

: RESEARCH

Export to PDF
Add Comment

IN WORKFLOW

1. ELEC C EGR Dept. Approver (schagness@wisc.edu; bvanveen@wisc.edu; jagubner@wisc.edu; lesieutre@wisc.edu)
2. EGR College Admin Reviewer (mlpaulson@wisc.edu)
3. EGR College Approver (irobertson@wisc.edu; mromero@wisc.edu; jpblanch@wisc.edu; binzley@wisc.edu; mjconkli@wisc.edu)
4. APIR Admin (wiessinger@wisc.edu; mrschultz3@wisc.edu; jlmilner@wisc.edu)
5. UAPC Approver (smangelsdorf@wisc.edu; jlmilner@wisc.edu; mrschultz3@wisc.edu; wiessinger@wisc.edu; laleininger@wisc.edu)
6. APIR Admin (wiessinger@wisc.edu; mrschultz3@wisc.edu; jlmilner@wisc.edu)
7. Registrar (sjgolueke@wisc.edu; wclipske@wisc.edu)

APPROVAL PATH

1. Mon, 17 Dec 2018 23:44:11 GMT
Barry D Vanveen (bvanveen): Approved for ELEC C EGR Dept. Approver

NEW PROGRAM PROPOSAL

Date Submitted: Mon, 17 Dec 2018 23:34:51 GMT

VIEWING: : RESEARCH

LAST EDIT: MON, 17 DEC 2018 23:43:47 GMT

Changes proposed by: kfawaz

Final Catalog

Rationale for Inactivation

Name of the school or college academic planner who you consulted with on this proposal.

Name
Parmesh Ramanathan - RGE

Proposal Abstract/Summary:

This will be a pooled tuition program for a Master of Science in Electrical Engineering. The purpose of the named option is to provide a Master of Science program that is research-based either through a thesis or a project. This option replaces the traditional degree obtained by graduate students in ECE completing the Research or Project track. Each student is required to have a research adviser and is required to participate in some form of independent research as part of the program. The purpose of the program is to prepare students for the PhD program or for research jobs in industry and the national labs.

Type of Approval

Governance Approval Needed

If approved, what term should the proposed change be effective?

Select yes if this proposal is only to add, remove, or rearrange curricular requirements, and will change less than 50% of the curriculum.

BASIC INFORMATION

Program State:

Type of Program:

Named Option

Parent Program:

MAJ: Electrical Engineering MS

Upload the Approved Notice of Intent and UW System Approval Memo.

Upload completed draft of the full Board of Regents Authorization Proposal for this program.

Parent Audience:

Graduate or professional

Who is the audience?

Parent Home Department:

ELEC C EGR

Home Department:

Parent School/College:

College of Engineering

School/College:

The program will be governed by the home department/academic unit as specified. Will an additional coordinating or oversight committee be established for the program?

No

Describe procedures under which the coordinating/oversight committee will operate, including how the committee chair is appointed, to whom the chair reports, how participating faculty and staff are identified, provisions for transitions in the committee, and processes for interaction with the home department.

Parent is in the Graduate School:

Yes

Is this in the Graduate School?

Award:

Other Award Name:

SIS Code:

SIS Code (BS):

SIS Description:

SIS Description (BS):

Transcript Title:

Research

Will this name change apply to all enrolled students in the same term (turn-key)?

Named Options:

POWER: Power Engineering
SPML: Signal Process & Machine Learn
382MSPROF: Professional
Sub Plan 1035: No Title Found

Does the parent program offer this as an additional major as well?

No

Will this be offered as an additional major as well?

Explain the program's process for reviewing joint degree proposals from students.

Describe the reason for offering the program as an additional major. Include evidence of student interest and demand, how the additional major benefits the students' learning experience, and describe how the program has capacity in course offerings and advising to support the additional major.

Provide information on which degree/majors it will likely be combined with most frequently and provide evidence that such combinations will not extend student time to degree beyond the standard four academic years.

Briefly describe the process the student follows to get permissions to declare the additional major from the primary degree/major and the additional major offering unit.

Will a doctoral minor be required?

Explain the rationale for the decision.

Describe the alternate breadth training resources that will be made available to/required of students.

Is this a non-admitting master's degree?

SUSPENSION AND DISCONTINUATION

What is the date by which you will submit a plan to resolve the suspended status, if approved?

What is the last term that a student could declare this program?

What is the last term that students may be enrolled in or complete the program?

What is the timeline and advance communication plan?

Explain the precipitating circumstances or rationale for the proposal.

What is the potential impact on enrolled students?

What is the potential impact on faculty and staff?

Explain and provide evidence of efforts made to confer with and to notify faculty and staff.

Explain and provide evidence of efforts made to confer with and to notify current students.

Explain and provide evidence of efforts made to confer with and to notify alumni and other stakeholders.

Teach-out plan - How will program quality be maintained during the suspended period or the teach-out period for discontinued programs?

Teach-out plan: A) For currently enrolled students, how will required courses, curricular elements, advising and other student services be provided?

Teach-out plan: B) For prospective students in the admissions pipeline, how are any commitments being met or needs to notify them that their program of interest will not be available?

Teach-out plan: C) For stopped out students, what provisions are made for their re-entry? What program(s) will they be re-entered into?

Teach-out plan: D) Provide any other information relevant to teach-out planning.

Roles by Responsibility: List one person for each role in the drop down list. Use the green + to create additional boxes.

Role Type	Name (Last, First)	Email	Phone	Title
Department Chair	Hagness, Susan C	schagness@wisc.edu	608/265-5739	
Primary Dean's Office Contact	Blanchard, James P	jpblanch@wisc.edu	608/265-2001	Associate Dean
Faculty Director	Vanveen, Barry D	bvanveen@wisc.edu	608/265-2488	Professor

List the departments that have a vested interest in this proposal.

Are all program reviews in the home academic unit up to date?

Yes

Please explain.

Are all assessment plans in the home academic unit up to date?

Yes

Please explain.

Are all assessment reports in the home academic unit up to date?

Yes

Please explain.

Mode of Delivery:

Face-to-Face (majority face-to-face courses)

Provide information on how any lab courses required for the degree will be handled.

Will this program be part of a consortial or collaborative arrangement with another college or university?

No

Upload proposal:

Will instruction take place at a location geographically separate from UW-Madison?

No

Upload proposal:

Parent has outside accreditation:

No

Will this program have outside accreditation?

Parent Guide Accreditation tab

Guide Accreditation tab

Will graduates of this program seek licensure or certification after graduation?

Graduates of parent program seek licensure or certification after graduation.

