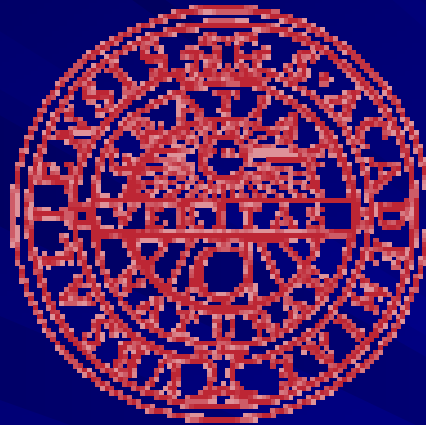


# Application to the position of Chair in Construction Engineering

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## Presentation

F.Pacheco Torgal

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Uppsala, 14 of May of 2018

**What do universities look in a Professor ?**

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**Knowledge in a artificial  
intelligence world ?**

**Integrity, ethics, reputation or  
something else perhaps?**

**How much does a wrong hiring affects  
a university brand ?**

**Is it wise to speak about family issues in a cover letter when applying  
to an university in a country that does not appreciate such high detail ?**

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Uppsala, 14 of May of 2018

## What is the business of universities ?

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**If the business of universities is knowledge what prevents a company to do the same for a lower cost ?**

Is the work of the intellectuals to transform the unthinkable into plausible ?

**Do universities serve as the cultural armed arm of a country ?**

**Is the most important mission of a university to contribute to PEACE ?**

# What is the business of universities ?

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**We are here to change the world or to invent something ?**

**Thomas Edison held 1093 US patents much below the top 3**

“Class on ‘science of positive psychology’ becomes university’s  
most popular course“

Yale University

## What is the business of universities ?

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*: “The purpose of life is not to be happy. It is to be useful, to be honorable, to be compassionate, to have it make some difference...”*

Ralph Waldo Emerson

*“education is not training, and learning at its best is connected with the imperatives of social responsibility”*

*Kathy Hytten in Philosophy of Education*

**Universities in the 21 century have the obligation of infecting students with the “dangerous” virus of non conformity **pacifism** (plus a degree) ?**

# The Portuguese heritage

## A historical melting pot

Where Europe, meets Africa and Asia



Eduardo Lourenço (95)-U.Nice  
*“My greatest pride as Portuguese  
is the fact that we are  
a mix of people and races.  
All the world should be like that”  
10 of May of 2018*

Carthaginians 800 BC, Romans (200 BC-400AD), Alans, Vandals, Visigoths  
**Arabs-Moors (600-1100AD)** and Portuguese after 1100 AD

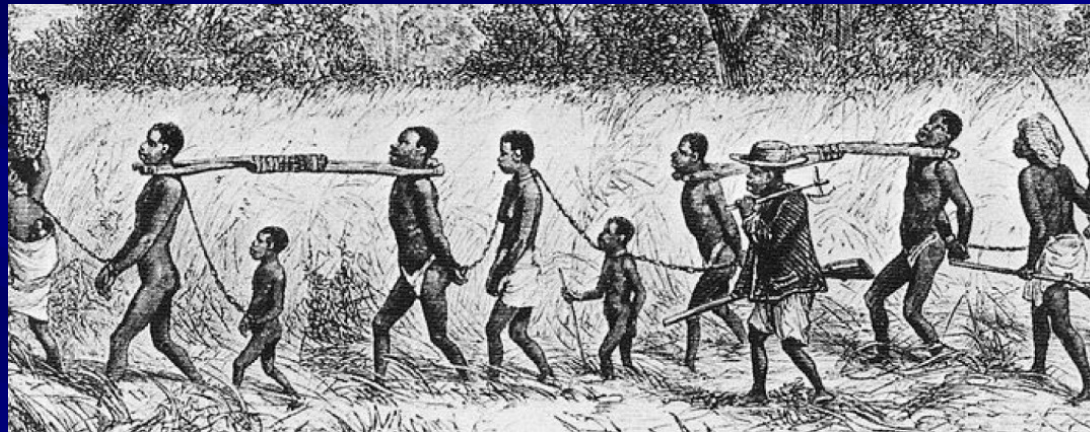
Uppsala, 14 of May of 2018

# What can a Portuguese bring to Sweden ?

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## Portuguese heritage

The last burning of non-Christians took place in 1761 but the official extinction of Portuguese Inquisition only occur in 1821



