

**ADDENDUM FOR A JOINT GRADUATE DEGREE PROGRAM  
BETWEEN  
THE INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY  
(MONTERREY, NUEVO LEÓN, MEXICO)  
AND  
THE REGENTS OF THE UNIVERSITY OF NEW MEXICO  
(ALBUQUERQUE, NEW MEXICO, USA)**

The Regents of the University of New Mexico (hereafter referred to as UNM), located in Albuquerque, New Mexico, United States of America and the Instituto Tecnológico y de Estudios Superiores de Monterrey – Monterrey Campus (hereafter referred to as ITESM-Monterrey Campus), located in Monterrey, Nuevo León, México, are willing to enter into and formally establish this Addendum for a Joint Graduate Degree Program.

This Addendum and the student flow conducted from this Addendum will be managed by ITESM – Monterrey Campus and the University of New Mexico. The exchange balance resulted from the exchange agreement signed between the University of New Mexico and the Instituto Tecnológico y de Estudios Superiores de Monterrey – Estado de México Campus (here after referred as ITESM – Estado de México Campus) in 1998 and renewed in February 2008, will not be affected by this Addendum or by the student flow conducted by this Addendum.

### **JOINT GRADUATE DEGREE PROGRAM**

ITESM-Monterrey Campus through its School of Engineering and Information Technologies / “Escuela de Ingeniería y Tecnologías de Información” (hereafter referred to as EITI) and UNM through its Department of Electrical and Computer Engineering (hereafter referred to as ECE) agree to establish a Joint Graduate Degree Program for selected students enrolled in the Master of Engineering in Automation and Control / “Maestría en Ingeniería con especialidad en Automatización y Control” / MAT at EITI-ITESM as well as for selected students enrolled in the Master of Science in Electrical or in the Master of Science in Computer Engineering at ECE-UNM described in the present section.

This Joint Graduate Degree Program will be ruled by the following clauses and conditions:

#### **Clause 1: Objective**

The purpose of this agreement is to establish Joint Graduate Degree Program for Master Programs that facilitate students that are registered on a full-time basis at the EITI (of ITESM) or the ECE (of UNM) to jointly pursue masters degrees. The objectives of the Joint Graduate Degree program are:

- 1.1 To encourage collaborative research and intellectual interaction between EITI-ITESM and ECE-UNM through the activities of the participating students and their advisors; and
- 1.2 To enhance human-resource development at both institutions through sharing the strengths and resources available at ECE-UNM and EITI-ITESM.

#### **Clause 2: Student Status**

- 2.1 Students who participate in the Joint Graduate Degree Program must be registered at their home universities on a full-time basis and must complete a minimum number of credit hours before they may apply to the partner university (see details below).
- 2.2 Students applying to the partner university must apply as international students and must be admitted under the generally applicable academic requirements, financial standards, application deadlines, and language requirements established for international students at each respective university and within each College or Department.



- 2.3 Students applying to the partner university shall abide by the immigration regulations of the country of the host university.
- 2.4 Students applying to the partner university shall be responsible for their own tuition at that university, and will have the same options of applying for graduate assistantships or financial assistance, as do resident graduate students, subject to applicable laws and policies governing the partner university.
- 2.5 Students applying to the partner university shall be responsible for any special course, recreation, or lab fees at the partner university.
- 2.6 Students applying to the partner university shall be responsible for necessary health insurance and medical costs, as required by the partner university for its international students.
- 2.7 Students applying to the partner university shall be responsible for their own living, travel, and personal expenses.
- 2.8 Students seeking award of a Master's degree must meet or be in compliance with all of the generally applicable rules and regulations for degree recipients of each institution, in addition to the Joint Graduate Degree Program specific requirements.

### Clause 3: Master Degree Programs

The Master's degree programs at the ECE-UNM Department included in this Joint Graduate Degree Agreement are the Master of Science in Electrical Engineering and the Master of Science in Computer Engineering. A complete list of the courses offered in the Master of Science in Electrical Engineering of UNM and its academic load (number of credits) is included in Appendix 1. Similarly, a complete list of the courses offered in the Master of Science in Computer Engineering of UNM and its academic load (number of credits) is included in Appendix 1.

The Master degree program at the EITI-ITESM included in this Joint Graduate Degree Agreement is the Master of Engineering in Automation and Control ("Maestría en Ingeniería con especialidad en Automatización y Control" – MAT). A complete list of the courses offered in the Master of Engineering in Automation and Control of EITI-ITESM is included in Appendix 2.

