



AUTONOMOUS UNIVERSITY OF AGUASCALIENTES
DOCTORATE IN APPLIED SCIENCES AND TECHNOLOGY
PROGRAM¹

I. PROGRAM IDENTIFICATION

Responsible academic centers:	Center for Basic Sciences and Center for Engineering Sciences
Responsible academic departments:	Computer Science, Statistics, Mathematics and Physics, Electronic Systems, Information Systems, Automotive Engineering, Biomedical Engineering, Robotic Engineering
Modality:	On-campus
Level:	Doctorate
Program orientation:	Applied Research
Program engagement:	Full time
Duration:	Four years (eight semesters)
Academic credits:	200
Kind of academic program:	Institutional program
Approval date by HUC ² :	June 5, 2017

II. QUALITY CERTIFICATIONS

National:	National Postgraduate Quality Program (PNPC) Level: Recently created
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III. PROGRAM OBJECTIVES

To train students in the areas of applied sciences and technology with a solid base in research to generate knowledge, analyze, propose, apply, and innovate solutions to specific problems and to direct and carry out scientific research projects (basic or applied) and/or technological development along with the development of new methods and technological tools required by areas that demonstrate professional service and links to different sectors that make up society.

IV. LINES OF RESEARCH

1. Electronics
2. Artificial Intelligence and Statistical Modeling
3. Applied Mathematics
4. Computational Systems
5. Software Engineering Technologies and Learning Objects

V. APPLICANT AND GRADUATE PROFILES

APPLICANTS	GRADUATES
<p><i>Knowledge in:</i></p> <ol style="list-style-type: none"> 1. The basics of the generation and application of knowledge; this is evaluated by a knowledge exam (corresponding to each line of research). 2. The scientific method to generate and apply knowledge; this is evaluated using the Vitae Curriculum (CV). 3. The basics in information and communication technologies; this is evaluated by CV and knowledge examination. 	<p><i>Knowledge in:</i></p> <ol style="list-style-type: none"> 1. Expertise in the chosen area of research. 2. Techniques and their foundation for simulation and optimization with support or development of specialized software and in theories related to algorithms. 3. Theoretical frameworks and experimental methods that develop a broad stochastic knowledge base. 4. A mastery of techniques, methodologies, and tools for the development of theoretical models and technological projects. 5. A mastery of research methodologies as a tool for publishing diverse types of works.
<p><i>Skills</i></p> <ol style="list-style-type: none"> 1. To identify and raise research problems; this is evaluated by a written essay. 2. To form abstract problems and propose solutions; this is evaluated by a written essay. 3. To communicate effectively in writing and speaking; this is evaluated by a written essay and oral interview. 4. To apply mathematical logic and/or techniques for analyzing and solving problems; this is evaluated by a knowledge exam. 5. To use information and communication technologies properly; this is evaluated through an interview and knowledge examination. 6. To meet the minimum English proficiency level (at least 450 TOEFL score or equivalent). 	<p><i>Skills:</i></p> <ol style="list-style-type: none"> 1. Analytical capacity achieving a balance between the ability to solve technological problems and that of developing basic research to participate in the generation of cross-border knowledge and its application in the chosen area of expertise. 2. Ability to join and participate professionally in the public and private sectors. 3. Contribute to the enrichment of science in the chosen area of expertise. 4. Ability to participate in multidisciplinary teams focused on research and the development of applications for creative problem solving typical within a chosen discipline. 5. To communicate effectively in writing and speaking in Spanish or English, communicating research results in different academic forums. 6. Ability to apply specialized techniques in software development and management of scientific analysis tools suitable to a chosen area of expertise. 7. Ability to develop and manage research projects and/or technological developments.

<p><i>Attitudes:</i></p> <ol style="list-style-type: none"> 1. To learn and develop skills on his/her own; evaluated by a written essay and oral interview. 2. Willingness to work in interdisciplinary teams (interview). 3. Willingness to face new challenges with a critical attitude; this is evaluated through an interview and a knowledge examination. 	<p><i>Attitudes:</i></p> <ol style="list-style-type: none"> 1. A self-starter 2. Critical 3. Reflective 4. Analytical 5. Proactive 6. Collaborative/cooperative in teams 7. A leader 8. Committed 9. Shows Initiative 10. Creative
<p><i>Values:</i></p> <ol style="list-style-type: none"> 1. Ethical, evaluated through an interview. 2. Socially responsible, assessed through an interview. 3. Disciplined, evaluated through an interview. 4. Punctual, assessed by means of of an interview. 	<p><i>Values:</i></p> <ol style="list-style-type: none"> 1. Humanistic 2. Autonomous 3. Socially Responsible 4. Ethical 5. Conscientious 6. Equitable 7. Pluralistic 8. Respectful