**12 millions African slaves sent over the Atlantic**  
**Portugal abolished the slave trade only in 1851**

or how a heinous crime helped to forge the supremacy of a language

6th most spoken language by more than 220 millions in 8 countries, more than 300 millions by 2030

- Fortunatly by 2030 instant language translation will wipe out any language supremacy

# What can a Portuguese bring to Sweden ?

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Countries evolve and people should also evolve



Wembley stadium 1961  
-  
Lisbon Pantheon 2015



Old kings, politics, writers, singers

Is science detached from the people's heart ?



**How much have i evolve ?**

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**Cover letter  
Soccer career dream**

**Competitive sport makes no sense in  
a type one civilization**

**Is the first mission of universities is  
to contribute to peace not  
competition ?**

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Uppsala, 14 of May of 2018

## **What can a Portuguese bring to Sweden ?**

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**We are not only a genetic heritage, we are not only the education that we received in childhood, we are also the place in which we were born**

**Portugal and Croatia are the only two european countries in the Top 35 most biodiverse small countries**

**A Portuguese spoken country (Brazil) is the world most biodiverse country, Angola and Mozambique are in the Top 30 most biodiverse**

**Portugal Continental shelf rigths on the Atlantic represents almost 4 million km<sup>2</sup>, a maritime size 40 times its terrestrial size**

# What can a Portuguese bring to Sweden ?

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## Expatriate Insider 2017

12500 respondents of 166 nationalities

1st place – I´m feeling at home with the local culture

1st place – Its easy to get used to the local culture

1st place – Its´s easy to settle down here

2nd place - Peacefulness

## What is Sweden to me ?

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<https://sweden.se/society/20-things-to-know-before-moving-to-sweden/>

Wikipedia – Too many facts to little heart

**Has ABBA contribut more to the world  
change than all Sweden scientists  
put together ?**

**Sweden (1919, 1921)**

**In March 1972 US Senate passed the Equal Rights Amendment  
(ratified only by 35 states)  
since 1972 several countries allowed women to vote**

Disclosure: Maybe this is just a brainwash exercise of my 5 sisters

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Uppsala, 14 of May of 2018

**How can Sweden help the Planet ?**

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**Do universities serve as the  
cultural armed arm of a country ?**

**Is a type 1 civilization a goal that  
makes sense or just a dream ?**

***“multicultural, tolerant, scientific society”***

**Why are universities been incapable of inspire a  
generation that prefers to die in the name of hate ?**

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Uppsala, 14 of May of 2018

## How can Sweden help the Planet ?

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**Just putting Money in research is not the solution  
No country can beat China in that game**



**The best way to win a race is to choose the terms  
Olympic games (Beijin, 2008- UK, 2012)**

## **Visibility: vanity or a strategy for greater impact ?**

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**We don't need a high performance OAR  
because DiVa suffices and we are already famous  
worldwide !**

**Scholar Google -Academics with more than 10.000 citations**

**Univ. Sydney – 118 (ARWU 83)**

**KULeuven - 108 (ARWU 90)**

**Uppsala Univ. – 61 (ARWU 63) !!!!!**

**Its irrelevant to know in what countries are my publications  
being download and when ?**

**Data is now the most valuable asset (Economist, 2017)**

# Are we now on a post review world ?

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**Sweden on Publons-Clarivate Analytics**  
**4<sup>o</sup> position reviewers/million people**  
**7<sup>o</sup> position top reviewers/million people**

## PEER REVIEW=ALTRUISM

Bastian, H. (2014) **A stronger post-publication culture is needed for better science.** PLoS medicine, 11(12), e1001772.