### Clause 4: Requirements for the Joint Graduate Degree Program

The following specific requirements apply for students wishing to jointly pursue a master degree at ECE-UNM and EITI-ITESM:

- 4.1. A minimum of 12 credit hours courses (i.e., four 3-credit courses) at or from ECE-UNM. These may include a maximum of 3 hours of 400-level ECE-UNM courses or 3 hours of 400-level Non-ECE-UNM courses (as long as they are approved for graduate credit by UNM).
- 4.2. A maximum of 3 credit hours in "problems" (ECE 551) courses at ECE-UNM. No more than 50% of the required course credits at UNM may be taken with a single faculty member.
- 4.3. One credit hour of Graduate Seminar Course at ECE-UNM.
- 4.4. A minimum of 12 graduate credit hours (48 course units from ITESM system) at EITI-ITESM (equivalently, four graduate courses). Required thesis or project courses to be registered at ITESM are not included in these 12 graduate credit hours.
- 4.5. At least 12 credit hours at ECE-UNM must be completed after admission to the master's program at ECE-UNM.
- 4.6. Completion of a master's thesis or project report is required. The thesis or project report originals will be written in English.
- 4.7. Six credit hours of thesis or problems at ECE-UNM with joint supervision of one faculty from ECE-UNM and one faculty from EITI-ITESM. Once the student is enrolled for the first time in Thesis (ECE-599) he/she will have to be continuously enrolled in the course with at least one credit in the remaining academic terms.
- 4.8. A minimum of two thesis courses or a minimum **of** two project courses (each of these courses of 12 academic units from the ITESM system / each of these courses equivalent to 3 USD credits) need to be registered at ITESM, Campus Monterrey with joint supervision of one faculty from EITI-ITESM and one

faculty from ECE-UNM. Each of these ITESM thesis or project courses needs to be registered simultaneously to the registration of a thesis or project at ECE-UNM.

- 4.9 The following requirements are necessary to fulfill the graduate student profile from ITESM: 1.5 credit-hours (6 course units from ITESM) of the Seal Course at ITESM “Leadership for the Sustainable Development” OR “Leadership for Business Innovation” and 1.5 credit-hours (6 course units from ITESM system) of the pre-Thesis seminar: “Methods for Research and Innovation”.
- 4.10 Each student must fulfill the TOEFL and GRE requirements mandated by the UNM Admissions Office and the ECE-UNM department, respectively for the specific semester in which the graduate student is applying. As a reference, for the fall semester of the year 2012, graduate students applying to UNM were expected to show a minimum English language proficiency of 575 on the TOEFL written test, 213 on the TOEFL computerized test, or 79-80 on the internet-based test. Institutional TOEFL scores can also be accepted with the scores of 550 for graduate students. As for the GRE, Graduate students applying to UNM were expected to show a minimum GRE verbal section score of 400 (old)/146 (new) and a minimum quantitative GRE section score of 650 (old)/151 (new).

Notes and clarifications:

Satisfying requirements 4.1-4.9 will automatically satisfy ECE-UNM’s Masters requirements (e.g., 24 credit hours of regular courses plus 6 thesis hours or 27 credit hours of regular courses plus 6 project hours for the case of project report and exit examination) and EITI-ITESM’s Master program (96 course units plus 24 course units of formal thesis or project report and exit examination from the ITESM system).

A degree plan distribution table is included in Appendix 3 and a suggested course schedule to be followed by students enrolled in this double degree program is included in Appendix 4 respectively.

**Clause 5: Application/Transfer of Credit**

The following regulations apply to the application or transfer of credits:

- 5.1 Course must have carried graduate credits.
- 5.2 Course work must be from an accredited institution.
- 5.3 Student must have obtained a grade of “B” or better (UNM grading system) and a grade of “80” or better (ITESM grading system).
- 5.4 The host institution will provide the home institution with an adequate record of the participant’s academic performance (a transcript). Courses completed by students at either university will be treated as equivalencies by the home institution according to each institution policies. The grading systems to be used by each institution are as follows:

ITESM

Grade	Quality
100	Excellent
99-90	Very Good
89-80	Good
79-70	Average
Below 70	Failed



UNM

Grade	Quality
A	Excellent
A-	Very Good
B+	Good
B	Fair
B-	Pass
C+, C	Boundary Passing
D, F	Fail

NOTE: at ECE-UNM the student cannot have more than 6 credits of coursework graded C, C+, or CR

- 5.5 Courses must be approved by the graduate unit from UNM. Moreover, course must be also approved by the Graduate Area of the School of Engineering and Information Technologies of ITESM and the graduate faculty group of the corresponding academic field from ITESM Monterrey Campus.
- 5.6 Course must be listed on Application for Candidacy form.
- 5.7 All courses must have final approval from the Dean of Graduate Studies.

**Clause 6: Credit-hour equivalence**

1 credit hour at UNM is equivalent to 4 course units at ITESM Campus Monterrey.

**Clause 7: Financial Considerations**

- 7.1 Tuition and fees will be paid each semester by the graduate Double Degree student to the institution that will provide/will teach the course to the student. The following alternative sources of financial resources could be explored by the student:
- a) For students enrolled in the Joint Graduate Degree Program the ECE Department may elect, upon request by the student, to offer financial aid to an admitted student on a case-by-case basis and according to each department's merit selection criteria for offering financial aid. These include Research Assistantships, Teaching Assistantships, Fellowships, and Project Assistant positions.
- b) UNM has the AMIGO International Scholarship program that enables foreign students to pay in-state-tuition. Students who meet the qualification requirements for the AMIGO International Scholarship, and who apply, obtain, and maintain the scholarship, based on merit and academic achievement, may be eligible to pay in-state tuition at UNM, provided they meet all requirements. As a reference, UNM in-state-tuition for the Spring Semester 2012 for 6 credit hours course (Thesis not included) in a UNM Master degree is around \$1600 USD.
- c) Students who apply for and receive a UNM AMIGO International Scholarship or other assistantship award that entitles the student to pay UNM in-state tuition are responsible for continuing to meet the academic and any other eligibility requirements for the Scholarship or award throughout their time as a UNM student. Failure to meet on-going eligibility requirements will result in the student losing the AMIGO International Scholarship or assistantship award.
- d) CONACYT of MEXICO has allocated some scholarships for Mexican students that want to pursue graduate studies at UNM. In addition, the ECE Department and the School of Engineering have expanded this program by providing some Project Assistant awards; a certain number of these Project Assistant

awards are offered by the ECE Department of UNM and some other are offered by the School of Engineering of UNM.

