

AUTONOMOUS UNIVERSITY OF SAN LUIS POTOSI

FACULTY OF ENGINEERING

INSTITUTIONAL DEVELOPMENT PLAN 2010 -2023

MECHANICAL ENGINEER



MECHANICAL ENGINEER

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INTRODUCTION

In recent years, the Mechanical Engineering program has shown a growing trend towards quality and excellence in all its spaces: Study plans, Academic Plant, Students, The Teaching-Learning process, Infrastructure, Linkage and Research. In such a way that today the National Evaluation Center (CENEVAL), an agency dependent on the Secretary of Public Education, catalogs the Faculty of Engineering (including the Mechanical Engineering career), as one of the best in the country.

Due to the continuous effort of the members of the Faculty, these achievements have allowed the Accreditation Council for Engineering Teaching Careers (CACEI) to accredit 11 of the programs in the Faculty of Engineering, one of them being the Mechanical engineer. That is why it has been of the utmost importance to prepare an Institutional Development Plan within the Faculty and the program to be carried out in the next thirteen years.

The Institutional Development Plan 2010-2023 of the Mechanical Engineering career (PIDE IM 2010-2023) was carried out under the guidance of the actions, strategies and continuous improvement sought by the Institutional Development Plan of the Faculty of Engineering 2010-2023 (REQUESTS 2010-2023).

The PIDE of the Faculty of engineering is the result of the analysis of the current situation of the faculty, highlighting its strengths, weaknesses, lags; as well as its goals, actions and strategies that it aims to



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carry out for the next decade. The PIDE 2010-2023 was carried out with the participation of directors, teaching staff, administrative and administration staff, students, graduates and employers; capturing in writing the ideas that the University community wants in the future for its faculty.

The objective of having an Institutional Development Plan for the Mechanical Engineer career is to have an instrument for the evaluation, planning, control, and feedback of the actions that are desired to be achieved within the career, fulfilling the mission as Higher Education Institution (SIE).

Both the Mechanical Engineering program and the faculty know the importance of continuing to participate regularly in the Comprehensive Programs for Institutional Strengthening (PIFI) promoted by the Undersecretary of Higher Education of the Ministry of Public Education. However, the scope of these documents goes beyond the scope of the PIFI, since both the Faculty and the program itself seek to define other objectives and particular interests of the institution not considered in the latter, which provide distinctive characteristics and a own identity to give added value to its graduates and to the services that both these and the institution itself provide to society.





FACULTY OF ENGIENNERING OF

AUTONOMUS UNIVERITY OF SAN LUIS POTOSI

DEFINITION OF THE FACULTY OF ENGINEERING:

A public institution of higher education dedicated to teaching and research in Engineering.

MISION:

The comprehensive training of competitive and innovative engineering professionals, as well as cutting-edge technological research and development, for the benefit of society.

VISION:

To be an academic space of excellence, flexible, dynamic and multidisciplinary; internationally recognized for its scientific, technological and educational innovation; that contributes to the training of engineering professionals, leaders and entrepreneurs, who generate solutions to the challenges that society demands.



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MECHANICAL ENGINNER

DEFINITION OF THE MECHANICAL ENGINEER PROGRAM:

It is the Professional who applies his knowledge and skills to find effective solutions to technical problems related to mechanical systems.

MISION:

The training of Mechanical Engineering professionals of the highest level, capable of integrating themselves into society in a dignified and efficient manner, applying their knowledge and skills to find effective solutions to technical problems of any kind, but who present a solution based on a principal mechanic

VISION:

To be an internationally accredited Mechanical Engineering program recognized for its education, technology, and technological innovation, which contributes to the training of leading professionals and entrepreneurs, who generate solutions to the challenges that society demands.



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MECHANICAL ENGINEER INCOME PROFILE

Emotional profile:

- Attitude of self-improvement and self-confidence
- Character to fight and exercise power of decision
- Know how to work under pressure and in a team
- Persistence, tenacity, and optimism

Intellectual profile:

- Ease and interest in exact and natural sciences
- Be precise and skillful
- Capacity for observation, analysis, and interpretation
- Creativity and imagination



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GRADUATE PROFILE OF THE MECHANICAL ENGINEER

Its preponderant activity is the design, manufacture, assembly, installation, start-up, testing, operation and maintenance of mechanical systems, in companies and productive and service institutions.

It can be employed in the supervision, organization, development, coordination and control of production and quality processes, human, technical, material and financial resource management.

