

The Centro Politécnico Superior (CPS) is one of the most prestigious engineering schools in Spain in terms of professional training and research within the subject areas it offers. Engineers graduating from the CPS enjoy excellent opportunities in the job market, at both national and international levels. Finding their first job takes graduates only about two months on average.

A degree course in Architecture was introduced in the academic year 2008/09, fully adapted to the Bologna Process, so that the CPS became a College of Engineering and Architecture. This development was the fulfilment of a longstanding wish of people in Aragon and represents a source of great pride for the CPS. The coexistence in one centre of architecture and various engineering studies will undoubtedly produce synergies and benefits resulting in a better and more complete education for our students.

The CPS currently has 2,900 students enrolled in the five major degree subject areas: Industrial Engineering, Computer Science & Engineering, Chemical Engineering, Telecommunications Engineering and Architecture. There are a further 300 postgraduate (studying national and CPS master programs) and PhD students.

The CPS is a forward-looking institution committed to the teaching of high-quality technical studies, to competitiveness and integration within Europe, to its own environment and to meeting the training needs of productive sectors. The institution offers students a complete and up-to-date training and provides complementary means to achieve this objective. Initiatives such as introductory welcome sessions for new students, the tutorial programme, student advisory services, pre-university foundation seminars, etc. are examples of programmes specifically designed to encourage their involvement in the centre and their academic advancement.

Students at the CPS have many opportunities to extend their training, on both a technical and a personal level, by undertaking work experience in companies, participating in national and international exchanges through the SICUE and ERASMUS programmes involving more than a hundred Spanish, European and American universities, collaborating in R+D activities with various research groups, departments and institutes, etc.

There is also a strong tradition at the centre of encouraging extra-curricular activities. Several student associations devoted to culture, sport, technical issues, etc., have been promoted by the students themselves and are established at the centre.

The CPS is a relatively young institution, dynamic, open-minded, aware of the forthcoming changes in European higher education and research, and aspiring to excellence in all its facets: teaching, research and technology transfer.

Finally, on behalf of all the members of our community here at the centre, I would like to express my best wishes for success in your studies.

Enrique Masgrau Gómez
CPS Director

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Welcome

Welcome to the ***Centro Politécnico Superior***, the College of Engineering and Architecture of the ***University of Zaragoza***.

We hope these pages make it easy to find your way out among us. Practical issues such as academic information, health care, accommodation, courses on Spanish as a foreign language,... are described for you to have, before arrival, a first contact with your daily life as an international student.

You can contact us whenever you need some more details or your queries find no answer in the information provided in this booklet:

International Relations office

Postal address:

María de Luna 3. 50018 – Zaragoza (Spain)

Phone & Fax: +34 976 76 22 33

e-mail address: cpsri@unizar.es

Visiting hours: from Monday to Friday from 12.00 to 14.00

Torres Quevedo Building – Ground floor – Office 1



Before Arrival

Where we are



The city of Zaragoza has always benefited from a strategic location as it lies in the junction of the main crossroads in North-Eastern Spain that link Madrid with Barcelona and Bilbao with Valencia.

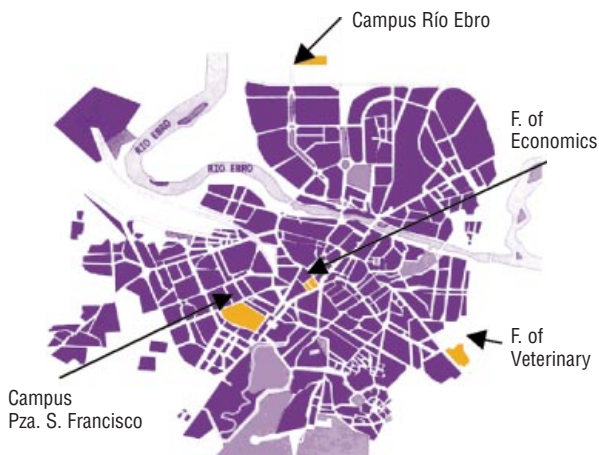


Zaragoza is just one of the four cities where our University has settled its campuses: Together with Huesca, Teruel and La Alfranca de Doña Godina, studies in almost every field of knowledge are offered by our Institution.

The CPS is located in the University of Zaragoza's northern campus, Campus Río Ebro, which we share, among others, with the School of Technical Engineering and the School of Business. The university community involved in teaching engineering and architecture in Zaragoza share facilities and services in the Ada Byron, Leonardo Torres Quevedo and Agustín de Betancourt buildings.

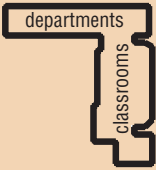
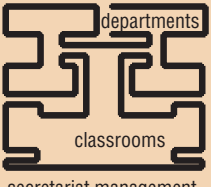
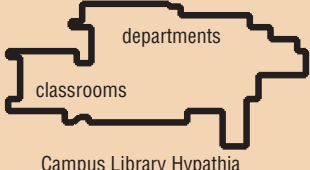
For further information, see the CPS website:

www.cps.unizar.es





What you will find at the CPS

Ada Byron Building 	Torres Quevedo Building 	Betancourt Building 
CPS teaching installations: classrooms, seminar rooms, computer rooms, etc. Study room. University department offices: • Systems Computing and Engineering. • Electronic and Communications Engineering. Students associations: AATUZ, IAESTE, Dir-Europa, ISF Aragón CIUR (University Information and Complaints Office). Cajalón cashpoint	CPS Management, Administration and Secretariat. CPS teaching installations: classrooms, seminar rooms, computer rooms, etc. Reprography service. Business Relations Office (O.R.E.) International Relations Office (O.R.I.). Departmental offices: • Materials and Fluids Science and Technology • English and German • Applied Physics • Condensed Matter and Materials Physics • Design and Manufacturing Engineering • Electrical Engineering • Mechanical Engineering • Chemical Engineering and Environmental Technologies • Applied Mathematics • Statistical Methods • Analytical Chemistry • Inorganic Chemistry • Organic and Physical Chemistry Students representatives and associations Language Institute Research Centres: CIRCE, ICMA, I3A, TIIP IberCaja cashpoint	Library “Hypatia de Alejandria” • Study room • Library / reference library • Self-learning language room. University department offices: • Economics and Business Management. • Mechanical Engineering. Departmental laboratories: • Materials and Fluids Science and Technology • Applied Physics • Design and Manufacturing Engineering • Mechanical Engineering • Chemical Engineering and Environmental Technologies • Analytical Chemistry • Inorganic Chemistry • Organic and Physical Chemistry Río Ebro Campus Maintenance Service Workshops EUITI Management, Administration and Secretariat. EUITI teaching installations: classrooms, seminar rooms, computer rooms, etc.
Plaza de las Ingenierías CAI cashpoint and Banco Santander and IberCaja branches		

Travelling to Zaragoza

Direct International flights from/to ZARAGOZA

IBERIA **www.iberia.es**: Frankfurt, Paris

RYANAIR **www.ryanair.com**: Milano-Bergamo, Roma, London, Brussels

From MADRID

The capital of Spain is 300 km away from Zaragoza .

BY PLANE: There is a daily flight from Madrid-Barajas airport to Zaragoza (a 45-minute flight). From Zaragoza airport you can reach the city centre by bus (2€ approx.) or by taxi (20€ approx.).

BY TRAIN: High-speed trains run approximately every 90 minutes, the same time trip takes. The «Puerta de Atocha» Railway station (underground station, «Atocha Renfe», line 1) is in the centre of Madrid. Timetables and prices can be checked in Internet: RENFE **www.renfe.es**

BY BUS: There are coaches almost every hour (a journey of 3 hours 45 minutes). The coach station is located on eastern Madrid (underground station «Avenida de América»). Information about timetables and prices on this site: ALSA **www.alsa.es**

BY CAR: There is a dual carriageway: A-2 (toll-free).

From BARCELONA

The second largest city in Spain is also only 300 kilometres away from Zaragoza.

BY TRAIN: From Barcelona airport you can reach the railway station “Sants” by commuter trains and take there a high-speed one that will bring you to Zaragoza in approximately two hours. Timetables and prices can be checked in RENFE's site: **www.renfe.es**

BY BUS: Coaches run almost every hour (a three-hour trip by motorway). The coach station «Barcelona Nord» is at the «Arc del Triunf» (underground L1 and bus line 54). Information about timetables and prices on the Internet: ALSA **www.alsa.es**

BY CAR: You can take either the toll motorway AP-2 or the trunk road A-2.

From BILBAO

BY TRAIN: There are two trains a day (a four-hour journey). Timetables and prices can be checked at **www.renfe.es**

BY BUS: There is a coach service every two hours (a four-hour journey on the motorway). Information about timetables and prices on the Company site: ALSA **www.alsa.es**

BY CAR: Take the toll motorway AP-68.

Entry and Residence Permits

Nationals of a member state of the European Economic Area (EU and Norway, Island and Liechtenstein) or Switzerland just need a valid identification card (passport included) to enter Spain.

Nationals of any other country have to apply for a visa at the Spanish embassy or consulate before leaving their home country. Details of the procedure and lists of the Spanish consular representations can be found at www.mae.es

The countries on the table below have a consular representation in our city:

CONSULAR REPRESENTATIONS IN ZARAGOZA		
Germany Consul: María López Palacín Cinco de Marzo, 7, 1º, izda. 50001 Zaragoza Tf. 976 794 275 Fax 976 214 783 Email: marialpa@grupoilssa.com	Slovak Republic Consul: Jean Paul Bastiaans Fray Luis Amigó, 4 50006 Zaragoza Tf. 976 253 192 Fax 976 377 568 E-mail: consulado@rep-eslovaquia.org	France Consul: Mireille Gelas de Ledesma Josefa Amar y Borbón, 5, pral. B. 50001 Zaragoza Tf. 976 216 917 Fax 976 223 188
Italy Vice-Consul: Massimo Marchetti San Miguel 2, 9º A 50001 Zaragoza Phone 976 22 86 59 Fax. 976 22 32 94	Mexico Consul: Luis Fernández Ordóñez Lagasca 29, 4º D 50006 Zaragoza Phone. 976 220 986 976 552 298	Portugal Consul: Jesús Bergua Camón San Ignacio de Loyola, 5, 1º, D. 50008 Zaragoza Phone: 976 218 885

Health Insurance

Students from the EU do just need their European Health Insurance Card. The international office of your University will certainly inform you on how/where to get it.

Students from a country that has a national insurance agreement with Spain have to ask for information and appropriate documents at their insurance agency. In case health care service was not included in the agreement a private insurance must be purchased.

Those students whose country does not have an insurance agreement with Spain should also purchase a private insurance.

If you are provided with the European card and need health assistance, you may get this at the so called "Centros de Salud": every district in the city counts one or two of these centres. Once you have a place to live here (as it depends on your address), you should inform yourself on which one you may get health assistance from.

