EE491, EE492 Syllabus
Independent Study Syllabus

1. General Course Description. The independent study experience is designed to provide an opportunity for cadets to pursue original research in a topic of their choosing. Typically the first such experience will be EE491 for 1 credit hour. If a second, more involved experience is desired in a following semester, the 2 credit hour EE492 may be arranged. EE492 typically involves project management/leadership skills of junior cadets taking EE491. In both courses cadets will conclude their independent study work by giving an oral presentation to faculty and interested cadets both within the department and during the post-wide Cadet Research Symposium held in the spring, and create a written presentation to be posted on the web.

2. Instructor information. MAJ James Squire, NEH 336
   Email: squirejc@vmi.edu
   Office tel: x7548 Home tel: 264-0122 (call before 1900)

3. Requirements of every participating cadet
   a. Participate with the rest of the team in delivery of a 50 minute oral and written status report every two weeks to the project advisor. Written status report shell is attached.
   b. Be present at a short, informal, and ungraded meeting held between the semiweekly meetings. These meetings are only for your benefit—to bring up any problems you have encountered and share any progress you have made. No reports or presentations are due.
   c. Log at least 5 hours each week for EE491 and at least 10 hours each week for EE492. Keep track in your lab notebook (below) and semiweekly submit incremental totals to the project leader for inclusion in the status report. You may be over/under any particular week as long as you meet the minimum summed over the two weeks by each semiweekly meeting.
   d. Every participating cadet will maintain a laboratory notebook devoted exclusively to the project. This notebook will contain ideas, sketches, datasheets, time log sheets (see below), parts requests, etc., organized in a coherent manner determined by the individual cadet. Unlike other course notebooks, this is a legal document; should anything be discovered that warrants patenting, this notebook becomes legal evidence.
   e. The lab notebook should also contain a log sheet documenting hours worked and a very brief note describing what was done – e.g.
      9/3/01 1000-1050: weekly meeting
      9/3/01 1600-1715: soldered & tested FET H-bridge.

4. Additional requirements of project leader
   a. Before the first team meeting, the project leader must meet with the faculty advisor to discuss the project, goals, and funding issues. He/she will then draft a timeline in the format of the enclosed "timeline.xls", and submit it to the advisor for approval/changes before the first team meeting. The timeline must include the project status report dates.

   b. Organize the semiweekly status report/presentation.

      1) Use the enclosed "status report.doc" shell for the written report. Collect individual team member time logs for the report.

      2) Email reminders to all team members and advisor before the meeting.

      3) Delegate sections of the oral presentation among team members.

      4) If the project is no longer following the timeline, submit a revised timeline with the status report.

5. Additional requirements of secretary

   a. After each status report meeting will summarize the meeting's findings and tasks assigned to each member with suspense dates in a format similar to the attached "minutes.doc".

   b. The secretary will email to each member of the project team and the faculty member a copy of these minutes within a day following the status report presentation, and compile a copy in a section of his/her lab notebook.

6. Additional requirements of treasurer (done by the secretary in teams of two)

   a. At the start of the semester the treasurer will order electronics parts catalogs from the following companies:

Electronix Express	www.elexp.com	1 800 972-2225	cheap but limited selection
Mouser	www.mouser.com	1 800 346-6873	medium cost and selection
Digi-Key	www.digikey.com	1 800 344-4539	$$, but comprehensive
Jameco	www.jameco.com	1 800 831-4242	cheap, good kits, some tools
Marlin P Jones	www.mpja.com	1 800 652-6733	cheap, good kits, pwr supplies

   b. Submit parts orders as needed to faculty advisor in the format of the attached "parts order.xls". Be sure to check the catalog numbers and availability of the parts online for each part before submitting the list.

7. Grading

   Grading is 100% evenly divided among the semiweekly project reports, except for the final presentation/report which is worth double. Typically about 6 are filed, making each worth about 15% and the final 30% of the final grade. At the conclusion of each status report meeting, specific goals are agreed upon for completion by the next status report meeting. These should be detailed goals taken from the more general landmarks described by the overall project timeline submitted at the first meeting. For example, a timeline goal might be "submit paper to IEEE Potentials". The project goals agreed upon at the previous meeting might then be:

- Complete revision of draft #7, specifically fix the problems with the Discussion section (Tim)
- Cut the abstract down to 250 words (Shawn)
- Complete author bibliographies (Ron)
- Obtain author's kit from IEEE Potentials (Ron)
- Draft submission letter (Tim)

The final report must include sufficient detail for another team to duplicate the project exactly; that means it must include parts lists and sources, fabrication instructions (if any), and absolutely, positively, complete schematics for *everything* – no exceptions. Microsoft Visio, available for free from our ECE technicians (see Roger Childress), will let you draw very professional schematics. There is no final examination.

The project reports have are graded as follows. Not all team members may receive the same grade since the project status report contains both elements that are common among all team members (T) and individual to the cadet (C).

