CommNetS: Communications Networks & Systems

Student orientation

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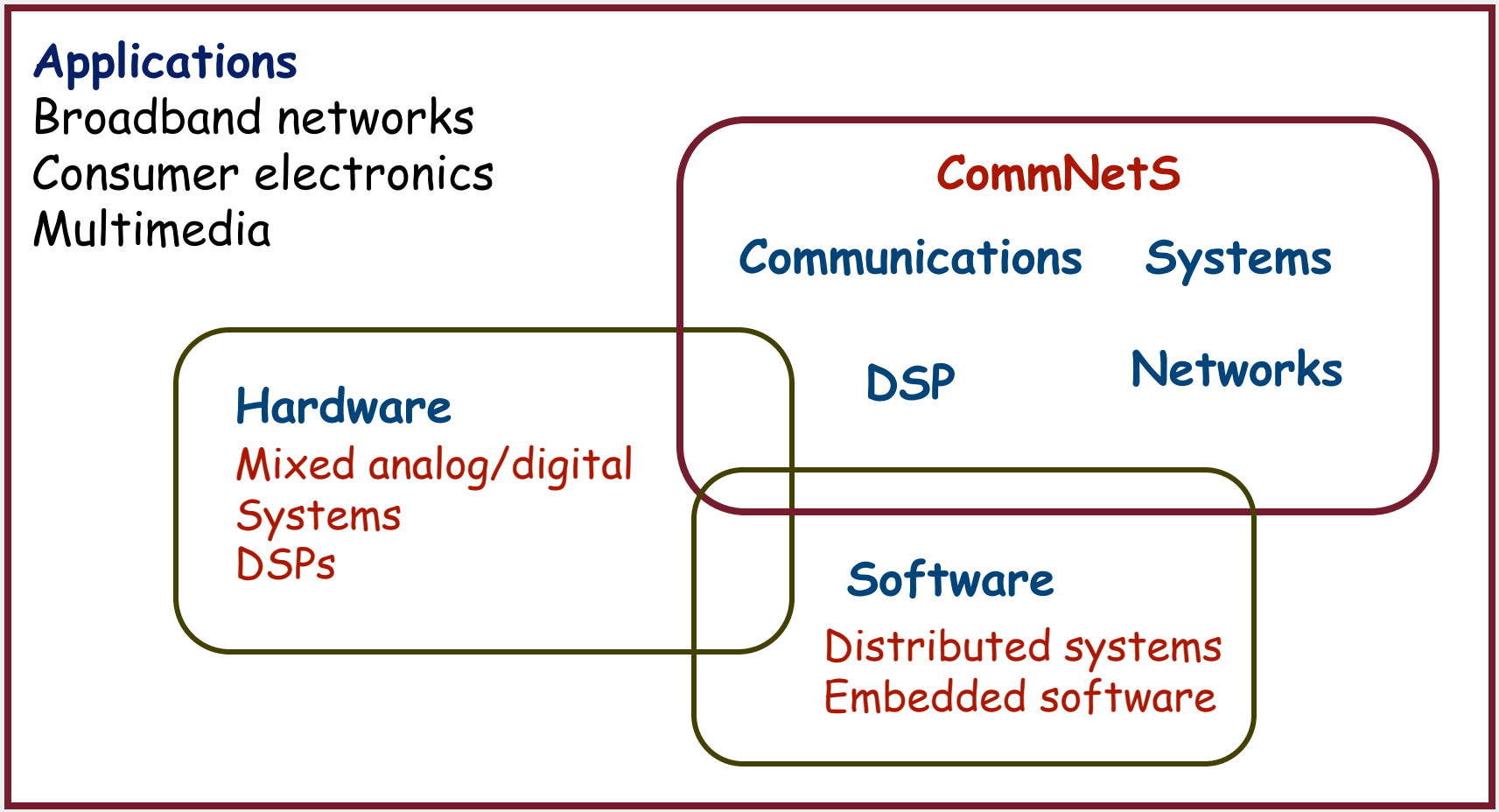
Warning: Advice comes in all shapes, forms and yes with different biases so you need to take responsibility and get it from a variety of sources….

