



ECE: Get More Insight

Welcome!

John McNeill
ECE Associate
Department Head

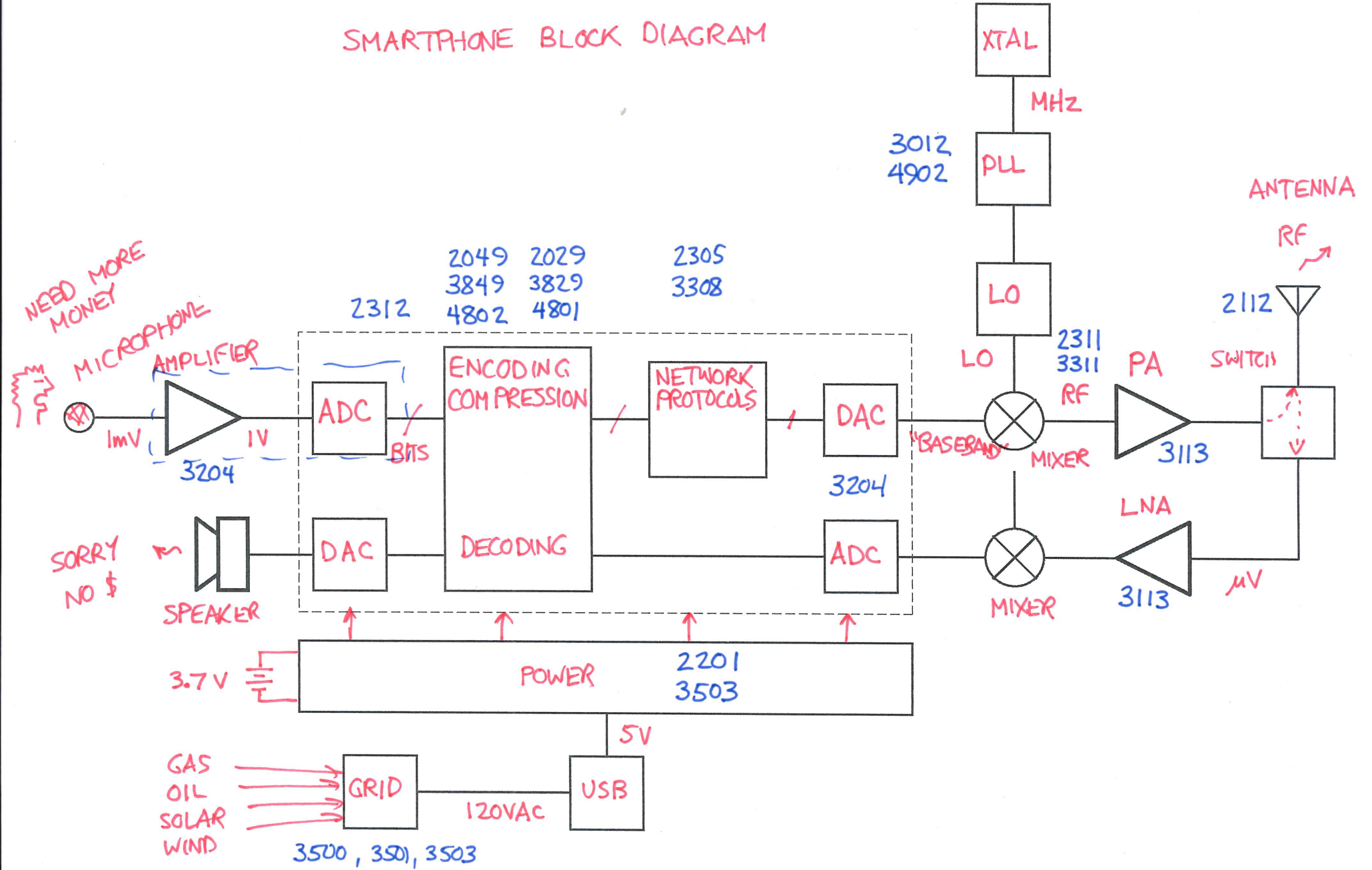
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ATWATER KENT
LABORATORIES

Worcester Polytechnic Institute

SMARTPHONE BLOCK DIAGRAM





Finding Your Path

- **Strategy for Planning your Courses**
 - “I’m not sure what I like best in ECE ...”
 - Sample different areas
 - Build breadth to inform decision
 - Eventually go in depth for good MQP background
 - “I know I want to do ...”
 - Go in depth as soon as possible!
 - Fill in breadth later for solid ECE-wide background
- **Tools**
 - Program Flowchart
 - Find courses, paths in areas of interest
 - Program Tracking Sheet
 - Meet all catalog requirements for graduation



ECE Program Tracking Sheet

- Use with advisor to make sure you meet all catalog requirements
- Take advantage of flexibility to tailor program to your interests!