Efficiently manage human, technical, material and financial resources to achieve the objectives of the company or institution where you work.

PROFESSIONAL FIELD OF MECHANICAL ENGINEER

- Productive or service industries.
- Advisory and specialization companies.
- In expert activities.
- Specialized sales advice.
- In teaching and research.
- Project development, design and inspection.



AREAS OF STUDY

Area of Basic Sciences and Mathematics

- Mathematics Branch
- Physics Branch
- Chemistry Branch
- Mechanics Branch
- Manufacturing Materials and Processes Area
- Materials Engineering
- Manufacturing processes
- Computerized numerical control
- Computer-aided engineering
- Mechanical Design Area
- Mechanics (static and dynamic)
- Material mechanics
- Kinematics of the machines
- Machine design
- Design methodology
- Metrology



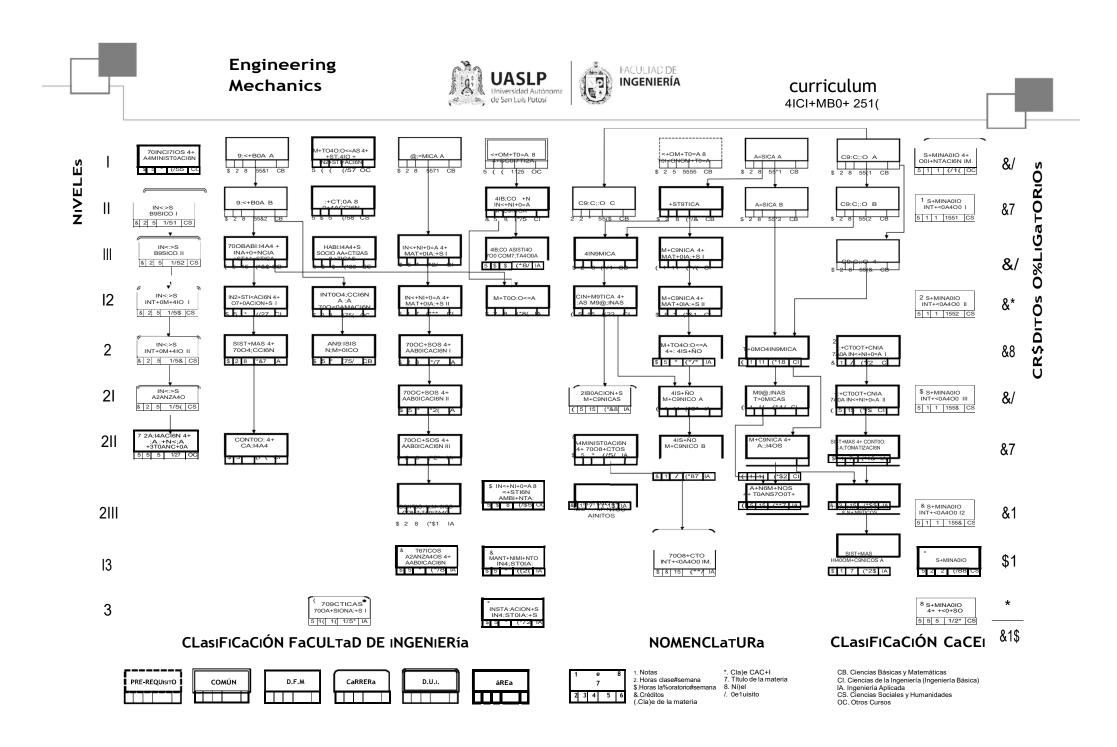
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• Material handling

Thermofluids Area

- Thermodynamics
- Thermal machines and equipment
- Fluid mechanics
- Hydraulic and pneumatic circuits
- Hydromechanical systems
- Area of Social Sciences and Humanities
- Languages
- Sports
- Values and Attitudes
- Diverse Courses





INGENIERÍA **MECÁNIC**a

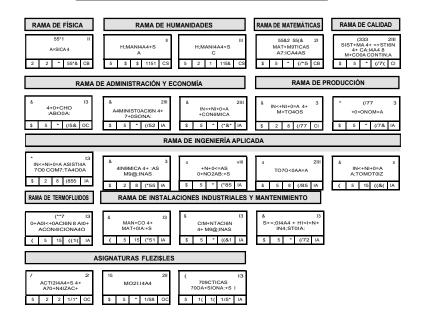




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Materias Optativas'



O%&ETIVO DEL PROGRaMa'