Expense Estimate

Except for the tuition fees of official studies¹, exchange students have to assume all other expenses. The table below may help you preparing your budget:

ACCOMODATION		
HALLS OF RESIDENCE		
Full board in a single room	530	€/month
Apartment with kitchen	270	€/month
APARTMENTS/FLATS		
A flat	500 / 600	€/month
A room	200 / 300	€/month
UNIVERSITY LIFE		
1 meal	4,65	€
10 meals voucher	37	€
photocopies, books...	30	€/month
UNIVERSITY SPORT CLUB		
Single day ticket	1,4	€
Access card	38	€/year
Activities		
PUBLIC TRANSPORT		
URBAN BUS		
1 trip	0,95	€
Bus card	7	€
TAXI	minimum	4
		€

1. Courses of Spanish as a foreign language are not official studies (not included in University curricula).

Accommodation

Halls of Residence

If a Hall of Residence is your best liked choice, just decide where in the city you would like to live.

For those who appreciate proximity the most and look for a student atmosphere, the hall "Residencia Goya II" (http://www.unizar.es/hoy/doc/cartel_resi.pdf) offers all they may need in a modern building close to our Campus.

If you prefer the lively atmosphere of the city centre but also want to enjoy the advantages and ambience of a student hall, try those at Campus San Francisco. Exchange students have to apply for a place through the form at <http://wzar.unizar.es/servicios/inter/alojamiento/aloja.html>². This may be an interesting option since public transport properly links our campus with that of Plaza San Francisco.

In case you applied a bit late and got no place at the University halls (applicants usually outnumber places), you can directly contact those below promoted by private institutions:

C.M. CARDENAL XAVIERRE	http://www.xavierre.com/	
C.M. MIRAFLORES	http://www.miraflores.es	Only men
C.M. VIRGEN DEL CARMEN	http://www.unizar.es/carmelo/index.htm	Only men
C.M. AZAILA	http://www.cm-azaila.es	Only women
C.M. LA ANUNCIATA	cm.annuncio@unizar.es	Only women
C.M. PEÑALBA	http://www.colegiomayorpenalba.com	Only women
C.M. JOSEFA SEGOVIA	http://www.unizar.es/cmujs	Only women

A general overview of halls of residence in the city is provided by the city council at <http://www.zaragoza.es/ciudad/sectores/jovenes/cipaj/publicaciones/aloja05.htm>.

Flats and Rooms

The priority for those who prefer to live in a flat is to arrange accommodation for their first days in Zaragoza: you can either directly contact the Youth Hostels below or apply for short term accommodation through the **form** provided above.

Albergue Juvenil «Baltasar Gracián»

C/ Franco y López, 4 – 50005 ZARAGOZA

Booking: (+34) 902 088 905 / raaj.iaj@aragon.es

Albergue Zaragoza

C/ Predicadores, 70 – 50003 ZARAGOZA

Booking: <http://www.alberguezaragoza.com>

In case this option was not available at the time of your applying or you have other preferences, a list of hotels in the city can be looked up at http://www.zaragoza.es/ciudad/turismo/default_en.htm

2. Information on the services provided in the different Halls is given on the form itself.

Your main task during these first days will be looking for a flat: the offer is wide and it does not normally take more than a week to find a place.

These are some aspects to keep in mind before starting your search:

- Campus Río Ebro is located in northern city, in the area known as ACTUR
- Reaching this campus from the furthest district in the city takes no more than a half-an-hour bus ride
- Prices rank from 500€ if you want to live by yourself until 200€ if you get a room in a shared flat
- The main sources of information on flats and rooms to rent are:
 - The lists updated by the University Accommodation Service (information-only service, no support to contact the owners or arrange the rental agreement is provided)
<http://wzar.unizar.es/ciur/alojamiento.html>
 - The Youth Housing Service held by the City Council (information, legal assistance may be provided)
<http://www.zaragoza.es/ciudad/sectores/jovenes/vivienda/buscavivienda.htm>

The notice boards in the Faculties and Schools: most students and landlords put their ads on them, both searching and offering places to live: you are invited to do so too.

HOMESHARE WITH ELDERLY PEOPLE

Within the Homeshare International network, the programme “vive y convive” puts together students looking for cheap accommodation and elderly householders willing to exchange housing by support: students get their own room for free and offer help and companionship.

More information can be obtained at the web page of the promoter
<http://obrasocial.caixacatalunya.es/osocial/main.html?idioma=2>

and at:

Service of Social Management
Office 311. Interfacultades Building, 3rd floor
C/ Pedro Cerbuna 12 – 50009 Zaragoza
E-mail: asocial@unizar.es
Phone: 976 761000 (ext. 3010)





Academic Information

Higher Education in Spain

The Bologna process has resulted in new curricula all over Europe. The curriculum of a Bachelor diploma in Spain is made up of 240 ECTS and most of Master ones are made of between 60 and 120 ECTS. In our College, Master degrees have been running since 2008 and Bachelor ones will do as of 2010 academic year so, old and new degrees will run together for the next four years.

The curriculum of the Studies of Architecture is made up of 300 credits and according to the Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications.

The Academic Year

The academic year runs from September to September, including both lectures and vacation periods. It consists of two semesters, Autumn (September-January) and Spring (February-June). The exact dates may vary from one year to another but Autumn semester lectures usually start by the last third of September and finish by similar dates of January. There is then a break for examinations. Spring semester opens by middle February and ends by last May-beginning of June and the examinations of this term usually run all June long. A second call for failed or not sat examinations opens in September.

There are three main vacation breaks, Christmas (from 23rd December until 7th January), Easter (about ten days in spring) and summer (from middle July until last August) and some other public holidays (rarely more than a couple of days) distributed all year long.

The academic calendar and class timetable can be seen at <http://www.cps.unizar.es>.

Pre-Registration and Enrolment Deadlines

New Students

Admittance to UNDERGRADUATE and MASTER DEGREE PROGRAMMES

Pre-registration dates:

- First stage: 18 June to 6 July
- Second stage: 14 to 18 September (only if there are still places available after the first stage)

Enrolment dates:

- Students admitted in the first stage: 17 to 24 July.
- Students admitted in second stage: before 8 October.

Admittance to MASTER DEGREE PROGRAMMES

Registration dates:

- First stage: 18 June to 10 July
- Second Stage: 14 to 18 September (only if there are still places available after the first stage)

Exchange Students

You have to arrange your registration at the international office in your first days here. The courses you should sign up are those you proposed in your learning agreement: timetables may restrict your choice so, you will be allowed to select some other courses once you have checked, accordingly with your home and host co-ordinators, that the contents fit your learning agreement. Once you decide the courses of your interest you have to hand the registration form (provided at the international office) at the admission office. You should do this within the first 10-15 days.

Other Students

As of the date assigned in the appointment given and in any case before 8 October.

Registration Deadline Extension

15 to 19 February 2010.

Enrolment Procedure

SCHEDULED APPOINTMENT

The CPS assigns an enrolment appointment to each student as follows:

- a) First, appointments are given to those students who have passed all the subjects in the first and second call, as well as those enrolled only for the final degree project.
- b) Secondly, according to:

The number of credits not obtained for subjects enrolled in 08/09 by August 2009 (in increasing order).

Average of credits obtained per year (total number of credits/years of study at the Centre), in decreasing order.

Average mark, in decreasing order.

The appointment for completing the enrolment will be sent by e-mail and can also be seen in the University of Zaragoza "Virtual Secretary" webpage (<http://www.unizar.es>).

Those students failing to complete their enrolment on the date of the appointment lose the opportunity to do so in the self-enrolment room, and should complete the process by any other computer through <http://www.unizar.es> (Virtual Secretary).

SELF-ENROLMENT

Self-enrolment will be available for completing the enrolment process for the academic year 2009/10, with the following exceptions:

- Students with concurrent studies
- Students admitted directly to the second cycle or transfer students

The self-enrolment room is located on the first floor of the Torres Quevedo building. There is a member of the secretariat available at all times. The opening hours are dependent on the distribution of appointments, a reason for why dates and times should be strictly observed. Once an appointment has been assigned, it is not possible to complete the enrolment before the assigned date and time.

The self-enrolment, with the same limitations as those mentioned above, can also be carried out through any computer with an Internet connection and printer using the “Virtual Secretary” option of the University of Zaragoza website: <http://dumbo.unizar.es/servicios/sv/sv.html>.

Very important: before enrolling, remember to check the regulations about ***Continuation and progress in studies***.

Exam Regulations

The means and criteria of assessment of the knowledge acquired are decided by the professors and must be published before registration. Although examinations are not the only means of assessment, they are the most common one. There are two calls to take exams: exams of subjects attended in Autumn semester can be sat in February and/or in September and those of Spring semester in June and/or in September. Qualifications are graded from 0 to 10 and you are considered to have passed a test when you get a grade of 5. Not sitting an exam of a subject you have registered for is not penalized but your transcript of records will reflect this with the mention “Absent”.

Lectures in English

From 2006/07 academic year on we are offering courses lectured in English in all our degrees of Engineering. The list is available at <http://www.cps.unizar.es/ori/students/index.php?lang=en&page=offer>





Engineering's, Bachelor's and Master's Degrees

Engineering's Degrees

The Engineering's degrees are the old structure of the university studies in Spain: 5 academic years, 300 ECTS, High school certification + 5 years. These Engineering's degrees are going to disappear by the academic year 2015-2016. The University of Zaragoza is offering 4 engineering's degrees at the CPS. The level of competences of the Engineering's degrees is equivalent to the new Master level, according to the European Higher Education Area.

Industrial Engineering

This degree prepares students for many areas of the industrial and business sector. These include engineering in the mechanical, electrical, electronic, chemical, textile, energy, environmental, materials and industrial architecture fields. In the area of industrial development, activities include feasibility studies, assessment, organisation, direction and management relating to projects, production techniques and systems, and industrial and service businesses.

Students are prepared for working both in public sector administration and institutions and in the private sector, as well as in education. Professional qualifications and responsibilities are governed by the law. Professional practice is supervised by the Official Institute of Industrial Engineers.