ELECTRICAL AND COMPUTER ENGINEERING MAJOR Program Tracking Sheet Based on AY 2014-15 Degree Requirements and Course Offerings

Name:	Class Year:	Expected Graduation Date:
Student ID #:	Advisor:	2 nd Major:

NOTES: Minimum total academic credit = 15 units
Residency Req.: Min. of 8 units must be completed at WPI

HUMANITIES AND ARTS REQUIREMENT (2 units)

--Breadth Component: Students must take at least one course outside the grouping in which they complete their depth component. To identify breadth, courses are grouped in the following manner:

- art/art history, drama/theatre, and music (AR, EN/TH, MU);
- foreign languages (SP, GN, AB, CN);
- literature and writing/rhetoric (EN, WR, RH);
- history and international studies (HI, HU);
- philosophy and religion (PY, RE).

Exception: May take all six courses in a foreign language

Course	Term	Grade	Units
1.			1/3
2.			1/3

--Depth Component: Students must complete at least three thematically-related courses prior to a culminating Inquiry Seminar or Practicum in the same thematic area. At least one of the three

ENGINEERING SCIENCE AND DESIGN REQUIREMENT (6 units)

ELECTRICAL AND COMPUTER ENGINEERING (12/3 units)

Courses with prefix ECE (except ECE 3601) and ES 3011

22.			1/3
23.			1/3
24.			1/3
25.			1/3
26.			1/3
27.			1/3
28.			1/3
29.			1/3
30.			1/3
31.			1/3
32.			1/3
33.			1/3

