



Technische
Universität
Braunschweig



Stiftung
Innovation in der
Hochschullehre

Projeto:
Uma ponte concreta
entre Alemanha e Brasil

INSCRIÇÕES:
01/03/23 a 24/03/23

Encontros presenciais no
Campus do Imepac, em
Araguari às quartas-feiras 19h



IMEPAC
CENTRO UNIVERSITÁRIO

Introductory Class – PRODIGI pilot class A Concrete Bridge between Germany and Brazil Uma ponte entre Alemanha e Brasil

Dr. Ing. Thamara Tofeti Lima
Professors Raphael and Nathalia

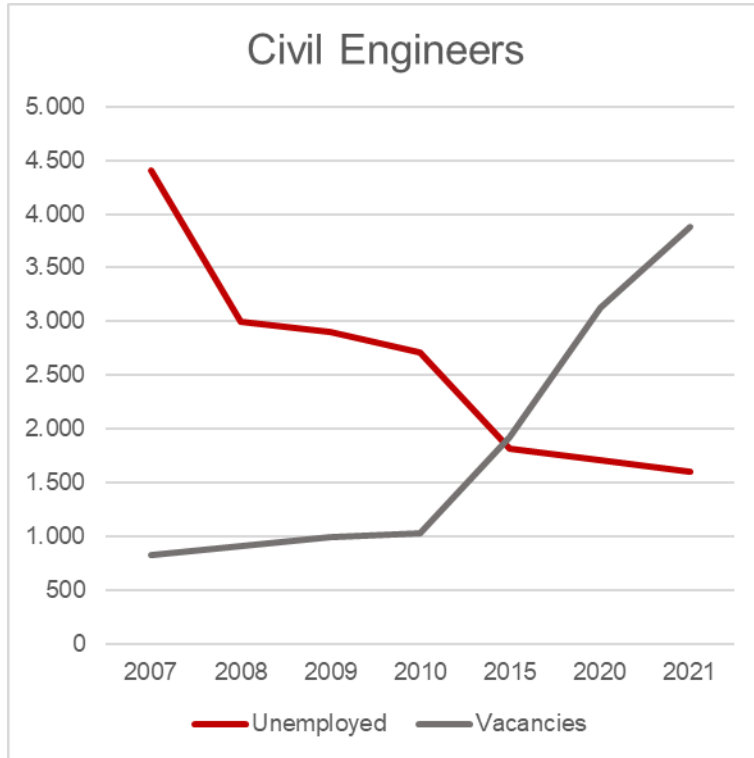
Braunschweig University of Technology, Institute of Applied Mechanics
IMEPAC Araguari

About the project: A concrete bridge between Germany and Brazil

- Connect TU Braunschweig with an university in Brazil, in this case, IMEPAC - Araguari, Minas Gerais, in order to offer an elective course, taught in English and 100% online.
- The main goal is the networking and exchange of information between German and Brazilian students, showing there are no limitations to keep the trade of information among different countries. Moreover, if the cooperation works, in the future, the two universities could become partners for sending/receiving exchange students.



Motivation – Job market in Germany



“The shortage of skilled workers is a fundamental problem for the construction industry. More than one in three companies can’t find enough staff. At the same time, demand for construction services remains very high, with order books full up,” says ifo researcher Felix Leiss. “In civil engineering, order backlogs have reached an impressive 3.8 months, while in construction they are at a record-breaking 5.2 months.”

Source:

[Beschäftigung und Arbeitslosigkeit im Bauhauptgewerbe – Die Deutsche Bauindustrie](#) 14.02.2023

<https://www.ifo.de/en/press-release/2021-11-05/greater-shortage-skilled-building-construction-workers-germany>

General Information

- Total of 42 Brazilian students (35 from IMEPAC Araguari, 7 from the general community)
- Marketing format: the course was advertised in IMEPAC's website 1 month in advance
- Not only students from the civil engineering department were informed about the opportunity to participate but also former students and companies in the area.
- Lectures have the duration of 2 hours, every 2 weeks, on Wednesdays at 19:00 (Brazilian time), since most students work during the day.