No

Parent Guide Certification/Licensure tab

Guide Certification/Licensure tab

First term of student enrollment:

Fall 2019 (1202)

When will the application for the first term of enrollment open?

Fall 2019 (1202)

Which terms will you allow new students to enroll? What are the application deadlines for each term selected?

Start Term	Application Deadline MM/DD
Fall	12/15

Year of three year check-in to GFEC (3 years after first student enrollment):

2023

Year of first program review (5 years after first student enrollment):

2025

If this proposal is approved, describe the implementation plan and timeline.

This is the existing traditional research MS moved under a named option, therefore there is little to implement. However, to avoid confusion, the application for this option will not be implemented while an application for the same term is active for the traditional plan.

RATIONALE AND JUSTIFICATIONS

How does the named option relate to the major and to other named options in the major, if relevant?

Currently, the ECE department offers four Master of Science Programs in Electrical Engineering: the research-focused traditional MS, Signal Processing and Machine Learning (SPML), Professional, and Power Engineering Online. The SPML and Professional are course-only and non-pooled named options. They intend to serve students who are interested in professional development. On the other hand, this proposal aims to replace our current traditional and research-focused MS program with a research named option. Because the degree requires research, students choose a research adviser and typically finish in no less than 3 semesters (typically 2 years). This degree serves students who are focused on obtaining a research-based job or continue for the Ph.D. When implemented, all of our MS programs will be offered as named options: research, professional, SPML, and power online.

Why is the program being proposed? What is its purpose?

The purpose of the named option is to provide a Master of Science – Electrical Engineering program that is research-based. EE and CMPE undergraduates must take a wide breadth of classes. This option allows these students to focus at an advanced level on a particular area of Electrical Engineering and carry out independent research under the supervision of a faculty adviser in order to prepare themselves for further study in a PhD program or for research-related positions. The named option contributes significantly to the mission of the Department of Electrical and Computer Engineering by enhancing the reputation of the Department and the College nationally and internationally. The addition of the named option Research clarifies the role of this option relative to other named option alternatives available to students.

How is the certificate program designed to complement the degree/major of participating students?

What is its relation to the institution's mission? (Consider the mission broadly as a major research university with missions in teaching, research, service, and the Wisconsin Idea.) How does it contribute to the mission of the sponsoring unit(s)?

Do current students need or want the program? Provide evidence.

Approximately 50% of the students enrolled in our traditional masters program would fall into this category of a Research Named Option.

What is the market, workforce, and industry need for this program? Provide evidence.

There has been considerable demand each year for the research-based MS, this named option would take-up that demand.

How does the program represent emerging knowledge, or new directions in professions and disciplines?

In what ways will the program prepare students through diverse elements in the curriculum for an integrated and multicultural society (may include diversity issues in the curriculum or other approaches)?

What gap in the program array is it intended to fill?

This named option will provide differentiation for the traditional research-based master's degree by providing a subplan label "Research".

What is the rationale for this change?

What evidence do you have that these changes will have the desired impact?

What is the potential impact of the proposed change(s) on enrolled students?

What is the potential impact of the proposed change(s) on faculty and staff?

FACULTY AND STAFF RESOURCES

List the core program faculty and staff with title and departmental affiliation(s) who are primarily involved and will participate in the delivery and oversight.

Name (Last, First)	Department	Title
Vanveen, Barry D	Electrical and Computer Engr (ELEC C EGR)	Professor

What resources are available to support faculty, staff, labs, equipment, etc. ?

The current advising structure is adequate for this program – we are not anticipating adding students in a major way.

Program advisor(s) with title and departmental affiliation(s).

Name (Last, First)	Department	Title
Vanveen, Barry D	Electrical and Computer Engr (ELEC C EGR)	Professor

How will the resource load for the additional advising be met?

Describe how student services and advising will be supported.

Existing student services and advising will be utilized through the traditional pooled 101 funding.

Describe the advising and mentoring practices that will be used in this program, including how annual assessment of student progress will be communicated.

Confirm that the program advisor(s) or coordinator(s) have been consulted and reviewed this proposal.

Yes

Select the Graduate Research Scholars Community for this program.

RESOURCES, BUDGET, AND FINANCE

Is this a revenue program?

No

What is the tuition structure for this program?

Standard resident/MN/nonresident graduate tuition

Select a tuition increment:

What is the rationale for selecting this tuition increment?

Will segregated fees be charged?

If segregated fees will not be charged, please explain.

Upload the proposal for market based tuition:

Provide a summary business plan.

Provide an overview of plans for funding the program including but not limited to program administration, instructional/curricular delivery, technology needs and program assessment.

What is the marketing plan?

Describe resource and fiscal considerations - A. Provide an overview of plans for funding the program including program administration, instructional/curricular delivery, academic and career advising, technology needs, marketing (if relevant), financial aid and scholarships (if relevant), capacity for student learning outcomes assessment and program review.

Describe resource and fiscal considerations - B. Are the faculty, instructional staff and key personnel existing or new faculty and staff? If they already serve existing programs, how are they able to add this workload? If new faculty and staff will be added, how will they be funded?

Describe resource and fiscal considerations - C. What impacts will the program have on staffing needs beyond the immediate program? How are those needs being met?

Describe resource and fiscal considerations - D. For graduate programs, describe plans for funding students including but not limited to funding sources and how funding decisions will be made.

UW System Administration and the Board of Regents require submission of budget information in a specific format. These forms will be completed in collaboration with APIR after school/college approval and before submission to UWSA for Board consideration. These forms are uploaded here by APIR.

Given considerations associated with the proposed change, describe the academic unit's fiscal capacity to support the instructional and curricular requirements, academic and career advising, student support services, technology needs, and relevant assessment of student learning and program review requirements. Is there sufficient capacity in the curricular and academic support services to meet the additional workload? For research graduate programs, include information on how the program will be administered and how student funding will be handled. For undergraduate programs, include information on academic advising, career advising, student support services.

Does the program or change require substantial new resources other than those just described? Describe the needs. Confirm that the dean is committed to providing the resources.

There will be no change relative to how the program is funded now.

Are new Library resources needed to support this program?

No

Provide a summary of the requirements.

Memo from the Libraries confirming that the needs can be addressed.

Describe plans for funding students including but not limited to funding sources and how funding decisions are made.

Students are typically funded through either teaching assistantships or research-funded research assistantships.

Will you be seeking federal financial aid eligibility for this Capstone program?