- 7.2 Participating students will be responsible and will pay for their own expenses in the host university or in the host country for room, board, transportation, living expenses and costs involved in travel to and from the host institution for the educational experience. This includes travel and living expenses (including vacation periods and between terms), passport expenses, telephone calls, books, excess of luggage, luggage storage and independent travel.

#### **Clause 8: Health insurance**

Each participant student must have a health insurance valid in the host country during all the time the student stay in the host country. For all cases this health insurance must include: medical attention, air medical evacuation and repatriation of remains.

#### **Clause 9: Program Administration**

This program will be academically administered by a permanent, joint management committee whose members are selected from the participating faculty from ECE-UNM and EITI-ITESM.

However, at ITESM the administration of the postulation and reception of application of students will be conducted through the International Programs Office of ITESM – Monterrey Campus. Therefore, students will have to accomplish all policies, payments and calendar established by International Programs Office of ITESM – Monterrey Campus of both universities. At UNM the reception of application of ITESM Double Degree students coming to UNM will be conducted through The Office of International Admissions at UNM.

#### **Clause 10: Program Review**

ECE-UNM and EITI-ITESM agree to review the progress of this Double Degree program and suggest modifications to this agreement (if needed) 2 years from the date of signing this agreement. Such review shall be repeated periodically every two years thereafter.

#### **Clause 11: Terms of Addendum**

- 11.1 This agreement shall be signed in quadruplicate. Each institution will keep 2 copies of the document.
- 11.2 This agreement will become effective upon signing by both parties and shall automatically renew for successive terms of five (5) years each, unless terminated in writing as provided for in this agreement.
- 11.3 Any one of the parties may terminate this agreement, advising the other institution in writing six (6) months prior to the agreement's cancellation. In this case, the students who have already been accepted at the partner university will not be affected and will be allowed to complete their studies, subject to any applicable institutional policies governing the time period for degree completion.
- 11.4 This agreement shall be construed in accordance with the laws of the State of New Mexico.
- 11.5 Nothing in this agreement, express or implied, is intended to confer any rights, remedies, claims or interests upon a person not a party to this agreement.

#### **Clause 12: Dispute Resolution**

The parties agree that any controversies, disputes, or claims arising out of this Agreement, as between the parties, shall be first submitted to mediation. Mediation shall be conducted in English and Spanish. A mediated settlement, if any, shall be reduced to writing. If necessary, both parties will agree on a neutral arbitrary mediator and will be subject to its resolution.



### **Clause 13: Intellectual Property**

The parties authorize the home institution to mention the name of the host institution in the transcript of the student that has participated in the program. Beside this, the parties convene that this Agreement does not give UNM or ITESM any license of use or rights over the intellectual property of the other party. The use of any other trademarks and/or denominations representative of either party is strictly prohibited without the owner's permission.

Both institutions declare the following addresses and contact persons for the purposes of the present agreement:

#### **FOR INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY**

Dr. Jaime Bonilla Rios  
Dean of the School of Engineering and Information Technologies  
Tecnologico de Monterrey – Monterrey Campus  
Ave. Eugenio Garza Sada #2501 Sur, Colonia Tecnológico  
Monterrey, Nuevo León, C.P. 64849, MEXICO  
Email: [jbonilla@itesm.mx](mailto:jbonilla@itesm.mx)

#### **FOR THE REGENTS OF THE UNIVERSITY OF NEW MEXICO**

Dr. Gruia-Catalin Roman  
Dean of the School of Engineering  
MSC01 1140  
1 University of New Mexico  
Albuquerque, NM 87131-0001 U.S.A.  
Email: [gcroman@unm.edu](mailto:gcroman@unm.edu)

## Appendix 1

### Program of the Master of Science in Electrical and Computer Engineering at the University of New Mexico

The Electrical and Computer Engineering Graduate Program specializes in a broad range of state-of-the-art research emphases:

- Electrical Engineering
  - Applied Electromagnetics
  - Bioengineering
  - Communications
  - Image Processing
  - Microelectronics
  - Optoelectronics
  - Power and Energy
  - Signal Processing
  - Systems and Controls
- Computer Engineering
  - Bioengineering
  - Computational Intelligence
  - Computer Architecture & VLSI Designs
  - Computer Networks & Systems
  - Computer Graphics & Vision
  - Image Processing
- Optical Science and Engineering
  - Refer to <http://www.optics.unm.edu/> for details.