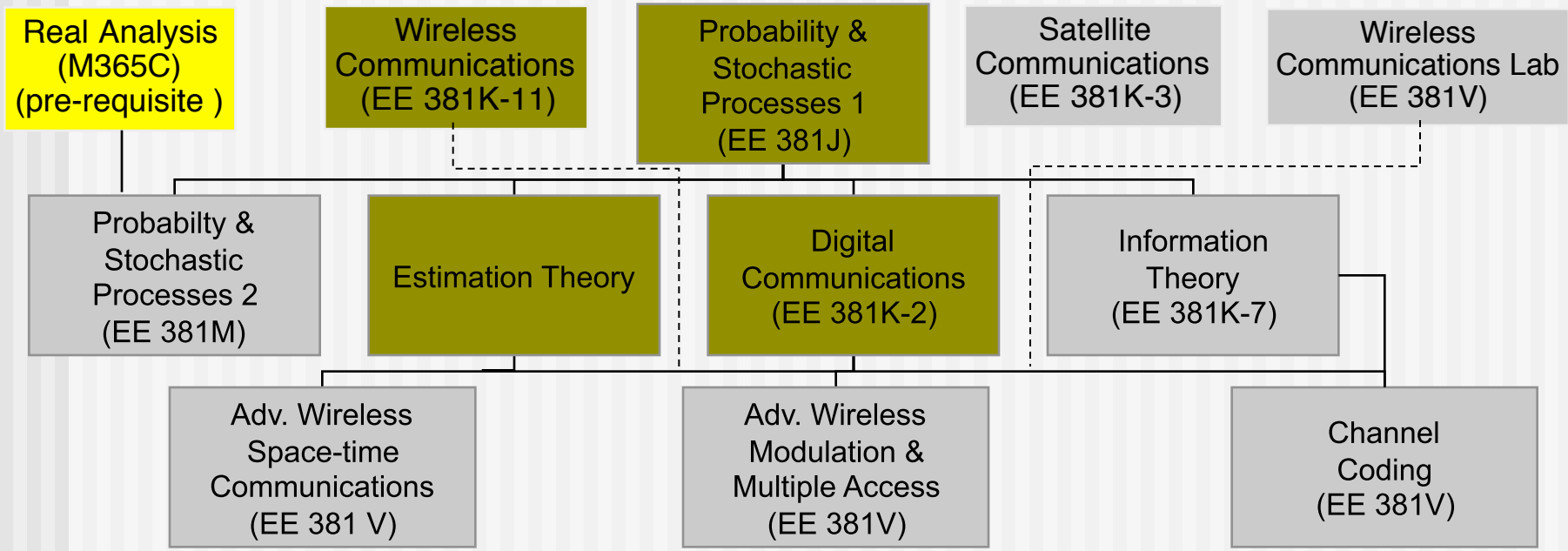
Communications, Networks and Systems (CommNetS)