Capstone program students are eligible for federal financial aid (usually loans) if they participate in Gainful Employment (GE) requirements, that is, they prepare students for employment in a recognized occupation. For information about gainful employment requirements see: <https://studentaid.ed.gov/sa/about/data-center/school/ge>

Identify the SOC codes most closely associated with the occupational preparation the Capstone provides.

What program-specific financial aid, if any, is available for this program?

What is the time period that this program is designed to be completed in by the typical student?

Gainful Employment requirements come with the need to track employment of graduates and provide additional reports – does the program have the capacity to complete these requirements?

CURRICULUM AND REQUIREMENTS

If you are proposing a change to the curriculum, what percentage of the curriculum is changing?

Provide an explanation of the reasons for such a substantial curricular change, the potential impact on students, availability of courses, and plan for transition.

Which students are eligible for the certificate?

List the specific schools and colleges.

Provide justification for the limits.

Is this certificate available to University Special (non-degree seeking students)?

Which University Special students are eligible for the certificate?

Describe certificate program procedures to advise students who do not complete the certificate to notify the program advisor if they re-enroll as a University Special student to complete the certificate.

Describe certificate program procedures to notify Adult Career and Special Student Services (ACSSS) of those University Special students who are formerly unaffiliated with the program who intend to complete a certificate.

Describe certificate program procedures to report to the Registrar's Office when a University Special student has completed the certificate and supply a list of courses that student used to fulfill certificate requirements. (Note that SIS eDeclaration and DARS are not available for University Special students.)

Parent Plan Admissions/How To Get In Requirements

An applicant must have a bachelor's degree from a regionally accredited U.S. institution or a comparable degree from an international institution. International applicants can find specific information for their country on the Graduate School Admission Requirements (<http://grad.wisc.edu/admissions/requirements>) page. The department welcomes applications from scientific, engineering, and mathematical disciplines other than E C E.

Admission Requirements:

- A grade point average of 3.0 (4.0 basis) is the minimum requirement for admission consideration. Applicants from an international institution must demonstrate strong academic achievement comparable to a 3.0. The Graduate School will use your institution's grading scale. Please do not convert your grades to a 4.0 scale.
- A submitted online application is required, consisting of:
 - your resume/CV;
 - a statement of purpose (see the guidelines (<https://grad.wisc.edu/apply/prepare>) provided by the Graduate School);
 - an uploaded transcript; and
 - payment of the one-time application fee of \$75.

- This fee is non-refundable. It can be paid by credit card (MasterCard or Visa) or debit/ATM card. By Wisconsin state law, this fee can only be waived or deferred through the conditions outlined by the Graduate School. (<https://grad.wisc.edu/apply/fee-grant>)
- Applicants must also obtain three letters of recommendation for consideration.
- Graduate Record Exam (GRE) general test scores are required for all applicants. Please send your scores electronically via ETS to institution code 1846. UW undergraduate students, specifically those who have a B.S. degree in Electrical Engineering or Computer Engineering, may be exempt from the GRE requirement. Please inquire with the E C E Graduate Admissions Team at ecegradadmission@engr.wisc.edu
- Applicants whose native language is not English must provide an English proficiency score. There are a few situations in which applicants are exempt from this requirement. Please see the Graduate School's English Proficiency Requirement (<https://grad.wisc.edu/apply/requirements>), which also lists the exemptions and required method of delivery.

The application deadline for Fall is **December 15** of the year prior to starting the program (ex: December 15, 2018 for Fall 2019). There are no Spring or Summer admission cycles. Only completed applications, including supportive materials, by the application deadline are guaranteed consideration. Please note that it is highly advised to take the GRE and TOEFL/IELTS tests well in advance of the deadline to ensure time for receiving and processing the scores.

If you have any admissions questions, please contact the E C E Graduate Admissions team at ecegradadmission@engr.wisc.edu.

GRADUATE SCHOOL ADMISSIONS

Graduate admissions is a two-step process between academic degree programs and the Graduate School. Applicants must meet requirements of both the program(s) and the Graduate School. Once you have researched the graduate program(s) you are interested in, apply online (<https://grad.wisc.edu/admissions>).

Guide Admissions/How to Get In tab

- All applicants must complete the supplemental application section that identifies their research interest area.
- All applicants must upload a copy of their transcripts from their undergraduate institution and other previous higher education institutions. Applicants must upload a transcript for each institution attended. Please do not send any hard-copies of transcript unless specifically instructed to by the ECE Graduate Admissions Office.
- Please do not mail any paper copies of application materials. They will not be reviewed. Please only upload the required application materials with the Graduate School application. This includes official transcripts. If an applicant is admitted by the ECE Admissions Committee, they will receive further instructions from the ECE Graduate Admissions Office.
- Applicants should monitor your application status by visiting the "Graduate Application Status" window within your MyUW portal (information on this is received after submitting an application). You may need to activate a NetID to gain access to the MyUW portal.
- We anticipate most decisions will be made by mid-March for Fall semester applications. Applicants will receive an e-mail from the ECE Graduate Admissions Office with the Admissions Committee's decision as soon as the office receives it.
- Note: When an applicant submits an application, they are automatically also put in the pool to be considered for funding from the department. Funding decisions come directly from faculty members. However, funding is limited and never guaranteed. All admitted, incoming students should anticipate to fund themselves. Those selected for funding will be contacted separately and directly by ECE faculty.

Describe plans for recruiting students to this program.

n/a

What is the recruiting and admissions strategy for underrepresented students?

Will students be declared in an intended major while completing the admission requirements?

Describe how the students will be advised and the transition to other degree granting program if they are not admitted.

Projected Annual Enrollment:

Maximum enrollment that can be supported with existing instructional and student services resources:

Describe plans for supporting enrollments that are much higher or much lower than the anticipated enrollment.

Are international students permitted to enroll in this program?

Those who are not familiar with using the html editor fields may upload a document with information about the curriculum for use by those who will format and edit the content that will appear in the Guide.

Select the school or college degree requirements that will be used.

Will this program have Honors in the Major?

Parent Requirements

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (<http://guide.wisc.edu/graduate/#policiesandrequirements>), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

Face to Face	Evening/Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

Mode of Instruction Definitions

Evening/Weekend: These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.

Online: These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.

Hybrid: These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.

Accelerated: These on-campus programs are offered in an accelerated format that allows you to complete your program in a condensed time-frame. Enjoy the advantages of on-campus courses with minimal disruption to your career. For more information about the accelerated nature of a specific program, contact the program.