The main fields of study are:

- Industrial installations, construction and architecture
- Electricity, electronics, systems and automatic switching
- Mechanical and materials engineering
- Manufacturing processes and product design
- Hydraulic, thermal, nuclear and alternative energies
- Environmental technology
- Business organisation and administration
- Project methodology, organisation, direction and management
- Transport engineering

Distribution of credits

1st year	1st sem.	37.5 c	1st cycle	Core and compulsory	162.0
	2nd sem.	37.5 c		Optional	9.0
2nd year	3rd sem.	34.5 c		Free elective	15.0
	4th sem.	37.5 c			
3rd year	5th sem.	39.0 c	2nd cycle	Core and compulsory	114.0
	6th sem.	37.5 c		Non-technical optional	3.0
4th year	7th sem.	37.5 c		Other optional	33.0
	8th sem.	37.5 c		Free elective	22.5
5th year	9th sem.	37.5 c		Project	15.0
	10th sem.	37.5 c		Total credits	373.5

Specialities

- Industrial automation and robotics
- Industrial installations and construction
- Machine and vehicle design Electronics
- Energy, heat and fluids technology
- Materials
- Industrial organisation
- Production
- Electrical systems

More information at

<http://www.cps.unizar.es/NuevaORI/Ingles/Industrial.php>

Telecommunications Engineering

This degree prepares students for many areas of the telecommunications industry. These include security, electronics and telematics; planning, design, management and operation of telephone systems, data transmission systems, and telecommunication networks and services; planning, development, direction and management of telecommunication projects, plans or services and the application of classic and modern technologies in the world of fixed and mobile telecommunications.

Students are prepared for working both in public sector administration and institutions and in the private sector, as well as in teaching. Professional practice is supervised by the Official Institute of Telecommunications Engineers.

The main fields of study are:

Computer architecture
Optical communications
Design of electronic circuits, components and instruments
Radiation and radio communication
Telecommunication networks, systems and services
Digital signal processing
Physical support transmission
Projects
Business organisation and administration
Digital communications

Distribution of credits

1st year	1st sem.	37.5 c	1st cycle	Core and compulsory	165.0
	2nd sem.	33.0 c		Optional	6.0
2nd year	3rd sem.	39.0 c		Free elective	12.0
	4th sem.	36.0 c			
3rd year	5th sem.	37.5 c	2nd cycle	Core and compulsory	102.0
	6th sem.	37.5 c		Non-technical optional	3.0
4th year	7th sem.	37.5 c		Other optional	34.5
	8th sem.	36.0 c		Free elective	25.5
5th year	9th sem.	36.0 c		Project	18.0
	10th sem.	36.0 c		Total credits	366.0

Specialities

- Communications
- Electronics
- Telematics

More information at

<http://www.cps.unizar.es/NuevaORI/Ingles/telecos.php>

Computer Science Engineering

This degree prepares students for many areas of the information technology and computer industries. These include design, analysis and evaluation of IT systems in general, together with the various specifics of management, organisation and direction of IT projects, of maintenance of equipment and infrastructures, of artificial intelligence, of parallelism and large scale information management. Technical expertise is offered in systems, databases and communications in any industrial or service sector.

Students are prepared for working in public sector administration or institutions and in the private sector, as well as in teaching.

The main fields of study are:

- Data and information structure
- Computer structure and technology
- Software engineering and programming methodology and technology
- Operating systems
- Formal language and automata theory. Language processors.
- Computer architecture and engineering
- Artificial intelligence and knowledge engineering
- Networks
- Business organisation and administration
- Methodology, organisation, direction and management of IT projects

Distribution of credits

1st year	1st sem.	34.5 c	1st cycle	Core and compulsory	148.5
	2nd sem.	34.5 c		Optional	12.0
2nd year	3rd sem.	34.5 c		Free elective	18.0
	4th sem.	36.5 c			
3rd year	5th sem.	37.5 c	2nd cycle	Core and compulsory	82.5
	6th sem.	34.5 c		Non-technical optional	3.0
4th year	7th sem.	35.5 c		Other optional	49.5
	8th sem.	36.0 c		Free elective	18.0
5th year	9th sem.	33.0 c		Project	20.0
	10th sem.	35.0 c		Total credits	351.5

More information at

<http://www.cps.unizar.es/NuevaORI/Ingles/informatica.php>

Chemical Engineering

This degree prepares students for multiple opportunities within the chemicals industry and others that manufacture or use chemical products such as the paper, textile, pharmaceutical, food, oil, rubber, energy, materials and biotechnology industries. Expertise is offered in the areas of new products and chemical processes, risk prevention, recycling and treatment of industrial waste, environmental studies, quality control management and health and safety.

Students are prepared for working in public sector administration or institutions, the private sector, or in education.

The main fields of study are:

Engineering, design and management of chemical processes
Control, instrumentation, simulation and optimisation of chemical processes
Product design, materials science and chemical transformation
Equipment design in the chemicals industry
Project management in the chemicals industry
Environmental technology, waste management and treatment
Risk management and safety in the chemicals industry

Distribution of credits

1st year	1st sem.	37.5 c	1st cycle	Core and compulsory	168.0
	2nd sem.	36.0 c		Optional	0.0
2nd year	3rd sem.	37.5 c		Free elective	18.0
	4th sem.	37.5 c	2nd cycle	Core and compulsory	103.5
3rd year	5th sem.	37.5 c		Non-technical optional	3.0
	6th sem.	37.5 c		Other optional	42.0
4th year	7th sem.	37.5 c		Free elective	19.5
	8th sem.	36.0 c		Project	15.0
5th year	9th sem.	36.0 c		Total credits	369.0
	10th sem.	36.0 c			

Specialities

- Equipment design in the chemicals industry
- Process engineering
- Environmental engineering

More information at

<http://www.cps.unizar.es/NuevaORI/Ingles/quimicos.php>

Second cycle access routes

The programmes of studies are structured in such a way that in certain cases students who have studied other first cycle university degrees may access second cycles. In some cases the access is direct while in others it is necessary to pass a specific number of complementary credits. In any case there is a maximum number of places for this access route in the four engineering degrees offered by the CPS.

The Rector's Office of the University of Zaragoza has designated the specific curricular access routes for direct access from the technical engineering degree of the University of Zaragoza for studying a second cycle at the Centro Politécnico Superior. Further information is available in the Enrolment Guide of the University of Zaragoza.

EXTRACT FROM THE RECTOR'S REGULATIONS CONCERNING CURRICULAR ACCESS ROUTES.

Technical Engineers who access second cycle engineering studies at the CPS must take 150 credits to obtain the corresponding degree title. A reduction in the number of credits may be obtained through some core and compulsory subjects whose contents are considered to be adequately covered in the original degree course and for those from which direct access students are exempt, with additional reductions in optional and or free-elective credits where necessary.

In all cases, direct access students are exempt from the obligation of devoting three optional credits on taking a non-technical optional subject.

Notwithstanding the above, in order to provide students with additional training for their academic progress, there is an approved list of subjects of the first cycle of CPS degrees for which, depending on the access degree, enrolment is recommended to direct access students, in advance if the programme of studies allows or when accessing the second cycle.

With respect to second cycle optional subjects for CPS degrees, there is a list of those for which direct access students may not enrol depending on the route followed in the original degree.

In reaching this agreement it has been considered that subjects already passed or very similar subjects should not be taken again, and that the second cycle should provide new contents for the educational advancement of students.

The number of credits required for accreditation of a specific speciality (in subjects or blocks) will be obtained in each case, deducting from the established total the credits for the subjects for which the student is not permitted to enrol, for having already taken similar subjects in the original degree.



Bachelor's Degrees

The bachelor's degrees (Graduado) are the new studies adapted to the European Higher Education Area. The University of Zaragoza is offering 10 bachelor's degrees at the Campus Rio Ebro.

Two bachelor's degrees started during the academic year 2008-2009

Architecture (5 years, 300 ECTS)

Industrial Design and Product Development Engineering (4 years, 240 ECTS)

At the academic year 2010-11 the following bachelor's degrees are going to start

Electrical Engineering (240 ECTS)

Mechanical Engineering (240 ECTS)

Chemistry Engineering (240 ECTS)

Electronic and Control Engineering (240 ECTS)

Industrial Organization Engineering (240 ECTS)

Industrial Technologies Engineering (240 ECTS)

Telecommunication Technologies and Services Engineering (240 ECTS)

Computer Engineering (240 ECTS)



Architecture

The main objective of this Bachelor's degree is to develop the students' aptitudes to conceive, design, understand and execute a building project in the context of the practice of architecture as a balance between feeling, reason and intuition, and of providing a physical form answering the needs of society and individuals. In particular, the achievement of the following objectives are sought:

- To understand and value the relationships between architecture and the humanities, physical and social sciences, technology, environmental sciences and the creative arts, as well as its ethical and social implications.
- To provide the technical, scientific and human knowledge and processes necessary for professional practice.
- To raise students' awareness of responsibilities towards human, social, cultural, economic and urban values of architecture, planning and the environment, and those relating to architectural heritage.

In order to achieve these objectives a series of general and specific abilities will be developed:

- Command of the subject or discipline.
- Capacity to acquire new knowledge quickly.
- Capacity to produce results under pressure.
- Capacity to coordinate activities.
- Capacity to make effective use of time.
- Capacity to work in a team.
- Capacity to make oneself understood.
- Capacity to use computer tools.

- Capacity to find new ideas and solutions.
- Capacity to write reports and documentation.
- Ability to create architectural projects satisfying both aesthetic and technical requirements.
- Adequate knowledge of the history of architectural theory, and of the arts, technology and related human sciences.
- Knowledge of fine arts as an influential factor contributing to the quality of an architectural conception.
- Appropriate knowledge of urban development, planning and techniques applied in the planning process.
- Ability to understand the relationships between people and buildings, and buildings and their surroundings, in addition to the need to relate buildings and the areas between them to human needs and scale.
- Ability to understand the architectural profession and its role in society, especially in the context of developing projects involving social factors.
- Knowledge of research and preparation methods for building projects.
- Understanding the problems of structural conception, construction and engineering involved in building projects.
- Appropriate knowledge of physical problems and of various technologies, as well as of the functions of buildings, so that appropriate internal comfort and climatic protection can be provided.
- Ability to satisfy the requirements of the users of a building while respecting limits imposed by budgetary considerations and construction regulations and standards.
- Appropriate knowledge of the industries, organisations, standards and procedures involved in carrying out building projects and in planning integration.

CURRICULAR STRUCTURE

Type of subject	ECTS
Basic training	60
Compulsory	204
Optional	24
Final degree project	12
TOTAL	300

BASIC CONTENTS

- Services, installations and fittings
- Architectural composition
- Construction
- Structures
- Graphical expression
- Physics
- History of art and architecture
- Computer studies
- Mathematics
- Organisation, administration and legislation in architecture
- Final degree project
- Architectural projects
- Integrated project workshop
- Urban planning
- Landscape and environment (Optional)
- Construction innovation (Optional)

GENERAL DEGREE CHARACTERISTICS

Professional opportunities: This degree enables graduates to practise the profession of architect.

Mobility: Students may participate in the SICUE, ERASMUS, etc., mobility programmes in accordance with the appropriate regulations.