VI. ADMISSION AND SELECTION REQUIREMENTS

1. To pass the EXANI III exam with a minimum average of 1000 points.
2. To hand academic and professional resume.
3. Minimum average of eight (8.0) or equivalent.
4. Master's degree in a discipline related to the lines of research of interest.
5. To obtain a minimum of 450 points in the TOEFL.
6. To present a research topic related to one of the lines of research of the doctorate during an interview with the selection committee. (Requires a previous interview with a professor from the doctoral program faculty. This interview does not ensure the acceptance into the doctorate program or that the visited professor would be the tutor).
7. To write a five-page essay on a chosen topic by the applicant and a topic that aligns with the program's line of research. (Requires a previous interview with a professor from the doctoral degree program faculty).
8. To pay required fees and administrative provisions of the institution.
9. Provisions not provided for to enter into the program will be resolved by the Academic Council.

VII. CURRICULAR ORGANIZATION AND STRUCTURE OF THE PROGRAM

Curriculum organization

FORMATION AXIS	DESCRIPTION
Electives	Courses that delve into topics or content typical of the postgraduate degree, since the objective is for students to develop and/or master their professional learning according to the LGAC, which are defined by the operating strategies. The electives are scheduled by the Academic Council and are assigned five hours (2 TH, 3PH) per week.
Research	A series of research seminars that allow the student to develop a doctoral dissertation with advice from a tutoring committee.
Complementary activities	Learning activities that include the following: conferences, courses, workshops or research stays, all of which are consistent with the training and development of a doctoral dissertation through the assistance of a tutor.

Curricular Map

Formation Axes	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester		6th Semester	7th Semester	8th Semester
Research 179 Credits	Research Seminar I TH: 0, PH:12 Credits: 12	Research Seminar II TH: 0, PH:11 Credits: 11	Research Seminar III TH: 0, PH: 11 Credits: 11	Research Seminar IV TH: 0, PH:12 Credits: 12	Research Seminar V TH: 0, PH:12 Credits: 12	Candidacy Exam	Research Seminar VI TH: 0, PH: 12 Credits: 12	Research Seminar VII TH: 0, PH: 12 Credits: 12	Research Seminar VIII TH: 0, PH: 12 Credits: 12
Complementary activities 18 Credits	Academic activities may be carried out from the first to the eighth semesters.								
Electives 18 Credits	Students will be able to take electives from first to fifth semester.								

VIII. PERMANENCE REQUIREMENTS

1. To comply with the current policies of the institution.
2. To pay the fees arranged by the institution.
3. To pass a PhD candidacy exam at the end of the fifth semester of the doctoral degree program.
4. To accomplish the English language requirement of 450 points TOEFL or achieve 450 points TOEFL within one year of entry into the doctoral degree program.

IX. GRADIATION REQUIREMENTS

1. To pass all subjects, seminars, and complementary activities indicated in the curriculum.
2. To achieve a minimum overall grade point average of eight (8.0).
3. To present and defend work in a public examination and pass in a timely fashion according to the Manual of Guidelines and postgraduate procedures for the elaboration of a doctoral dissertation or practicum and in accordance with the General Teaching Regulations.
4. The student must submit and have accepted two indexed articles, and moreover, have submitted at least one article to a magazine in any of the recognized indices per CONACyT (JCR, SCI, etc.), totaling a minimum of three articles derived from doctoral research.
5. The student must have completed his undergraduate thesis, the content of which must constitute an original contribution to the field of the line of research to which the student belongs.