Hunter, J. (2012) **Post-publication peer review: opening up scientific conversation.** Frontiers in computational neuroscience, 6, 63.

Herron, D. M. (2012) **Is expert peer review obsolete? A model suggests that post-publication reader review may exceed the accuracy of traditional peer review.** Surgical endoscopy, 26(8), 2275-2280.



# How can Uppsala University help the Planet ?

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## What does rankings really means ?

King Abdulaziz and King Saud University (**ARWU 101-150**)

### **ARWU (201-300)**

Aalborg University  
Chalmers Univ. Tech  
KTH Royal Univ. Tech  
Maastricht Univ.

### **ARWU (301-400)**

Eindhoven U.; Duesseldorf U.; Halle-Witterberg U., U.Liege.....

# How can Uppsala University help the Planet ?

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**In Top 100 ARWU: Checked !**

But what about Uppsala University sustainability ranking performance ? Green metric, 4 Sweden, Unchecked

FP 9 (2021-2027) multidisciplinary moonshot missions ?

**Peace in a Europe from the Atlantic to the Urals**

**27 low crime, low inequality, energy poverty free, healthier, with higher cohesion, resilient and sustainable biophilic cities in 2030**

Instead of technovotocratic dreams

# How much time do we have ?

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**Nature, Oct 2017:**

German lost 76% of aerial insects in the last 27 years

**March 2018:**

Birds abundance fallen 55% in the last 30 years

**Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), March 2018:**

Biodiversity and nature's contributions continue dangerous decline, scientists warn

Less than 0.3%, is spent on LIFE program which enhances and protects biodiversity

**Really, how much time do we have ? 1000 years ?**

# What is to teach sustainability ?

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***"We cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well—for we will not fight to save what we do not love"***

**Gould, S.J. (1991) 'Enchanted Evening', *Natural History*, September 1991: 14.**

- **Does sustainability need different professors ?**
- **Is teaching a religion ?**
- **Are professor university priests ?** Can a professor involved in sustainability related issues drive a 400 horse power car ? Are personal habits really irrelevant ?

## What is to teach sustainability ?

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# **“How Are We to Live? Ethics in an Age of Self-interest”**

Peter Albert David Singer

(the world's most dangerous philosopher)

Three easy ways to make a difference:

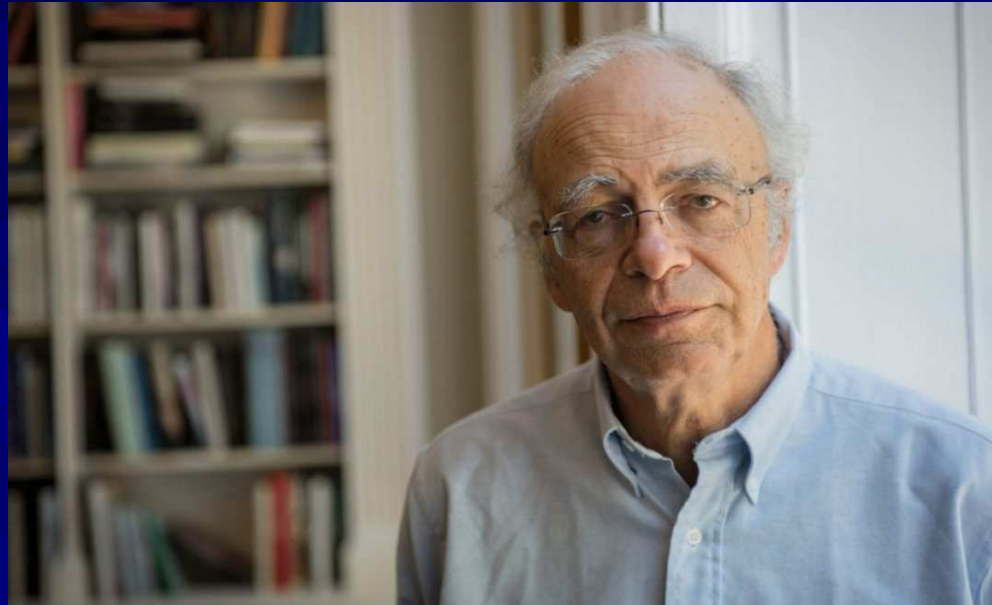
- Do something for the world's poorest people
- Do something for animals
- Do something for our Planet's environment