Task	Cadet (C) or Team (T)?	%
Met goals decided at previous meeting?	T	25
Written report complete (e.g. follows shell given, complete, clear)	T	25
Hours logged (average per week since last semiweekly meeting)	C	25
Verbal presentation complete (clear, comprehensive, identifies any problems, proposes solutions). For example, *never* say "worked on x", but say "completed y".	C	25

8. <u>FAQs</u>

a. Hours and goals don't accumulate or de-accumulate between reporting periods: each reporting period is independent and a fresh chance to excel.

b. The project leader ensure the goals decided for each grading period should be such that each EE491 student needs to log about 5 hours per week and each EE492 student logs about 10 hours per week.

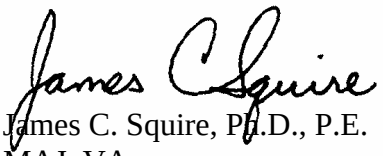
c. If your resourcefulness lets you complete all your group's goals early, good for you; you're done and will receive full credit for time regardless of hours logged. If any of the goals are not completed, though, you're expected to spend at least the 5 to 10 per week needed to fix them...even if the goal is not in your specific area of responsibility.

d. Interim meetings are entirely ungraded, usually very short, and serve as a chance to meet, share accomplishments, and discuss problems. No paperwork is required; just your presence. The day before the semiweekly meetings the semiweekly report is due. The day after the semiweekly meetings the minutes are due.

9. Work for Grade

The completed project is an expression of the combined effort of all team members, and I expect everyone to similarly work together on the presentation and on any written reports. However, you must document help received from sources other than your team members and faculty advisor, in the manner described by VMI Policy (Appendix A and B).

As an example, if you use a circuit that you found in a past issue of Poptronics, you must document this fact in your presentation and in any written reports you create.



Encls

James C. Squire, Ph.D., P.E.
MAJ, VA
EE491/E492 Instructor

Appendix A: Institute Work For Grade Policy

"**Work for grade**" is defined as any work presented to an instructor for a formal grade or undertaken in satisfaction of a requirement for successful completion of a course or degree requirement. All work submitted for grade is considered the cadet's own work. "**Cadet's own work**" means that he or she has composed the work from his or her general accumulation of knowledge and skill except as clearly and fully documented and that it has been composed especially for the current assignment. No work previously submitted in any course at VMI or elsewhere will be resubmitted or reformatted for submission in a current course without the specific approval of the instructor.

In all work for grade, failure to distinguish between the cadet's own work and ideas and the work and ideas of others is known as **plagiarism**. Proper documentation clearly and fully identifies the sources of all borrowed ideas, quotations, or other assistance. The cadet is referred to the VMI-authorized handbook for rules concerning quotations, paraphrases, and documentation.

In all written work for grade, the cadet must include the words "**HELP RECEIVED**" conspicuously on the document, and he or she must then do one of two things: (1) state "none," meaning that no help was received except as documented in the work; or (2) explain in detail the nature of the help received. In oral work for grade, the cadet must make the same declaration before beginning the presentation. Admission of help received may result in a lower grade but will not result in prosecution for an honor violation.

Cadets are prohibited from discussing the contents of a quiz/exam until it is returned to them or final course grades are posted. This enjoinder does not imply that any inadvertent expression or behavior that might indicate one's feeling about the test should be considered a breach of honor. The real issue is whether cadets received information, not available to everyone else in the class, which would give them an unfair advantage. If a cadet inadvertently gives or receives information, the incident must be reported to the professor and the Honor Court.

Each cadet bears the responsibility for familiarizing himself or herself thoroughly with the policies stated in this section, with any supplementary statement regarding work for grade expressed by the academic department in which he or she is taking a course, and with any special conditions provided in writing by the professor for a given assignment. If there is any doubt or uncertainty about the correct interpretation of a policy, the cadet should consult the instructor of the course. There should be no confusion, however, on the basic principle that it is never acceptable to submit someone else's work, written or otherwise, formally graded or not, as one's own.

The violation by a cadet of any of these policies will, if he or she is found guilty by the Honor Court, result in his or her being dismissed from VMI. Neither ignorance nor professed confusion about the correct interpretation of these policies is an excuse.

Appendix B: Department Work For Grade Policy

Revised 14 August 2003

Tutoring [e.g. Writing Center, Academic Center, athletic tutors, private tutors]: The ECE Department supports and encourages cadet use of such learning aids, as offered by the VMI Writing Center, VMI Academic Center, and tutors. All assistance from these, and any other similar aids, must be explicitly described in the cadet statement regarding HELP RECEIVED.

Peer Collaboration: Peer collaboration policies, including policies on CRITICAL COMMENTS, will be established by the individual faculty of the ECE Department, and may vary from assignment to assignment. Each ECE faculty member will clearly indicate the appropriate collaboration policy for each assignment. Policy regarding laboratory groups, team cooperation, interaction between teams, etc. will be established by the individual faculty. All assistance from such peer collaboration must be explicitly described in the cadet statement regarding HELP RECEIVED.

