

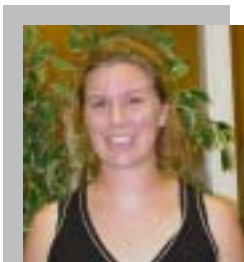
# THE COMMUNICATION FACTOR

NEWSLETTER OF THE CAIN PROJECT IN ENGINEERING AND PROFESSIONAL COMMUNICATION AT RICE UNIVERSITY - June 2003

## ENGI/NSCI 307 Students Gain a Global Perspective

This spring the Cain Project launched a new course, ENGI/NSCI 307: Communication in Five Countries, Many Cultures. The course focused on preparing students to “anticipate the roles, situations and expected communication practices they would encounter in engineering firms or other businesses” in other countries. The course’s instructor, Dr. Ute Cezeaux, was very pleased with the students’ enthusiasm. Most of the students had some experience abroad. Julia Baumann, Danielle Dunn, and Marie Schweiterman agreed to reflect and comment on how international/intercultural communication will affect their futures.

**Julia Baumann**, a junior majoring in civil engineering, studied in Budapest, Hungary in fall 2002. She



Julia Baumann

took classes with students from many countries including Cypress, Iran and Libya at the Budapest University of Technology and Economics. During that time she also traveled around Central Europe and Turkey.

Julia found that Dr. Cezeaux’s class related quite a bit to her experiences overseas. The class helped her understand the culture behind the teaching styles of the Hungarian educational system. It also validated many of the conclusions she had already formulated about how to communicate with people from other cultures. She gained a better understanding of why the methods she had used for communicating and coping in a foreign country had proven successful.

Julia also felt that the discussion-based ENGI/NSCI 307 sessions forced her to improve her speaking abilities. The actual business/communication side of engineering had not been a part of her previous coursework. Julia says, “While we (engineering students) all probably know that there is more to the world than problems, tests and raw information, it is very easy to forget.”

**Danielle Dunn**, a 2003 graduate in chemical engineering, has accepted a job in the manufacturing division at Merck in Pennsylvania.



Danielle Dunn

Last summer she spent two months living in Turku, Finland, working as an intern at Abo Akademi, Turku’s Swedish university. While there she traveled around the Nordic countries.

Danielle is also very enthusiastic about her experience as a student in ENGI/NSCI 307. Through the discussions at each class session with a guest from a different culture (British, Chinese, German, Saudi Arabian and Mexican), she discovered how to ask the right questions in order to learn about the various cultures, and how to communicate effectively with people from varied backgrounds. She also achieved a greater awareness of American culture and how people from other countries perceive it.

Danielle plans to apply much of what she learned in the course when she travels to Ireland this summer. She also feels that the information from the course will be extremely useful in her new job.

Danielle hopes to someday interact with co-workers from all over the world. The skills she developed will help her avoid cultural misunderstandings and conflicts at work and will help her benefit from the diversity of Merck’s employees.

## Whitmire Succeeds Polking as Faculty Advisory Committee Chair

Kenton H. Whitmire, Professor and Chair of Chemistry has succeeded John Polking as Chair of the Cain Project’s



Kenton H. Whitmire, PhD

Faculty Advisory Committee for 2003 – 2004. While serving as Chair, Polking played a crucial role in integrating the Cain Project with the rest of the Rice community. He worked closely with both the Dean of Natural Sciences and the Dean of Engineering, and served on the Committee on the Undergraduate Curriculum. Whitmire began his three-year term as a member of the committee in fall ’02. He accepted the appointment as chair this spring.

In fall 2002, the Cain Project welcomed three new committee members who will serve three-year terms: Lisa Meffert, Assistant Professor, Ecology & Evolutionary Biology; Peter Hartley, Professor and Department Chair of Economics; and Mark Kulstad, Professor of Philosophy.

The main tasks for the committee this year have been formulating recommendations based on last year’s assessment process and planning for the next two years.

**Marie Schweiterman** is also a graduating senior, majoring in mathematical economic analysis. She would highly recommend the course to both engineering and non-engineering majors who think they may some day work in an international firm or who may work abroad for an American firm. She says the course helped her learn

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# Student Spotlight: Cain Project Mentors & Coaches

## Student Presentations Coaches

In the fall of '99, the Cain Project trained its first presentations coaches to mentor the presentations of other students. Science and engineering students can make appointments with these coaches to get feedback on their presentations' delivery, organization and graphics. Currently the Cain Project has two presentations studios in which practices are held: one in Abercrombie B109 and the other in Anderson Biology 215. Although final presentations fall at the end of the semester, a hectic time for all students, the dedicated coaches take time out of their busy schedules to help other students prepare for their presentations.