CURRICULAR REQUIREMENTS

Requirements	Detail
Minimum Credit Requirement	30 credits
Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	Half of degree coursework must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university's Course Guide.
Overall Graduate GPA Requirement	3.00 GPA required.
Other Grade Requirements	<ol style="list-style-type: none"> 1. A grade of B or better in any graduate course is acceptable. A grade of S in E C E 790 Master's Research or Thesis, E C E 890 Pre-Dissertator's Research and E C E 990 Research or Thesis is acceptable. 2. A grade of BC in an E C E course is acceptable, provided the total cumulative GPA for graduate E C E courses is greater than or equal to 3.00. 3. A grade of C or lower in an E C E course is not acceptable. 4. A grade of BC or lower in an independent study course (E C E 699 Advanced Independent Study or E C E 999 Advanced Independent Study) or a grade of U in Research or Thesis (E C E 790, E C E 890 or E C E 990) is not acceptable. 5. A grade of BC or C in a non-E C E course is acceptable only if approved by the Graduate Committee. 6. If students are unable to complete coursework by the end of the term, an instructor may enter a temporary grade of I for incomplete. If students have not resolved all Incompletes by the end of the next fall or spring term in which they are enrolled, they are considered in bad standing by the Graduate School; however, the instructor may impose an earlier deadline. If not resolved within this time period, the grade is considered unsatisfactory and will remain an "I" unless changed to a final grade by the instructor. An unresolved I grade lapses to a grade of PI after five years. Students may be placed on probation or suspended from the Graduate School for failing to complete the work and receive a final grade in a timely fashion. Outstanding Incompletes must be resolved before a degree is granted.
Assessments and Examinations	A thesis, a project, or a specified course sequence must be completed, depending upon which degree plan the student follows.
Language Requirements	Non-native speakers of English who enroll in the M.S. program must take the ESLAT test on arrival at the university and then take any recommended courses based on the exam results. In addition, if a student's advisor believes that his or her technical writing ability needs improvement, the student may be required to undertake remedial work.

REQUIRED COURSES

Students may select one of three tracks for completing the degree: Thesis, Project, and Course. Students in the Thesis and Project tracks have the same required coursework:

- At least 15 must be in E C E Courses 400-level or higher, and at least 15 must be in courses numbered 700 or higher. Only graduate courses, namely those courses listed or approved for listing in the Graduate School Bulletin are applicable for graduate credit, with the exceptions that 300-level E C E courses and E C E 702 are not acceptable. E C E 890 and E C E 990 Research or Thesis are not applicable to the M.S. degree.
- Of the 30 credits, a minimum of 3 and a maximum of 9 credits must be in E C E 790. These E C E 790 credits are applicable toward both the 15 E C E credit requirement and the 700-level requirement. The combined number of credits in E C E 790, E C E 699, and E C E 999 applied toward the degree may not exceed 9.

Students in the Course track have the following required coursework:

- At least 15 credits must be in E C E courses 400-level or higher, at least 15 credits must be in courses numbered 700 or higher, AND at least 9 credits must be in E C E courses numbered 700 or higher.
- At most, 6 credits may be in E C E 699 or E C E 999. E C E 702, E C E 790, E C E 890, and E C E 990 are not counted as part of these 30 credits.

Electrical and Computer Engineering courses:

Code	Title	Credits
E C E 401	Electro-Acoustical Engineering	3
E C E 411	Introduction to Electric Drive Systems	3
E C E 412	Power Electronic Circuits	3
E C E 420	Electromagnetic Wave Transmission	3
E C E 427	Electric Power Systems	3
E C E 431	Digital Signal Processing	3
E C E 432	Digital Signal Processing Laboratory	3
E C E 434	Photonics	3
E C E/COMP SCI/MATH 435	Introduction to Cryptography	3

E C E 436	Communication Systems I	3
E C E 437	Communication Systems II	3
E C E/M E 439	Introduction to Robotics	3
E C E 440	Electromagnetic Fields and Waves	3
E C E 445	Semiconductor Physics and Devices	3
E C E 447	Applied Communications Systems	3
E C E 453	Embedded Microprocessor System Design	4
E C E 454	Mobile Computing Laboratory	4
E C E/B M E 461	Mathematical and Computer Modeling of Physiological Systems	3
E C E/B M E 462	Medical Instrumentation	3
E C E/B M E 463	Computers in Medicine	3
E C E 466	Electronics of Solids	3
E C E 489	Honors in Research	1-3
E C E 491	Senior Design Project	3
E C E 504	Electric Machine & Drive System Laboratory	2-3
E C E/COMP SCI 506	Software Engineering	3
E C E 511	Theory and Control of Synchronous Machines	3
E C E 512	Power Electronics Laboratory	3
E C E/COMP SCI/I SY E 524	Introduction to Optimization	3
E C E/N E/PHYSICS 525	Introduction to Plasmas	3
E C E/N E/PHYSICS 527	Plasma Confinement and Heating	3
E C E/N E 528	Plasma Processing and Technology	3
E C E/COMP SCI/M E 532	Theory and Applications of Pattern Recognition	3
E C E/COMP SCI 533	Image Processing	3
E C E 536	Integrated Optics and Optoelectronics	3
E C E 537	Communication Networks	3
E C E/COMP SCI/M E 539	Introduction to Artificial Neural Network and Fuzzy Systems	3
E C E 541	Analog MOS Integrated Circuit Design	3
E C E 542	Introduction to Microelectromechanical Systems	3
E C E/CBE/M S & E 544	Processing of Electronic Materials	3
E C E 545	Advanced Microwave Measurements for Communications	3
E C E/PHYSICS 546	Lasers	2-3
E C E 547	Advanced Communications Circuit Design	3
E C E 548	Integrated Circuit Design	3
E C E 549	Integrated Circuit Fabrication Laboratory	3
E C E 551	Digital System Design and Synthesis	3
E C E/COMP SCI 552	Introduction to Computer Architecture	3
E C E 553	Testing and Testable Design of Digital Systems	3
E C E 554	Digital Engineering Laboratory	4
E C E 555	Digital Circuits and Components	3
E C E 556	Design Automation of Digital Systems	3
E C E/M E 577	Automatic Controls Laboratory	4
E C E 600	Seminar in Electrical and Computer Engineering	0
E C E 601	Special Topics in Electrical and Computer Engineering	1-4
E C E 610	Seminar in Electrical and Computer Engineering	1
E C E 611	Introduction to Doctoral Research in Electrical & Computer Engineering	2
E C E 630	All of Signal Processing	3
E C E/MATH 641	Introduction to Error-Correcting Codes	3
E C E 699	Advanced Independent Study	1-6
E C E/COMP SCI 707	Mobile and Wireless Networking	3
E C E 711	Dynamics and Control of AC Drives	3
E C E 712	Solid State Power Conversion	3