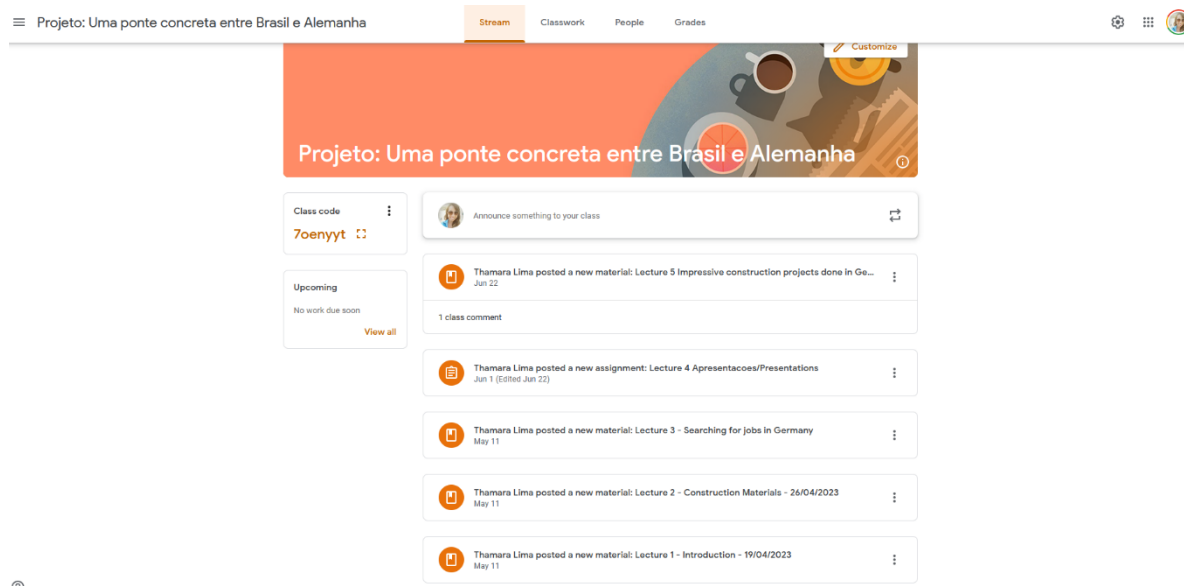
Pictures from own archive taken with permission from students on the first and second lectures, in Brazil

Digital Platform in use

- Digital Platform in use: Google Classroom

IMEPAC Araguari has an agreement with Google teaching systems, as it is a common practice in Brazil.

- All lecture materials are posted 2 days before the lecture.
- People who have access to the classroom: IAM from TU Braunschweig, Professors from IMEPAC and students.
- Up to date the communication though the platform has been every efficient and no complains were heard.



Screenshot of the initial page of the projects classroom

Online Lectures format

- Platform in use: Google Meetings

Also following IMEPACs previous experience, Google Meetings was set as the channel for transmission of online lectures.

- Students can opt for watching the lectures from home or from a classroom in the university where they have technical and language support.

-> In my opinion it is important to offer that option because not all students have appropriate working spaces at home and some not even have good access to Internet.

- Success rate: Up to date, 100% of attendance from students was achieved (a really impressive number).

-> Attendance is checked every lecture by the beginning and the end of it. Students are only qualified to complete the course in case they attend more than 75% of attendance (a common practice in Brazil).

Language

- Obviously the main language for the presentation materials is English, so that they can be available in future for German students as well.
- However to make students more comfortable and as Portuguese is my native language, I opted to teach the first two lectures in person and in Portuguese, while it is always an option to record an English version.
- IMEPAC also established an English teacher to be available for the students at all times in case they need help, either to understand me or to prepare presentation materials by themselves. Professor Corsino stays in the classroom all the time with the students while I teach.

Evaluation and Exchange Brazil Germany

- Students are evaluated according to their attendance, participation in the lectures and team projects. Up to date the first team projects were presented and very interesting input from students was noticed.
- > Topic of first team projects: In lecture 2, I shared with them interesting construction projects and techniques used Germany and asked them to prepare similar materials about interesting projects or construction techniques from Brazil to establish comparisons and exchange of ideas.
- The first slides from each team will be shown in next slides to give an overview of the interesting topics shown.