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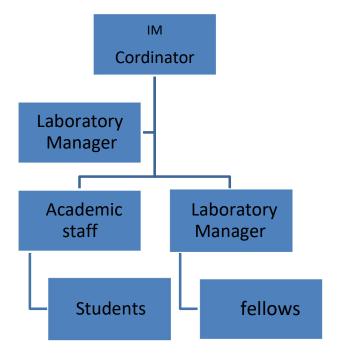
NOTAS ACaD\$MICas'

- 1. +sta asignatura se re1uiere tener apro%ados al menos &(créditos
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- **5.** +sta asignatura se re1uiere tener apro%ados al menos \$1(créditos y no puede cursarse simultáneamente con 7royecto Integrador IM ((**/).
- **6.** +sta asignatura se re1uiere tener apro%ados al menos \$*5 créditos.
- **7.** +ste espacio curricular será acreditado al presentar el eKamen de e)aluación del dominio del idioma inglésG definido por el Consejo Técnico de la Aacultad.
- **8.** +sta asignatura se acredita mediante la presentación del +Kamen <eneral de +greso de :icenciatura (+<+:LIM+CA). +ste eKamen de%e presentarse en su último semestre de su carrera.
- **9**. +ste %lo1ue representa 15 asignaturas de nom%re Acti)idades de Aprendilaje 16 116 116 126 26 216 2116 13 y 36 con cla)e consecuti)aG 1/1* Jasta 1/2(.
- **10.** +I %lo1ue representa 8 asignaturas de nom%re Mo)ilidad \mathbb{G} \mathbb{H} G \mathbb{H} G \mathbb{G} 2 \mathbb{G} 2

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N7ara o%tener la pasantíaG se de%erán apro%ar todos los créditos o%ligatorios y los optati)os necesarios para cu%rir por lo menos &(5 créditos.

ORGANIZATION CHART





CURRENT ENVIRONMENT

In Mexico, young people face the difficult challenge of being included in changing social situations, plagued by restrictions and subject to the urgency of rapid and effective adaptations demanded by the labor market, new forms of socio-economic organization, communication technologies and cultural life in local and global terms.

The public educational field is the epicenter where important transformations were directed, in this sense, recent studies elaborated on the educational situation conclude that the reforms implemented to date have not managed to intimidate the deepest causes of social inequality, the low quality of public service, the weak articulation with labour market trends and expectations, and the socio-cultural context of people; these are just some of the problems faced by young university students.

That is why graduates of the Mechanical Engineer program require comprehensive and multidisciplinary training so that they can compete in the workplace. In addition to developing skills throughout the career that ensures at the end of their studies their insertion into the productive environment of the country.

To keep the program competitive, its educational model is required to be continuously innovating. Another situation that should be taken as a challenge and not as a problem, is the increase in the demand for increasingly prepared students, which implies for the program a continuous challeng. Some of the tools that the Faculty must use and especially the program will be: cutting-edge technologies, better educational models, cutting-edge physical infrastructure, implement a better ethics and environmental culture and finally, but without diminishing its importance, the training of teachers who are facilitators in the teaching-learning process.



STRATEGIC OBJECTIVES

Six strategic objectives of the Mechanical Engineer program are based on the PIDE 2010-2023 of the Faculty of Engineering.

These strategic objectives are:

- 1. STUDENTS
- 2. ACADEMIC STAFF
- 3. EDUCATIONAL OFFER AND CURRICULAR DEVELOPMENT
- 4. LINKING
- 5. SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT
- 6. ORGANIZATIONAL STRUCTURE, REGULATIONS, POLICIES AND PROCEDURES OF THE MECHANICAL ENGINEER PROGRAM



STUDENTS

1. Strategic objective:

"IMPLEMENT A COMPREHENSIVE STUDENT DEVELOPMENT PROGRAM"

Objective 1.1.1 Establish a program of attention to students of high academic performance.

 Develop a program of stimuli to outstanding students. The program includes recognitions, scholarships, appointments of fellows in laboratories, internships in industries, free extracurricular courses.

Objective 1.1.2 Establish a program of attention to students with low academic performance.

• Establish mandatory meetings of low-performing students and their parents with the advisor

Objective 1.1.3 Implement a programme for part-time students

1.2 Establish a comprehensive care program

Objective 1.2.1 Collaborate with the program of care psicopedagógica.de the Faculty

Objective 1.2.2 Collaborate with the integral health program of the UASLP

Objective 1.2.3 Strengthen the mentoring and counselling programme.

• Promote counseling and tutoring, as well as the advisor-student relationship.