**Sam Jones**, a chemical engineering major in his junior year at Rice, is currently one of the Cain Project



*Sam Jones*

presentations coaches. Sam's first involvement with the Cain Project was as a Rice freshman in UNIV 113: Technological Disasters and Catastrophes. In this class, groups are required to give presentations analyzing a disaster or catastrophe such as the Apollo 1 mission. It was in this class that Cain Project Assistant Director Tracy Volz coached Sam. Because of Tracy's coaching, Sam now enjoys public speaking and finds it much less stressful. He "gets a kick" out of giving presentations.

Currently Sam coaches students in UNIV 113. He is also a TA for Organic Chemistry 215 where he presents synopses of chapters and works through old exams for an audience of up to 100 students. He feels that the ability to speak in front of a group helps students stand out. Although working with the Cain Project it is not a requirement, Sam says that students are missing out on a great opportunity if they do not take advantage of the services it offers.

## BIOS 201/202 Student Writing Mentors

Each year the Cain Project recruits some of the top writers in BIOS 202 to become writing mentors for Introductory Biology. These students are trained by Cain Project instructors to read, evaluate, grade and review BIOS 201/202 students' papers. They are available for one-on-one consultations with BIOS students to review their assignments and to give them feedback. This semester, ten mentors worked with over one hundred students on their assignments and extra-credit papers.

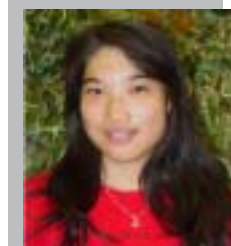
BIOS writing mentor **Trevor Crowell** is a junior majoring in biology and history. He is considering pursuing



*Trevor Crowell*

a career in international medicine.

Trevor was first introduced to the Cain Project when he enrolled in BIOS 202 and received the mentoring that he himself now gives. Trevor has also taken two other courses sponsored by the Cain Project, ENGL 307: Medical/Technical Communication and BIOS 305: Writing and Presenting in the Biosciences. The clarity and persuasiveness of his own writing have greatly improved as a result. Trevor expects to use many of the skills he has learned from the Cain Project as a physician, a career in which he will interact with people on a daily basis. Being able to communicate effectively will aid him when working with patients, researchers, and other physicians and professionals.



*Lingo Lai*

**Lingo Lai** is a senior psychology student who has been a Cain Project writing mentor for the past two semesters. She

emphasizes the difference between writing science papers vs. writing humanities papers. Most students entering college lack experience writing scientific reports. They are rarely taught how to manage the aspects of style, tone and wording required by this type of writing. As a mentor, Lingo helps students develop the skills they need to write well.

Lingo says that her experience working with the Cain Project as a writing mentor has been rewarding because of the noticeable improvement of the students' work within a semester. She likes knowing that the students actually read the comments she writes on their papers and enjoys feeling that she's made a difference in one aspect of their academic careers.

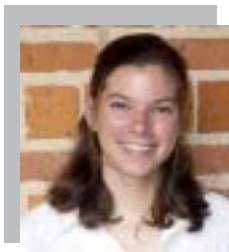
In addition to helping the BIOS students, Lingo finds that mentoring helps improve her own writing skills. After reading so many papers, she has developed a "better sense of how information should be presented and how sentences should be phrased."

**Visit the Cain Project web-site at:**  
<http://www.owl.net.rice.edu/~cainproj/>  
**for additional resources and information.**

**"Communication skills are tremendously important, but they are often overlooked. Most courses really emphasize content, but being able to communicate that content to others can be equally important. Students need to be able to convey their unique ideas to each other—to share their knowledge, argue their viewpoints, and discuss their thoughts."**

*Trevor Crowell*

# Student Commentary: Anne van de Ven



Anne van de Ven

As a first-year graduate student in the Bioengineering Department at Rice, I first heard about the Cain Project through their involvement in my Cellular Engineering class last fall. Tracy Volz came to speak to us about how to give technical presentations. I was impressed by her knowledge and infectious enthusiasm, but most all, I was thrilled to discover that Rice had a program to help science students write and present data.

As an undergraduate, I never received tutorials or handouts on how to write essays or give presentations. I had to struggle through several years before I learned how to communicate scientific data effectively to many different audiences.