Overview of Course Programme

1. **Introductory Lecture**
2. **Construction Materials**
3. **Looking for Jobs in Germany/Writing a CV**
4. **Team Project presentations on the topics discussed in 1, 2 and 3**
5. **Impressive construction Projects done in Brazil**
6. **Impressive construction projects done in Germany**
7. **Invited speaker from HOCHTIEF (one of the biggest construction companies in Germany)**
8. **Invited speaker from a construction company in Brazil**
9. **Team Project presentations on the topics discussed in 5 and 6.**
10. **Closing of the lecture**

In the following slides, some of the interesting topics covered on the lectures will be briefly shown.

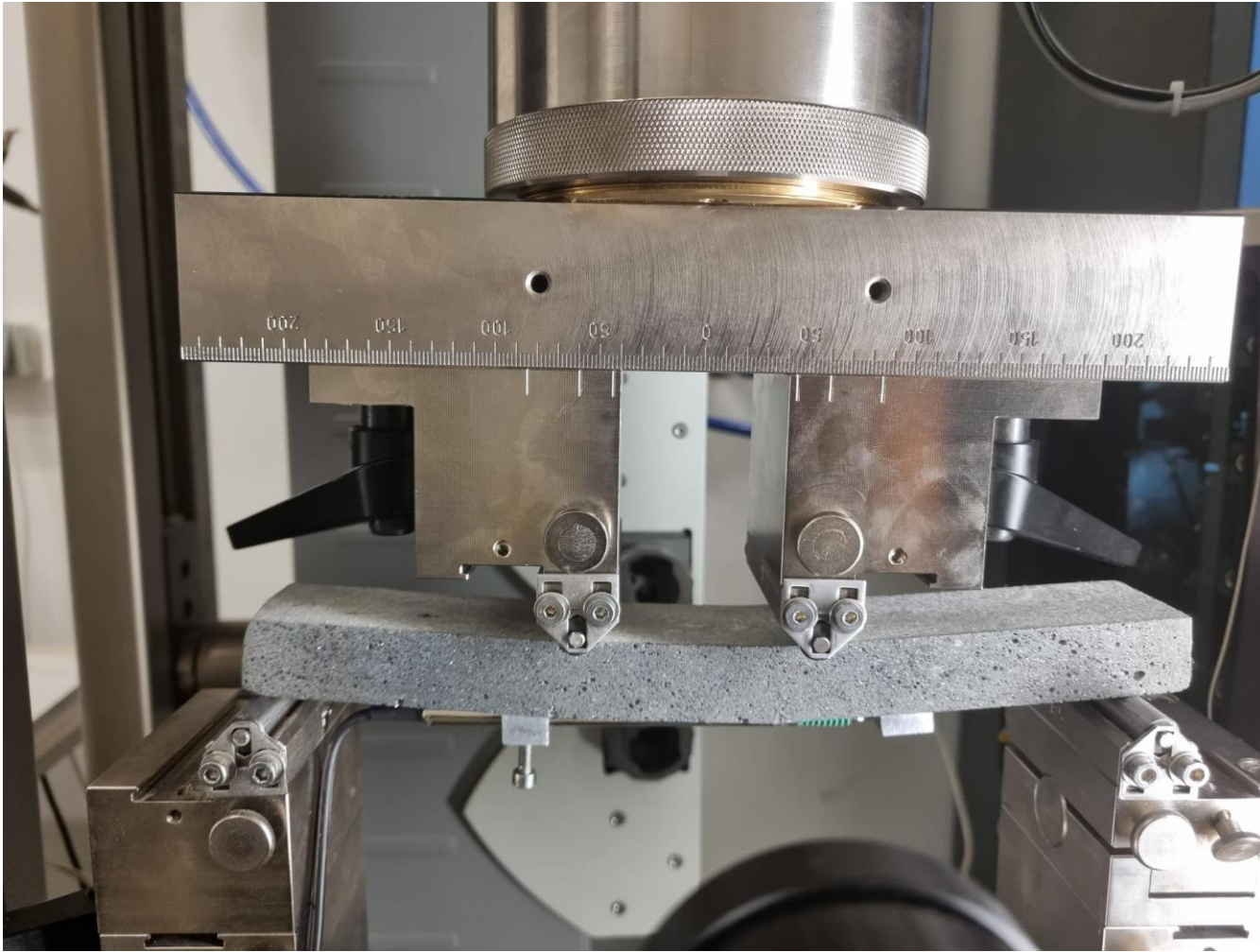
Building with waste

- Germany's first recycling house was built in Hanover in 2019. Radiators, stairs and several walls consist of sauna benches. The façade insulation is made of recycled jute sacks for cocoa beans. And the windows came from a former youth club.