Are these three met by the type 1 civilization vision

## Am I here because of random chance ?

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In 2007 i saw a movie and that movie has influenced almost everything that i did afterwards



“If I could make everyone in the world see one film, I'd make them see [Earthlings](#)” -- Peter Singer

**What is it that makes humans human?**

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Uppsala, 14 of May of 2018

## A Chair in Construction Engineering: My research interests

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Is Uppsala University addicted to glamorous research ?

Scopus search all 109.703 Uppsala publications:

Medicine (33%), Biochem,

Genet., Molec Bio (22%)

Physics and astronomy (16%)

Materials science (8%)

Engineering (7%)

Scopus search in title, abstract, key-words:

“**pollution**” publications – 7th place (1st-Stockholm U., 2nd Lund U.)

“**waste**” publications – 7th place (1st-KTH, 2nd Lund U.)

**Should Uppsala university engage  
in promoting Swedish values ?**

**What Swedish values ? Waste recycling ?**

**“Zero waste” – that is our slogan’,**

**<https://sweden.se/nature/the-swedish-recycling-revolution/>**

**<https://www.independent.co.uk/voices/sweden-recycling-rates-revolutionary-dark-truth-behind-uk-wales-incineration-a7471861.html>**

**What’s the importance of waste based research  
on the context of the European resource  
efficiency strategy ?**



## A Chair in Construction Engineering: My research interests

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On average for every ton of mined materials more than 85% became mine waste (for several its over 99%)



a) climate change;

b) the exhaustion of resources (fossil fuels, water, land, ores, and biomass);