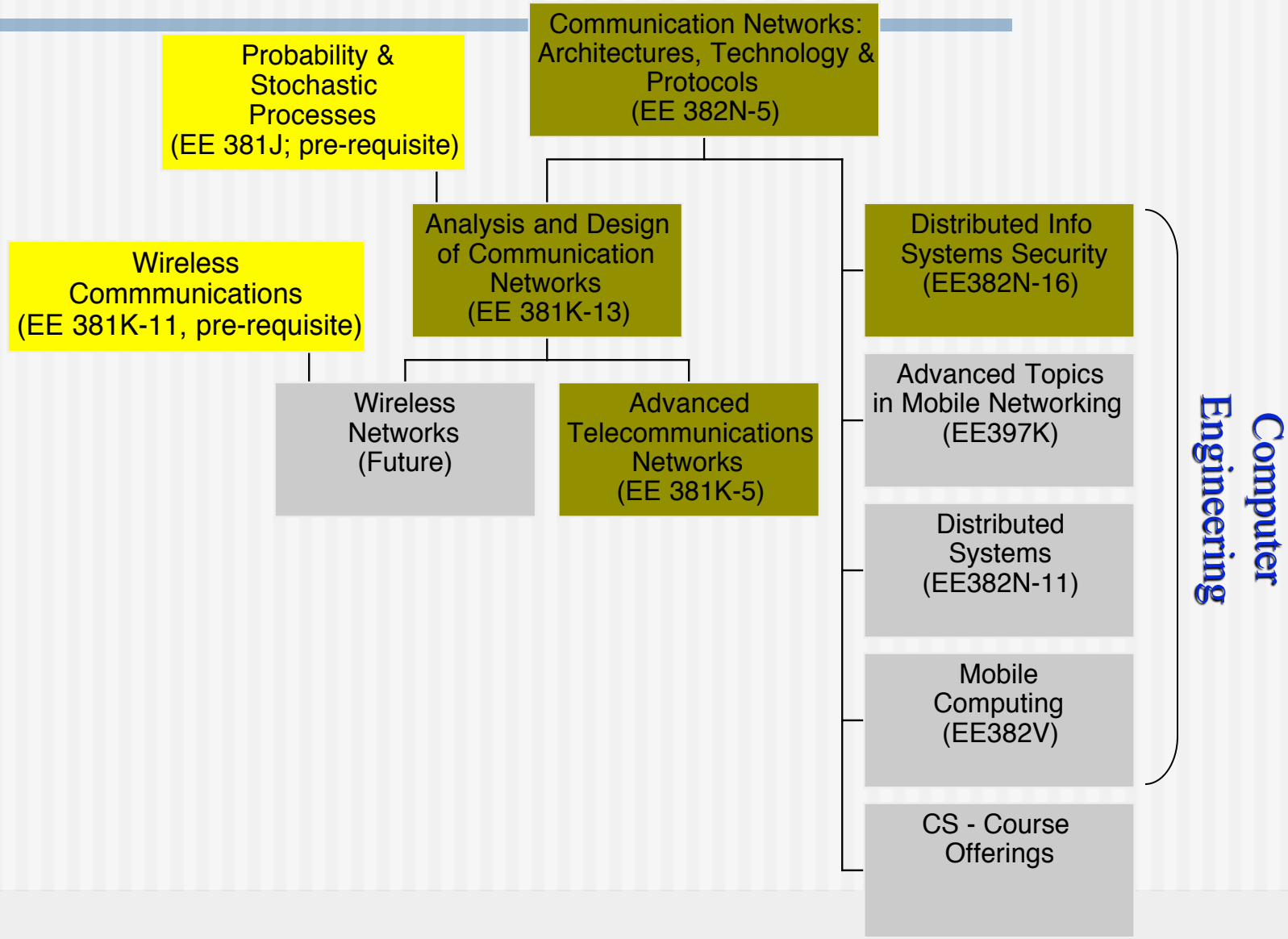
Typical CommNetS Course Schedule

	FALL	SPRING	INSTRUCTORS
Yearly	Prob. & Stochastic Proc. 1		AA,GdV,SS
	Wireless Communications Lab	Digital Communications	RH / JA
	Comm. Nets: Arch. Protocols	Analysis & Design of Comm. Nets.	SN / GdV,SS
	Advanced Telecom Networks	Information Theory	GdV,SS / SV
	DSP		AB
	System Theory	Optimization	AA,CC / RB
Alternate Years		Multidimensional DSP	BE
	Estimation Theory*	Estimation Theory*	HV
	Convex Optimization	Advanced DSP (Stat. Signal Proc.)	CC / RH,HV
	Adv. Wireless: Mod/Multiple Acc.	Wireless Communications	JA / TR
	Adv. Wireless: Space-Time Comm.	Time Frequency Analysis	RH / EP
Rarely	Stochastic Control		AA,CC
	Nonlinear Systems		AA,CC
	Coding Theory		SV
	Parallel & Dist. Algos	Prob. & Stochastic Proc. 2	AA