Further information: <http://www.cps.unizar.es>



Industrial Design and Product Development Engineering

The main objective of this Bachelor's degree is to give the students the general and specific abilities that make them ready to tackle the management of knowledge and project experience necessary for the planning and development of the complete life process of a product. In particular, the achievement of the following objectives are sought:

1. Develop the aptitude of the students to conceive, develop, understand and execute the product design process, within the framework of a necessary balance between technique and socio-cultural context, responding to the needs of the company, the market, society and the users.
2. Provide the technical, scientific, humanist, aesthetic, environmental knowledge and procedures and the boost in creative capacity necessary for professional practice.
3. Bring to the professional angle a sense of ethical and social responsibility that shows an awareness of the significance that professional practice has in terms of human, social, cultural and economic values and in its respect towards the environment.

In order to achieve these objectives a series of abilities will be developed corresponding with those defined in the White Book, which can be encompassed within four large content blocks:

1. Generation of ideas for the market.
2. Development of new products.
3. Production and manufacturing techniques.
4. Product launch.

Among the specific skills that need to be acquired over the duration of the course to attain these abilities, the following stand out:

- The ability to obtain, compile, analyse and synthesise documents proceeding from the most diverse sources.
- The ability to reach objective and relevant conclusions for the generation of new product concepts and to generate new ideas and solutions, starting from the work on the aforementioned documents.
- Mastery of the ability to develop these product concepts in those aspects related to the product's character, its link with the market, its link with where it will be used, its link with the user (as regards ergonomics, functionality, safety, aesthetics, etc.).

- The ability to develop these product concepts for its manufacture, indicating the most appropriate materials and processes in each case, assembly systems, etc., considering other relevant points such as the production line, the logistics of distribution or the environmental effects of any kind related to the product.
- The ability to generate the necessary documents and media for a clear transmission of ideas, i.e. through sketches, models and prototypes, plans, documents of all types, spoken presentations, etc. Making people understand.
- Other general skills such as command of IT tools, the ability to work in a team, to organise time effectively and co-ordinate activities, to quickly acquire new knowledge and to perform under pressure.

CURRICULAR STRUCTURE

Type of subject	ECTS
Basic training	60
Compulsory	105
Optional	45
Final degree project	30
TOTAL	240

BASIC CONTENTS (ECTS)

- Statistics 6
- Graphic Expression 15
- Physics 9
- Computer Science 6
- Mathematics 9
- Company 6
- Artistic Expression 15
- Marketing and legal aspects 6
- Materials 6
- Mechanics 9
- Computer-aided design 9
- Creativity 6
- Graphic design and communication 6
- Ergonomics 9
- Aesthetics and the History of Design 11
- Methodology of design 9
- Processes 9
- Design workshop 18
- Electrical / electronic technology 6
- Project management office / Projects 6

GENERAL DEGREE CHARACTERISTICS

Professional opportunities

The aim of the Degree is to enable future graduates to cover the social and industrial needs in the following professional profiles:

- Practice the activity in private companies (Design Management, Product Development, Technical Office Work, Management, Quality, Environmental and Workplace Risk Prevention Tasks, etc.).
- Practice the activity in public companies (Design Management, Processing of subsidies and aid, Advice to companies, etc.)

- Free practice of the professional activity (Design Management, Product Development, Corporate Image, Communication, etc.)
- Teaching activity (Teaching and training in specific aspects of Design and Development).

Mobility: Students may participate in the SICUE, ERASMUS, etc., mobility programmes in accordance with the appropriate regulations.

Further information: <http://www.unizar.es/euitiz/>



Electrical Engineering

The objectives of this bachelor's degree are to give professional skills in the field of Electrical Engineering, such as generation, transmission and distribution of electricity, the electrical installations, electrical machines and drives, renewable energy, and other future relevance, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Mechanical Engineering

The objectives of this bachelor's degree are to give professional skills in the field of Mechanical Engineering, such as civil engineering, mechanical equipment, energy systems, industrial plants and manufacturing processes, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Chemical Engineering

The objectives of this bachelor's degree are to give professional skills in the field of Chemical Engineering such as design and improvement of processes and products, including the design, calculation, construction, commissioning and operation of equipment and facilities that carry out processes in which the matter experience changes in its composition, energy content, state or characteristic of the chemical industry and other related sectors such as pharmaceuticals, biotechnology, food or environmental, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Electronics and Automation Engineering

The objectives of this bachelor's degree are to give professional skills in the field of Electronics and Automation Engineering, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Industrial Organization Engineering

This is a Bachelor's degree with a primarily vocational orientation, with two areas of professional development, one focused on professional practice in the business, government and other organizations, and another one focused especially on professional development in the area of military defence.

The objectives of this bachelor's degree are to give professional skills in management and business process, organizations, institutions and teams of people in areas where technology plays a role, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Industrial Technologies Engineering

This Bachelor's degree aims to equip graduates with a multipurpose and generalist training, with solving skills, innovation and adaptation to the challenges that arise in their professional practice whether in the professional fields of industrial and service, research and teaching centers, government, etc., with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice. Also, this degree will provide the student's scientific and technological bases that allow to undertake further studies specific leading to the Master's Degree in Industrial Engineering.



All these Bachelor's degrees share the following academic structure:

Common Basic training (60 ECTS)	
Subjects	ECTS
Mathematics	18
Physics	12
Informatics	6
Business administration	6
Chemistry	6
Graphic design	6
Statistics	6

Mandatory (74-92 ECTS)	
Subjects	ECTS
English language B-1	2
Specific Technology	60-78
Final Bachelor's Degree Project	12

Common Technical training (72 ECTS)	
Common subjects	ECTS
Fundamentals of Electrical	6
Fundamentals of Electronics	6
Mechanical	6
Environmental Engineering	6
Organization and Management	6
Project Office	6
Strength of Materials	6
Control Systems	6
Fundamentals of engineering thermodynamics and heat transfer	6
Fluid mechanics	6
Fundamentals of Materials Engineering	6
Manufacturing technologies	6

The specific technologies for each bachelor's degrees are

Specific Technologies			
Electrical Engineering	72	Electronics and Automation Engineering	72
Subject	ECTS	Subject	ECTS
Electrical Machinery	18	Electrotechnique	6
Control Engineering	6	Electronic Materials	6
Electrical Installation	12	Digital Electronic	6
Power Lines and Electrical Power Systems	12	Programmable Eletronic Systems	10
Power Electronics	6	Power Electronics	6
Electrical Circuit Analysis	6	Electronic Instrumentation	6
Power and Renewables	12	Signals and Systems	6
Mechanical Engineering	72	Engineering Control	6
Subject	ECTS	Industrial Robotics	6
Industrial Drawing	6	Industrial Automation	6
Theory of Mechanisms and Machines	6	Industrial Organization Engineering	42
Applied Knowledge of Thermal Engineering	12	Subject	ECTS
Deformable Solid mechanics	6	Economic Engineering	6
Theory of Structures and Industrial Constructions	6	Applied Thermodynamics and heat transfer fundamentals	6
Fluid Mechanics	6	Expanding Operations Research	6
Technology of Materials	6	Organization of human resources	6
Manufacturing Technology II	6	Fluid Engineering	6
Machine Design Criteria	6	materials Engineering	6
Chemical Engineering	72	Manufacturing Technologies	6
Subject	ECTS	Industrial Technologies Engineering	66
Foundations of Chemical Engineering	12	Subject	ECTS
Chemical Process Design	12	Control Engineering	6
Chemical Process Control	6	Machine Design Criteria	6
Thermal and Fluid Engineering	12	Digital electronics and power	6
Transformation of raw materials and resources	6	Thermal Engineering	6
Experiments in Chemical Engineering	12	Fluid machinery and plant facilities	6
		Deformable Solid Mechanichs	6
		Materials Technology	6
		Electrical power systems	6
		Manufacturing processes and industrial drawing	6
		Industrial chemical processes	6
		Electric Machinery	6

GENERAL DEGREE CHARACTERISTICS

Professional opportunities: This degree enables graduates to practise the profession of Technical Industrial Engineering.

Mobility: Students may participate in the SICUE, ERASMUS, etc., mobility programmes in accordance with the appropriate regulations.

Further information:

<http://www.cps.unizar.es>

<http://www.unizar.es/euitiz/>



Telecommunication Technologies and Services Engineering

The objectives of this bachelor's degree are to give professional skills to understand the fundamental principles that underpin the telecommunications technologies and services and the ability to apply knowledge and technical procedures to design, analyze, implement, operate, maintain and manage, a service, system, component or process in the field of Telecommunications engineering to meet the required specifications, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Common Basic training (60 ECTS)	
Subject	ECTS
Mathematics	18
Physics	12
Informatics	6
Business administration	6
Electronic Technology, Circuits and Systems	12
Statistics	6

Telecommunication (90 ECTS)	
Subject modules	ECTS
Signals and Communications	33
Electronics	18
Networks, Systems and Services	33
Telecommunications Project Management	6

Specific Technologies (48 ECTS)	
Technology	ECTS
Telecommunication Systems	48
Telematics	48
Electronic Systems	48
Sound and Image	48

Mandatory (14 ECTS)	
Subjects	ECTS
English language B-1	2
Final Bachelor's Degree Project	12

Optional and free elective (28 ECTS)	
Subjects	ECTS
Free elective	6
Optional technical subjects, company training	22

GENERAL DEGREE CHARACTERISTICS

Professional opportunities: This degree enables graduates to practise the profession of Technical Telecommunication Engineering.

Mobility: Students may participate in the SICUE, ERASMUS, etc., mobility programmes in accordance with the appropriate regulations.

Further information: <http://www.cps.unizar.es>



Computer Engineering

The objectives of this bachelor's degree are to give professional skills to conceive, write, organize, plan, develop and sign projects in the field of computer engineering whose purpose are the design, development or operation of computer systems, services and applications, with the ability to work in multidisciplinary teams, ready to adapt to lifelong learning and responsible professional practice.

Common Basic training (60 ECTS)	
Subjects	ECTS
Mathematics	18
Physics	6
Informatics	24
Business Administration	6
Statistics	6

Computer Technologies (102 ECTS)	
Subjects	ECTS
Computer Architecture and Organization	6
Programming and Computing	30
Operating systems and computer networks	18
Software engineering and information systems	30
Distributed Systems	6
Computer Security	6
Hardware Projects	6

Specific Technologies (48 ECTS)	
Technology	ECTS
Software Engineering	48
Computing	48
Computer Engineering	48
Information Systems	48
Information Technologies	48

Mandatory (14 ECTS)	
Subjects	ECTS
English language B-1	2
Final Bachelor's Degree Project	12

Optional and free elective (16 ECTS)	
Subjects	ECTS
Free elective	6
Optional technical subjects, company training	10

GENERAL DEGREE CHARACTERISTICS

Professional opportunities: This degree enables graduates to practise the profession of Technical Computer Engineering.

Mobility: Students may participate in the SICUE, ERASMUS, etc., mobility programmes in accordance with the appropriate regulations.

Further information: <http://www.cps.unizar.es>

Master's and Doctorate Degrees

Master's and Doctorate Degrees are already adapted to the European Higher Education Area.