Spring semester of this year, I was offered the exciting opportunity to be an oral presentations coach for the Bioengineering Senior Design class. The students of BIOE 452, split into five teams, were asked to design innovative new total artificial hearts.

"I was repeatedly impressed by the presentation skills of the students."

Anne van de Ven

Each team not only had to propose a design midway through the semester, but they also had to prepare detailed technical and business plans to present at the end of the semester. My role through the Cain Project involved helping each design team plan and rehearse its presentations, then giving feedback to aid the students in revising and improving their presentations before their in-class performance.

During my meetings with the individual design teams, I was

repeatedly impressed by the presentation skills of the students. Many of the students had already received guidance by the Cain Project in previous classes and it clearly showed in the confidence, knowledge, and skill with which they tackled each presentation. I found that the students already knew how to give great presentations, so I focused on the technical content by teaching the students to assess critically the feasibility of their ideas and be persuasive in marketing these ideas in their presentations. The students in turn taught me that that there are many ways to solve a single problem and that by thinking outside the box, great ideas are easy to find. For me, it was particularly rewarding to watch all these ideas come together for the final presentations. The memories of this fun, intellectually stimulating work is something I will always carry with me and I hope that I will be able to pass on my enthusiasm and new knowledge to next year's class.

# Student Spotlight: New Ventures Course

## ENGI/NSCI 305 Students

Students who take the New Ventures Communication Course ENGI/NSCI 305, taught by Dr. June Ferrill, learn to develop business plans and then present their concepts to venture capitalists from the "real world."

**Emmie Chang**, who graduated from Rice in 2002 with a degree in electrical engineering, took the concepts she learned from this course and her other training from Cain Project sponsored activities, and started her own business. Along with her fellow alumna Josefa Marquez, Emmie developed a computer and technology enrichment company called "Wonder Space." Currently they coordinate summer computer camps for students K-12 and hope to expand into adult and after-school programs this fall.

Her work with Cain Project courses and activities gave her the confidence to start her own business. Emmie received presentations coaching from

Tracy Volz in ELEC 391. Her work with Tracy greatly influenced her design principles and public speaking skills. Additionally, Emmie was active in the Cain Project sponsored "Ideas to Action" group, serving on its board and coordinating the group's first fundraiser in the summer of 2000.

**You can find out more information about Emmie Chang's company at: <http://www.wonder-space.com>.**

## ENGI/NSCI 307

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aspects of both formal and informal communication in different cultures.

Marie has spent quite a bit of time working and studying abroad. While growing up, she spent three summers in Mexico City, two summers in Germany, and one year living with a host family in Potsdam, Germany, while in high school. In college she spent one



Marie Schweiterman

summer living in Vienna, working at the American Embassy. The class discussions and readings in ENGI/NSCI 307 helped her gain a better understanding of the

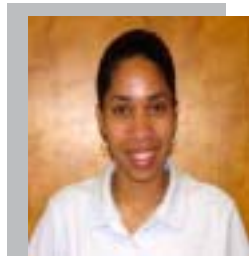
people she met during her travels. She feels it is helpful to understand others' mannerisms, beliefs and value systems.

The course also prepared Marie to know how people in other countries with different cultural backgrounds will expect her to act in both business and casual environments. This will especially be helpful for her because next year she plans to teach English in Japan through a Japanese government-sponsored program. The class taught her a lot about Asian cultures and what to expect in her new environment. She highly encourages students to take a course like this to help them prepare for "real-life" careers in increasingly international fields.

# Student Spotlight: Graduate Studies

## Thesis group & Workshop Students

One of the outstanding achievements of the Cain Project is the work of Dr. Jan Hewitt with her Thesis- and Proposal-writing Groups, and her Thesis-writing Workshop. In these Cain Project sponsored offerings, students who are in various stages of writing a thesis are taught in a classroom setting and also work one-on-one with Dr. Hewitt. Both current and former students praise “Dr. Jan,” her work, and the Cain Project.



*Powtawche Williams*

### **Powtawche Williams**

received her masters from Rice in Mechanical Engineering, and is currently pursuing her PhD here as well. She hopes to work

in industry, focusing on research and eventually would like to teach. Powtawche participated in both the Thesis-writing Workshop and the Thesis-writing Group and continues to meet occasionally with Dr. Hewitt, who welcomes her with open arms.

It was through her work with Dr. Jan that Powtawche learned how to organize her ideas and thoughts and manage her time. Powtawche encourages her peers to take advantage of the support that the Cain Project offers.