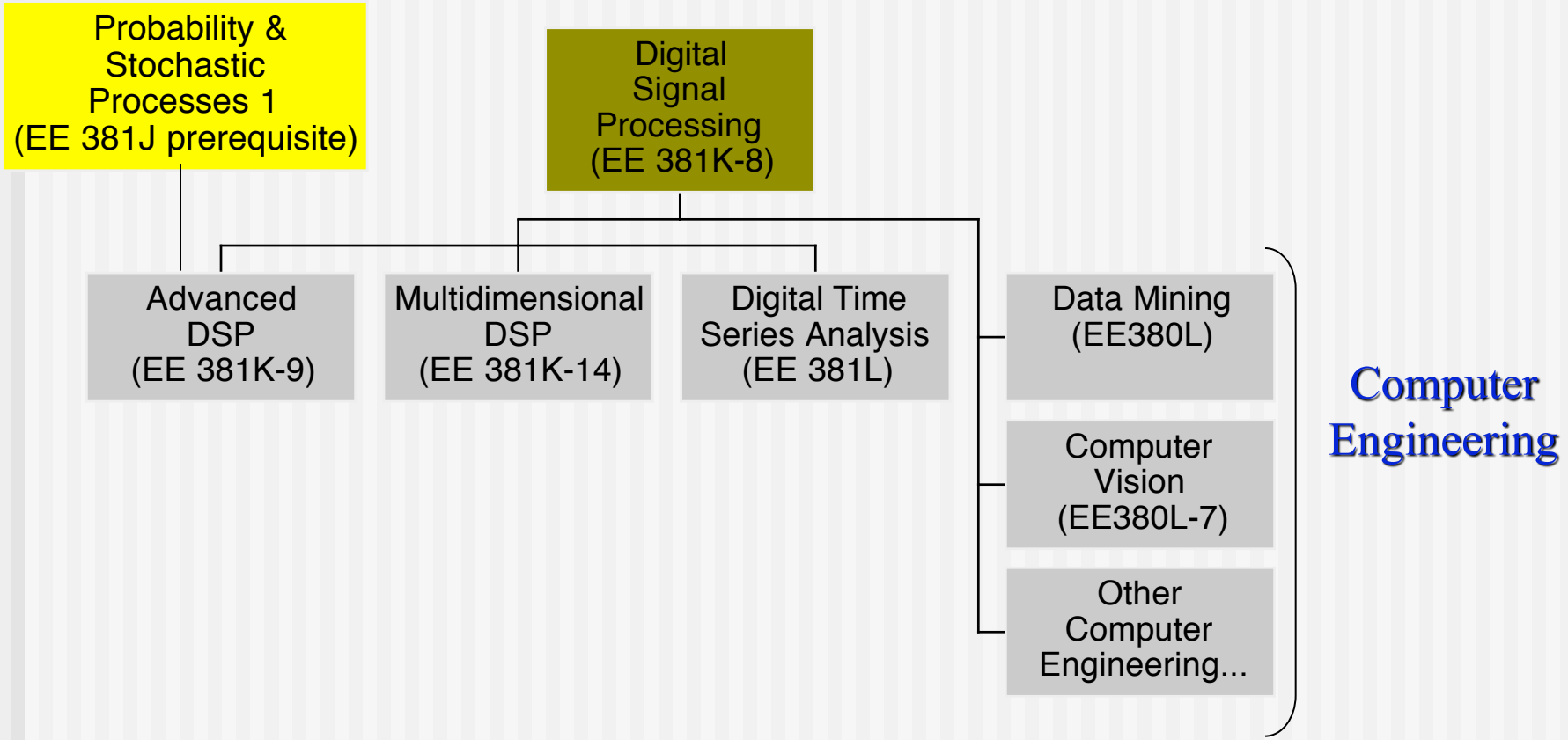
Communications



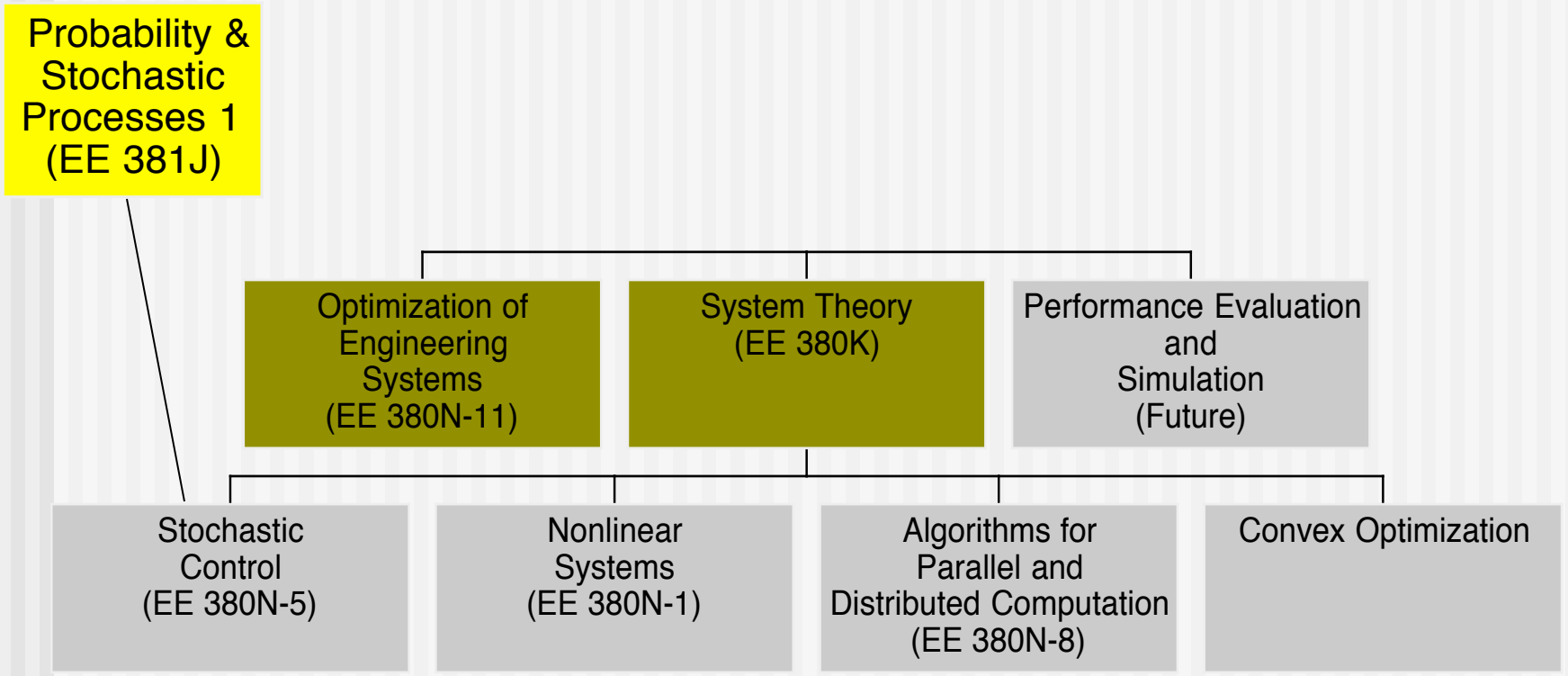
Networking


Probability & Stochastic Processes (EE 381J; pre-requisite)
Communication Networks: Architectures, Technology & Protocols (EE 382N-5)
Wireless Commmunications (EE 381K-11, pre-requisite)
Analysis and Design of Communication Networks (EE 381K-13)
Distributed Info Systems Security (EE382N-16)
Wireless Networks (Future)
Advanced Telecommunications Networks (EE 381K-5)
Advanced Topics in Mobile Networking (EE397K)
Distributed Systems (EE382N-11)
Mobile Computing (EE382V)
CS - Course Offerings
Computer Engineering