**ECE Graduate Office.** The Graduate Committee consists of the Director of the Graduate Program and faculty members elected by each research area. The Director of the Graduate Program reports to the Department Chair, coordinates all activities of the Graduate Committee and is responsible for all aspects of the graduate program, including:

- Overseeing all correspondence with applicants seeking admission, including final notification of acceptance/deny,
- Interaction with the Office of Graduate Studies (OGS), Office of International Admissions (OIA), and Office of International Programs (OIPS), and
- Probation/enrollment matters and exit requirements.

**The UNM catalog and ECE graduate handbook.** The Office of Graduate Studies (OGS) at UNM is responsible for upholding the academic standards of all graduate programs at the University of New Mexico. To this end, it establishes and enforces certain rules that must be satisfied by all graduate students and the faculty. This handbook only includes the additional policies and procedures that apply specifically to the ECE graduate program. Graduate students are ultimately responsible for understanding and meeting the requirements described in UNM Catalog and this handbook. This edition of the handbook supersedes any previous editions of the ECE Graduate Handbook. Students entering the graduate program in Fall 2011 or later must follow this edition of the handbook until further notice.

**Grandfather clause.** Students are required to meet the program requirements as described in the UNM Catalog and the ECE Graduate Handbook in effect at the time of admission. Should the requirements in the handbook change during their program, students may move to the new requirements with approval of their advisor.



## ADMISSIONS

**Admission requirements.** Acceptance as a regular graduate student in the ECE Department will normally require a bachelor's degree in Computer Engineering, Computer Science, Electrical Engineering, or a related field, from an ABET accredited program in United States or its equivalent in another country. Admission into the ECE Graduate Program for both M.S. and Ph.D. degrees are decided on a case-by-case basis. Many factors are taken into account for admission decisions, including, but not limited to, previous academic degree(s) and coursework, GRE scores, letters of recommendation, etc. and TOEFL (for international students, check UNM Catalog).

**Financial aid.** The ECE graduate program has two types of assistantships: Graduate Assistantships (GA) and Research Assistantships (RA). The GAs are awarded by the ECE department for exceptional students. On the other hand, RAs are chosen and administered completely by faculty, with their own research grants. In addition to the GA and RA assistantships there are many fellowships available to graduate students.

**Application procedures.** Prospective graduate students will find UNM application materials and ECE required materials online at [www.ece.unm.edu/apply/applygrad.htm](http://www.ece.unm.edu/apply/applygrad.htm). The online applications are required for both UNM and ECE. Please note that incomplete applications will not be processed by OGS or by OIA, and therefore will not make it into the ECE department.

• The following materials should be submitted directly to ECE Graduate Office:

1. The GRE Scores,
2. Three letters of recommendation on supplied forms,
3. ECE Addendum, including a statement of intent and an indication of the specialization,

**Application deadlines.** All application materials must be received by the established deadlines for timely consideration. The ECE Department reviews graduate applications twice a year, corresponding to the Fall and Spring semesters.

	Fall Semester	Spring Semester
Applicants requesting financial aid International application	February 15	July 15
Domestic applications without financial aid	February 15 July 15	July 15 November 1

**Course articulation.** A student, whose previous educational background is not in Computer Engineering, Computer Science, or Electrical Engineering, may have to make up certain courses at the undergraduate level. Determination of these courses will be in accordance with the UNM requirement of 12 semester hours of upper division coursework (300 level or higher) in the major field or in cognate areas and will be decided upon by an advisor and approved by the ECE Graduate Office at the time of admission. If any articulated courses at the undergraduate level are identified, the student may fulfill the requirement by taking the prescribed course at UNM, or by taking an equivalent course at another university. Normally, the student is not admitted to the graduate program until all identified articulated courses are completed with a B grade or better.

**Exceptions.** For students wishing to enter the graduate program who have fulfilled all other admission requirements, but whose GPA is slightly less than 3.0 for M.S. degree or 3.5 for Ph.D. degree, the ECE Graduate Office may recommend the student completing further requirements, which usually consist of a list of 1 to 4 undergraduate courses that are important to the student's proposed graduate work and in which the student received a low grade in his/her undergraduate program. Upon successful completion of these courses (i.e. receiving at least a grade point average of 3.0 for M.S. or 3.5 for Ph.D.), the student will be placed in regular status in the M.S. or Ph.D. program.

Students who are admitted on probation, with certain course requirements, will be given a limited time (no more than 2 semesters) to complete those courses. The objective is to ensure that these courses are expeditiously completed and that they are taken before other courses that may have them as a prerequisite. If the time limit is not met, the student may be dis-enrolled.

**Non-degree courses.** Domestic students may enroll as non-degree status before admission (this option is unavailable for International students). A student in non-degree status who desires to receive graduate credit for an approved 400-level course must obtain signatures from the course instructor and the Office of Graduate Studies on a Graduate Credit Authorization card. Moreover, only 9 credits are acceptable for transfer from non-degree to degree status.



## GENERAL INFORMATION

**Advisement hold.** Each ECE graduate student must meet with her/his advisor on a regular basis, since this is an important part of the educational process. Therefore, each student will have a HOLD placed on her/his registration. Students must obtain academic advisement each semester before the hold is removed. After advisement, the advisor will sign the advisement form so the hold can be removed.

**Guidelines for courses outside ECE.** All courses taken for the M.S. and Ph.D. degrees in ECE must be approved by both the ECE department, and the Office of Graduate Studies. Before selecting any course at the 400-level, check to see that graduate credit is granted by the department.