c) other impacts such as toxic releases to the ecosystem

**April 2018 - Environ. Sci. Technol. Urban Mining of E-Waste is Becoming More Cost-Effective Than Virgin Mining**

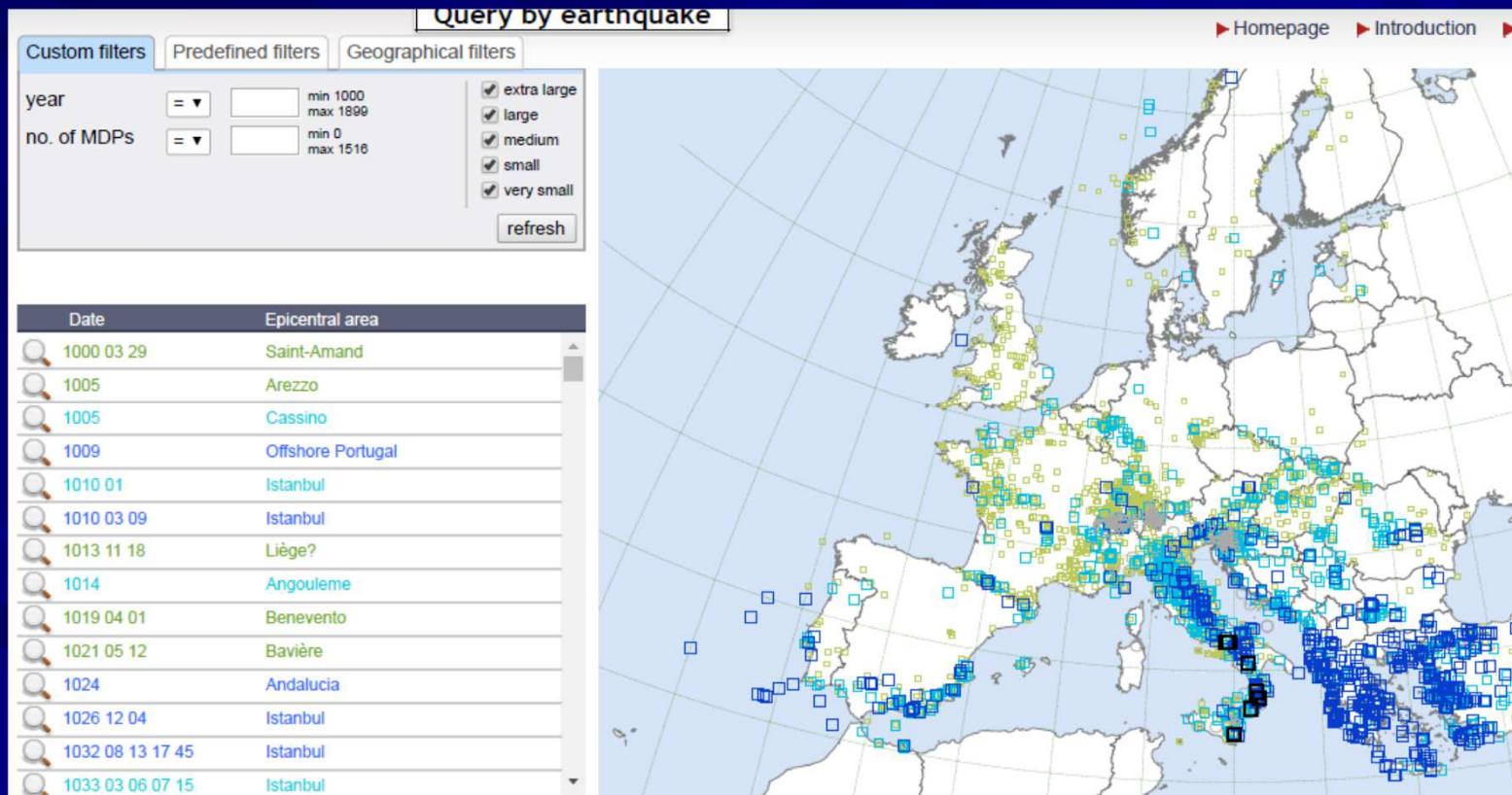
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Uppsala, 14 of May of 2018

# A Chair in Construction Engineering: My research interests

Proposal submitted to ERC by Feb 2018

Intelligent waste based composites with high carbon dioxide sequestration capacity for climate resilient infrastructure



Uppsala, 14 of May of 2018

# A Chair in Construction Engineering ?

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*"Construction Engineering aims at designing and managing a well-built urban environment while minimizing impact on the Earth's finite resources"*

<http://www.uu.se/en/about-uu/join-us/details/?positionId=159340>

**"What's in a name ?"**

From Romeo (Montague) and Juliet (Capulet)  
by William Shakespeare

Does an Engineer involved in such grand purposes  
need not to have a more inspire designation ?

**How ethic should an engineer involved  
in such grand purpose need to be ?**

# What is a Construction Engineer ?

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**Where are our Construction Engineer will work,  
here or abroad?**

**Construction Engineers to adress 2030 agenda**

**Energy efficiency is important but requires game changing cost-  
effective tech and sociologic approaches**

**Wastes and water the two paramount issues  
for students from China, India...and Russia ?**

# A Chair in Construction Engineering ?

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**What is Construction Engineering in other Swedish Universities ?**

**Does this really matter ?**

**Does Harvard worries on the competition or it's the followers to worry on the leader does ?**

**Skills for construction engineering:**

**Designing, Planning, Management**

**But what are the skills required by the construction engineering will need in 2030 ?**

**Multidisciplinary holistic design (SME employee or self-employed ???), design for demolition (improving health and safety of construction workers), smart demolition, recycling CDW etc etc etc ?**

# A Chair in Construction Engineering ?

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**Strategy for the sustainable competitiveness of the construction sector**  
the cost-efficient contribution of the buildings sector would be around 40 to 50% reduction in 2030 and around 90% in 2050