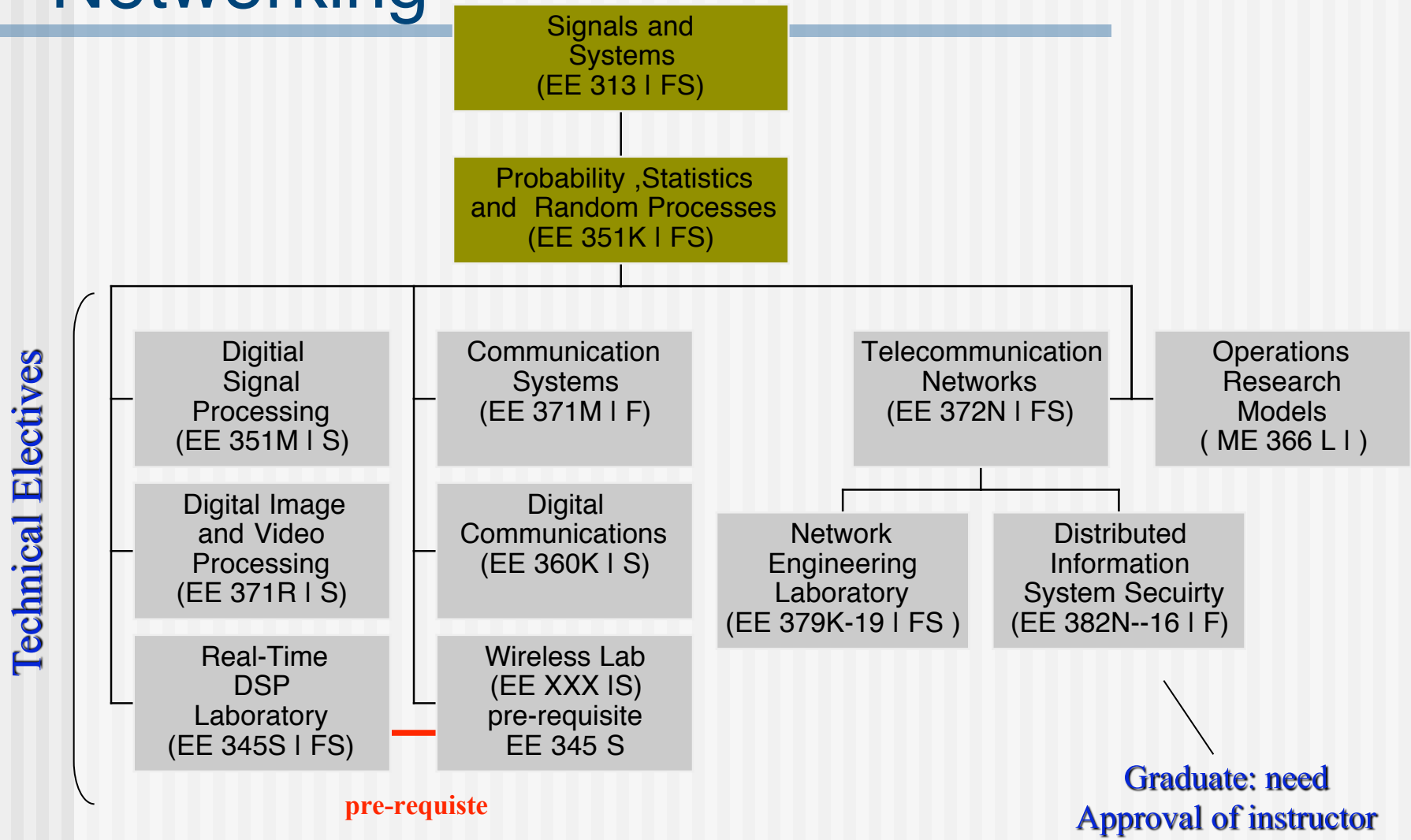
Digital Signal Processing



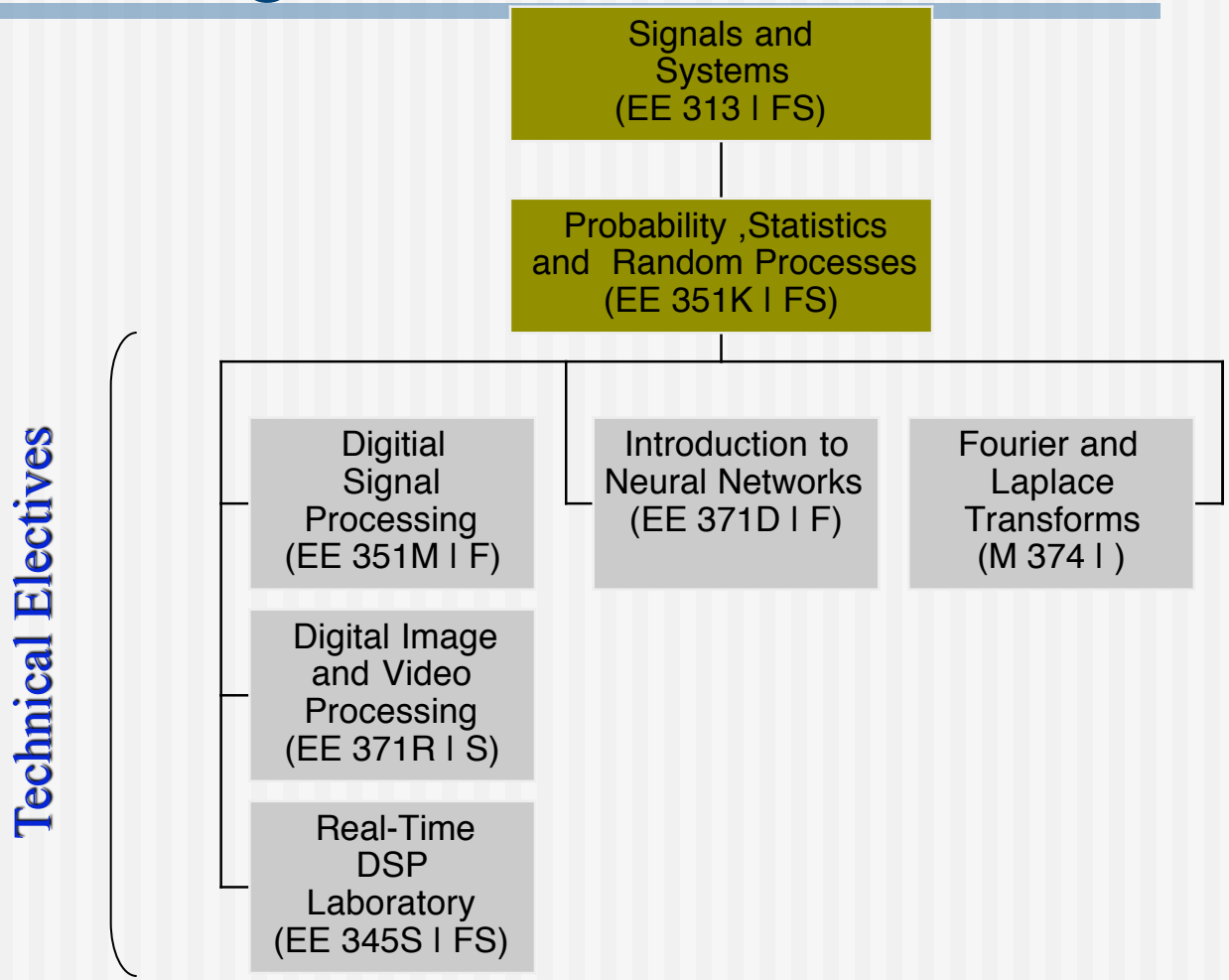
Systems


Probability & Stochastic Processes 1 (EE 381J)
Optimization of Engineering Systems (EE 380N-11)
System Theory (EE 380K)
Performance Evaluation and Simulation (Future)
Stochastic Control (EE 380N-5)
Nonlinear Systems (EE 380N-1)
Algorithms for Parallel and Distributed Computation (EE 380N-8)
Convex Optimization

EE Tech. Area : Communications & Networking



EE Tech Area: Signal and Image Processing



Academic questions

- Requirements:
  - Masters: 3 options
    - report/thesis/ ntnr (no thesis no report)
  - Ph.D.: coursework/preliminary-qualifying requirements ..etc.
- Building a program of study
  - M.S.: breadth + some focus
  - Ph.D.: breadth + depth + focus
- **Key issue**: match your goals and interests, e.g., where are you heading !!

Masters Course Requirements

Three MS Options		# Formal Courses required		
		Major	**Supporting**	**Total**
Thesis	**EE698A, EE698B (6 hrs)**	**4 - 6**	**2 - 4**	**8 (24 hrs)**
Report	**EE398R (3 hrs)**	**5 - 7**	**2 - 4**	**9 (27 hrs)**
No Thesis / No Report		**6 - 8**	**2 - 4**	**10 (30 hrs)**
Min GPA required		**3.0**	**3.0**	**3.0**