Any elective courses taken outside the department for the satisfaction of degree requirements, must be of a technical nature. Courses from the following departments are usually acceptable: Computer Science, Mathematics, Physics, or another department in the School of Engineering. Some courses from the Anderson School of Management are acceptable; however, approval should be sought from the Director of Graduate Program before registering for the course. If the course is not from one of these departments or the course might be questionable, you should first obtain the approval of the Director of Graduate Program

**ECE 590 Seminar.** All M.S. students are required to complete one credit hour of ECE 590 Seminar, and all Ph.D. students are required to complete two credit hours of ECE 590. The grading will be CR/NC based and the credits will not apply toward the required number of degree hours in the program.

**ECE 551/651 Problems courses.** The ECE Department has a policy that requires that each student taking ECE 551 or ECE 651 Problems course submit a final report for the student's record. A copy of the report should be sent to the Graduate Office for insertion into the student's file. This requirement will be checked once the student submits the Application for Candidacy or the Program of Studies, and before the student graduates. Failure to submit the report may result in a delay in graduation.

**Time limit for completion of degree.** All work used to meet degree requirements for an M.S. degree, including transfer credit, must be completed within a seven-year period immediately preceding the granting of the degree. Course work older than seven years cannot be used to meet requirements for the master's degree. Note that international students on student Visa must make progress towards their degree, and are therefore expected to graduate within 2 years from starting their M.S. studies.

**Notification of Intent to Graduate.** A student must inform the ECE Graduate Office, in writing, of the Intent to Graduate no later than 11:00am on the last day of the semester immediately preceding the semester of graduation. Degrees are awarded three times during the year, while commencement exercises are only held in May and December. Graduation is dependent upon the completion of all degree requirements for graduation by November 15 for Fall, April 15 for Spring, or July 15 for Summer. If a student does not complete all degree requirements for graduation in a particular semester, the student must submit a new Intent to Graduate form for graduation in a subsequent semester. Only students who have completed all degree requirements may participate in commencement exercises.

**Graduating GPA requirements.** A student may not graduate if his/her program of study includes more than 6 hours of coursework graded C, C+, or CR (ECE590 is excluded from this limitation). A student's cumulative GPA cannot be below 3.0. In addition, the GPA for courses presented in his/her program of studies cannot be below 3.0.



## RESEARCH EMPHASES AND CORE COURSES

A graduate student in ECE department is required to choose a research emphasis. Each emphasis is associated with three core courses, which are required for students to take. Students are requested to identify his/her choice of emphases in the application to ECE department. During the initial stage of the program study, a student may reselect his/her research emphases. Any switching of research emphases after one year from the enrollment either as a MS student or as a PhD student is not encouraged. Table 1 lists all major core courses for different emphases in ECE Department.

Table 1: Emphases and Core

	Emphases	Major Core Courses
Computer Engineering	Computer Architecture	ECE537 Foundations of Computing (Fall) ECE538 Advanced Computer Architecture (Fall) ECE520 VLSI Design (Spring)
	Computer Graphics & Vision	ECE537 Foundations of Computing (Fall) ECE516 Computer Vision (Spring) ECE512 Advanced Image Synthesis (Fall)
	Computer Networks & Systems	ECE537 Foundations of Computing (Fall) ECE536 Computer Systems Software (Spring) ECE540 Advanced Networking Topics (Fall)
	Computational Intelligence	ECE537 Foundations of Computing (Fall) ECE517 Pattern Recognition (Spring) ECE549 Information Theory & Coding (Fall)
Electrical Engineering	Image Processing	ECE537 Foundations of Computing (Fall) ECE533 Digital Image Processing (Spring) ECE539 Digital Signal Processing (Spring)
	Systems & Controls	ECE500 Theory of Linear Systems (Fall) ECE541 Probability Theory & Stochastic Processes (Fall) ECE546 Multivariable Control Theory (Spring)
	Signal Processing	ECE500 Theory of Linear Systems (Fall) ECE541 Probability Theory & Stochastic Processes (Fall) ECE539 Digital Signal Processing (Spring)
	Image Processing	ECE533 Digital Image Processing (Spring) ECE541 Probability Theory & Stochastic Processes (Fall) ECE539 Digital Signal Processing (Spring)
	Communications	ECE500 Theory of Linear Systems (Fall) ECE541 Probability Theory & Stochastic Processes (Fall) ECE542 Digital Communications Theory (Spring)
	Optoelectronics	ECE561 Electrodynamics (Spring) ECE570 Optoelectronic Semiconductor Materials & Devices ECE572 Physics of Semiconductors (Spring)
	Applied Electromagnetics	ECE561 Electrodynamics (Spring) ECE560 Intro. to Microwave Engineering (Fall) ECE534 Plasma Physics I (Fall, the Plasma Science track) or ECE569 Antennas for Wireless Communications (Spring, the Antennas track)
	Microelectronics	ECE520 VLSI Design (Spring) ECE523 Analog Electronics (Fall) ECE576 Modern VLSI Devices (Spring)
	Power and Energy	ECE582 Electric Drives and Transformers (Fall) ECE584 Photovoltaics (Spring) ECE588 Future Energy Systems (Spring)
	Bioengineering	Bioengineering with CompE
Bioengineering with Systems & Controls		ECE510 Medical Imaging (Fall) ECE533 Digital Image Processing (Spring) ECE500 Theory of Linear Systems (Fall)
Bioengineering with Signal Processing		ECE510 Medical Imaging (Fall) ECE533 Digital Image Processing (Spring) ECE539 Digital Signal Processing (Spring)
Bioengineering with AppliedEM		ECE510 Medical Imaging (Fall) ECE533 Digital Image Processing (Spring) ECE561 Electrodynamics (Spring)

Courses.



