ENGINEERING 5

Lecture 5: Matlab programming; Learning Styles

Professor Carr Everbach

Course web page: http://www.swarthmore.edu/NatSci/ceverba1/Class/e5/E5Index.html

Remember...

- Thursday 9/22: Matlab II is due.
- Thursday 10/6: MatLab III lab is due.
- Wizards available Tuesdays/Wednesdays 7:00-9:00 pm (Hicks 213) for Engin (Matlab help) and Sundays/Tuesdays 7:00-9:00 pm (SC 128) Physics & Math
- This week in lab: continue to make things out of stuff. If time, start assembling servos into robotic arm.

A volunteer opportunity

Professor Macken works with kids from Chester on Engineering projects (model bridges in the fall, solar cars in the spring).

You must have Wednesday afternoons after 3:45 free.

The bridge project begins after Fall break (October 19) and goes 4-5 weeks.

Contact Professor Macken, nmacken1, x8073

A volunteer opportunity



Matlab1 comments

- Difference among scripts, functions, .mat files
- A^2 = 2*B C
- x = [-pi:0.2:pi]
- plot command: triplets
- formatted output: fprintf

Matlab 2 comments

If confused, please ask for help from classmates, wizards, upperclass engineers, me, etc. Do your own work – I must know that you can do the assignments yourself

- Review matrix multiplication
- polyfit and polyval
- input command
- if, elseif, else
- for and while loops

Learning Styles

Learning Styles

- Everybody learns in a different way.
- Learning style index, similar to Myers-Briggs personality type index (Extrovert-Introvert, Sensing-Intuition, Thinking-Feeling, Judging-Perceiving).
- Learning styles (Active-Reflective, Sensing-Intuitive, Visual-Verbal, Sequential-Global).
- Exact "axes" aren't important, but being aware of the way you learn can be very important.

Information on learning styles taken from: http://www4.ncsu.edu/unity/lockers/users/f/felder/public/ILSdir/styles.htm

Active vs. Reflective (Description)

Active	Reflective
Retain information best by doing something active.	Prefer to think about it quietly first.
"Let's try it out and see how it works"	"Let's think it through first"
Group work	Working alone

Active vs. Reflective (Strategies)

Active	Reflective
Study in a group.	Stop periodically to review what you have read and think of possible questions or applications.
Quiz each other	Write short summaries of readings or class notes in your own words.

Sensing vs. Intuitive (Description)

Sensing	Intuitive
like learning facts	prefer discovering relationships
solve problems by well- established methods	like innovation and dislike repetition
practical and careful	work quickly and innovatively
like connections to real world	don't like "plug-and-chug" courses w/ memorization
patient with details and good at memorizing facts	good at grasping new concepts and abstractions

Sensing vs. Intuitive (Strategies)

Sensing	Intuitive
ask instructor for specific examples of concepts and procedures	ask your instructor for interpretations or theories that link the facts
try to find specifics in textbook or other references or by brainstorming with friends or classmates	take time to read entire question before you start answering and be sure to check your results

Visual vs Verbal (Description)

Visual	Verbal
remember best what they seepictures, diagrams, flow charts, time lines, films, and demonstrations.	get more out of words written and spoken explanations.

Visual vs Verbal (Strategies)

Visual	Verbal
try to find diagrams, sketches, schematics, photographs,	write summaries or outlines of course material in your own words
see if any of the course material is available.	working in groups can be particularly effective:
make concept map by listing key points, enclosing them in boxes or circles, and connecting	hearing classmates' explanations and even more when you explain
Color-code your notes with highlighter	

Sequential vs Global (Description)

Sequential	Global
gain understanding in linear steps; each step following logically from the previous one	learn in large jumps, absorbing material almost randomly without connections, and then suddenly "getting it"
follow logical stepwise paths in finding solutions	may solve complex problems quickly or in novel ways once they have big picture, but may have difficulty explaining how they did it

Sequential vs Global (Strategies)

Sequential	Global
ask the instructor to fill in the skipped steps do so yourself	skim entire chapter to get overview
outline lecture material for yourself in logical order	immerse yourself in individual subjects for large blocks instead of short bursts
	relate the subject to things you already know

The 5th axis: Inductive-Deductive

- `...the "best" method of teaching ... is induction, whether it be called problem-based learning, discovery learning, inquiry learning, or some variation on those themes.'
- On the other hand, the traditional college teaching method is deduction, starting with "fundamentals" and proceeding to applications.
- 'I don't want instructors to be able to determine somehow that their students prefer deductive presentation and use that result to justify continuing to use the traditional but less effective lecture paradigm in their courses and curricula. I have therefore omitted this dimension from the model.'