

**SIMON FRASER UNIVERSITY
FALL SESSION 2005**

**EDUC 488-3
SPECIAL TOPICS:
PHYSICS EDUCATION: RESEARCH & TEACHING
STRATEGIES
(E01.00)**

Dr. Jan van Aalst
EMAIL: vanaalst@sfu.ca

Office: edb 8672
Phone: 604-291-4825

MONDAY 17:30-20:20 in Room 545
Surrey Campus

PREREQUISITE: Completion of lower division courses in an undergraduate program in physics with at least a B average or equivalent.

DESCRIPTION: This course explores research on learning physics at the introductory level, as well as research-based teaching strategies. It is intended for high school and college teachers of physics, as well as teaching assistants in physics. It may also be of interest to teachers of related disciplines, such as mathematics. This course provides an opportunity to improve your understanding of physics, research on learning physics, and innovative teaching strategies.

TOPICS: Motivation for physics education research; understanding kinematics; probing student thinking about motion with surveys; some methodological issues; perspectives on learning; peer teaching in lecture courses; critical details – what you can accomplish in a few hours; microcomputer-based laboratory tools; tutorials in introductory physics. This list can be fine-tuned depending on the interest of the class.

FORMAT: This course uses an active learning format appropriate to a seminar. Students will be asked to lead a discussion of some of the papers; students are also expected to complete in-class activities designed to encourage them to examine their understanding of physics and how to teach it. There are opportunities for micro-teaching that will also help some students develop their teaching. The course will meet once per week for a three-hour session.

EVALUATION:

- (a) Classroom observations (15%) Students will observe a focused series of about three physics lessons at the high school or college/university levels, and write an essay to examine teaching and learning issues similar to those discussed in the readings. Evaluation will be based on a rubric.
- (b) Paper/Project (50%) This can take many forms. For example, a literature review on a topic of interest to

the

student, or a small-scale inquiry. Evaluation will be similar to that for papers in other undergraduate courses.

(c) Portfolio (35%) Using small assignments throughout the course, the student demonstrates how his or her thinking about teaching and learning has changed. The portfolio will be guided by several focus questions.

Evaluation will be based on a rubric.

TEXTBOOK: No textbook is required.

Return to Education's Undergraduate 2005-3 Course Outlines Main Page.