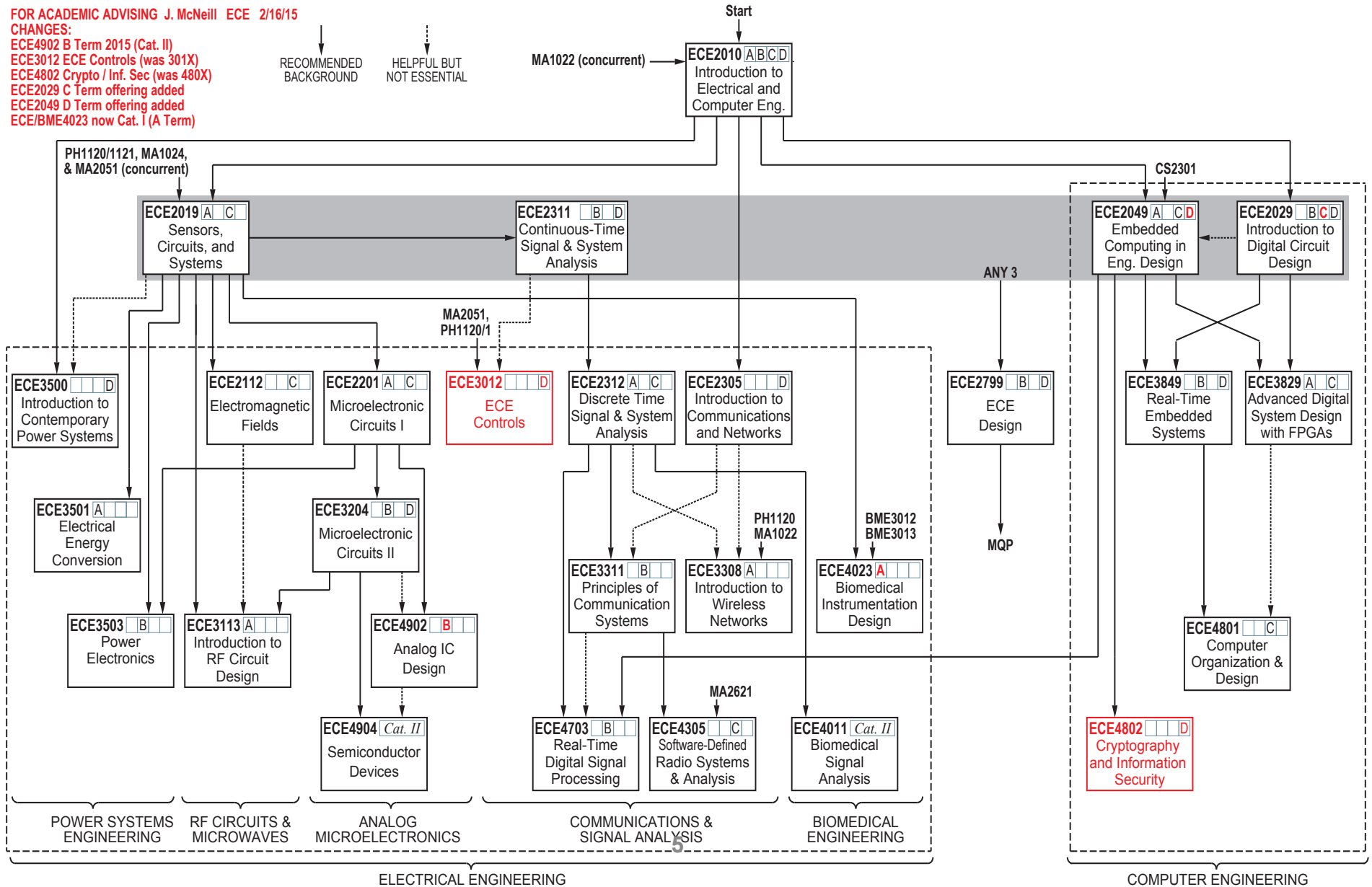


ECE Program Flow Chart

FOR ACADEMIC ADVISING J. McNeill ECE 2/16/15

- CHANGES:
 ECE4902 B Term 2015 (Cat. II)
 ECE3012 ECE Controls (was 301X)
 ECE4802 Crypto / Inf. Sec (was 480X)
 ECE2029 C Term offering added
 ECE2049 D Term offering added
 ECE/BME4023 now Cat. I (A Term)