Source: <https://www.deutschland.de/en/topic/knowledge/sustainable-construction-recycling-building-materials>

PVA Fiber reinforced concrete – Bendable Concrete



Working in Germany – Degree recognition

- Before applying for a master's or doctorate degree at a German university or even to apply for a job, it is very important to know whether your degree program is recognized in Germany.
- Recognition of your foreign university-level qualifications in Germany is often an essential prerequisite for securing a **German Work Visa**, **Job Seekers Visa** or **German Blue Card**.
- Often the success of your visa application is dependent on you being able to successfully prove that your university-level qualification is considered on par with an equivalent German qualification.
- Generally, you require a 3/4-year bachelor's degree to meet the basic requirements for your degree to be recognised in Germany. (Curiosity: common in Brazil is minimum 5 Years)

Creating a CV

[Create your Europass CV | Europass](#)

- The Europass CV is one of the best-known CV formats in Europe. It is easy-to-use and familiar to employers and education institutions.
- You will first have to create your Europass profile with information on your education, training, work experience and skills. After you complete your Europass profile, you can create as many CVs as you want with just a few clicks. Just select which information you want to include, pick your favourite design and Europass will do the rest.
- You can create, store and share CVs in 30 languages. You can download your Europass CV, store it in your Europass Library share it with employers, with EURES or other job boards.



THE MOST SUSTAINABLE HOUSE IN BRAZIL

BIANCA DE OLIVEIRA
GONÇALVES
ISABELA AMÂNCIO
COSTA





Sustainable Technologies in Development in Brazil

Ana Paula Morais da Silva

Brunna Ribeiro

Leticia Aparecida Pereira

Maria Eduarda Barbosa Silva Santos



Sustainable Construction: Solar Heating

GROUP MEMBERS:

GUSTAVO HENRIQUE

JOÃO PEDRO PEREIRA

KAROLYNA VITORIA

SAMARA REZENDE



CONSTRUCTIONS WITH MONOLITHIC EPS PANELS

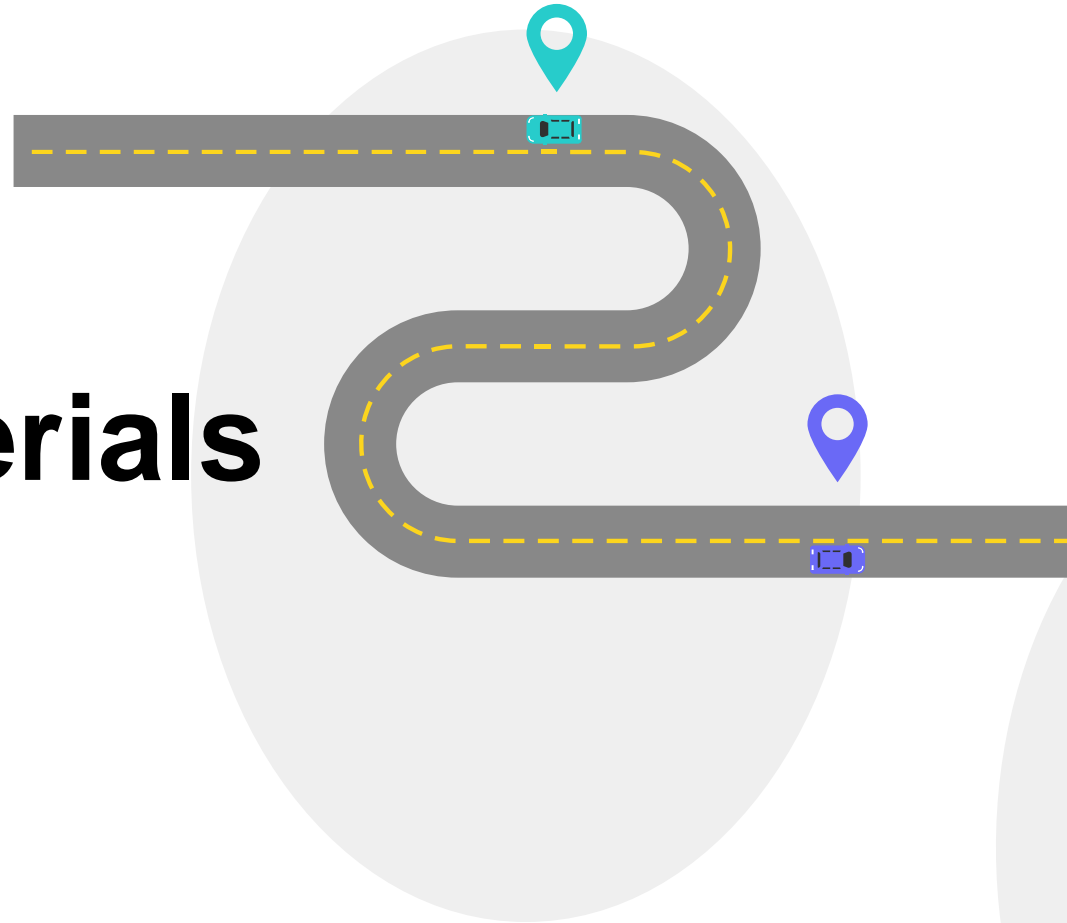
**CHARLES DA SILVA
MATHEUS FELIPE ROSA DE ABREU SILVA
NAYARA PORTELA BARBOSA GAMA
RENNAN RODRIGUES MARQUES**