X. CORE FACULTY

Grade	Name	Institution where the degree was obtained	S.N.I.	Line of Research
Ph.D.	Ivonne Bazán Trujillo	CINVESTAV-IPN / Higher Council for Scientific Research, Madrid, Spain	I	Electronics
Ph.D.	Alejandro Cervantes Herrera	CINVESTAV-IPN Guadalajara Unit	C	Electronics
Ph.D.	César Alejandro Chavez Olivares	CIEP-UASLP, Mexico.	C	Electronics
Ph.D.	Mariana Alfaro Gómez	Research Center in Optics	C	Electronics
Ph.D.	Luis Alejandro Flores Oropeza	Polytechnic University of Madrid	No	Electronics
Ph.D.	Omar Gutiérrez Navarro	UASLP - Faculty of SLP Sciences, Mexico.	I	Electronics
Ph.D.	Edgar López Delgadillo	Institute of Astrophysics, Optics and Electronics	C	Electronics
Ph.D.	Alejandro Román Loera	New Mexico State University	No	Electronics
Ph.D.	Eduardo Rubio Cerda	UNAM	I	Electronics
Ph.D.	Netzahualcóyotl Castañeda Leyva	CIMAT	No	Artificial Intelligence and Statistical Modeling
Ph.D.	José Antonio Guerrero Díaz de León	CIMAT	I	Artificial Intelligence and Statistical Modeling

Ph.D.	Angel Eduardo Muñoz Zavala	CIMAT	I	Artificial Intelligence and Statistical Modeling
Ph.D.	Alejandro Padilla Díaz	Mexican Institute for Pedagogical Studies	No	Artificial Intelligence and Statistical Modeling
Ph.D.	Eunice Esther Ponce de León Sentí	Institute of Cybernetics, Mathematics and Physics	No	Artificial Intelligence and Statistical Modeling
Ph.D.	Julio César Ponce Gallegos	UAA	C	Artificial Intelligence and Statistical Modeling
Ph.D.	Silvia Rodríguez Narciso	CIMAT	No	Artificial Intelligence and Statistical Modeling
Ph.D.	Rogelio Salinas Gutierrez	CIMAT	C	Artificial Intelligence and Statistical Modeling
Ph.D.	Hermilo Sánchez Cruz	UNAM	I	Artificial Intelligence and Statistical Modeling
Ph.D.	Aurora Torres Soto	UAA	No	Artificial Intelligence and Statistical Modeling
Ph.D.	María Dolores Torres Soto	UAA	No	Artificial Intelligence and Statistical Modeling
Ph.D.	Jesús Adrián Cerda Rodríguez	Michoacán University of San Nicolás de Hidalgo	No	Applied Mathematics
Ph.D.	Sandra Elizabeth Germán Delgadillo	CIMAT	C	Applied Mathematics
Ph.D.	Arturo Enrique Giles Flores	Pierre and Marie Curie University, Paris VI	C	Applied Mathematics
Ph.D.	Roberto Alejandro Kú Carrillo	CIMAT	I	Applied Mathematics
Ph.D.	Jorge Eduardo Macías Díaz	Tulane University	II	Applied Mathematics
Ph.D.	Julio César Macias Ponce	CIMAT	C	Applied Mathematics
Ph.D.	Manuel Ramírez Aranda	CIMAT	C	Applied Mathematics
Ph.D.	José Villa Morales	CIMAT	II	Applied Mathematics
Ph.D.	Carlos Argelio Arévalo Mercado	UAA	No	Computational Systems
Ph.D.	Luis Eduardo Bautista Villalpando	University of Quebec at Montreal	No	Computational Systems

Ph.D.	Arturo Elías Ramirez	UAA	No	Computational Systems
Ph.D.	Juan Manuel Gómez Reynoso	Claremont Graduate University	No	Computational Systems
Ph.D.	Estela Lizbeth Muñoz Andrade	UAA	No	Computational Systems
Ph.D.	Francisco Javier Álvarez Rodríguez	UNAM	I	Software Engineering Technologies and Learning Objects
Ph.D.	Juan Pedro Cardona Salas	Mexican Institute for Pedagogical Studies	No	Software Engineering Technologies and Learning Objects
Ph.D.	José Manuel Mora Tavárez	UNAM	I	Software Engineering Technologies and Learning Objects
Ph.D. and Postdoctoral	Jaime Muñoz Arteaga	UT1	I	Software Engineering Technologies and Learning Objects
Ph.D.	César Eduardo Velázquez Amador	UAA		Software Engineering Technologies and Learning Objects

XI. FLEXIBILITY OF THE PROGRAM

The core faculty of the doctorate degree program has a broad relationship with doctors from other national and international institutions, evidenced by the list of contributors submitted for graduate school. This will encourage the participation of external professors in the doctoral dissertation committees, promoting agreements with other institutions that allow the realization of stays by students and doctoral tutors.

The student who takes advantage of a study exchange and takes a subject related to a doctoral dissertation from another graduate program within or outside the institution, will be recognized a certain number of credits defined by the Academic Council.