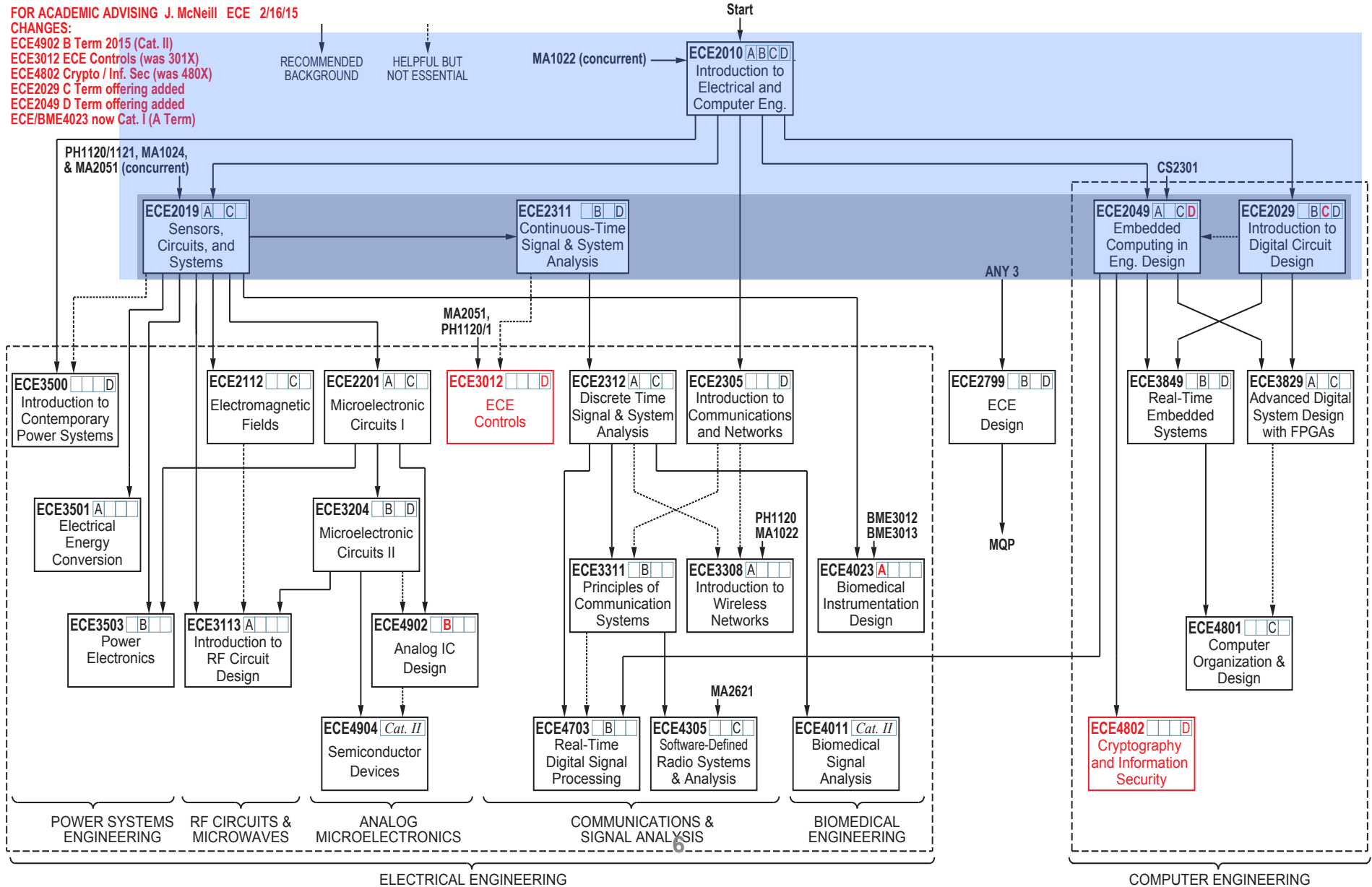
RECOMMENDED BACKGROUND HELPFUL BUT NOT ESSENTIAL





Basic Courses

FOR ACADEMIC ADVISING J. McNeill ECE 2/16/15
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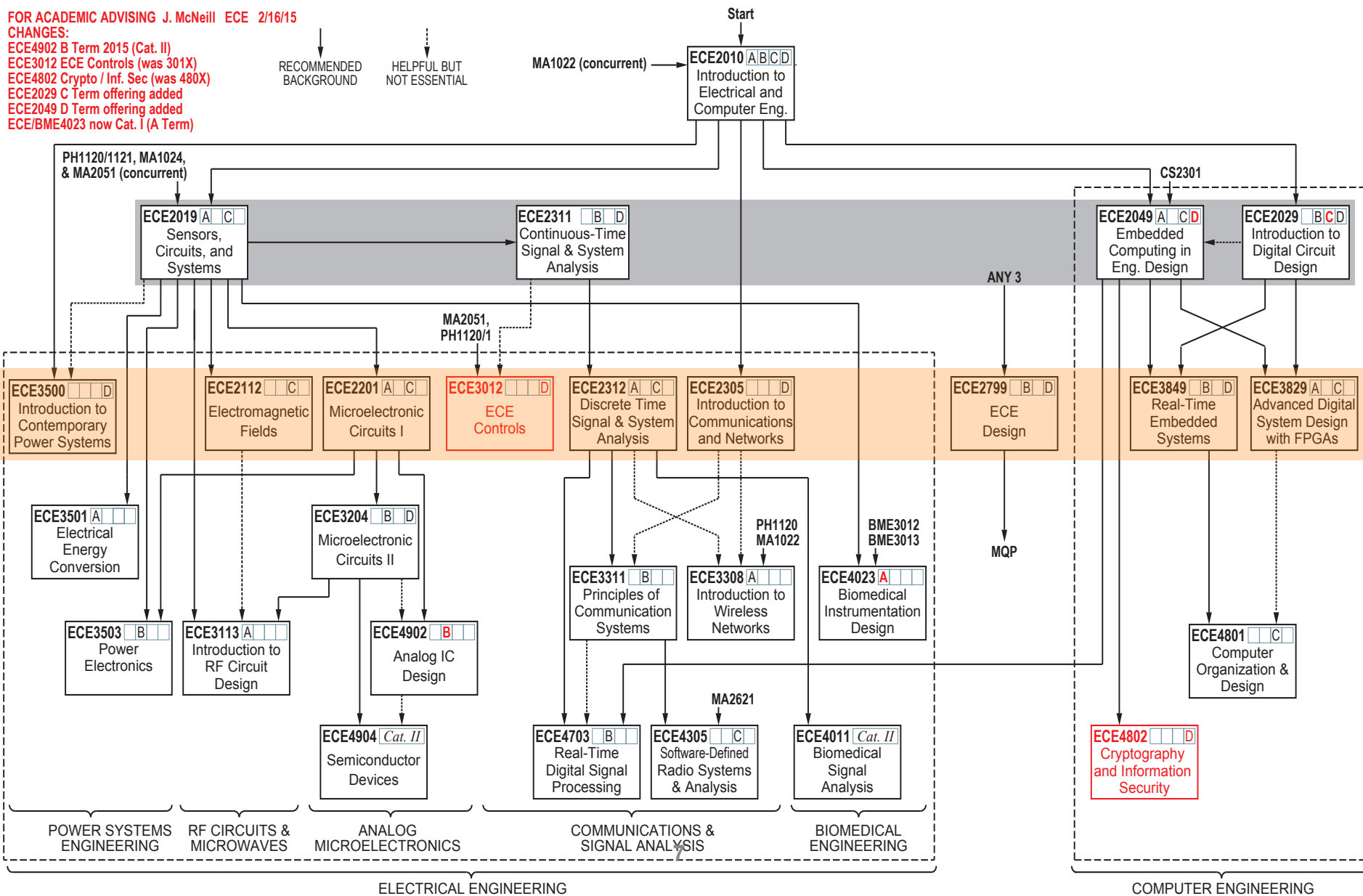