The official courses leading to the award of a Master's degree are intended to provide advanced specialized or multidisciplinary training, aimed at academic or professional specialization, or an introduction to research work leading to a doctorate programme and obtaining a PhD.

The doctorate programme is intended to give students advanced training in research techniques. It can include courses, seminars and other activities directed at research training, and will include creating and presenting a doctoral thesis consisting of an original research project. The Doctorate programme consists of two periods, the training and research periods. The training period correspond to the Master's degree.

The actual offer at the Campus Rio Ebro on Master's degrees is focused on introduction to research, corresponding to the training period of the doctorate programmes. The official Master's degrees and Doctorate programmes offered at the Campus Rio Ebro are:

- **Master's degree and Ph.D in Renewable Energies and Energy Efficiency.**
- **Master's degree and Ph.D in Computing and Systems Engineering.**
- **Master's degree in Applied Mechanics and Ph.D in Computational Mechanics.**
- **Master's degree and Ph.D in Mechanical Systems.**
- **Master's degree and Ph.D in Introduction to Research in Chemical and Environmental Engineering.**
- **Master's degree and Ph.D in Electronic Engineering**
- **Master's degree and Ph.D in Information and Communication Technologies in Mobile Networks**
- **Master's degree and Ph.D in Biomedical Engineering**

To enter to a Master's degree course you need to hold of an official degree from either a Spanish university or an equivalent higher education institution from the European Higher Education Area that allows the holder to undertake a Master's degree course in the awarding country.

To enter the Doctorate programme in the research period, you will need an official Master's degree or a qualification of the same level issued by a higher education institution in the European Higher Education Area.



Master's in Renewable Energies and Energy Efficiency

Orientation: Research

Number of credits to obtain title: 60 credits

Maximum number of places: 30

Minimum number of places: 10

Minimum number of credits per year: 20

Coordinator: Inmaculada Arauzo Pelet, **e-mail:** iarauzo@unizar.es

Admission profile:

This Master's course is designed for students who have completed degrees in the following areas:

A: Engineering or science degrees.

B: Technical engineering, specialising in mechanics, electrics, chemistry and other areas related to energy.

Students without basic knowledge of thermodynamics, heat transfer, circuit theory and electrical machines are obliged to take the subject "Fundamentals of electrical and energy engineering" within the 60 credits to be passed in order to obtain the Master's title.

Structure and contents of the Master's

The courses are organised so that a total of 60 ECTS credits must be completed, 45 of these through formal teaching and 15 through a Master Thesis.

The Master's has three basic recommended routes:

- Emphasis on renewable energies: this route encompasses introductory subjects related to the main renewable energies (solar, wind and biomass) during the first semester, specialising in advanced concepts during the second. These subjects are marked "eerr" in the table below.
- Emphasis on electrical systems: renewable energies for electrical energy production (wind and photovoltaic) and related advanced issues such as the management and reliability of electrical networks, integration of renewable energies, distributed generation, electrical markets, etc. These subjects are marked "elec" in the table below.
- Emphasis on thermal systems: renewable energies for heat production and thermoelectric power plants (solar heat and biomass) and advanced issues such as energy processes with thermal transformations, such as polygeneration, capture and storage of CO₂, bioclimatic architecture, etc. These subjects are marked with "term" in the table below.

Master's in Computer and Systems Engineering

Orientation: Research

Number of credits to obtain title: 60 credits

Maximum number of places: 40

Minimum number of places: 10

Minimum number of credits per year: 8

Coordinator: Juan Domingo Tardós Solano; **e-mail:** tardos@unizar.es

Admission profile:

Recent graduates who wish to deepen their knowledge of computer and systems engineering in order to improve their professional prospects.

Recent graduates requiring an introduction to the methodology of research, development and innovation (R+D+i) with the intention of doing a doctoral thesis in the future.

Business professionals wishing to update or complete their knowledge of R+D+i methodologies or to deepen their studies of specific techniques in order to improve their specialist knowledge and adapt it to the labour market (life-long learning).

The subjects covered by the Master's degree are aimed particularly at engineering or science graduates.

Structure and contents of the Master's

The courses are organised so that a total of 60 ECTS credits must be completed, 30 of these through formal teaching and 30 through a Master Thesis.

The Master prepares the student to undertake professional practice in R&D&I in industry in the area of Systems and IT Engineering.

Training will be provided in research and development in specific fields in IT (hardware and software) and Systems Engineering (real time, robotics and discreet event systems). The proposed programme covers the following lines of work in the sphere of Information Technology and Systems Engineering:

- Discreet Event Systems Engineering. Convention and formal methods for modelling, analysis and design of "artificial" manufacturing, logistical, traffic (air, rail, urban, etc.), information distribution, decentralised work, etc. production systems
- Robotics, Perception and Real Time. Robotics for services and intervention; advanced perception systems; computer vision; real time systems.
- Advanced Computer Graphics. Graphic treatment. Real and synthetic images – both static and animated.
- Computer architecture. High performance computations. Memory hierarchy. Design oriented towards performance and energy consumption.
- Digital topology for digital image processing, and engineering of the method and evolution of databases.
- Advanced Information Systems. Software technology for information systems with geo-referenced data, mainly in Space Data Infrastructure (SDIs).
- Distribution Information Systems. Design and development of access systems for information located remotely. Distributed databases, affiliated information systems, web, wireless devices.

Master's in Applied Mechanics

Orientation: research

Teaching method: classes

Number of credits to obtain title: 60 credits

Maximum number of places: 30

Minimum number of places: 10

Minimum number of credits per year: 8

Coordinator : Begoña Calvo Calzada. **E-mail:** bcalvo@unizar.es

Admission profile:

This master's course is designed for students who have completed one of the following degrees:

- A: Technical engineering
- B: Engineering
- C: Physics or Mathematics.

Structure and contents of the Master's

The courses are organised so that a total of 60 ECTS credits must be completed, 45 of these through formal teaching (30 obligatory and 15 optional) and 15 through a Master Thesis.

The objective of the Master's lies in the training of the postgraduates in advanced mechanical engineering, with competence in all the topics which comprise the field of the corresponding qualification. As regards achievements and abilities, this proposed Master's uses the Descriptors of Dublin and Royal Decree 1393/2007 as its framework.

More in particular, specifically for the present Master's, at the end of which the students should have acquired the following general abilities:

- Have shown a systematic understanding of the field of mechanical engineering and a mastery of the skills and research methods related to this field.
- Have shown the ability to conceive, design and put into practice different mechanical elements under scientific rigour, as well as the terminology and basic concepts of solid and fluid mechanics.
- Be able to perform a critical analysis, evaluation and synthesis of new and complex ideas.
- Know the peculiarities of work in the industry and in research centres, and the social and economic repercussions of actions within mechanical engineering.
- Know how to communicate with colleagues, the academic community in its entirety and society in general about mechanical engineering.
- Know the research methodology sufficiently to be able to undertake a doctoral thesis in any area of Solid or Fluid Mechanics.

Master's in Mechanical Systems

Orientation: research

Teaching method: classes

Number of credits to obtain title: 60 credits

Maximum number of places: 30

Minimum number of places: 10

Minimum number of credits per year: 20

Coordinator: Emilio Larrodé Pellicer. **E-mail:** elarrodé@unizar.es

Admission profile:

This master's course is designed for students who have completed one of the following degrees:

A: Technical engineering

B: Engineering

C: Physics, chemistry or mathematics.

Structure and contents of the Master's

The courses are organised so that a total of 60 ECTS credits must be completed, 45 of these through formal teaching and 15 through a Master Thesis. These 60 credits do not include complementary training credits that students may be required to complete for admission purposes.

The objectives of the programme focus on the training of the student in the general area of Mechanical Systems and in the specific aspects of analysis, design and optimisation of component elements and integrated systems related to industrial machines and vehicles, as well as the production processes involved – stressing the latest technological advances in the field and the most advanced developments for their calculation, analysis and design. The specific objectives of the programme allow the student to acquire a new conception of mechanical systems, their component elements, the integration into more complex systems, the optimal working of these systems which allows greater mechanical and energy efficiency, the most ideal material for the configuration and the most correct and advanced production processes which allow the required level of quality and reliability control. This comes through a deeper knowledge of the behaviour of these matters from a mechanical, structural, thermal and functional point of view.

Master's in the introduction to research in chemical and environmental engineering

Orientation: Research

Number of credits to obtain title: 60 credits

Maximum number of places: 30

Minimum number of places: 10

Minimum number of credits per year: 20

Coordinator: Javier Herguido Huerta, **e-mail:** jhergui@unizar.es

Admission profile:

Recent graduates who wish to deepen their knowledge of chemical and environmental engineering technologies in order to improve their professional prospects.

Recent graduates requiring an introduction to the methodology of research, development and innovation (R+D+i) with the intention of doing a doctoral thesis in the future.

Business professionals wishing to update or complete their knowledge of R+D+i methodologies or to deepen their studies of specific techniques in order to improve their specialist knowledge and adapt it to the labour market (life-long learning).

The subjects covered in the Master's course are designed especially for

A: Chemical engineers, industrial engineers, graduates in chemistry or environmental sciences.

B: Technical engineers, specialising in industrial chemistry.

For other degrees, the Master's Academic Committee will need to provide a favourable report for admission of the student, indicating the complementary subjects that must be taken if the previous studies are not considered sufficient for being able to satisfactorily achieve the objectives of the Master's course.

Structure and contents of the Master's

The Master's course does not involve routes or specialities, and is organised in three principal blocks:

Compulsory subjects: these include areas of general interest for the acquisition of research skills in any of the lines on which the Master's is structured, namely: modelling, characterisation of materials and research management (2 subjects of 6 ECTS credits each). Also included in this block is compulsory laboratory practices (12 ECTS credits) in which the student will carry out an initial research work under the direction of the Master's teaching professor.

Optional subjects: representing specialist training in the various research lines covered by the Master's course. The student must take 21 ECTS credits out of the 48 offered in optional subjects.

Master Thesis, a compulsory work representing 15 ECTS credits. This will consist of the carrying out of an initial research or innovation technology project by the student under the direction of a teacher of the Master's. For evaluation purposes, the students will have to provide a report to be presented in public.

The courses are organised so that a total of 60 ECTS credits must be completed, 45 of these through formal teaching (24 from the block of compulsory subjects and 21 from the optional subjects) and 15 through the Master Thesis.

Master's in Electronic Engineering

Orientation: Research

Number of credits to obtain title: 60-90 credits (*)

Minimum number of credits per year: 20 (**)

Coordinator: Arturo Mediano Heredia, **e-mail:** amediano@unizar.es

Admission profile:

Recent graduates who wish to deepen their knowledge of electronic engineering technologies in order to improve their professional prospects.

Recent graduates requiring an introduction to the methodology of research, development and innovation (R+D+i) with the intention of doing a doctoral thesis in the field of electronic engineering in the future.