1. Conference courses may not be counted toward Formal courses
2. Courses taken CR/NC will not count towards fulfilling MS degree requirements
3. EE X97C or X97G Research Problems may not be included towards MS degree
4. No more than one course with C/C+ may be included in ECE MSE program of work
5. Undergraduate courses:
   - At most 6 hours of UG senior electives may count towards MS
   - At most 1 in either major or supporting work
   - Minimum coursework requirements must be satisfied with graduate courses

Examples of supporting work within ECE

- Undergraduate courses
  - EE360C Algorithms (undergraduate Fall and Spring)
  - EE 360P Concurrent and Distributed Systems
- Electromagnetics
  - Antenna Theory and Practice (graduate - Spring)
- Computer Engineering
  - VLSI I (graduate - Fall and Spring)
  - Analog Integrated Circuits (graduate - Fall and Spring)
  - CAD and Computer architecture (see catalog)
- Software and Distributed Systems
  - Engineering programming languages (graduate - Fall)
  - Embedded software systems (graduate - Spring)
  - Software engineering … (see catalog)

Advancing to Ph.D. candidacy

- Administered by CommNetS Area Coordinator, currently Prof. Ari Arapostathis
  - Students entering with MS must do so before 40 hrs
  - Students entering with BS must do so before 60 hrs
- Application for evaluation of coursework
  - 1. Evaluated based on 15 hrs including 4 formal CommNetS courses
    - if entered as PhD student need 9 hrs including 2 formal CommNetS courses
  - 2. Statement of purpose
  - 3. Letter of support from research advisor
  - Deadlines: Sept 15th and Feb 1st every year.
- Oral research proposal
  - Set up PhD committee early on in conjunction with your advisor and submit to CommNetS area coordinator.
  - Once approved (two weeks or so) schedule exam.
- After you advance to candidacy the next administrative step is the PhD defense.

Ph.D. Course Requirements

- At least 30 hrs of regular classroom study i.e. no individual instruction
- At least 12 hrs in residence at U.T.
- At least 6 hrs outside principle area of study
- GPA of at least 3.5 in above categories

Research

- How do I prepare myself?
- How do I find an advisor?
- What will she or he expect?

Research Skills

- Do you know how to use **computing /library** resources?
  - library short courses, www, departmental/ university computing facilities.
- Do you need help with your **writing**/ **communication** skills?
- Take the **initiative**: get acquainted with your environment, work on your weak points...

Finding a research advisor

- What are your interests, goals, and needs?
  - e.g., research area, MS, Ph.D., funding...
- Get to know the faculty in your area
  - carefully select courses,
  - Attend seminars!
  - talk to faculty and fellow students
- Keep in mind that a good match is a two way street....

`Anatomy' of a research advisor

- Want to do research?
  - Great! Go find a problem, and then come talk to me.. (**independence !!**)
  - Sure. Write this program, report, build this and that... (joining a project, deliverables...etc.)
  - In reality, all kinds of advisors with different ideals…
- Assess: level of involvement, teaching and research record, resources, current student satisfaction.
- What are his/her goals?

What is an advisor looking for?

- **Independence and creativity**: show initiative, e.g., research background in library,
- **Neat, organized** and **hard** working.
- Consult with others, follow advice !
- Be excited about your work----------
  research is **FUN** !
- **Competence**: know where your knowledge gaps are and fix them.

Bottom line

- Find out what you really want...
- Be prepared:
  - what skills will you need?
  - when meeting your advisor/teachers, prepare your questions, make notes, i.e., make good use of their time..
- Take the initiative and have fun…

Your ECE navigation `resources'

- Your peers or seniors are an excellent source of information and/or where to look for it…
- ECE web page
- CommNetS information web page
  - Follow links to graduate academics in CommNetS from my web page
  - Faculty, procedures, frequently asked questions… etc…
  - WNCG…
- ECE Graduate Office
  - Invaluable help in navigating paper work and deadlines
- MS/PhD Research Advisor
  - If you have one, s/he should be the source of most information and both research and academic advising….
- CommNetS Area Advisor (Sanjay Shakkottai)
  - general academic matters, approval of MS programs of work, etc…
- CommNetS Area Coordinator (Ari Arapostathis)
  - Application for Ph.D. Candidacy, etc
  - Appointment of qualifying exam committee
- ECE Graduate Advisor (Dean Neikirk)
  - Tough issues the above can not resolve….