The Next Level

FOR ACADEMIC ADVISING J. McNeill ECE 2/16/15

- CHANGES:
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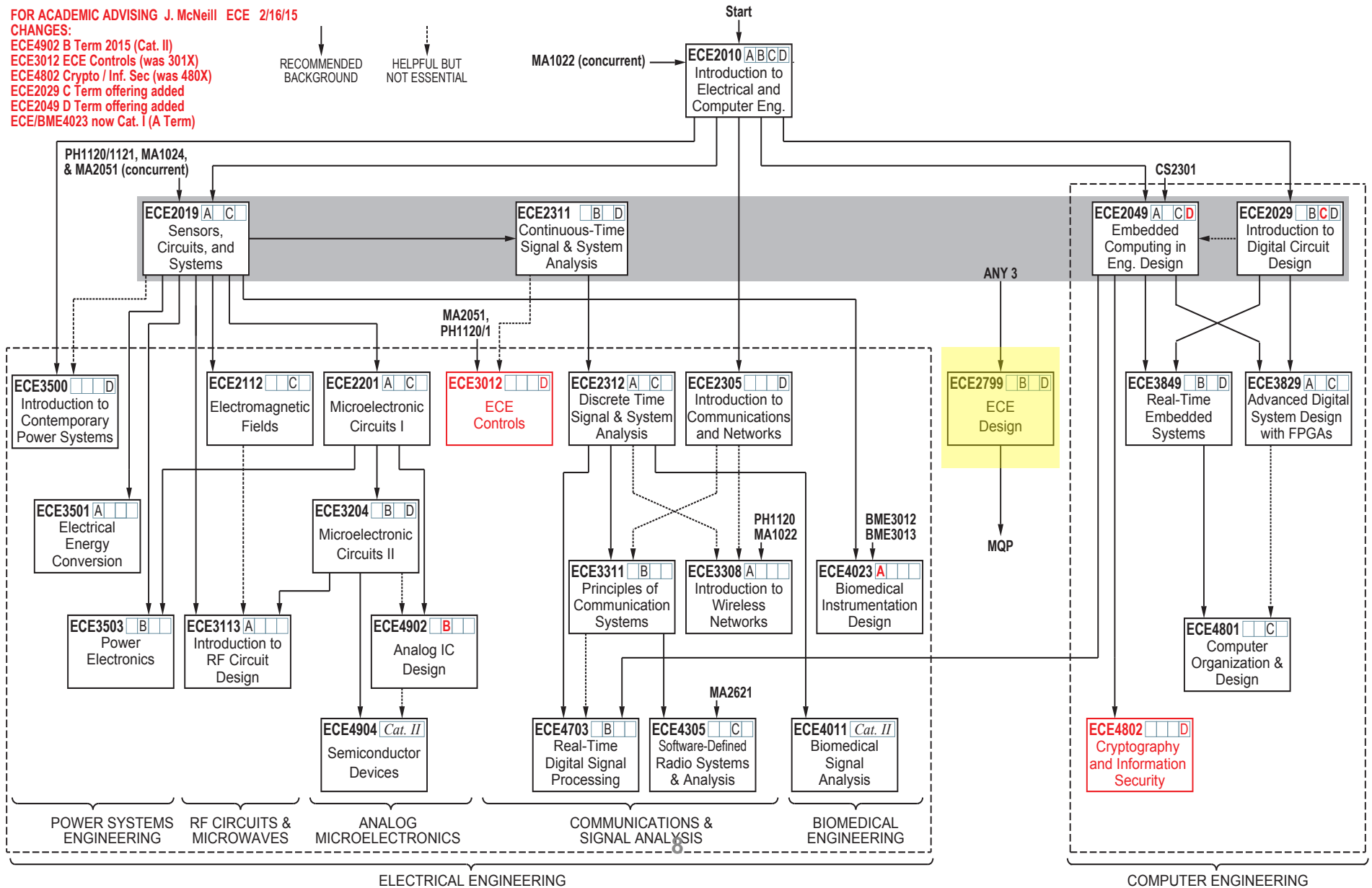