**Denise Beckles** received both her MS and PhD from Rice in Environmental Science and Engineering, finishing her studies in 2000. She is currently a lecturer in Environmental Chemistry at the University of the West Indies. She was one of the first students to join Dr. Hewitt’s classes, and continued to turn to the Cain Project for support through her PhD. Denise says that there were several aspects of the program that proved to be extremely helpful: the

grammar review, the structured nature of the class and Dr. Hewitt herself. Denise would highly recommend the program to current Rice students. She reflects that by the time a student starts to work on an advanced science/ engineering degree, he or she tends to leave their English writing skills behind.

Denise also found a short section on presentation skills helpful. She realizes now that so much of today’s job market involves presenting data. Denise thinks that training in communication/writing skills should be required for all science/ engineering graduate students.

**“Dr. Hewitt was very good at helping me take my work to the next level.”**

*Powtawche Williams*

# Staff Spotlights: Scholarships & Presentations

## Successful PhD Defense

Cain Project instructor Julie Zeleznik successfully defended her dissertation at Iowa State University in March. She received her degree on May 9<sup>th</sup>. She also gave invited presentations at McGill University and at Carleton College in Canada this spring.

## VIGRE Grant

The Cain Project is pleased to have been included in the new VIGRE project recently funded by the NSF. Vertically integrated research teams from the departments of CAAM, STAT and MATH will be learning visual design, giving oral presentations and writing for publication as part of the project. We look forward to this research collaboration with faculty from these departments and their teams.

## CCCC/ATTW Conference Presentations

Dr. Jan Hewitt’s presentation on “A Model That Helps Native and Non-Native English-Speaking Graduate Students” was accepted for the 2003 Conference on College Composition and Communication in New York City in March.

Dr. Linda Driskill and Dr. Deborah Andrews of the University of Delaware presented a workshop on “Assessing Writing in College Courses” at the Association of Teachers of Technical Writing, also in New York City in March.

Janie Hammons, a writing coach with the Cain Project, attended both the ATTW and CCCC meetings.



## Cain Project

The Cain Project in Engineering and Professional Communication helps Rice students become expert speakers and writers. Because of Gordon and Mary Cain’s generous gift, undergraduate and graduate students in science and engineering are developing the communication skills necessary for successful professional leadership.

**Linda Driskill, PhD**  
*Project Director*

**Tracy Volz, PhD**  
*Assistant Director*

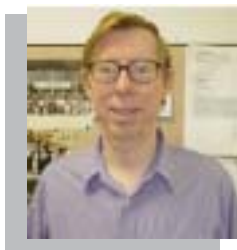
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## Course Design to Defeat the “Content Squeeze”: BIOS 424



George Bennett, PhD

Clean up oil spills with microbes? Develop a new medicine? Plan a defense against biological weapons? The many roles of microbes in industry, medicine, and environmental management make George Bennett’s Biosciences 424, “Microbiology and Bio-

technology,” a popular elective but a teaching challenge. With so many fascinating applications to explore, there’s always pressure to include additional topics.

Bennett designs his course to include both fundamentals and the newest developments. Naturally, he wants students to develop basic microbiology knowledge and analytical skills; but recognizing that his students have so many possible career paths and individual interests, he also wants to enable them to study related applications they’ve chosen themselves.

His solution divides the course into three parts and weaves together rigorous reading (about 30 chapters), 15 lectures to reinforce and extend students’ understanding of underlying mechanisms, and three 75-minute examinations. Into this framework he incorporates three team reports on microbiology and biotechnology in industry, environment, or medicine. The teams’ reports enable each person and each team to study a topic in depth while learning the chief results of other teams’ projects through oral presentations. The result is depth plus breadth.

Through course design Bennett ensures that students use knowledge gained from reading and lectures to interpret and master the research literature. As students discuss how to integrate their individual research efforts into a clear, concise, but complete team report, they learn how to review the literature on a particular topic, see connections between articles, build skills for working in a team, and improve their communication.

Bennett provides books and abstracts of articles as a springboard for each team, although teams are encouraged to seek additional articles on their own (see sample 1). In-class working time plus this “jump start” make it possible to accomplish three projects within the semester. Each team’s presentation and written report add specialized knowledge related to textbook readings and lectures, defeating the content squeeze.

In course design, as in so much else, timing is everything. The overall syllabus scheme (see sample 2) reveals the rhythm of readings, lectures, projects, and exams. Excluding two sessions—the course introduction and the course review and evaluation—the remaining 26 course sessions are grouped in three series. Topic 1 ends with an exam in session 10, topic 2 with an exam in session 18, and topic 3 with a third exam in session 28. Woven into each topic series are three class sessions devoted to work on team reports.