E C E 713	Electromagnetic Design of AC Machines	3
E C E 714	Utility Application of Power Electronics	3
E C E 717	Linear Systems	3
E C E 719	Optimal Systems	3
E C E 723	On-Line Control of Power Systems	3
E C E/N E/PHYSICS 724	Waves and Instabilities in Plasmas	3
E C E/N E/PHYSICS 725	Plasma Kinetic Theory and Radiation Processes	3
E C E/N E/PHYSICS 726	Plasma Magnetohydrodynamics	3
E C E 729	Theory of Information Processing and Transmission	3
E C E 730	Modern Probability Theory and Stochastic Processes	3
E C E 731	Advanced Power System Analysis	3
E C E 734	VLSI Array Structures for Digital Signal Processing	3
E C E 735	Signal Synthesis and Recovery Techniques	3
E C E 736	Wireless Communications	3
E C E 738	Advanced Digital Image Processing	3
E C E/M E 739	Advanced Robotics	3
E C E 740	Electromagnetic Theory	3
E C E 741	Semiconductor Diode Lasers and other Optoelectronic Devices	3
E C E 742	Computational Methods in Electromagnetics	3
E C E 743	High-Power Diode Lasers and Amplifiers	3
E C E 744	Theory of Microwave Circuits and Devices	3
E C E 745	Solid State Electronics	3
E C E/PHYSICS 746	Quantum Electronics	3
E C E/PHYSICS 748	Linear Waves	3
E C E/N E/PHYSICS 749	Coherent Generation and Particle Beams	3
E C E/COMP SCI 750	Real-time Computing Systems	3
E C E 751	Embedded Computing Systems	3
E C E/COMP SCI 752	Advanced Computer Architecture I	3
E C E 753	Fault-Tolerant Computing	3
E C E/COMP SCI 755	VLSI Systems Design	3
E C E/COMP SCI 756	Computer-Aided Design for VLSI	3
E C E/COMP SCI 757	Advanced Computer Architecture II	3
E C E/COMP SCI/E M A/E P/M E 759	High Performance Computing for Applications in Engineering	3
E C E/COMP SCI 761	Mathematical Foundations of Machine Learning	3
E C E/B M E 762	Biomedical Instrumentation	3
E C E/B M E 763	Projects in Computers in Medicine	3
E C E/CBE/MATH 777	Nonlinear Dynamics, Bifurcations and Chaos	3
E C E 790	Master's Research or Thesis	1-9
E C E 817	Nonlinear Systems	3
E C E 821	Optimal Control and Variational Methods	3
E C E 830	Estimation and Decision Theory	3
E C E 841	Electromagnetic Radiation and Transmission	3
E C E/MATH 842	Topics in Applied Algebra	3
E C E 845	Transport in Semiconductor Devices	3
E C E/PHYSICS 848	Nonlinear Waves	3
E C E/COMP SCI/STAT 861	Theoretical Foundations of Machine Learning	3
E C E 901	Special Topics in Electrical and Computer Engineering	1-3
E C E/N E/PHYSICS 922	Seminar in Plasma Physics	1
E C E 999	Advanced Independent Study	1-3

E C E 610 Seminar in Electrical and Computer Engineering seminar requirement

All on-campus E C E graduate students must register for E C E 610 during their first semester of graduate studies. MS-degree seeking students must take 1 credit of E C E 610 in the Fall semester of which they are entering the program. Students with a course conflict with E C E 610 can defer taking the seminar by one year provided their faculty advisor agrees.

The purpose of E C E 610 is to expose students in their first semester of graduate school to various areas within E C E and to areas outside of E C E to which E C E has or could have connections, e.g., biotechnology, physics, mathematics, business, software. Electrical and Computer Engineering is very interdisciplinary in nature, and so it is important that students be aware of state-of-the-art research in areas other than their own.

Thesis Track ¹

The **thesis track** consists of 30 semester hours of graduate credits and approval of a master's thesis based on independent research. Of these 30 credits, at least 15 must be in E C E courses 400 level or higher, and at least 15 must be in courses numbered 700 or higher. Only graduate courses, namely those courses listed or approved for listing in the Graduate School Bulletin are applicable for graduate credit, with the exceptions that 300-level E C E courses and E C E 702 are not acceptable. E C E 890 and E C E 990 are not applicable to the M.S. degree.

Of the 30 credits, a minimum of 3 and a maximum of 9 credits must be in E C E 790 Master's Research or Thesis. These E C E 790 credits are applicable toward both the 15 E C E credit requirement and the 700-level requirement. The combined number of credits in E C E 790, E C E 699, and E C E 999 Advanced Independent Study applied toward the degree may not exceed 9.

Project Track ¹

The **project track** consists of 30 semester hours of graduate credits and approval of a limited scope project with a prepared report. Of these 30 credits, at least 15 must be in E C E courses 400 level or higher, and at least 15 must be in courses numbered 700 or higher. Only graduate courses, namely those courses listed or approved for listing in the Graduate School Bulletin are applicable for graduate credit, with the exceptions that 300-level E C E courses and E C E 702 are not acceptable. E C E 890 and E C E 990 are not applicable to the M.S. degree.

Of the 30 credits, a minimum of 3 and a maximum of 9 credits must be in E C E 790 Master's Research or Thesis. These E C E 790 credits are applicable toward both the 15 E C E credit requirement and the 700-level requirement. The combined number of credits in E C E 790, E C E 699, and E C E 999 Advanced Independent Study applied toward the degree may not exceed 9.

Course Track ¹

The **course track** consists of 30 semester hours of coursework. Of these, at least 15 credits must be in E C E courses 400 level or higher, at least 15 credits must be in courses number 700 or higher, AND at least 9 credits must be in E C E courses numbered 700 or higher. At most, 6 credits may be in E C E 699 or E C E 999. E C E 702, E C E 790, E C E 890 and E C E 990 are not counted as part of these 30 credits. No thesis or project is required.

Footnotes

¹ These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

NAMED OPTIONS (SUB-MAJORS)

A named option is a formally documented sub-major within an academic major program. Named options appear on the transcript with degree conferral.