Business professionals from the electronics sector wishing to update or complete their knowledge of R+D+i methodologies or to deepen their studies of specific techniques in order to improve their specialist knowledge and adapt it to the labour market (life-long learning).

Structure and contents of the Master's

The Master's is organised in three modules:

Basic levelling subjects (between 10 and 40 ECTS to be taken by the student, depending on previous studies): This module includes the subjects necessary to achieve a similar level among students starting the course with different degrees, providing the appropriate common knowledge and skills required for subsequent studies. Each student must take the subjects corresponding to this module (between 10 and 40 ECTS) which have not previously been taken and accredited, depending on the nature of the original degree and previously taken optional subjects.

Optional subjects (30 ECTS to be taken by the student): specialist training in the various research lines covered by the Master's course. Students are not expected to do a specific speciality, it being possible to choose more general or more specialised studies subject to the agreement of the tutor. However, in order to create specific routes for specialist study, the subjects in this module are organised into **two specialist subject blocks and one common block**.

Master Thesis (20 ECTS), which is compulsory. This will consist of the carrying out of an initial research or innovation technology project by the student under the direction of a teacher of the Master's. For evaluation purposes, the students will have to provide a report to be presented in public.**2009/10**

(*) Depending on the student's previous studies (see *Structure and contents of the Master's*).

(**) Except in cases where the number of credits pending to obtain the title is less.

Master's in Information and Communications Technologies in Mobile Networks

Orientation: Research

Number of credits to obtain title: 60 credits

Maximum number of places: 60

Minimum number of places: 10

Minimum number of credits per year: 8

Coordinator: José Ruíz Más. **E-mail:** jruiz@unizar.es

Admission profile

Graduates in Telecommunications, Information and Electronics Engineering, and first cycle graduates (with complementary access)

Structure and contents of the Master's

The courses are organised so that a total of 60 ECTS credits must be completed, 44 of these through formal teaching (4,5 obligatory and 39,5 optional) and 16 through a Master Thesis.

The objective of the programme is the training of research professionals in the field of Information and Communication Technology in Mobile Networks. This training includes the study of the mobile networks from the point of view of telecommunications systems, radio technology, digital signal treatment and data transmission. The programme covers aspects of 3G mobile networks and systems going further – known as “beyond 3G” – as well as local area networks via radio, personal networks, WPAN and WBAN, in addition to terrestrial communications systems: LDMS, MVDS, WiMAX, TDT, etc.

The programme provides knowledge and abilities to develop research work in the following specific areas of R&D&I:

- Telematic systems in mobile and wireless communication, aspects of safety, service quality, protocol design, multiple access techniques, error control mechanisms and network planning
- Branch systems based on fibre optics and technology related to fibre optic systems
- Systems planning via radio, study and characterisation of spreading channels across different band widths. Application to mobile and wireless communications and implications for the designing of mobile networks
- Design the architecture of networks to provide mobile service based on heterogeneous technology and the convergence of standards
- Algorithms and advanced techniques for voice signal processing. Signal processing applied to wireless communications and algorithms to optimise the capacity of the radio-electric channels in mobile communications and the correct size of network resources.
- Modelling the active devices and circuit designs in hybrid and monolithic technologies
- Design telecommunications systems. Channel models
- Antennas

Master's in Biomedical Engineering

Orientation: Research

Number of credits to obtain title: 60 credits

Maximum number of places: 30

Minimum number of places: 10

Minimum number of credits per year: 8

Coordinator: Pablo Laguna Lasaosa **e-mail:** laguna@unizar.es

Admission profile:

This master's course is designed for students who have completed one of the following degrees:

A: Technical engineering

B: Engineering

C: Biology, Pharmacy, Physics, Mathematics, Surgery or Chemistry

Structure and contents of the Master's

The courses are organised so that a total of 60 ECTS credits must be completed, 45 of these through formal teaching and 15 through a Master Thesis.

The objective of the programme is the training of researchers in matters relating to Biomedical Engineering. The formative objectives are directed towards training people who will revitalise research centres and groups in both the public and private spheres. It is intended that by the end of the Master's, the students will have acquired the abilities necessary to work on a doctoral thesis in any area within Biomedical Engineering.

Having a competitive position in this field in the future requires quality research, for which reason well-trained doctors are needed. The main objective of the programme is the training of doctors in areas related to biomedical engineering so that they can join research projects occurring in the University and in companies. The achievement of the aforementioned general objective requires posing and reaching the following smaller objectives:

- a) The training on offer will be based on the research areas of the research groups involved. This objective ensures the quality of the teachings involved.
- b) Encourage students to be multidisciplinary, to exchange ideas, and to co-operate effectively in the different facets of biomedical engineering, with particular emphasis on clinical/medical and technical aspects.

Biomedical Engineering is an area of engineering that is highly interdisciplinary. It aims to provide solutions to any engineering problem found in the field of biology and medicine. Thus, a very important aspect of training will lie in being able to develop abilities (individually, but basically in teams) that combine the necessary knowledge and specialities to respond to the problems that the student will have to face when working professionally.

It will be necessary to know both the engineering methodologies related to the design process and the medical terminology, basic concepts of biology and medicine, peculiarities of work with tissues, organs and living beings – in particular in the clinic environment – and the social and economic repercussions of the action.

Doctorate Programmes

The Doctorate programmes are coordinated by university departments or research institutes. The University of Zaragoza is offering the following Doctorate Programmes at the Campus Rio Ebro.

PhD Programmes	Department or Institute
Biomedical Engineering	UZ Engineering Research Institute (I3A)
Renewable Energies and Energy Efficiency	UZ Institute of Research, CIRCE
Design and Manufacturing Engineering	Design and Fabrication Engineering
Systems and Computer Engineering	Computer Science and Systems Engineering
Electronic Engineering	Electronic and Communication Engineering
Chemical and Environment Engineering	Chemical Engineering and Environmental Technology
Computational Mechanics	Mechanical Engineering
Fluid Mechanics	Science and Technology of Materials and Fluids
Mechanical Systems	Mechanical Engineering
Information Technologies and Communications in Mobile Networks	Electronic and Communication Engineering

CPS Postgraduate Programmes

The CPS has originated, promoted and coordinated a wide-ranging offer of postgraduate courses since 1989, with the support and initiative of university departments in the area of technology, the CIRCE foundation, the Engineering Research Institute of Aragon, etc. Currently fifteen master's and postgraduate degrees are offered in various engineering disciplines, with training programmes constantly updated to match the needs of industry and of society.

Postgraduate studies at the CPS represent excellent additional educational value for young engineers and graduates who wish to expand their knowledge and skills in specific technology fields and improve their employment prospects. They are also of great interest to working professionals seeking to update their education and training.



Category	ECTS	Duration	Cost (euros)	Telephone	E-mail
MASTER'S					
Industrial and Technological Diversification	60	1 year	6,000	976761894	anasanz@unizar.es
Ecodesign and Energy Efficiency in Construction	70	1 year	4,725	976762146	master.ecodiseñonizar.es
Ecoefficiency and Energy Markets. Class attendance or On-line	70	1 year	4,800	976762146	circe@unizar.es
Renewable energies. On-line	60	1 year	4,525	976762146	circe@unizar.es
European Renewable Energies. Class attendance or On-line	90	1 year	5,665	976762146	circe@unizar.es
Thermoelectric Generation. Zero Emission Technologies. On-line	60	1 year	4,450	976762146	circe@unizar.es
Environmental Engineering.	60	1 year	4,100	976761873	cnerin@unizar.es
Pipeline Engineering	50	1 year	6,000	976761000 Ext. 5053	olga@unizar.es
POSTGRADUATE					
Biomass Energy	30	5 months	3,175	976762146	circe@unizar.es
Renewable Energies	30	6 months	3,325	976762146	circe@unizar.es
Climatization Engineering	30	1 year	3,000	976762042	Postgrado.climatizacion@unizar.es
Design Engineering and Industrial Fluid Installation Engineering	30	1 year	3,000	976765048	pipin@unizar.es
Water Resources Engineering on-line	30	1 year	2,100	976765057	pigar@unizar.es
Industrial Organisation	89	1 year	3,800	976762101	carnava@unizar.es
SPECIALITY					
Technological analysis of irrigation systems. On-line	14	6 months	1,100	976765057	pigar@unizar.es
Energy Certification of Buildings	20	6 months	2,000	976762042	Diploma.certificacion@unizar.es
Fluvial Engineering. On-line	12	6 months	1,000	976765057	pigar@unizar.es
Hydrogen and combustible battery technologies	15	6 months	1,675	976762146	circe@unizar.es



Student activities

Tutorial Programme

Tutoring is one of the responsibilities of university teachers. The CPS tutorial programme extends the traditional function of resolving doubts arising within a specific subject to other aspects of student life at the university.

The tutor:

- Offers support and information to students in connection with the various services of the CPS and the university.
- Assists in the development of learning skills and strategies.
- Identifies issues that can interfere with the academic performance of the student.
- Provides guidance about university study methods.
- Encourages the student to take part in training improvement activities
- Monitors the academic progress of the student.



Participation in the tutorial action programme is voluntary throughout the degree course, and information about joining is available at the welcome meetings organised by the CPS management (Meeting with Engineering and Architecture Studies-EcEdIA'2009, 17 and 18 September 2009). You can also find all the information at the CPS website www.cps.unizar.es.

The experience of the tutorial action programme has been entirely positive since its inception in 2003. For students it provides an opportunity and means of support in their academic and personal development, with the tutor representing both an educational professional and a human face within the university environment. For tutors and the CPS the programme is a valuable and indispensable means of gathering information about the process of adaptation and progress of the students, and helps to improve academic achievement.

Welcome meetings EcEdIA

Every year the CPS organises welcome meetings for new engineering students before the course begins. The aim of the EcEdIA meetings is to help new first year students to settle in at the university. Registration is free and done at the CPS Secretariat or via internet (www.cps.unizar.es). The meeting is held just the days before the academic year start. The usual schedule of the meeting is as follows:

FIRST DAY

09:00-10:00. Welcome to the University

The Rector of the University of Zaragoza and the Director of the Centro Politécnico Superior will welcome new students and give an introduction to the university and the CPS.

10:00-11:00. Teaching at the CPS (I)

The teaching process at the CPS will be explained: the programme of studies, the tutorial programme, exams, curricular assessment, work experience in companies, language teaching, study periods abroad, how the campus library works, sports activities, etc.

11:00-11:30. Break

11:30-13:00. Teaching at the CPS (II)

13:00-14:00. Students take the floor

Students currently studying engineering and architecture at the CPS will talk about learning at the centre (classes, facilities, exams, teacher-students relations, etc.), about university life at the CPS and about opportunities and extracurricular activities organised by student associations.

