¹⁵N HMBC Spectroscopy of Complexes Relevant to Green Chemistry" Awarded July, 2005---\$10,000
(12) Washington and Lee University---Class of '65 Excellence in Teaching, "Codifying Materials for the Presentation of Scientific Investigations into 17th Century Dutch Art" Awarded May, 2004---\$6,000

- (11) Associated Colleges of the South Mini-Keck Grant---“Codifying Materials for the Presentation of Scientific Investigations into 17th Century Dutch Art” Awarded May, 2004---\$7,500
- (10) Global Stewardship Course Development Grant---“Science in Art” Awarded March, 2004---\$2,500
- (9) National Science Foundation---Major Research Instrumentation, "Multinuclear Gradient Inverse Probe, Amplifier, and Overnight Low Temperature Dewar for High-field NMR Spectroscopy in the Chemistry Department at Washington and Lee University" Awarded August, 2003---\$70,830
- (8) Jeffress Research Grant---“¹H-¹⁵N HMBC Spectroscopy of Complexes Relevant to Green Chemistry” Awarded July, 2003---\$25,000
- (7) Hewlett-Packard Company---University Donation, "Gel Permeation Chromatography in Undergraduate Education at Washington and Lee University" Awarded August, 1999---\$25,646
- (6) Washington and Lee University---Class of '65 Excellence in Teaching, "Development of New Cross Disciplinary Experiments for Chem 112 and Chem 252" Awarded April 1999---\$5,044
- (5) Hewlett-Packard Company---University Grants, "UV-Vis Spectroscopy in Undergraduate Education at Washington and Lee University" Awarded November, 1997---\$15,788
- (4) National Science Foundation---Instrumentation and Laboratory Improvement, "HighField Multinuclear NMR in Undergraduate Education at Washington and Lee University" Awarded May, 1996---\$99,500
- (3) Washington and Lee University---Class of '65 Excellence in Teaching, "Development of New Cross-Disciplinary Laboratory Experiments for the New Inorganic Courses at Washington and Lee University" Awarded April, 1996---\$4,375
- (2) American Chemical Society---Petroleum Research Fund Type G, "Novel Ligands for Transition Metal and Lanthanide Complexes" Awarded April, 1995---\$20,000
- (1) Research Corporation---Cottrell College Science Award, "Novel Macrocyclic Polyamide Ligands for Lanthanide Chemistry" Awarded May, 1995---\$27,000

Publications prior to 1993:

- (7) Collins, T. J.; Kostka, K. L.; Uffelman, E. S.; Weinberger, T. “Design, Synthesis, and Structure of a Macrocyclic Tetraamide That Stabilizes High-Valent Middle and Later Transition Metals,” *Inorg. Chem.* **1991**, 30, 4204-4210.
- (6) Collins, T. J.; Nichols, T. R.; Uffelman, E. S. “A Square-Planar Nickel(III) Complex of an Innocent Ligand System,” *J. Am. Chem. Soc.* **1991**, 113, 4708-4709.
- (5) Collins, T. J.; Powell, R. D.; Slebodnick, C.; Uffelman, E. S. “Stable Highly Oxidizing Cobalt Complexes of Macrocyclic Tetraamide Ligands,” *J. Am. Chem. Soc.* **1991**, 113, 8419-8425.
- (4) Collins, T. J.; Kostka, K. L.; Münck, E.; Uffelman, E. S. “Stabilization of Mononuclear Five-Coordinate Iron(IV),” *J. Am. Chem. Soc.* **1990**, 112, 5637-5639.
- (3) Collins, T. J.; Powell, R. D.; Slebodnick, C.; Uffelman, E. S. “A Water-Stable Manganese(V)-Oxo Complex: Definitive Assignment of a σ (Mn-O) Triple Bond Infrared Vibration,” *J. Am. Chem. Soc.* **1990**, 112, 899-901.
- (2) Collins, T. J.; Slebodnick, C.; Uffelman, E. S. “Chromium(V)-Oxo Complexes of Macrocyclic Tetraamido-*N* Ligands Tailored for Highly Oxidized Middle Transition Metal Complexes: A ¹⁸O- Labelling Reagent and a Structure with Four Nonplanar Amides,” *Inorg. Chem.* **1990**, 29, 3432-3436.
- (1) Collins, T. J.; Uffelman, E. S. “The First Macrocyclic Square-Planar Cobalt(III) Complex Relieves Ring Strain by Forming a Nonplanar Amide,” *Angew. Chem. Int. Ed. Engl.* **1989**, 28, 1509-1511.

Course Evaluations:

Uffelman receives an overwhelming number of positive written comments in all of his courses. What follows below are numerical data from representative courses:
 Chem 111 General Chemistry 2007, Chem 250 Inorganic Chemistry 2007,
 Univ 202/Art 380 Science in Art 2007, and early data---Chem 241 Organic Chemistry 1993

Chem 111 (2007) CU = completely unsatisfactory; P = poor; A = adequate; G = good; VG = very good; S = superior; NA = not applicable

Opportunity in class to question or express ideas: CU 0; P 0; A 2; G 11; VG 42; S 39; NA 0
Class discussions: CU 0; P 1; A 4; G 17; VG 35; S 36; NA 1
Instructor ability relate course material other subjects: CU 0; P 0; A 3; G 6; VG 28; S 58; NA 0
Instructor's presentation of the material: CU 0; P 0; A 1; G 7; VG 31; S 55; NA 0
Effectiveness of lecturer: CU 0; P 0; A 1; G 5; VG 35; S 53; NA 0
Degree intellectual stimulation Uffelman's lectures: CU 0; P 0; A 1; G 7; VG 33; S 52; NA 0
Overall I consider Uffelman's lectures: CU 0; P 0; A 1; G 4; VG 31; S 57; NA 0
Overall I consider Dr. Uffelman: CU 0; P 0; A 1; G 1; VG 15; S 75; NA 0
The fact that Dr. Uffelman were teaching another course would be: A definite reasons for not taking the course---2; Irrelevant to my decision to take the course---13; An added reason for taking the course---79