View as listView as grid

- **ELECTRICAL ENGINEERING: POWER ENGINEERING, M.S.** ([HTTP://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-POWER-ENGINEERING-MS](http://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-POWER-ENGINEERING-MS))
- **ELECTRICAL ENGINEERING: PROFESSIONAL, M.S.** ([HTTP://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-PROFESSIONAL-MS](http://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-PROFESSIONAL-MS))
- **ELECTRICAL ENGINEERING: SIGNAL PROCESSING AND MACHINE LEARNING, M.S.** ([HTTP://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-SIGNAL-PROCESSING-MACHINE-LEARNING-MS](http://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-SIGNAL-PROCESSING-MACHINE-LEARNING-MS))

Guide Requirements tab

Degree Credit Requirement:

UW-Madison Graduate School policy states that the M.S. degree requires at least 30 credits of courses (300 level or above, no audits or pass-fail) completed as a graduate student at UW-Madison: <https://grad.wisc.edu/documents/minimum-graduate-degree-credit-requirement/>

The ECE department requires 30 credits for an M.S. degree (see sections 3.2.1 – 3.2.3 below) and does not count ECE 300-level courses toward M.S. or Ph.D. requirements.

Research Option MS Degree Plans

There are two distinct plans of study, from which students must choose in order to fulfill the requirements for the research option ECE M.S. degree: Thesis and Project.

Thesis Plan

To fulfill the requirements of the Thesis Plan, the student must earn 30 graduate credits, attained with acceptable grades as defined in Section 7. Of these 30 credits, at least 15 must be in ECE Courses 400-level or higher, and at least 15 must be in courses numbered 700 or higher. Only graduate courses, namely those courses listed or approved for listing in the Graduate School Bulletin are applicable for graduate credit, with the exceptions that 300-level ECE courses and ECE 702 are not acceptable. ECE 890 and 990 are not applicable to the M.S. degree.

Of the 30 credits, a minimum of 3 and a maximum of 9 credits must be in ECE 790 (Master's Research or Thesis). These ECE 790 credits are applicable toward both the 15 ECE credit requirement and the 700-level requirement. The combined number of credits in ECE 790, ECE 699, and ECE 999 (Advanced Independent Study) applied toward the degree may not exceed 9.

Each student who elects the Thesis Plan is required to perform research in consultation with a master's thesis committee. Master's thesis committees must have at least 3 members, 2 of whom must be graduate faculty or former graduate faculty up to one year after resignation or retirement. At the conclusion of the research program, a thesis must be prepared. The thesis must: 1) conform to Graduate School and library formats; 2) be approved by the master's thesis committee; 3) be filed with the Memorial Library where it is catalogued and stacked for future reference (if required by the master's thesis committee); and 4) an electronic copy must be sent to the ECE Graduate Student Services Coordinator, who will deposit it into Minds@UW, Department of Electrical and Computer Engineering Thesis Collection. The Minds@UW system will provide a permanent URL, safe long-term archiving and is indexed by Google, Google Scholar and other specialty academic search engines.

At the conclusion of the thesis, all grades of P (Progress) and I (Incomplete) in ECE 790 are changed to either S (Satisfactory) or U (Unsatisfactory) by the advisor. In the final semester the student is required to check in at the ECE Graduate Student Services Office to apply for a degree warrant by the announced deadline. The MSEE Course Approval Form is available in the Graduate Student Services office or online: <https://www.engr.wisc.edu/app/uploads/2016/01/ECE-MS-Course-Approval-Form.pdf>

Project Plan

The Project Plan consists of the same credit and course requirements as the Thesis Plan. Under this plan, the student must perform a research project in consultation with a faculty advisor. At the conclusion of the project, a report is prepared. The research project is generally more limited in scope than a thesis and typically is not awarded as many credits. The report need not conform to Graduate School and library formats, but it must be typewritten. The student's advisor must approve the report. No library or Minds@UW copy is required (see section 3.2.1), but may be requested by the faculty. In the final semester, the student is required to check in at the ECE Graduate Student Services Office to apply for a degree warrant by the announced deadline. The MSEE Course Approval Form is available in the Graduate Student Services office or online at: <https://www.engr.wisc.edu/app/uploads/2016/01/ECE-MS-Course-Approval-Form.pdf>

ECE 610 Seminar Requirement

All on-campus ECE graduate students must register for ECE 610 during their first semester of graduate studies. MS-degree seeking students must take 1 credit of ECE 610 in the Fall semester of which they are entering the program. Students with a course conflict with ECE 610 can defer taking the seminar by one year provided their faculty advisor agrees.

The purpose of ECE 610 is to expose students in their first semester of graduate school to various areas within ECE and to areas outside of ECE to which ECE has or could have connections, e.g., biotechnology, physics, mathematics, business, software. Electrical and Computer Engineering is very interdisciplinary in nature, and so it is important that students be aware of state-of-the-art research in areas other than their own.

English Competency for Non-Native English Speakers

Effective written and oral communication is vital for a successful academic career. International students whose native language is not English will be required to take the English as a Second Language Assessment Test (ESLAT), offered by the English as a Second Language (ESL) Program.

The ESLAT must be taken as soon as the student arrives at the university. The test is offered in the Fall and Spring during the week before the beginning of instruction. For more information, see the ESL home page at <https://esl.wisc.edu/international-students/placement/>

Based on ESLAT performance, specific ESL courses may be recommended. These courses must be taken and passed within 12 months of the ESLAT. Otherwise, the student will not be permitted to register during the third semester after entering the graduate program. Any ESL courses numbered 300 or above can be counted towards graduate degree requirements but not toward ECE course requirements. Completion of ESLAT and recommended courses are also a requirement for graduation of an international student whose native language is not English.

Students are exempt from taking the ESLAT if:

op# English is the exclusive language of instruction at the undergraduate institution; or

they have earned a degree from a regionally accredited U.S. college or university not more than 5 years prior to the anticipated semester of enrollment; or

they have completed at least two full-time semesters of graded course work, exclusive of ESL courses, in a U.S. college or university, or at an institution outside the U.S. where English is the exclusive language of instruction, not more than 5 years prior to the anticipated semester of enrollment.

Total credits required:

30

Semesters to completion:

Parent Plan Graduate Policies

GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/acadpolicy>) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

MAJOR-SPECIFIC POLICIES

GRADUATE PROGRAM HANDBOOK

The Graduate Program Handbook (https://docs.google.com/document/d/1vzDpUN5CGy2RdI7SnD2ZAsG7-b_8I7QaXOLGfStoHnY/edit) is the repository for all of the program's policies and requirements.