### ***Planning the literature search and team project***

In the first of the three sessions, students form subgroups to cover each of the subtopics. These subgroups scour the text and books plus lists of abstracts Bennett brings to class. They examine the references and organize a brief outline of the subtopic. Each subgroup then assigns specific portions of the outline to each member. By the end of the second discussion period, a handwritten, more detailed outline of the group’s subtopic has been prepared and turned in.

### ***Becoming authors and presenters***

About a week later, individual students turn in short written reports of about 1 1/2 pages summarizing their own findings, and based on the team’s outline. The team members who have been chosen to present the report receive advance copies so they can prepare the presentation to the class. At the third meeting team representatives give 15- to 20- minute presentations. Teams must balance considerations of brevity, conciseness, and thoroughness in planning how to leave enough time for Q&A. Usually each student will present to the class once a semester.

### ***Becoming reviewers and revisers***

During the second and third rounds of team reports, copies of students’ short reports are distributed at the second meeting to other students outside the subgroup for reviews due at the next class meeting. Students receive excerpts from these signed one-paragraph reviews along with the instructor’s comments at the next meeting. These comments help students improve their final drafts and get ideas for the in-class presentations. Writing the reviews prepares students to comment on other scientists’ drafts, just as they will be expected to do once they are part of a research or industry team. A schematic view of the course design is shown on the other side of this page (sample 2).

As a result of this carefully orchestrated design, students are able to

- learn fundamentals and processes
- choose topics of personal interest
- build team skills
- practice communication processes central to microbiology and research teams
- increase their skill in pulling important information out of the literature
- explain information concisely and completely to others
- learn independently, and
- be responsible to others in their subgroup and to the class as a whole.

Bennett balances independent responsibilities with collaboration because most scientists will work in teams and collaborate with others to develop a mutual understanding of topics or problems. Since the results of new research in microbiology are reported almost daily—revising and extending what is known—students must

become comfortable with constantly learning and evaluating new material and organizing and incorporating it into a framework of prior understanding. The course thus introduces students to the long-term process of scientific work that lies ahead.

Bennett participated in the week-long workshop on designing communication-enhanced courses sponsored by the Cain Project and led by Rebecca Burnett and Julie Zeleznik in summer 2000. He has been refining his courses ever since. Students are very happy with the current plan and feel they get a lot out of the projects both personally and professionally. Bennett recently was appointed as chair of the Department of Biochemistry and Cell Biology.

With all the responsibilities of leading such a large and active department soon to begin, it's great that he developed his course design for BIOS 424 in advance. You can contact George Bennett to discuss communication-enhanced course design at [gbennett@rice.edu](mailto:gbennett@rice.edu) or call the Cain Project at ext. 6141.

## Sample 1: Some Selected Topics for Reports

### Environmental Topics

- Bioremediation of chlorinated solvents
- Environmental production and utilization of methane (anaerobic oxidation)
- Biopesticides and *Bacillus thuringiensis*
- Bacterial/algae/coral/sponge interactions

### Industrial Topics

- Production of carotene compounds and dyes
- Bovine growth hormone and fish growth hormone
- Biological warfare
- DNA vaccines

### Medical Topics

- Plague
- *H. Pylori* and ulcers
- Ebola and related viruses
- Bacterial meningitis

## Sample 2: Syllabus Design for Bios 424 Class Session

- 1 – Introduction to the course
- 2 – Lecture / readings
- 3 – Lecture / readings and begin discussion of project 1
- 4 – Lecture / readings
- 5 – *Group meeting 1*
- 6 – Lecture / readings
- 7 – *Group meeting 2 – outline*
- 8 – *Group meeting 3 – presentations to class*
- 9 – Lecture / readings
- 10 – **Exam 1**
- 11 – Begin topic 2
- 12 – Lecture / readings
- 13 – *Group meeting 1*
- 14 – Lecture / readings
- 15 – *Group meeting 2 – outline*
- 16 – *Group meeting 3 – presentations to class*
- 17 – Lecture
- 18 – **Exam 2**
- 19 – Begin topic 3
- 20 – Lecture / readings
- 21 – *Group meeting 1*
- 22 – Lecture / readings
- 23 – *Group meeting 2 – outline*
- 24 – Lecture / readings
- 25 – *Group meeting 3 – presentations to class*
- 26 – Lecture / readings
- 27 – Course review and evaluation
- 28 – **Exam 3**