Chem 250 (2007) CU = completely unsatisfactory; P = poor; A = adequate; G = good; VG = very good; S = superior; NA = not applicable

Clarity of laboratory instructor's policies: CU 0; P 0; A 0; G 0; VG 4; S 8; NA 1
Organization of course content: CU 0; P 0; A 0; G 2; VG 4; S 7; NA 0
Instructor's explanation of material: CU 0; P 0; A 0; G 0; VG 4; S 9; NA 0
Opportunity in class to question or express ideas: CU 0; P 0; A 0; G 0; VG 2; S 11; NA 0
Class discussions: CU 0; P 0; A 1; G 1; VG 4; S 6; NA 1
Instructor ability relate course material other subjects: CU 0; P 0; A 0; G 0; VG 3; S 10; NA 0
Instructor's presentation of material: CU 0; P 0; A 0; G 0; VG 4; S 9; NA 0
Confidence in instructor's assigning a fair grade: CU 0; P 0; A 0; G 0; VG 5; S 8; NA 0
Effectiveness of lecturer: CU 0; P 0; A 0; G 0; VG 3; S 10; NA 0
Degree of intellectual stimulation in this course: CU 0; P 0; A 0; G 1; VG 3; S 9; NA 0
Taking everything into account I consider this course: CU 0; P 0; A 0; G 0; VG 5; S 8; NA 0
Taking everything into account I consider this instructor: CU 0; P 0; A 0; G 0; VG 0; S 13; NA 0
The fact that Dr. Uffelman were teaching another course would be: A definite reasons for not taking the course---0; Irrelevant to my decision to take the course---0; An added reason for taking the course---13

Science in Art Univ 202/Art380A (2007) Dr. Uffelman

Score of 1, 2, 3 = very dissatisfied; Score of 4, 5, 6 = moderately satisfied;

Score of 7, 8 = very satisfied; Score of 9, 10 = outstanding

Overall Academic Quality: one 9 and thirteen 10
Overall Quality of Instruction: one 9 and thirteen 10
Usefulness of Guest Instructors: two 8, four 9, eight 10
Usefulness of Site Visits/Tours: one 9 and thirteen 10
Housing/Living Arrangements: two 7, two 8, seven 9, three 10
General Travel Arrangements: two 8, three 9, nine 10
Classroom Facilities: one 7, one 8, two 9, ten 10
Program Organization & Management two 9 and twelve 10

Chem 241 (Organic Chemistry) (1993) Dr. Uffelman's First Course At W&L

57 responses out of 63 total possible

Score of 1 = completely unsatisfactory; Score of 2 = poor; Score of 3 = adequate;

Score of 4 = good; Score of 5 = very good; Score of 6 = superior

Scores were tallied as averages in 1993

Clarity of instructor's policies **4.6**
Organization of course content **5.3**
Instructor's explanation of laboratory material **5.5**
Opportunity in class to question or express ideas **5.0**

Class discussions	4.5
Laboratory able to relate course material to other subjects	5.2
Instructor's presentation of material	5.4
Confidence in instructor's assigning a fair grade	5.2
Effectiveness of lecturer	5.4
Degree of intellectual stimulation in this course	5.1
Taking everything into account I consider this course	5.0
Taking everything into account I consider this instructor	5.7
The fact that Dr. Uffelman were teaching another course would be: A definite reasons for not taking the course---0; Irrelevant to my decision to take the course---11; An added reason for taking the course---46	

Additional letters of support (excerpted)

"Dr. Erich Uffelman is unquestionably a talented and resourceful educator who demonstrates a clear understanding of the intrinsic interconnections between art and science. Furthermore, the unique research opportunities that he has been able to arrange attests to remarkable ingenuity and motivation in providing quality research projects for his students ." **Petria Noble; Head of Paintings Conservation; Curatorial & Conservation Department; MAURITSHUIS**

Erich is a role model for me, because he represents the perfect balance between a great and considerate teacher and a top-notch researcher. A career in academia is challenging, but one of the most important things that I have learned from Erich is that hard work, dedication and integrity are the keys to success. Erich offered his support in guiding me through the thorny path of the tenure track job. Our conversations about teaching, research, time management, and how to balance my family life and my career are invaluable to me. Having Erich as my colleague is a privilege and a joy. **Professor Irina Mazilu, Department of Physics and Engineering, Washington and Lee**

Dr. Uffelman is one of those great professors who take the time to get to know everyone in his class no matter how large or small. His personalized attention and passion for what he is teaching is even motivation enough to have last semester seniors working harder than ever to do well in his course, when most peers were relaxing until graduation. Because he is so excited about the material he is teaching, students become excited and interested as well. I was lucky enough to participate in Dr. Uffelman's spring term course that combines his two loves: chemistry and 17th Century Dutch Art. The way he brought the material to life and the fun we had in Netherlands visiting museums and conservatories will be some of my favorite memories from Washington and Lee. He made chemistry fun. **Beth Lidinsky, former student**

They say that when planning a course schedule to take the professor not the class. I had the distinct privilege and honor of being Dr. Erich Uffelman's student during my junior year at Washington & Lee. His invigorating teaching style, uncanny sense of humor, and sincere dedication to his students, make me fondly recall him as the best professor I had at W&L— among *several* great professors that I was blessed to experience. Erich shows a passion for teaching and for his students that is far above and beyond that of other faculty and thus make him well deserving of this award. **Drew Davenport, W&L '08**