PRIOR COURSEWORK

Graduate Work from Other Institutions

With program approval, students are allowed to count graduate coursework from other institutions toward the minimum graduate degree credit requirement and the minimum graduate coursework (50%) requirement. No credits from other institutions can be counted toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

UW–Madison Undergraduate

With program approval, up to 7 credits from UW–Madison numbered 300 or above can be counted toward the minimum graduate degree credit requirement. Up to 7 credits of E C E courses numbered 700 or above can be counted toward the minimum graduate coursework (50%) requirement. No credits can be counted toward the minimum graduate residence credit requirement.

With program approval, students may count up to 7 credits of undergraduate coursework from a bachelor of science degree in Electrical Engineering, Computer Engineering, Electrical and Computer Engineering, Electrical Engineering and Computer Science, or Computer Science from an ABET-accredited program at other institutions (not UW–Madison) toward fulfillment of minimum degree requirements. Courses numbered 300 or above may be counted towards the minimum graduate degree credit requirement and courses numbered 700 or above may be counted towards the minimum graduate coursework (50%) requirement. No credits from other institutions can be counted toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

UW–Madison University Special

With program approval, students are allowed to count up to 9 credits of coursework numbered 400 or above taken as a UW–Madison University Special student toward the minimum graduate residence credit requirement, and the minimum graduate degree credit requirement. Courses numbered 700 or above taken as a UW–Madison Special student toward the minimum graduate coursework (50%) requirement. Coursework earned five or more years prior to admission is not allowed to satisfy requirements.

PROBATION

Students must be in good academic standing with the Graduate School, their program, and their advisor. The Graduate School regularly reviews the record of any student who received grades of BC, C, D, F, or I in graduate-level courses (300 or above), or grades of U in research and thesis. This review could result in academic probation with a hold on future enrollment, and the student may be suspended from graduate studies.

The Graduate School may also put students on probation for incompletes not cleared within one term. All incomplete grades must be resolved before a degree is granted.

The status of a student can be one of three options:

1. Good standing (progressing according to standards; any funding guarantee remains in place).
2. Probation (not progressing according to standards but permitted to enroll; loss of funding guarantee; specific plan with dates and deadlines in place in regard to removal of probationary status).
3. Unsatisfactory progress (not progressing according to standards; not permitted to enroll, dismissal, leave of absence or change of advisor or program).

A semester GPA below 3.0 will result in the student being placed on academic probation. If a semester GPA of 3.0 is not attained during the subsequent semester of full time) the student may be dismissed from the program or allowed to continue for 1 additional semester based on advisor appeal to the Graduate School.

ADVISOR / COMMITTEE

New students must declare an advisor by the end of the second week of classes in the first semester.

CREDITS PER TERM ALLOWED

15 credits

TIME CONSTRAINTS

Master's degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

OTHER

Funding is not guaranteed and applicants should be prepared to fund their degree. The department awards a small number of research assistantships, teaching assistantships, project assistantships, and fellowships each year. All applications are automatically considered for department funding. Students in the online Power Engineering program are not permitted to accept assistantships.

Guide Graduate Policies tab

PRIOR COURSEWORK

Graduate Work from Other Institutions

With program approval, students are allowed to count graduate coursework from other institutions toward the minimum graduate degree credit requirement and the minimum graduate coursework (50%) requirement. No credits from other institutions can be counted toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

UW–Madison Undergraduate

With program approval, up to 7 credits numbered 400 or above can be counted toward the minimum graduate degree credit requirement. Up to 7 credits of E C E courses numbered 700 or above can be counted toward the minimum graduate coursework (50%) requirement. No credits can be counted toward the minimum graduate residence credit requirement.

UW–Madison University Special

With program approval, students are allowed to count up to 9 credits of coursework numbered 400 or above taken as a UW–Madison University Special student toward the minimum graduate residence credit requirement, and the minimum graduate degree credit requirement. Courses numbered 700 or above taken as a UW–Madison Special student toward the minimum graduate coursework (50%) requirement. Coursework earned five or more years prior to admission is not allowed to satisfy requirements.

PROBATION

Students must be in good academic standing with the Graduate School, their program, and their advisor. The Graduate School regularly reviews the record of any student who received grades of BC, C, D, F, or I in graduate-level courses (300 or above), or grades of U in research and thesis. This review could result in academic probation with a hold on future enrollment, and the student may be suspended from graduate studies.

The Graduate School may also put students on probation for incompletes not cleared within one term. All incomplete grades must be resolved before a degree is granted.

The status of a student can be one of three options:

1. Good standing (progressing according to standards; any funding guarantee remains in place).
2. Probation (not progressing according to standards but permitted to enroll; loss of funding guarantee; specific plan with dates and deadlines in place in regard to removal of probationary status).
3. Unsatisfactory progress (not progressing according to standards; not permitted to enroll, dismissal, leave of absence or change of advisor or program).

A semester GPA below 3.0 will result in the student being placed on academic probation. If a semester GPA of 3.0 is not attained during the subsequent semester of full time) the student may be dismissed from the program or allowed to continue for 1 additional semester based on advisor appeal to the Graduate School.

ADVISOR / COMMITTEE

New students must declare an advisor by the end of the second week of classes in the first semester.

CREDITS PER TERM ALLOWED

15 credits

TIME CONSTRAINTS

Master's degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

OTHER

Funding is not guaranteed and applicants should be prepared to fund their degree. The department awards a small number of research assistantships, teaching assistantships, project assistantships, and fellowships each year. All applications are automatically considered for department funding. Students in the online Power Engineering program are not permitted to accept assistantships.

Parent Guide Four Year Plan tab

Guide Four Year Plan tab

Discuss expected progress to degree and time to degree. For undergraduate programs discuss considerations for supporting students to complete the degree in four academic years.

Provide detail on how breadth will be achieved.

Describe part-time format (<8 credits fall and spring semesters < 4 credits summer term) here.

Describe full-time, time-compressed, intensive format here.

Describe other format here.

PROGRAM LEARNING OUTCOMES AND ASSESSMENT

Parent Program Learning Outcomes

Demonstrate a strong understanding of mathematical, scientific, and engineering principles in the field.

Demonstrate an ability to formulate, analyze, and solve advanced engineering problems.

Demonstrate creative, independent problem solving skills.

Apply the latest scientific and technological advancements, advanced techniques, and modern engineering tools to these problems.

Recognize and apply principles of ethical and professional conduct.

List the program learning outcomes.

Summarize the assessment plan.

Method for assessing learning (at least one direct method required): Each student is assessed by their adviser based on their thesis or project report.

Timetable for assessment activity (at least one activity each year; all goals reviewed in a 3-year cycle): All learning goals will be evaluated annually.

Approved Assessment Plan:

RELATED PROGRAMS

List majors and certificates that may not be earned in combination with this program.