## M.S. Program

### Degree Requirement

The M.S. (in Electrical Engineering or Computer Engineering) program is offered under Plan I (Thesis) and Plan II (Technical report and its presentation) as shown in Table 2, plan I requires 24 hours of coursework and 6 hours of Thesis, while Plan II requires 33 hours of coursework. Both plans require one-credit ECE590 and at least 12 hours of ECE core courses, among which 9 hours are required by the emphasis as 3 major core courses, and the other 3 hours are selected from another emphasis as a minor core course. Note that in addition to the three major core courses some emphases require another course as listed in Section 4. The remaining courses are free electives.

Table 2: Master Degree Requirements.

#### Plan I

1. A minimum of 24 hours of course work (not including ECE590), with a minimum of 15 hours in ECE.
2. A maximum of 6 hours of 400-level ECE courses, and no more than 6 hours of 400-level Non-ECE (as long as approved for graduate credit).
3. A maximum of 3 hours in “problems” courses (ECE551 or ECE651).
4. At least 50% of required course work must be completed after admission to the graduate program, unless further limited by the graduate program.
5. One credit hour of graduate seminar course (ECE590).
6. Six hours of Thesis (ECE599) credit and completion of a master’s thesis.

#### Plan II

1. A minimum of 33 hours of course work (not including ECE590), with a minimum of 18 hours in ECE.
2. A maximum of 6 hours of 400-level ECE courses, and no more than 6 hours of 400-level Non-ECE (as long as approved for graduate credit).
3. A maximum of 6 hours in “problems” courses (ECE551 or ECE651).
4. At least 50% of required course work must be completed after admission to the graduate program, unless further limited by the graduate program.
5. One credit hour of graduate seminar course (ECE590).
6. Pass the M. S. exit exam (Technical report and its presentation).

### Program of Studies

An M.S. student should file a Program of Studies with the Office of Graduate Studies as soon as she/he has planned a program of studies for the degree in consultation with the major advisor.

The Program of Studies must be approved by the Graduate Office and submitted to the Office of Graduate Studies by the following deadlines: October 1 for Spring, March 1 for Summer and July 1 for Fall. Each Program of Studies must be approved by the Dean of Graduate Studies before a student may take the master’s examination.

In the Program of Studies, no more than half the graduate program's minimum required course work hours, exclusive of Thesis, may be taken with a single faculty member. After a Program of Studies has been filed, a student may switch between Plans I and II only with the approval of the ECE graduate office and the Dean of Graduate Studies and must submit a new Program of Studies;

**Transfer of graduate credit.** The applied or transfer of graduate credit to a program of studies is never automatic. With the approval of the ECE graduate office, a maximum of 50% of the course work requirements for the M.S. degree may consist of a combination of applied/transfer credits, assuming they meet the restrictions specified in the UNM catalog. Note that course work that has been counted toward a previous degree may not be counted again in the program of studies for a master's degree. In addition, applied/transfer credit must meet the following criteria:

1. The course work was taken at an accredited institution and is approved by both the ECE Graduate Office and the Dean of Graduate Studies to be appropriate to the student's degree program;
2. The course work is graded at least a B and was completed within the required seven-year period; and
3. The courses are submitted to the ECE graduate office for approval. This usually requires a course syllabus and a consultation of the Director of Graduate Program with the appropriate faculty members.

#### **Master's Examination**

All M.S. students are required to pass a master's exam. The student will have at most two opportunities to pass the master's examination.

- **Thesis defense:** Plan I students will be examined over the thesis material by the thesis committee.
- **Technical report-based MS Exit Examination:** Plan II students will be examined in an emphasis area based on a technical report plus its presentation to the examination committee.

**Advisor and Examination committee.** Each student will be assigned an advisor on admission into the department. Upon submission of POS, a student must choose an academic advisor. The student, in cooperation with the academic advisor, will form an examination committee that includes three members, two of whom must be UNM faculty holding a tenure-track appointment. Moreover, the examination committee must be chaired by an ECE tenure-track faculty member who works in the emphasis area of the student as listed by the ECE Graduate Office (e.g., systems & controls, optoelectronics, etc.).