• Regulate the advice of the full-time teacher – student.

1.3 Collaborate with the division of school services for the training of teachers of upper middle level and accreditation of incorporated high schools

- Objective 1.3.2 Collaborate with the establishment of an accreditation program for preparatory schools incorporated into the UASLP.
- Objective 1.3.3 Collaborate with the establishment of a certification program for teachers of baccalaureate in basic sciences.
- Objective 1.3.4 Collaborate with a permanent program of training of baccalaureate teachers in basic sciences.
 - Courses for counselors
 - Vocational orientation meetings during the admission process

1.4 Establish a program for the development of skills and values

- Objective 1.4.1 Develop programs that foster entrepreneurial skills, administrative and managerial skills, leadership and self-learning in students.
- Objective 1.4.2 Implement a program of certification of labor competencies in students.
- Objective 1.4.3 Promote activities that stimulate students to develop creative skills.
- Objective 1.4.4 Promote the participation of students in cultural and artistic activities.
- Objective 1.4.5 Strengthen the humanistic training programme



1.5 Improve terminal efficiency indices, evaluation of entry and exit

Objective 1.5.1 Create a database of the students of the career.

Objective 1.5.2 Support the vocational orientation program during the admission process.

Objective 1.5.4 to guide students in accessing information technologies from their entry.



CADEMIC STAFF

2. Strategic objective:

"STRENGTHEN THE PROGRAM OF CONTINUOUS IMPROVEMENT OF THE ACADEMIC STAFF"

- 2.1 Implement ongoing training for academic staff
- Objective 2.1.1 Formalize a program of stays in industries/companies for teachers.
- Objective2.1.2 Encourage certifications for teachers.
- Objective 2.1.3 Promote courses or stays at other universities.

2.2 Incorporate educational and technological innovation tools in the teaching-learning process

- Objective **2.2.1** Participate in the teacher training programme in the use of information and communication technologies for academic purposes.
- Objective 2.2.2 Collaborate with the teacher training program in educational innovation.
- Objective 2.2.3 Ensure the use of educational innovation practices in the delivery of laboratory practices.

2.3 Implement a training program for new teachers detected among better students and import new talents

- Objective 2.3.1 Diagnose priority areas.
- Objective 2.3.2 Establish programmes that induce outstanding students to pursue postgraduate studies to form replacement cadres.
- Objective 2.3.3 Define a clear policy for the entry profiles of new teachers. Objective 2.3.4 Establish a programme for the insertion of visiting professors and researchers



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2.4 Consolidating academic bodies

Objective 2.4.1 Generate strategies that facilitate the consolidation of academic bodies.

Objective 2.4.2 Facilitate the integration of CAs into networks at national and international levels.

2.5 Enable teaching staff with a desirable and preferential profile (PROMEP)

Objective 2.5.1 Promote the research activity of research professors, from the preparation of proposals to the dissemination of results.

Objective 2.5.2 Balance the academic load of professors in the four areas recognized by PROMEP.



EDUCATIONAL OFFER AND CURRICULAR DEVELOPMENT

3. Strategic objective:

"CURRICULUM DEVELOPMENT"

3.1 Permanently update the programs and the study plan of the Mechanical Engineer career

Objective 3.1.2 Promote the effective participation of the business and service sector, associations and colleges of professionals as well as graduates, for the updating of the study plan.

• Formulate a programme of business visits that is effective in the context of school activities and include it within the curriculum.

Objective 3.1.3 Evaluate the possibility of incorporating competency-based curriculum design.

3.2 Incorporating the international dimension

Objective 3.2.1 Increase collaboration agreements with foreign institutions of higher education of recognized prestige.

Objective 3.2.2 Strengthen cooperation networks with international institutions for the purpose of double degrees.

Objective 3.2.3 Create a fund to support international student academic mobility programs, with contributions from students, graduates, companies and foundations



3.3 Implement professional residency programs with curricular value

- Objective 3.3.1 Review and update regulations for the realization of professional residencies.
- Objective 3.3.2 Support the professional residence programme for students.

3.4 Incorporate current technologies into the teaching-learning process

- Objective 3.4.1 Create and offer virtual education programs of the mechanical engineer career. incorporating information and communication technologies to improve the efficiency and effectiveness of the teaching-learning process.
- Objective 3.4.2 Support policies, procedures and regulations for the incorporation of information and communication technologies in educational programs.