List majors that are anticipated to frequently be completed in combination with the proposed program. For each, describe how the proposed program can be completed in combination with the major without increasing time to degree.

Provide information in related programs offered by other UW System institutions and explain the extent to which the proposed program is distinct and how it overlaps or duplicates those programs.

COMMITMENTS

All required courses are approved through the school/college level.

Yes

Courses are offered on a regular basis to allow timely completion.

Yes

Courses have enrollment capacity.

Yes

Courses in the curriculum are numbered 300 or higher.

Courses in the curriculum are numbered 699 or lower.

Courses in which a student elects the pass/fail option will not count toward completion of requirements.

Special topics courses are only used if all topics count for the certificate.

All requirements must be met; exceptions that amount to waiving requirements are not permitted.

Course substitutions to the curriculum should be kept to a minimum; if substitutions are being made on a regular basis, the curriculum should be re-examined. When course substitutions are made, the substituted course should be formally added to the curriculum through governance for inclusion in the curriculum the following academic year.

Substitutions are not permitted for any course unless the substitution would be provided for every student with the same substitution request.

When the proposed certificate is made available to University Special students it is only available to those who have earned a baccalaureate degree.

Certificate program faculty and staff understand that Adult Career and Special Student Services (ACSSS) in the Division of Continuing Studies will serve as the advising, admissions, and academic dean's office for all University Special students.

Certificate program faculty and staff will work with ACSSS to monitor and advise University Special students seeking a certificate.

Certificate courses have the enrollment capacity to accommodate University Special students. Certificate program faculty and staff understand that University Special students completing the certificate will not have enrollment priority over degree-seeking undergraduate students nor University Special students enrolled in capstone certificate programs.

If completing the certificate as a University Special student, at least 12 credits towards the certificate must be earned in residence at UW-Madison, either while enrolled as a University Special student or from coursework earned while enrolled as an undergraduate at UW-Madison. (Note this is a higher residency requirement than is used for degree-seeking students.)

All of the Capstone certificate credits must be earned "in residence" (which includes on campus and distance-delivered courses) at UW-Madison while enrolled in the Capstone certificate program. Because a Capstone certificate is comprised of just a few courses, it is not appropriate for students who already have completed the same or similar coursework at UW-Madison or another institution.

At least half of the credits must be earned in residence (UW-Madison on campus, study abroad, or distance courses); exceptions to the minimum residency requirement are not permitted.

Students must earn a minimum 2.000 GPA on required certificate coursework. Completed courses listed within the certificate curriculum, whether or not they meet a specific requirement, are included in the calculation of the GPA.

Students must earn a minimum 3.000 GPA on required certificate coursework. Completed courses listed within the certificate curriculum, whether or not they meet a specific requirement, are included in the calculation of the GPA.

Students must earn a minimum grade of C on all attempted Capstone certificate coursework.

The program faculty/staff will ensure the program is encoded into DARS and will work with the Registrar's Office DARS liaison to keep approved revisions to the curriculum current.

All students will be declared into the appropriate plan code in SIS via either an admission process or e-declaration. If the student does not have the plan code on their student record in SIS the student is not considered to be in the program.

Students may complete only 1 named option within a plan code.

Yes

The program faculty/staff will ensure the program website, Advance Your Career materials if applicable, and other presentations are consistent with the Guide information for this program.

Yes

Certificate requires no more than half of the credits required for a major in a related field.

Credential will not be awarded retroactively to students who completed all of the requirements before the credential was approved.

Yes

Degree-seeking students may not be concurrently enrolled in a Capstone certificate program.

Students enrolled in Capstone certificate programs are NOT eligible for teaching assistant (TA), research assistant (RA), project assistant (PA) nor graduate fellowship support. Programs must disclose this program policy to Capstone certificate students in the recommendation of admission letter, program website, program handbook, and program orientation.

To be eligible for admission to a Capstone program, a student must hold an earned bachelor's degree or equivalent credential from an accredited college or university.

SUPPORTING INFORMATION

List name and department of those who are in support of this proposal.

If those supporting the proposal provided a letter or email of support upload here. A letter is NOT required. Upload any other explanatory information about support from other UW-Madison units.

Additional Information:

APPROVALS

Department Approval - This proposal has been approved by the faculty at the department/academic unit level. The program faculty confirm that the unit has the capacity and resources (financial, physical, instructional, and administrative) to meet the responsibilities associated with offering the program, including offering the necessary courses, advising students, maintaining accurate information about the program in the Guide and elsewhere, conducting student learning assessment and program review, and otherwise attend to all responsibilities related to offering this program.

Enter any notes about approval here:

Changing the name of the traditional MS to a "Research" named option was approved at the March 14, 2018 ECE Faculty Meeting. The ECE Graduate Curriculum Committee approved the form language above in December 3, 2018.

Entered by:

Barry Van Veen

Date entered:

12/17/2018

School/College Approval - This proposal has been approved at the school/college level and it is submitted with the Dean's support. The Dean and program faculty confirm that the unit has the capacity and resources (financial, physical, instructional, and administrative) to meet the responsibilities associated with offering the program, including offering the necessary courses, advising students, maintaining accurate information about the program in the Guide and elsewhere, conducting student learning assessment and program review, and otherwise attend to all responsibilities related to offering this program.

Enter any notes about approval here:

Entered by and date:

Date entered:

GFEC Approval - This proposal has been approved by the Graduate Faculty Executive Committee and the Dean of the Graduate School.

Enter any notes about the approval here:

Entered by:

Date entered:

UAPC Approval - This proposal has been approved by the University Academic Planning Council and the Provost.

Enter any notes about approval here:

Entered by:

Date entered:

FOR ADMINISTRATIVE USE

Admin Notes:

Guide URL:

Effective date:

Effective Guide Edition:

Career:

SIS Program Code:

SIS Program Code (BS):

SIS Short Description:

SIS code for additional major:

SIS code for intended major:

SIS code for honors in the major:

SIS code for honors in the major (BS):

SIS code for honors in the major (BMAJ):

SIS code for special student certificate:

Other plan codes associated with this program:

Diploma Text:

Diploma Text 2:

Degree:

Degree (BS):

Field of Study:

Program Length:

National Student Clearing House Classification:

Plan Group:

Educational Level:

Award Category:

Enrollment Category:

CIP Code:

STEMOPT:

UWSTEM:

HEALTH:

Educational Innovation Program:

Distance Education Program:

Non Traditional Program:

Special Plan Type:

CDR certificate category:

Added to UW System Crosswalk:

Reviewer Comments

Key: 1035