**Technical report-based MS Plan-II Exit Examination.** The exam consists of two components: i) an original technical report on a topic approved by the examination committee; and ii) an oral defense of the technical report in front of the examination committee. The student must work with his/her examination committee to select a topic for the report no later than the submission of the student's POS. Students may not re-use reports produced for any other UNM course (including special-topics courses) as a technical report for the MS Plan-II Exit Exam. At least three weeks before the graduation deadline, the student must sign up for the MS Plan-II Exit Exam with the ECE Graduate office. The report should be typed, using 12-point font, single space with a 1-inch margin on all sides. Its length is expected to be between 12 and 15 pages excluding references. Students are reminded that verbatim copying of text and illustrations without proper citation of the source, paraphrasing and other forms of plagiarism are unacceptable and will result in failing the exam. At least two weeks before the exam, the Plan-II MS Exam announcement form must be filled and the technical report must be submitted to the committee. The results of the MS Plan-II Exit Exam (pass or fail) must be reported to the OGS by November 15 for fall graduation and April 15 for spring graduation. If a student fails the exam, she/he may re-take the exam within one calendar year from the date of the first exam. The Plan-II MS exam may be taken only twice. A second failure will result in the student's termination from the program.



**Announcement of master's examination.** At least two weeks before the final examination is held, and no later than November 1 for Fall, April 1 for Spring or July 1 for summer, the Graduate Office must notify the OGS of its schedule date by submitting the appropriate announcement form.

## Appendix 2

MAT  
Master of Engineering in Automation and Control  
(Edition 2012)

<b>First Semester</b>				
<b>Code</b>		<b>C</b>	<b>L</b>	<b>U</b>
<a href="#">GI5000</a>	Research and Innovation Methods	1.5	0	6
<a href="#">MR4000</a>	Process Identification	3	0	12
<a href="#">MR4006</a>	Advanced Digital Control	3	0	12
<a href="#">TE4001</a>	Instrumentation	3	0	12
		10.5	0	42

<b>Second Semester</b>				
<b>Code</b>		<b>C</b>	<b>L</b>	<b>U</b>
<a href="#">MR4007</a>	Laboratory of Advanced Digital Control	0	3	6
<a href="#">MR4008</a>	Laboratory of Logic Control and Industrial Networks	0	3	6
<a href="#">MR5000</a>	Mechatronics Systems Design	3	0	12
<a href="#">MR5035</a>	Selected Topics in Control	3	0	12
		6	6	36

<b>Third Semester</b>				
<b>Code</b>		<b>C</b>	<b>L</b>	<b>U</b>
<a href="#">MR5001</a>	Advanced Project in Mechatronics	3	0	12
<a href="#">OP4000</a>	General Elective	1.5	0	6
<a href="#">OP5042</a>	Elective I	3	0	12
<a href="#">OP5043</a>	Elective II	3	0	12
		10.5	0	42

Academic credits



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<b>C</b>	Number of class hours per week
<b>L</b>	Number of laboratory hours or activities per week
<b>U</b>	Study hours that must be dedicated to the course (class hours included)



## Appendix 3

### Degree Plan I Distribution Table

#### MS program

<b>Dual Master Degree Program UNM-ITESM</b>				
<b>UNM-Electrical and Computer Engineering (ECE-UNM)</b>				
<b>ITESM - School of Engineering and Information Technologies (EITI)</b>				
University of New Mexico ECE-UNM		Tecnológico de Monterrey EITI-ITESM		Comments
Courses	Credit Hours	Courses	Course Units	
4	12			3 credit hour courses
1	1			Graduate Seminar
2	6			Thesis course
		5	60	12 units per course
		2	24	Thesis courses
		1	6	Leadership course
		1	6	Research methods
7	19	9	96	TOTALS

### Degree Plan II Distribution Table

#### MS program

<b>Dual Master Degree Program UNM-ITESM-MTY</b>				
<b>UNM-Electrical and Computer Engineering (ECE-UNM)</b>				
<b>ITESM-MTY- School of Engineering and Information Technologies (EITI)</b>				
University of New Mexico ECE-UNM		Tecnológico de Monterrey EITI-ITESM		Comments
Courses	Credit Hours	Courses	Course Units	
5	15			3 credit hour courses
1	1			Graduate Seminar
2	6			Project courses
		5	60	12 units per course
		2	24	Project courses
		1	6	Leadership course
		1	6	Research methods
8	22	9	96	TOTALS

## Appendix 4

### Plan I: Suggested course schedule to be followed by students

Dual Master Degree Program UNM-ITESM-MTY TENTATIVE DEGREE PLAN WITH THESIS					
SEMESTER	COURSE	CREDITS AWARDED OR ACCREDITED BY UNM TOWARD THE UNM DEGREE	CREDITS AWARDED OR ACCREDITED BY ITESM TOWARD THE ITESM DEGREE	HOST INSTITUTION	COMMENTS
1	MR4000 Process Identification	3	12	ITESM	Thesis advisor must be selected from ITESM and from UNM during this semester
	MR4006 Advanced Digital Control	3	12		
	TE4001 Instrumentation	3	12		
	GT4000 Research and Innovation Methods	None	6		
	GI4000 Leadership for Innovation OR DS4000 Leadership for Sustainable Development	None	6		
	MR5000 Mechatronics Systems Design	3	12		
2	MR4007 Laboratory of Advanced Digital Control AND MR4008 Laboratory of Logic Control and Industrial Networks	3	12	ITESM (UNM courses will be taken through distance learning at ITESM facilities)	Courses to be advised by both thesis supervisors
	UNM Graduate Seminar	1	None		
	UNM Course ECE 1	3	12		
	UNM Course ECE 2	3	12		
3	UNM Course ECE-3	3	None	UNM (It is recommended but also optional to live during this semester in Albuquerque. As an alternative, the double degree student could be living in Monterrey while taking UNM courses through distance learning at ITESM facilities)	Thesis research initiated at UNM  The grade of the course "UNM Thesis ECE-599" and the grade of the course "ITESM Thesis Project I" need to be equivalent
	UNM Thesis ECE-599	3	None		
	ITESM Thesis Project I (The ITESM Professor will act as a co-advisor of the student in the course "UNM Thesis ECE-599" and will assign the grade to the course "ITESM Thesis Project I" jointly with the UNM Professor of the course "UNM Thesis ECE-599".	None	12		
4	ITESM Thesis Project II	None	12	ITESM (UNM courses will be taken through distance learning at ITESM facilities)	Thesis defense must be coordinated by both advisors  The grade of the course "UNM Thesis ECE-599" and the grade of the course "ITESM Thesis Project II" need to be equivalent
	UNM Thesis ECE-599 (The UNM Professor will act as a co-advisor of the student in the course "ITESM Thesis Project II" and will assign the grade to the course "UNM Thesis ECE-599" jointly with the ITESM Professor of the course "ITESM Thesis Project II")	3	None		
	UNM Course ECE-4	3	None		
TOTALS		31	120		