MQP Preparation

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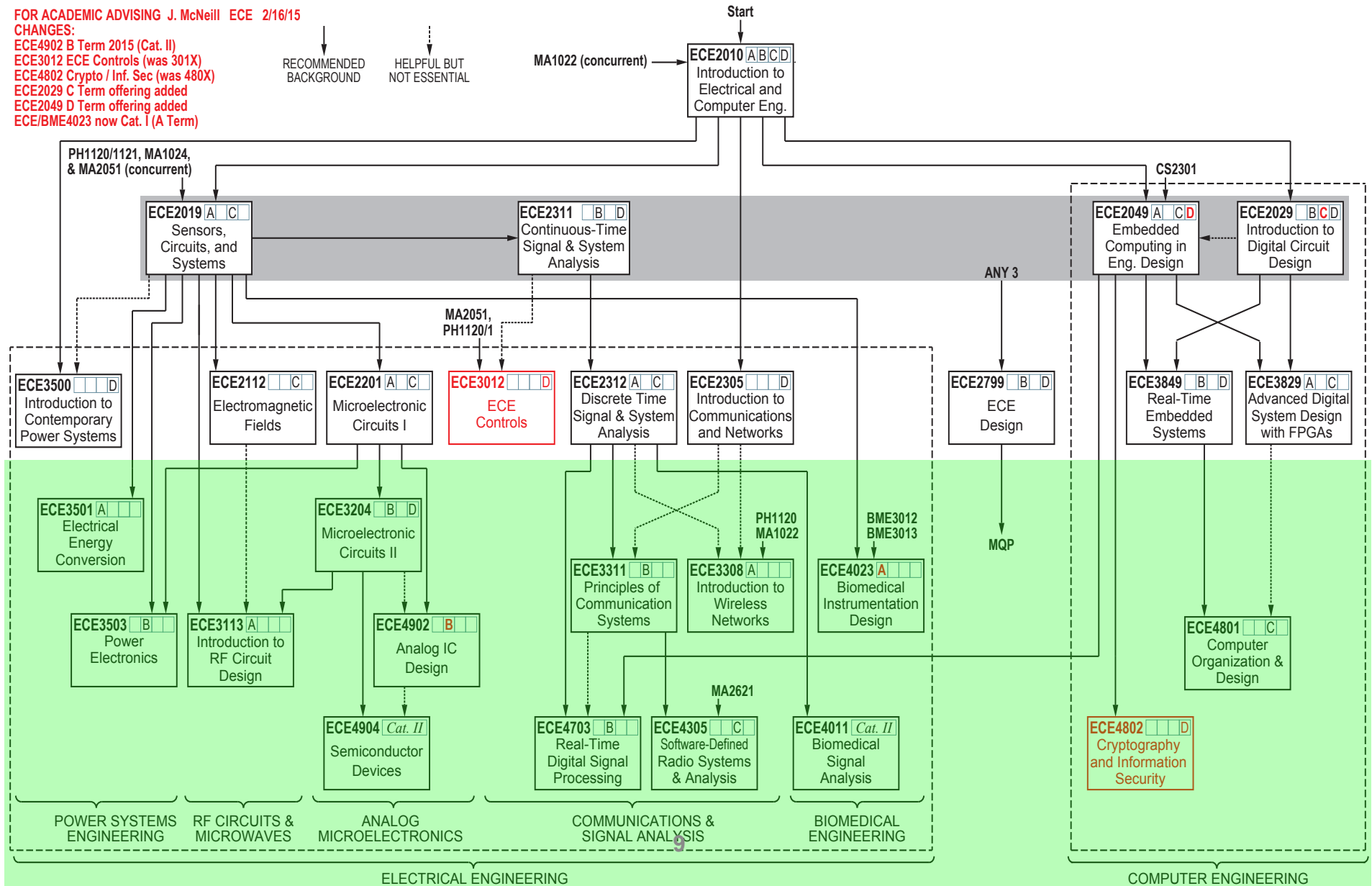