SECOND DAY

9:00-10:30. Finding out about your degree: the syllabus

Parallel sessions will take place, one for each degree (architecture, industrial engineering, computer science and engineering, chemical engineering, and telecommunications engineering). These first sessions will be devoted to an introduction and explanation of the syllabus for each degree together with the educational objectives.

10:30-11:00. Break

11:00-12:20. Finding out about your degree: qualifications

In these parallel sessions, qualified engineers will discuss the training of engineers and / or architects, the demands of the job market, and advice on how to approach the early stages of study.

12:20-12:40. Break

12:40-14:00. Finding out about your degree: students

Parallel sessions in which students from each degree course will discuss their experience, provide an assessment of their studies and, most importantly, answer questions from their new student colleagues.

Exchange students welcome meeting (ESWeM)

Students coming from mobility programmes are invited to a welcome meeting that usually takes place during the first week of the academic year. The aim of the ESWeM meeting is to present the College and the campus to the new exchange students. Also, it is a great opportunity for the exchange students to meet each other.



Student advisory services

There are four advisory services, staffed by professionals, situated in the Management area, next to the Secretariat in the Torres Quevedo building. Here you will find help and advice about resolving your problems. This service is free and anonymity is respected.

Study advice. Here you can obtain information and advice about any doubts you may have concerning your academic future.

Legal advice. This service provides advice about any issue related to employment, setting up an association, or how to make a complaint or claim.

Psychological advice. Help and advice is available about any worries you may have or feelings of insecurity or anxiety.

Sexual advice. Advice is available on how to avoid pregnancy, avoidance of risks and approaching your sexuality.

To use these services you only have to ask for an appointment (asesoria@unizar.es or Tel. 976 761356).

Students' Union & Students Associations

Students are represented and participate in the University governmental bodies through the students' unions. They do also enliven the Centre with their initiatives and play an important role in the organization of events such as employment fairs, cultural activities... you can meet them at <http://www.cps.unizar.es/dda/index.html>

There are also specific associations where students gathered as they share common interests: meeting and helping incoming students are among the interests shared by AEGEE, ESN, AIESEC... They organize parties, meetings and trips all of them widely announced.

The CPS enjoys an active student life with opportunities to take part in cultural activities, games, cooperation projects, sports, professional activities, exchanges, etc. The focus is always on the students.



Student Representatives

Torres Quevedo building (ground floor)

Tel.: 976 761866

E-mail: cpsdda@unizar.es

Web: www.cps.unizar.es/dda

Cultural Committee

Torres Quevedo building (ground floor)

Tel.: 976 761866

Fax: 976 761861

E-mail: cultcps@unizar.es

Web: www.cps.unizar.es/cultura

University of Zaragoza Telecommunications Students Association (A.A.T.U.Z.)

Ada Byron building

Tel.: 976 761000. Ext. 5337

E-mail: aatuz@unizar.es

Fax: 976 761866

Web: <http://aatuz.cps.unizar.es/>

Association of Chemical Engineers of Aragon (A.I.Q.A.)

Torres Quevedo building (ground floor)

Tel.: 976 761866

E-mail: aiqa@unizar.es

Fax: 976 761861

Web: www.cps.unizar.es/~aiqa/

Association of IT Engineers of Aragon (A.I.I.A.)

Avda. César Augusto nº 58, 1º

50.003 Zaragoza

Tel.: 647.43.38.63

E-mail: junta@aiaa.es

Fax: 976.29.20.31

Web: www.aiaa.es

University of Zaragoza Industrial Engineering Students Association (A.E.U.Z.I.I.)

Torres Quevedo building (ground floor)

Teléfono: 976 761866

E-mail: euzii@iespana.es

Fax: 976 761861

Web: www.euzii.es

Engineers' Choir

Torres Quevedo building (Culture room)

Teléfono: 976 761866

E-mail: coroingenieros@unizar.es

Engineers Without Borders (I.S.F. Aragón)

Office: Ada Byron building (first floor).

Tel.: 976 761000 Ext. 5339

E-mail: isf@unizar.es

Web: www.isf-aragon.org

Dir-Europa

Ada Byron building (second floor)

Tel.: 976 762384

E-mail: info@direuropa.org

Fax: 976 761861

Web: www.cps.unizar.es/~dire/

I.A.E.S.T.E.

Ada Byron building (second floor)

Tel.: 976 761000. Ext. 5339

E-mail: iaeste@unizar.es

Web: www.cps.unizar.es/iaeste

Fax: 976 761861

In-Forum

Torres Quevedo building

Tel.: 976 761977

E-mail: inforum@unizar.es

Fax: 976 761861

Web: <http://inforum.cps.unizar.es>

I.S.C. Junior-Empresa

Centro Politécnico Superior (Torres Quevedo building)

Tel.: 976.76.18.67

E-mail: isc@unizar.es

Fax: 976.76.18.61 (especificar ISC)

Web: <http://www.solucionesisc.com/>

La Cueva de Smaug (Smaug's cave)

Torres Quevedo building

E-mail: smaugcps@terra.es

Web: www.terra.es/personal6/smaugcps/

La Tuna

Torres Quevedo building (basement floor)

E-mail: tunadeingenieros@hotmail.com

Web: www.tunadeingenieros.com



IEEE University of Zaragoza Student Branch

Ada Byron building

Teléfono 976 761000 Ext. 5337

E-mail: ieeesb@unizar.es

Web: <http://ieeesb.cps.unizar.es>

Club de Malabares (juggling)

Edificio Torres Quevedo

E-mail: malabari@unizar.es

Web: www.cps.unizar.es/malabares

Society of modern audiovisual culture studies (SECAM)

Web: <http://secam.cps.unizar.es>

Púlsar (University of Zaragoza free software association)

Edificio Torres Quevedo

E-mail: pulsar@unizar.es

Web: <http://pulsar.unizar.es/>

Association for the promotion of space research and development (APSIDE)

E-mail: jonatan.peris@leem.es

Web: <http://sseti.unizar.es/>



Courses of Spanish as a Foreign Language

The University of Zaragoza has been teaching Spanish to foreign students since 1927 and its courses are worldwide reputed. The University is also an Official Examination Centre for the Diploma of Spanish as a Foreign Language (Diploma de Español como Lengua Extranjera – DELE), with exams in May and November.

Courses run throughout the year in the venue of Zaragoza (Campus of Plaza San Francisco) but in summer they are transferred to the tourist resort of Jaca (Huesca) in the Pyrenees. Among those lectured in Zaragoza, intensive ones (three weeks, three hours a day) are the most popular and exchange students are offered a reduction on their tuition fees.

Information on the courses and application forms can be found at http://wzar.unizar.es/uz/difusion/zaragoza/default_e.html

University Libraries

The library for studies of Engineering and Architecture is called Hypathia de Alejandría library and is located in the *Agustín de Betancourt* Building, in campus Río Ebro. You will be allowed to borrow books and look up its sources as soon as you get registered and, since it takes part of the net of the University libraries, to do so at any of them.

The Hypathia de Alejandría library offers the following services:

LOANS. The library catalogue can be consulted at <http://roble.unizar.es> To use the loan service a current University of Zaragoza user's card is required. Items available in the Roble catalogue can be borrowed and returned at any of the Zaragoza university libraries. Items can be reserved and renewed through the web. Further information is available at <http://biblioteca.unizar.es> Renewals and reservations can also be made by telephone on 976 761000, ext. 5256.

PHOTOCOPYING AND INTERLIBRARY LOANS. Photocopies and documentation from other libraries and organisations can be supplied subject to copyright restrictions. Requests can be made by e-mail at pihypatia@unizar.es or by completing the form at <http://biblioteca.unizar.es/pinter.php>

REFERENCE LIBRARY. Most of the journals and periodicals in the collection are available in electronic form through the general catalogue at <http://roble.unizar.es> and the A to Z list. The free access display contains the most recent issues of each title subscribed to in printed form. Since 1997 the lists of contents of periodicals available in printed form have been made available in electronic form. This service can be accessed at hypatia@unizar.es

DATABASES. A collection of databases accessible by internet is available at <http://biblioteca.unizar.es/basesdatos.php> Access is also available at the library if a computer and time is requested at the Reference Library counter (2nd floor).

INFORMATION AND REFERENCE. Enquiries can be answered in person, by e-mail at hypatia@unizar.es, by telephone or via the website at the mailbox service.

SELF ACCESS LANGUAGE LEARNING. The self access language learning room situated on the first floor is equipped with computers and material provided by the university language institute. Items available from the catalogue can be accessed at http://roble.unizar.es/search*sp/r?SEARCH=bca

WEBSITE: <http://biblioteca.unizar.es> is the website of the university library. Information about resources and services of the Hypatia library can also be consulted at <http://bca.unizar.es>

USER TRAINING. The Hypatia library organises training sessions in the use of databases and e-resources. Information is available via the website and mail lists. Further information can be found at <http://biblioteca.unizar.es/cursosformacion.php> The courses are general, specialised or “à la carte” according to user requirements.

OTHER RESOURCES. Work rooms Group I and II (reservations may be made at the loans counter), reference and database computers (reservations at the reference counter).

HYPATIA LIBRARY QUALITY CERTIFICATION. The “Hypatia de Alejandría” library was awarded in July 2006 the Quality Certification ISO 9001, establishing a quality commitment to users. Details at <http://bca.unizar.es/btcainforma.php>

USER INVOLVEMENT. Library Committee with student and teacher representatives. Suggestion and complaint forms available at library counters and at <http://biblioteca.unizar.es/quejas.php>. Communication by letter or personal interview request (via e-mail: hypatia@unizar.es).

FURTHER INFORMATION ABOUT THE RANGE OF SERVICES OFFERED BY THE HYPATIA LIBRARY at:
http://bca.unizar.es/Carta_de_Servicios.pdf

By now you can have a look at the Hypathia library’s digital services at <http://bca.unizar.es/>

Reading rooms where to study your own notes or books are also at your disposal in every building.



Computer Facilities

The University of Zaragoza has been settling a WI-FI net since 2004 and now is totally implemented in all its campuses.. User id. and password are provided when registering.

Besides equipped classrooms for regular courses there are open-access PC's available in several rooms for students to freely use them. Any student of the University is allowed to use other faculties' and schools' facilities according to their rules.

Sports

Main campus at Plaza San Francisco counts a complete sports complex with a gym, indoor and outdoor courts for basket ball and five-a-side football, an athletics track, a volley ball court, football pitch,... Furthermore, teams may be made up to take part in University leagues in some of these sports.

Other sports and physical activities are also available on the basis of monitored courses: from aerobics to tai-chi you just need to become a member of the sports club ('Servicio de Actividades Deportivas' -SAD-) and sing up for the activities chosen. Timetables and prices are described at <http://www.unizar.es/deportes/promocion/>

Buddy Pair Programme

Some of our students will be delighted to help you to prepare your stay among us and take the best of it: when you are contacted by the international office you will be offered the possibility of meeting this programme and we do encourage you to do so: your integration in the Centre, in the University and also in the city life will doubtlessly benefit from.