3.5 Achieving flexibility of the educational program

- Objective 3.5.1 Integrate subjects into the curriculum in 100% virtual environments.
- Objective 3.5.2 Implement curricular contents of terminal specialization and lateral exits.
- Objective 3.5.3 Incorporate transversal contents and learning in the curriculum, through the inclusion of workshops for the integration of theoretical and practical knowledge.
- 3.6 Permanently accredit the educational program
- Objective 3.6.1 Maintain the accreditation of the Mechanical Engineer program before CACEI
- Objective 3.6.3 Obtain international accreditation.





4. Strategic objective:

"IMPLEMENT A MANAGEMENT PROGRAM TO STRENGTHEN LINKAGE"

4.1 Develop a marketing strategy for the career of Mechanical Engineer

Objective 4.1.1 Implement promotional campaigns for the Mechanical Engineer program

- Prepare a career promotion document
- Develop special videotaped material for the race
- Implement a group of teachers to disseminate the career

4.2 Implement a program to link the career of Mechanical Engineer with the productive, governmental and social sectors

Objective 4.2.1 Coordinate the activities of academic staff and students with the different sectors.

Objective 4.2.2 To form an internal network of those responsible for linking the educational programme

Objective 4.2.3 Promote the donation of useful equipment from the productive sector to the programme.

Objective 4.2.4 Establish a program to identify the needs of the sectors and implement them to the race

Objective 4.2.5 Coordinate the management of agreements.



4.3 Implement collaborative programs with higher education institutions, schools, associations and councils

Objective 4.3.1 Implement the collaboration actions of the faculty with HEIs, schools, associations and councils.

Objective 4.3.2 Support and participate with a program of knowledge competitions for engineering students.

4.4 Strengthen communication with graduates and employers

Objective 4.4.1 Collaborate with the Association of Graduates of the Mechanical Engineer career.

Objective 4.4.2 Participate in the institutional portal of graduates and support that of the Faculty.

Objective 4.4.3 Promote the identity and commitment of graduates.

4.6 Strengthen continuing education activities

Objective 4.6.1 Strengthen the continuing education department and form an internal network of decision-makers.

Objective 4.6.2 Permanently provide quality continuing education courses for each academic programme.

Objective 4.6.3 Identify the needs for professional updating in all sectors.



5

Scientific and technological development

5. Strategic objective

"TO CONSTITUTE A POLE OF SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT"

5.1 Develop a system of involvement of research projects with society

Objective 5.1.1 Integrate outstanding students in research and linkage projects.

Objective 5.1.2 Develop links with government bodies oriented to research and technology.

5.2 Establish defined policies on research, innovation and technological development

Objective 5.2.1 Support the establishment of the Research Policy of the Faculty.

Objective 5.2.2 Carry out a program of activities that favors the work environment, creativity and teamwork.

Objective 5.2.3 Establish a methodological development programme for research activities.

Objective 5.2.4 To foster a culture of resource optimization.

5.3 Implement technological development programs in emerging issues

Objective 5.3.1 Identify needs and technological areas of development of the industry.

Objective 5.3.2 Conduct research focused on local, regional, national and international development.

Objetive 5.3.3 Develop a program to maintain high-level research on emerging issues in compliance with the standards of international and national evaluations related to the Mechanical area.



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Objective 5.3.4 Carry out R&I&D schemes in research projects.

5.1 Establish networks and strategic alliances for research, innovation and technological development

Objective 5.4.1 Conduct joint applied research with companies and/or government.

Objective 5.4.2 Establish partnerships with countries with similar research needs.

Objective 5.4.3 Establish partnerships with other universities to share human and physical resources.



ORGANIZATIONAL STRUCTURE, REGULATION POLICIES AND PROCEDURES OF THE PROGRAM

6. Strategic objective:

"UPDATE ORGANIZATIONAL STRUCTURE, REGULATIONS, POLICIES AND PROCEDURES"

6.1 Certify process quality

Objective 6.1.1 Collaborate with the Certification of the student's school control processes.

Objective 6.1.4 Audit the operation and resource management of laboratories that have an impact on the career.

6.1 Permanently update the regulations, policies and procedures

- Objective 6.2.1 Regulate activities of the Faculty's Regulatory Committee. Objective 6.2.2 Expand the reach of the digital information site.
- Objective 6.2.3 Facilitate access to academic-administrative information. 6.2 Permanently update the regulations, policies and procedures
- Objective 6.2.1 Regulate activities of the Faculty's Regulatory Committee. Objective 6.2.2 Expand the reach of the digital information site.
- Objective 6.2.3 Facilitate access to academic-administrative information.