## 2016 – EU CDW Management Protocol

**Principle 1: Market-based and promoting competitiveness**

**Principle 2: Ownership by practitioners and acceptance and support from policy makers**

**Principle 3: Transparency and traceability throughout the CDW management process**

**Principle 4: Promoting certification and audits throughout the entire process**

**Principle 5: No need to reinvent the wheel**

**Principle 6: Location**

**Principle 7: Respecting environmental, health and safety rules and standards**

**Principle 8: Data collection and generation throughout the CDW management process**

How can Const Eng engage in multidisplinary research

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**“The end of the average”**

**How does the curriculum adapt to the individual ?  
Social sciences/humanities courses ?**

The construction industry is supported by a framework of legislation, regulations, standards, case law, contracts, and professional practice ethical principles

**How important are legal aspects in construction engineering ? Do they require law courses ?**

Journal of Professional Issues in Engineering Education and Practice

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Uppsala, 14 of May of 2018

## Some old ideas: A 2016 proposal

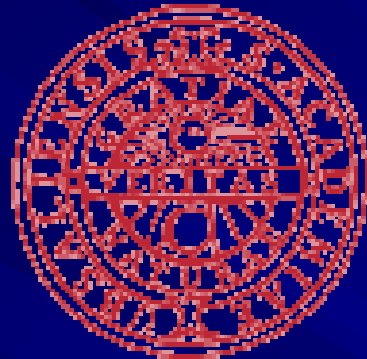
Existent core modules at the Civil Engineering curriculum at ICL	Suggested core modules for an eco-efficient built environment undergraduated curriculum
<b>Year 1</b>	<b>Year 1</b>
Professional Engineering Practice	Professional Engineering Practice
Drawing	Drawing
Surveying	Creative Design 1
Creative Design 1	Materials for eco-efficient construction 1 (New)
Materials	Mechanics
Mechanics	Structural Mechanics
Structural Mechanics	Fluid Mechanics
Fluid Mechanics	Mathematics
Geotechnics	Computational Methods I
Mathematics	Nanotechnology basics (New)
Environmental Engineering Science	Biology and biotechnology basics (New)
Computational Methods I	Smart built environment eco-efficiency (New)
Energy & Infrastructure I	Entrepreneurship skills (New)
Introduction to Civil Engineering	Humanities and social sciences (New)
<b>Year 2</b>	<b>Year 2</b>
Creative Design II	Structural Mechanics
Fluid Mechanics	Soils and Engineering Geology
Structural Mechanics	Statistics
Soils and Engineering Geology	Mathematics
Environmental Engineering	Computational Methods II
Statistics	Structural Design
Mathematics	Fluids Design
Computational Methods II	Materials for eco-efficient construction 2 (New)
Structural Design	Circular economy and life cycle analysis (New)
Fluids Design	Microbiology (New)
Project & Business Management	Humanities and social sciences (New)
<b>Year 3</b>	<b>Year 3</b>
Structure and Geotechnics Projects	Structure and Geotechnics Projects
Structural Mechanics	Computational Engineering Analysis
Fluid Mechanics	Apps for the smart built environment (New)
Transport Systems	Low carbon building design (New)
Environmental Engineering	Biomimetics and bioinspired design (New)
Geotechnics	Nano and biotech applications (New)
Computational Engineering Analysis	Humanities and social sciences (New)
Dynamics	Start-up creation and Business Management
Optional 1	Optional 1
Optional 2	Optional 2
The year ends with a five-week group design project.	The year ends with a five-week group design project.
<b>Year 4</b>	<b>Year 4</b>
Core modules	Core modules
Individual Research Project	Individual Research Project
Student Conference (Final Activity)	Student Conference (Final Activity)
Optional modules	Optional modules

Suggested core  
modulus for a  
curriculum  
on  
Smart Eco-Efficient  
Built Environment



# Application to the position of Chair in Construction Engineering

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Tack för ditt tålamod  
F.Pacheco Torgal

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Uppsala, 14 of May of 2018