Miscellaneous

Spanish Language

Exchange students are not required to take any test of proficiency in Spanish language at our Institution. However, since most courses are lectured in Spanish and your daily meetings with Spanish people will rarely be in English, we do encourage you to take courses of Spanish prior and upon arrival as far as you feel you have a weak knowledge at present.

Money Matters

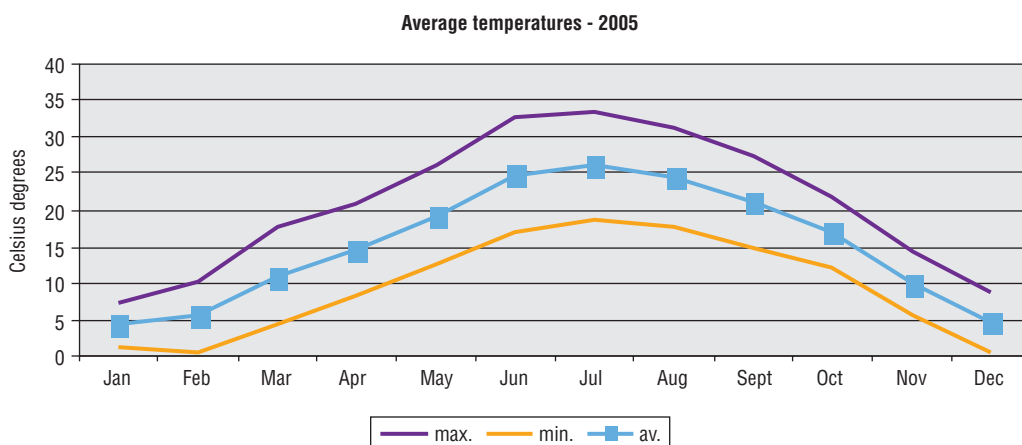
Spain's currency is the Euro. If you need to exchange money you should go to a bank, exchange offices are rarely found in our city.

Spanish people are very keen on credit cards and also on cash-dispensers; you may find them in shopping centres, within some University buildings (Ada Byron and Torres Quevedo got) and almost one in every street.

If you want to open a bank account you need to bring your passport, you will be required to identify yourself through it.

The Weather

Zaragoza's weather is a bit extreme and really windy, as in many regions with a similar characteristic, our wind also deserves to have its own name: you will soon feel the "cierzo". These are average temperatures, both 40°C in summer and below 0°C in winter are usually reached.



Electricity

The standard voltage is 220V. Two-pin plugs are standard on most electrical equipment. Adapters can be bought at electronics shops and in supermarkets.

Spanish Timetables

The Southernmost country in Europe, with some more sunlight hours, has different timetables from those of the rest of the Continent:

Labour activities do normally start by 8 or 9 a.m. and finish by 6 or 7 p.m. with a two-hour-break for lunch at 2 p.m. At University, lectures may run even until 9.00 p.m.

Shops open from 9.30 to 13.30 in the morning and from 17.00 to 20.30 in the evening. Supermarkets and shopping centres are normally opened from 9.00 to 21.00 or 10.00 to 22.00. These timetables usually run from Monday to Saturday.

Bank timetables may vary from one to another but they normally open by 8.30 a.m. approx. and close by 2 p.m.

As per meals, we have lunch at 14.00 approx. and dinner at about 21.00 or a bit later but restaurants have wider timetables and University canteens start serving lunch at 13.00.



The city of Zaragoza

City Transport

Public transport is supplied by a wide network of urban buses that links city quarters among them and with the city centre. As per lines and fares, check out the information at the webpage of the company (www.tuzsa.es), since this may be one of the first services to use when arriving, it may help to have a view on how it works beforehand.

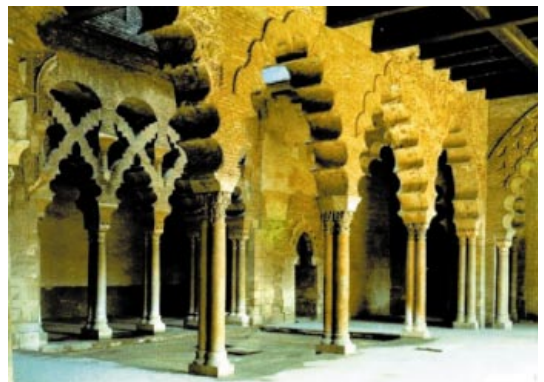
Strolling Around de City

Doing it on your own or enjoying the offer of the Tourism Board? One complete each other: Thematic strolls and guided visits are scheduled by the Tourism Board for visitors to have a deeper insight in the city History (***Enter History, Colour Strolls***) and also in its natural surroundings (***Enter Nature***).

You can also tour the city at the “Tourist Bus” or at the “Tourist Taxi”, proposals set up in collaboration with the Municipal Tourism Board.

Find more information about these services:

<http://www.zaragoza.es/ciudad/turismo/en/> or contact the Tourism Board at: 902 20 12 12.



Going Out: “Tapas” & Drinks

The “tapas” culture, so popular in Spain, is widely represented in the city and specially in the “Casco Histórico”. There, places like “Santa Marta” or “Santa Cruz” squares and the “Tubo” have become emblematic.

Going out with friends to have a drink is a popular way to enjoy the week-end among young people: the city centre and the “Casco Histórico”, and also the University district, count dozens of bars where students and young people meet at Friday and Saturday night.

Celebrations

OCTOBER

During one week by October 12th, the Pilar Festival, with its religious, folkloric and institutional ceremonies, performances on stage and on the streets, sport competitions, exhibitions, fireworks... cheers the city, its inhabitants and the thousands of visitors attracted every year by its fame.



SPRING

Easter in Zaragoza also has an outstanding place within the festive tradition of the city. Processions, whose origins go back to the 13th century, gather Faith, tradition and popular feeling in the deafening sound of the drums.

These are just two of the numerous festivals we enjoy in the city, to know more of all of them try this site:

<http://www.zaragoza.es/ciudad/turismo/es/agenda/fiestas.htm>

Enjoying

Do not forget the location of our city so near Madrid, Barcelona,... for your week-end trips and neither forget the Pyrenees if you are keen on winter sports: all of them can be enjoyed in Aragón. Some students associations organize journeys to visit some of the most interesting places in Spain, do not miss their advices on our board once you are here!





Useful contacts

Secretary's office

Tel.: 976.76.18.64.

Fax: 976.76.28.66.

E-mail: seccepsz@unizar.es

Management secretary

Tels.: 976.76.10. 00 (ext. 5033) or 976.76.18.68.

Fax: 976.76.20.31.

E-mail: rpoza@unizar.es

Administration

Administrator: María Soledad Pérez Pérez

Tels.: 976.76.10.00. (ext. 5021) or 976.76.18.64

E-mail: sperez@unizar.es

Library and reference room

Actur campus library "Hypatia de Alejandría". Betancourt building.

Telephones:

Management: 976.76.18.62.

Administration: 976.76.21.71.

Loans: 976.76.10.00, ext. 5256.

Reference room: 976.76.10.00, ext. 5201.

Fax: 976-762189 or 976.76.18.61

E-mail:

Bibliographic information, photocopying: bibactur@posta.unizar.es

Loans and reservation enquiries: circu410@unizar.es

Web: <http://bca.unizar.es>

Reception

Tel.: 976.76.20.32.

Fax: 976.76.18.61.

E-mail: csjcepsz@unizar.esmailto:csjcepsz@unizar.es

Business Relations Office

Tel.: 976.76.24.05

Fax: 976.76.20.31

E-mail: cpsind@posta.unizar.es

Distribution lists: cpspracticass@listas.unizar.es and cpsempleo@listas.unizar.es

Universa

E-mail: univactur@unizar.es

Web: www.unizar.es/universa

International Relations Office

Tel.: 976.76.22.33

Fax: 976.76.22.33

E-mail: cpsri@unizar.es

Reprography

Tel.: 976.76.10.00. (Ext. 5002)

Fax: 976.76.18.61.

E-mail: repro@unizar.es

Campus IT Services

General information: <http://sicuz.unizar.es>

E-mail: <http://www.unizar.es/sicuz/correo/index.html?menu=correo>

Enquiries: <http://moncayo.unizar.es/ccuz/faqsis.nsf/correoweb>

Remote access: <http://www.unizar.es/sicuz/infracomu.html?menu=infracomu>

Computer rooms: <http://www.unizar.es/sicuz/ordenpro.html?menu=ordenpro>

Emergencies: Tel.: 976.76.10.00 (Ext 5004, 5006 and 5008)

Problems, suggestions, requests: salascps@unizar.es

Teaching server “merlin”:

Emergencies: Tel. 976.76.10.00, ext. 1976

Access problems: <http://www.unizar.es/sicuz/siscen/index.html?menu=siscen> follow the link “Solución automática de problemas de acceso al servidor de docencia”.

Campus maintenance service

Tel.: 976.76.19.76

E-mail: fpeguero@unizar.es

Research support services:

Precision Mechanics Service

Tel.: 976.76.19.72

SElectronic Microscopy Service

Tel.: 976.76.10.00 (Ext.5128)

Web: <http://wzar.unizar.es/invest/sai/>

University information and claims centre

Tels.: 976.76.10.02 or 976.76.10.00 (Ext.5003)

Web: www.unizar.es/gerencia/vgacademicos/ciur/index.html

Language Institute

Tel.: 976.76.10.00 (Ext. 5246)

Fax: 976.76.10.25

E-mail: idiomas@unizar.es

Web: <http://www.unizar.es/idiomas>

Student advisory services

Offices in the management area (Torres Quevedo building, next to Secretary's Office)

- Legal advice
- Counselling service
- Sexual advice
- Advice on study techniques.

Tel. 976.76.13.56

E-mail: asesoria@unizar.es

Useful telephone numbers	
Emergencies	112
Sanitary emergency:	061
National Police:	091
Local Police:	092
Duty Chemist's:	901 71 23 77
Civil Protection:	006
Guardia Civil:	062
Firemen:	080

Municipality's Information	
City Council:	010
Citizen relationship office:	976 72 12 47
CIPAJ. Information for youngers:	976 72 18 18
Information office for consumers:	976 39 61 50
Woman House:	976 39 11 16
Tourism in Zaragoza:	902 20 12 12
Water (Malfunctions):	976 72 15 50
Electricity and gas:	976 76 00 00
Central Post office:	976 23 68 68

Transports		
Taxi:	Radio Taxi Aragón:	976 38 38 38
	Radio Taxi Zaragoza:	976 42 42 42
	Cooperativa Auto Taxi:	976 75 15 15
City Bus-TUZSA:	902 39 2008 / www.tuzsa.es	
Railway station:	902 24 02 02	
Airport:	902 404 704	