6.3 Implement a budget planning system

- Objective 6.3.1 Train personnel involved in resource management and ongoing resource optimization.
- Objective 6.3.2 Establish a program of planning, organization, direction and control of the allocated financial resources.

6.4 Develop institutional internal communication strategy

- Objective 6.4.1 Conduct a permanent media campaign on the work and achievements of the programme.
- Objective 6.4.2 Support the faculty with the creation of an electronic journal with advances in technology related to Mechanics topics.
- Objective 6.4.3 Promote congresses and exhibitions aimed at previous school levels

6.5 Optimize administrative processes

- Objective 6.5.1 Facilitate and make transparent the academic-administrative procedures of the program
- Objective 6.5.2 Create a culture of effective and efficient use of information and communication technologies in the programme community.
- Objective 6.5.4 Implement an information system as a basis for academic planning.



iffusion towards the PTC's of Mechanical

De: Sandra Luz Rodrìguez Reyna janaluzreyna@gmail.com Asunto: DIFUSIÓN: PLAN INSTITUCIONAL DE DESARROLLO IM

Fecha: 7 de septiembre de 2016, 12:12 p.m.

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Coordinación de ingeniería Mecánica.-

Por este conducto me permito Anexar:

- 1. Plan Institucional de Desarrollo IM (2010-2023)
- 2. Plan Curricular de ingeniería Mecánica (Versión 2016)

Saludos cordiales

Dra. Sandra Luz Rodríguez Reyna Profesor Investigador de la FI-UASLP

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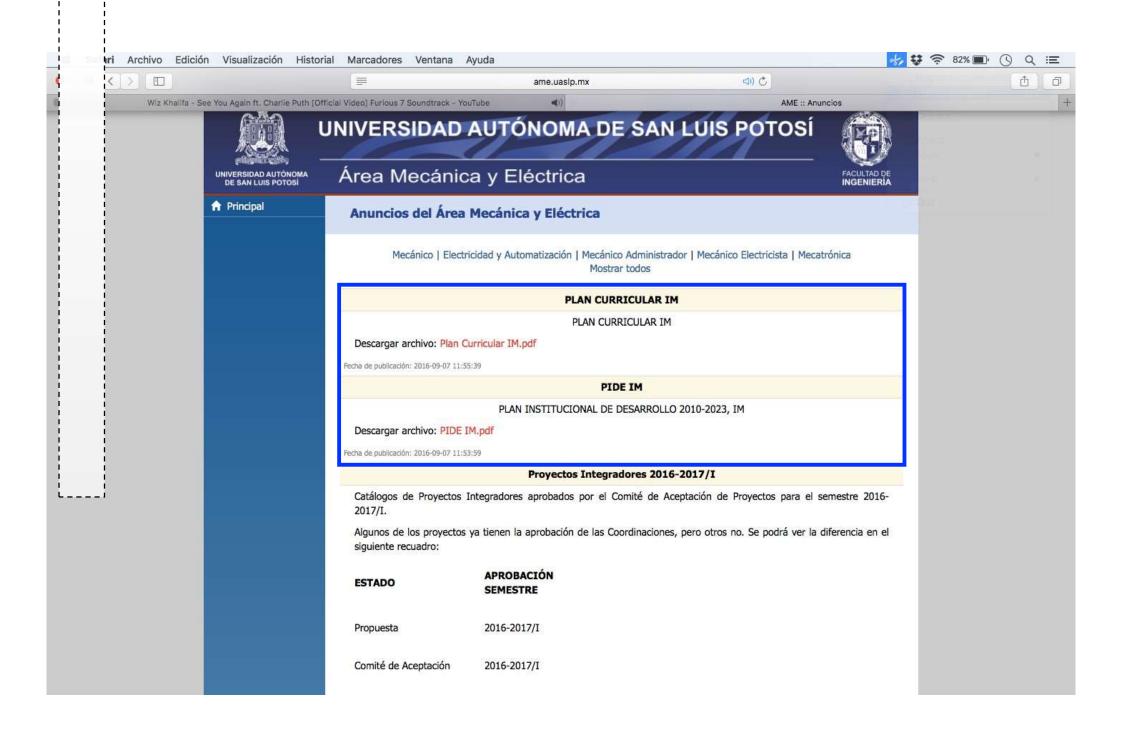
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Plan Curricular IM.pdf









Ingeniería Mecánica

"MODOS ET CUNCTARUM RERUM MENSURAS AUDEBO.

evidence in situ