Advanced Courses

FOR ACADEMIC ADVISING J. McNeill ECE 2/16/15

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 ECE4902 B Term 2015 (Cat. II)
 ECE3012 ECE Controls (was 301X)
 ECE4802 Crypto / Inf. Sec (was 480X)
 ECE2029 C Term offering added
 ECE2049 D Term offering added
 ECE/BME4023 now Cat. I (A Term)

RECOMMENDED BACKGROUND HELPFUL BUT NOT ESSENTIAL





ECE Courses

Basic Courses

- ECE 2010 – Intro to ECE
- ECE 2019 – Sensors, Circuits, and Systems
- ECE 2029 – Intro to Digital Circuits and Computer Systems
- ECE 2049 – Embedded Computer Systems
- ECE 2311 – Continuous-Time Signal and System Analysis

Prep for MQP

- ECE2799 - Electrical and Computer Engineering Design

Next Level

- ECE 3500 – Introduction to Power Systems
- ECE 2201 – Microelectronic Circuits I
- ECE 2112 – Electromagnetic Fields
- ECE 3012 – ECE Control Engineering (replaces ES 3011 for ECE majors)
- ECE 2312 – Discrete-Time Signal and System Analysis
- ECE 3849 – Real Time Embedded Systems
- ECE 3829 – Advanced Digital System Design with FPGAs



First Year

- **Suggested ECE Courses**
 - **Start with ECE2010: Overview of all aspects of ECE**
 - **Option to follow interest immediately or continue sampling different areas within ECE**
 - **Examples on following slides**
- **Suggest filling in Math, Science, CS necessary for ECE courses**
- **Suggest making progress toward your Humanities & Arts (HUA) Requirement**
- **Social Science requirement: If you go off-campus for IQP, you will take ID2050 which counts as 1 of 2 courses for social science requirement.**



Major: Required Math, Science

Total of 12 math, science courses required for ECE major:

- **Math (at least 7)**
 - MA1021-4 Calc I – IV
 - MA2051 Differential Equations
 - MA2621 Probability
 - MA2071 Matrices and Linear Algebra
- **Physics (at least 2)**
 - PH1110/1111 Mechanics
 - PH1120/PH1121 Electricity and Magnetism
 - PH1130 Modern Physics
 - PH1140 Oscillations and Waves
- **Chemistry or Biology (at least 1 of either)**
- **And any 2 math/science course (MA, PH, CH, BB, GE)**



Major: Required Engineering

Total of 15 ECE course equivalent required for major:

- **MQP (3 course equivalents)**
 - Usually includes capstone design (covered separately in case of research MQPs; check with MQP advisor)
 - Must take ECE2799 as preparation for MQP
- **12 ECE Courses at 2000-level or above**
 - At least 3 “EE” courses; at least 2 “CE” courses

Plus 3 additional engineering courses ...



Major: Required Engineering

Plus 3 additional engineering courses:

- **1 Computer Science (2000-level or above)**
 - Usually CS2301 (C programming)
 - Some CS courses excluded; check catalog
- **1 “ES” course at 2000 level or above**
 - Usually ES2001 (Materials) or ES2501 (Static Systems)
 - Not ES3011 [Controls] which was an ECE course; replaced for ECE majors by ES3012
- **1 course at 2000 level or above from any engineering**
 - AREN, BME, CE, HE, CS, ECE, ES, FP, ME, RBE
 - Some courses excluded; check catalog



Second Year

- **Suggested ECE Courses**
 - Depend on path in 2010, basic courses; examples follow
- **Suggest completing your Humanities & Arts (HUA) Requirement**
- **Suggest completing CS Requirement**
 - Usually CS2301 (System Programming; prep for ECE2049)
- **If you are interested in an off-campus IQP during your junior year, you must apply by September of your second year.**
- **If you are interested in a summer internship, start looking during your second year**
- **ECE2799 ECE Design: “Mini-MQP” in 7 weeks**
 - Can be taken as early as D term of second year
 - OK to wait until junior year; **MUST** complete before MQP
 - Key: ≥ 3 of ECE2019, 2311, 2029, 2049 to contribute to project



Sample First / Second Year Plans (ECE)