**IMEPAC UNIVERSITY CENTER
ARAGUARI / 2023**



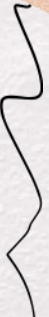
Alternative Paving Materials

Felipe Martins Gutierre
Pedro Henrique Araújo
Victor Lessa Sebastião
Warley Miranda Monteiro





SOLAR PAINT



Research developed by
the students:

Brenio Fernandes

Silva

Student of the 7th

Period of Civil

Engineering

IMEPAC Araguari-MG.

Isabella Lopes Martins

Student of the 7th

Period of Civil

Engineering

IMEPAC Araguari-MG.

Jean Batista Ferreira

Student of the 7th

Period of Civil

Engineering

IMEPAC Araguari-MG.

Main Differences between Germany and Brazil

- Brazil is still more inclined to traditional techniques for civil engineering – it seems to be harder to bring innovations to the construction site
- Due to the better economic position and lack of materials, Germany seems to be experimenting more with new things
- In Germany – wide use of Ultra High Performance Concrete
- In Brazil – very good professionals to develop better concretes but inertia to keep doing the same (lack of attention to planning stages -> problems later)
- Brazil is more advanced on renewable energies, mainly solar pannels!
- Students from Brazil are much more prepared than German students in general due to the vast and heavy course work. Brazilian Engineers are HIGHLY valued in Germany.

Impressive construction Projects done in Brazil



Source: <https://www.sacyrinfraestructuras.com/pt/transposicao-do-rio-sao-francisco>



Source: public domain <https://www.iheartbrazil.com/sao-paulo-museum-of-art-masp/>

Impressive construction Projects done in Brazil

Shifting bridges – A45 highway

That was the pinnacle in the new construction of the Lennetal Bridge near Hagen in North Rhine-Westphalia. Never before has a bridge this long been slid sideways in Germany. A 30,000 tons-colossus, three times as heavy as the Eiffel Tower.



**7 hours of precision work in 80 seconds.
That's how our bridge shifting on the A45 went.**

Source: <https://www.hochtief.com/news-media/shifting-bridges>

Main Differences between Germany and Brazil

- > Germany: more investments on public infrastructure
- > Brazil: unfortunately public projects take too long to be completed and the private sector develops faster.

Extending the partnership - TU Braunschweig



Extending the partnership – IMEPAC/TU Braunschweig

- At the moment I am in close discussions with TU Braunschweig in order to establish which other majors could benefit from the same experience and also how to keep offering the same course on the next semester.
- Moreover, as one of the goals of the project was to establish an exchange connection between IMEPAC and TU Braunschweig, we will gather necessary documents to inquiry a formal partnership with TU.
- One student from Brazil has applied to come as an exchange student to TU Braunschweig on next January, where she will work as a HIWI at the Institute of Applied Mechanics to help on research experiments.

Thank you. Obrigada.

Contact information: t.tofetilima@ibmb.tu-bs.de