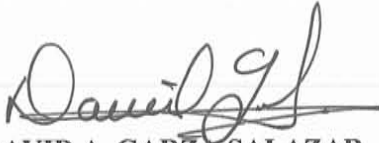
### Plan II: Suggested course schedule to be followed by students

Dual Master Degree Program UNM-ITESM TENTATIVE DEGREE PLAN BY TECHNICAL REPORT & EXIT EXAMINATION					
SEMESTER	COURSE	CREDITS AWARDED OR ACCREDITED BY UNM TOWARD THE UNM DEGREE	CREDITS AWARDED OR ACCREDITED BY ITESM TOWARD THE ITESM DEGREE	HOST INSTITUTION	COMMENTS
1	MR4000 Process Identification	3	12	ITESM	Project advisor must be selected from ITESM and from UNM during this semester
	MR4006 Advanced Digital Control	3	12		
	TE4001 Instrumentation	3	12		
	GT4000 Research and Innovation Methods	None	6		
	GI4000 Leadership for Innovation OR DS4000 Leadership for Sustainable Development	None	6		
	MR5000 Mechatronics Systems Design	3	12		
2	MR4007 Laboratory of Advanced Digital Control AND MR4008 Laboratory of Logic Control and Industrial Networks	3	12	ITESM (UNM courses will be taken through distance learning at ITESM facilities)	Courses to be advised by both thesis supervisors
	UNM Graduate Seminar	1	None		
	UNM Course ECE 1	3	12		
	UNM Course ECE 2	3	12		
3	UNM Course ECE-3	3	12	UNM (It is recommended but also optional to live during this semester in Albuquerque. As an alternative, the double degree student could be living in Monterrey while taking UNM courses through distance learning at ITESM facilities)	Project research initiated at UNM
	UNM Course ECE-4	3	None		
	MR5035 Selected Topics in Control	None	12		
4	MR5001 Advanced Project in Mechatronics	None	12	ITESM (UNM courses will be taken through distance learning at ITESM facilities)	Technical report and its examination must be coordinated by both advisors
	UNM Problem ECE-551	3	None		
	UNM Course ECE-5	3	None		
<b>TOTALS</b>		<b>34</b>	<b>120</b>		

In accordance, we sign four (4) copies of this Agreement, all contents being identical and equally valid.  
Both parties shall retain two (2) copies of each.

**INSTITUTO TECNOLÓGICO Y DE  
ESTUDIOS SUPERIORES DE MONTERREY**

**UNIVERSITY OF NEW MEXICO**

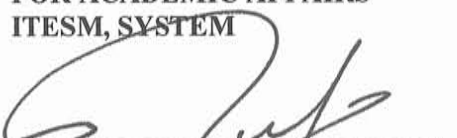


**DR. DAVID A. GARZA SALAZAR  
PRESIDENT AND LEGAL REPRESENTATIVE  
ITESM - RECTORY OF  
MONTERREY REGION**

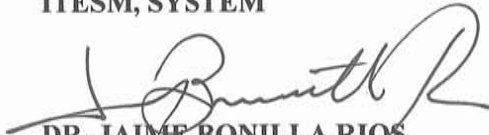
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ITESM, SYSTEM**



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ITESM, SYSTEM**



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DEAN OF THE SCHOOL OF ENGINEERING  
AND INFORMATION TECHNOLOGIES,  
ITESM - MONTERREY CAMPUS**



Dirección de  
Cooperación  
Internacional



**DR. ROBERT G. FRANK  
PRESIDENT**

Date: Dec. 20, 2012



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**PROF. LUKE LESTER  
ECE DEPARTMENT CHAIR**

Linney Wix 2/7/2013

**DR. LINNEY WIX  
CHAIR OF FACULTY SENATE  
GRADUATE COMMITTEE**



**DR. RAMIRO JORDAN  
ECE ASSOCIATE CHAIR,  
UNDERGRADUATE PROGRAMS  
ASSOCIATE DEAN OF ENGINEERING,  
INTERNATIONAL PROGRAMS**