- Possible ECE Courses

Year	Term	Course(s)
First	A	
	B	
	C	2010
	D	2029
Soph	A	2019
	B	2311
	C	2312 / 2049
	D	2799

Prefer "EE" side

Year	Term	Course(s)
First	A	
	B	
	C	2010
	D	2029
Soph	A	2049
	B	3849
	C	3829 / 2019
	D	2799

Prefer "CE" side



Sample First / Second Year Plans (ECE)

- Possible ECE Courses

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	C	
	D	2010
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	B	
	C	
	D	2010
Soph	A	2049
	B	2029
	C	3829 / 2019
	D	2799

Prefer "CE" side



Sample First / Second Year Plans (ECE)

- Possible ECE Courses

Year	Term	Course(s)
First	A	
	B	2010
	C	2019
	D	2311
Soph	A	2312 / 2201
	B	2029
	C	2049 / 2201
	D	2799

Prefer "EE" side

Year	Term	Course(s)
First	A	
	B	2010
	C	2049 / 2019
	D	2029
Soph	A	2049 / 2019
	B	3849
	C	3829
	D	2799

Prefer "CE" side



Junior, Senior Years

- **Junior year:**
 - Suggest depth in ECE area(s) to contribute on MQP:
 - Suggest completing your IQP
 - If you are interested in off-campus MQP, apply by the beginning of November in your junior year.
- **Senior year:**
 - MQP; typically:
 - ABC term (one course slot each term) for on-campus MQP
 - All 3 course slots during one term for off-campus MQP
 - Check with your advisor on degree requirements
 - ECE-specific
 - WPI general

ACADEMICS

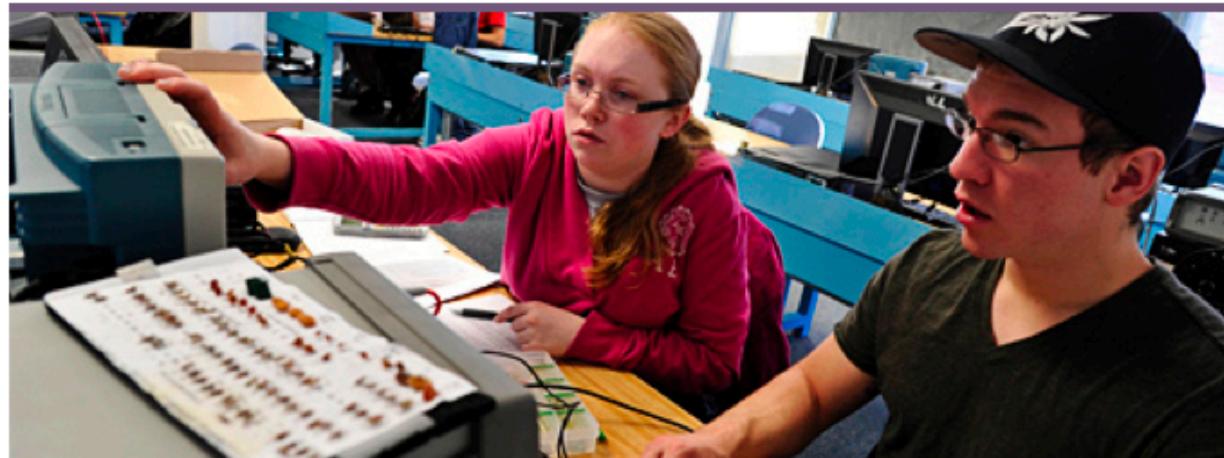
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Resources



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Academic Resources

- [Current Class Schedules](#)
- [myWPI Portal](#)
- [Department Honesty and Ethics](#)
- [ECE Course Chart Guide AY 2014-2015](#)
- [ECE Minor Form](#)
- [ECE Program Tracking Sheet AY 2014-2015](#)
- [Slides from "Get More Insight" presentation on 10/27/2014](#)

Computing Resources

- [SET YOUR ECE COMPUTER PASSWORD](#)
- [ECE Intranet](#) (Passwords, Printing, Help)
- [ECE Poster Printing Work Order \(226 KB PDF\)](#)
- [ECE Knowledge Base](#)





Questions - Feel Free to Contact Us

- **Prof. John McNeill, mcneill@wpi.edu
Associate Department Head**
- **Prof. Ted Clancy, ted@wpi.edu
Chair, Undergraduate Program Committee**
- **These slides will be posted in “Resources”
section of ECE website**
- **And feel free to contact any ECE faculty
member at anytime**