Computer Aids [including calculators, translators, spelling, style, and grammar checkers]: The ECE Department supports and encourages cadet use of computer aids, including calculators, translators, spelling, style, and grammar checkers to improve the quality of the cadets' work. The use of such computer aids does not constitute HELP RECEIVED.

timeline.xls

Smart Stent Timeline: Fall ** Semester** Cadet Name												Last Updated: ****		
September				October					November				December	
3	10	17	24	1	8	15	22	29	5	12	19	26	3	10
Status Meeting # 1		Status Meeting # 2		Status Meeting # 3		Status Meeting # 4		Status Meeting # 5		Status Meeting # 6	Thanksgiving		Status Meeting # 7	
		Finish first hardware demonstration		Finish complete hardware product		Finish software, display programs		Finish symposium paper		Finish first draft, paper			Final presentation	
		Grant draft		Submit grant										
Key dates				FTX (Oct 5-7)				RF (Nov 2-4)	Corps Trp (Nov 10-11)		Thanksgiving			

semiweekly status.doc

Electrical Engineering Research Project: Balloon Catheter Sensing Device
Project Leader: Steven Lee

Semiweekly Status Report of 17 September 2005

Goals decided at last project status meeting and status

Goals decided at last meeting	Met?
Draft complete Wetmore Research Grant proposal	yes
Place order for dielectric assortment, glues, and tools	yes
Complete initial hardware capactitance-measuring module	yes
General course coordination: project leader sent meeting reminders in advance, secretary sent minutes on time, etc.	yes

If any not met, what happened? Also, include updated timeline

Include problem that occurred, identify possible solutions tried

Other actions completed since last time

See attached Wetmore Grant proposal
Lee: Installed Matlab 5 onto laptop
Wrote skeleton code
Brooks: Tried rubber cement vs. silicon rubber vs. latex sheets as dielectrics
Silicon rubber gives good signal range (20-50pF), but is very delicate
Latex sheets provide adequate signal range (2-10pF), and is durable

Issues

Could not get rubber cement model to work. Tried cleaning with solvents, tried preheating.
DSP cadets are fooling around with the independent study gear

Hours logged – 2 week period from last meeting

Brooks	23	EE492
Lee	14	EE491

Proposed goals to be met by next status meeting

- Rewrite grant and submit
- Create a permanent PC board and mount all components on it
- Package capacitance measuring box and RS232 converter neatly into project box
- Develop test codes in Matlab and connect to RS232 multimeters so that Matlab can directly read external voltages
- As always, complete general course coordination: project leader pre-arranges meetings, secretary publishes minutes on time

Minutes filed by secretary the day following status report meetings

Electrical Engineering Research Project: Balloon Catheter Sensing Device
Secretary: Matthew R. Brooks

Minutes from 17 September 2005 Status Report Meeting

Issues

Could not get rubber cement model to work. Tried cleaning with solvents, tried preheating.
Squire: Do not use rubber cement; try electrochemical bonding, silver adhesive, and friction bonding

DSP cadets are fooling around with the independent study gear
Squire: Will speak to the EE431 class

Agreed goals to be met by next status meeting

- Rewrite grant and submit
- Create a permanent PC board and mount all components on it
- Package capacitance measuring box and RS232 converter neatly into project box
- Use each of the alternative bonding strategies listed above and compare
- As always, complete general course coordination: project leader pre-arranges meetings, secretary publishes minutes on time

parts order.xls

qty	cat number	description	cost ea	cost total
Mouser 800 346 6873 www.mouser.com				
20	17PP047	3.5mm stereo plug	0.48	9.60
1	578-DS40	Desoldering iron/bulb	84.44	84.44
1	578-1095	Heat gun	51.11	51.11
1	578-1082	Heat gun reflector	5.90	5.90
1	5168-2400	Silver epoxy	19.18	19.18
	5168-4300	Quickbond and accelerator	7.37	7.37
10	538-22-01-3027	0.1" 2 pos terminal housing	0.12	1.20
10	538-22-01-3077	0.1" 7 pos terminal housing	0.42	4.20
10	538-22-01-3107	0.1" 10 pos terminal housing	0.60	6.00
10	538-22-03-2021	0.1" 2 pos terminal header	0.15	1.50
10	538-22-03-2071	0.1" 7 pos terminal header	0.54	5.40
10	538-22-03-2021	0.1" 10 pos terminal header	0.62	8.00
100	538-08-50-0114	crimp terminals	0.07	7.00
10	546-1591DS-BK	plastic project boxes	4.38	43.80
DigiKey 800 344-4539 www.digikey.com				
25	296-1994-ND	Virtual Ground	1.23	30.63