



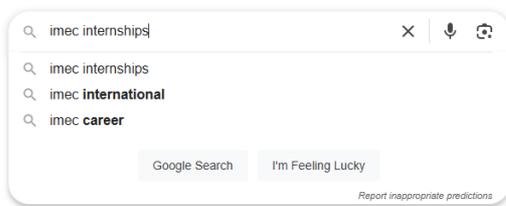
# imec

imec實習職缺網頁說明

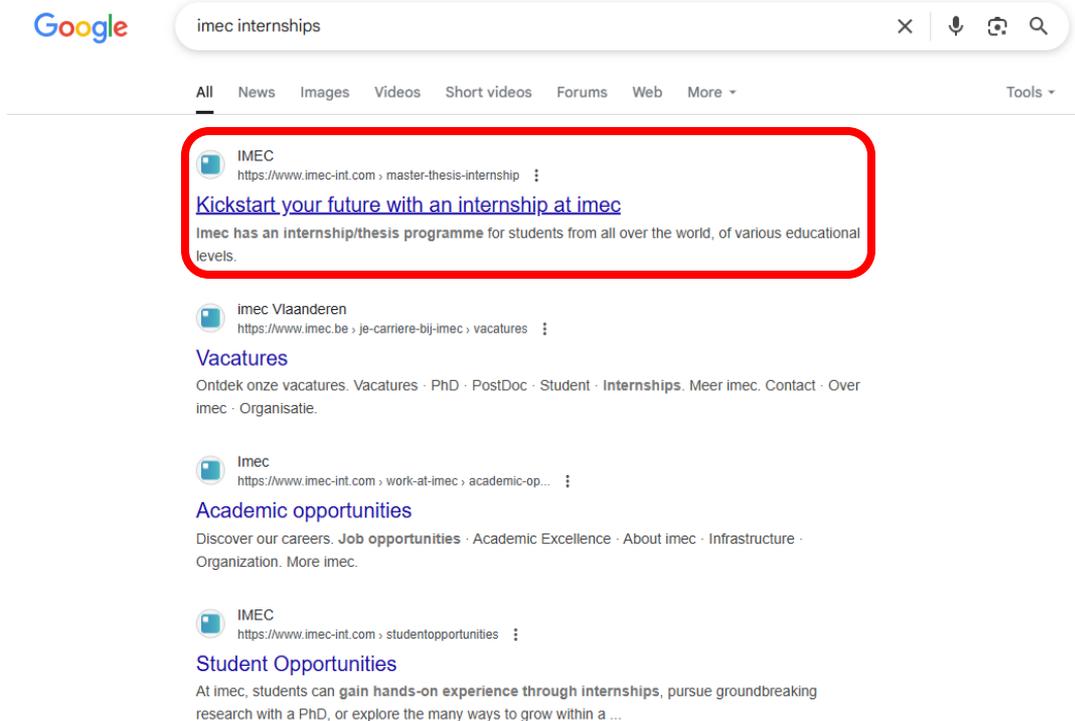
方禹

# 搜尋imec實習職缺網頁

## Google 搜尋imec internships

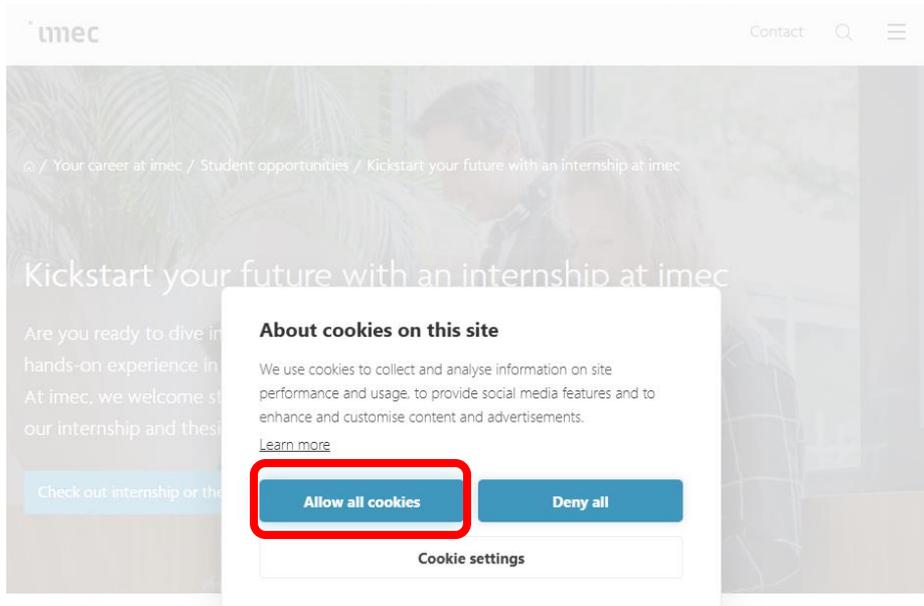


## 點擊搜尋結果中第一個網頁



# 進入imec實習職缺網頁

## Cookie選項：點選全部接受



The screenshot shows the imec website with a cookie consent dialog box overlaid. The dialog box has a white background and a red border. It contains the following text:

**About cookies on this site**

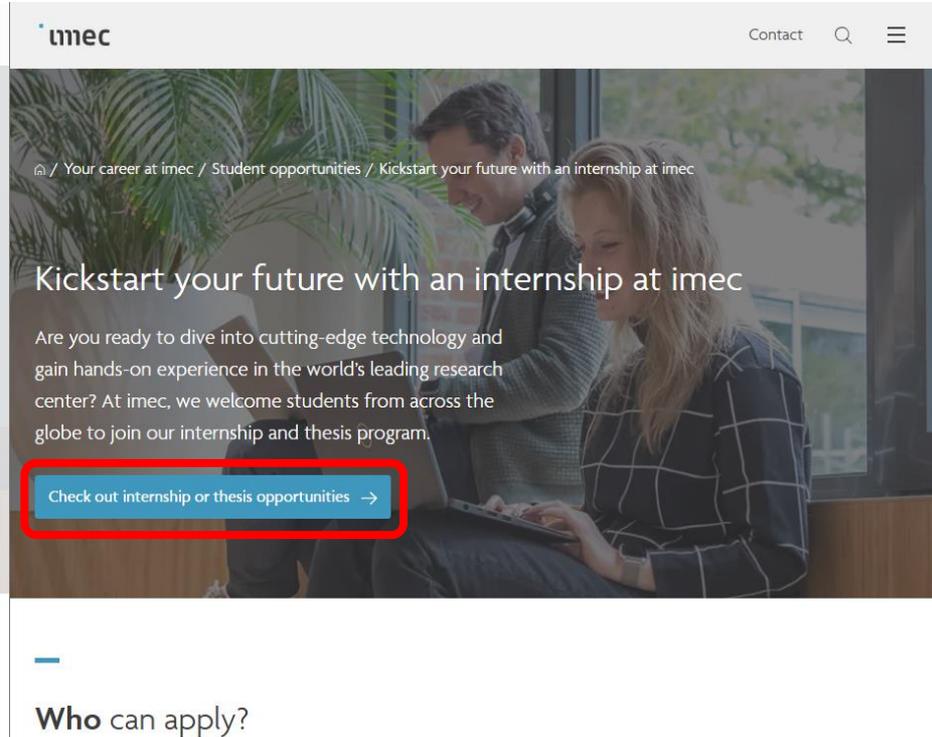
We use cookies to collect and analyse information on site performance and usage, to provide social media features and to enhance and customise content and advertisements.

[Learn more](#)

**Allow all cookies** **Deny all**

Cookie settings

## 點擊查看職缺

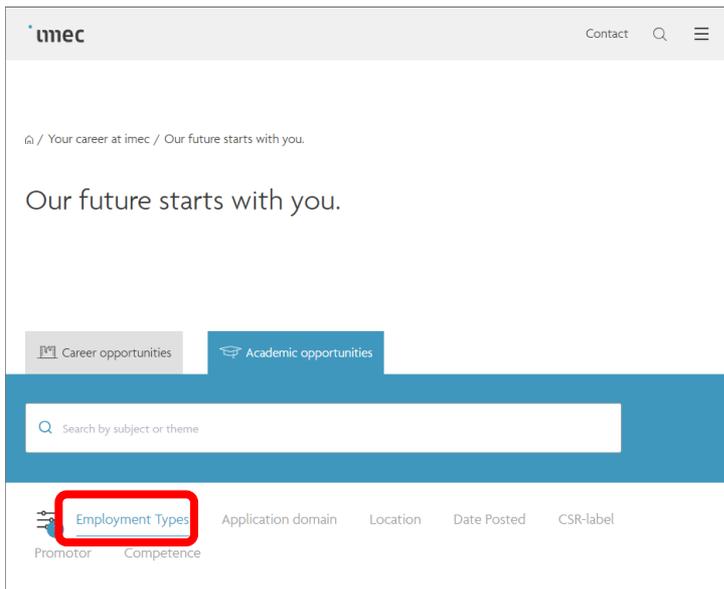


The screenshot shows the imec website with the 'Check out internship or thesis opportunities' button highlighted with a red border. The button is blue with white text and a right-pointing arrow. The background of the page features a photograph of two people, a man and a woman, looking at a laptop screen together.

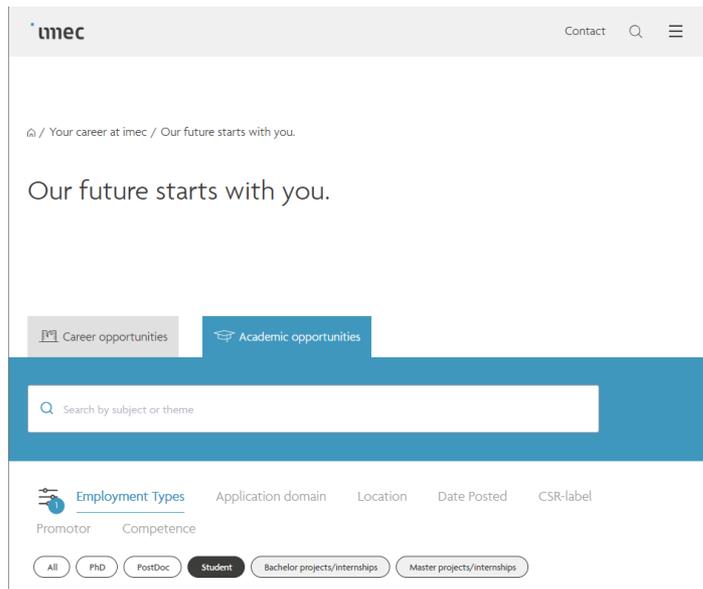
**Who can apply?**

# 篩選職缺類型

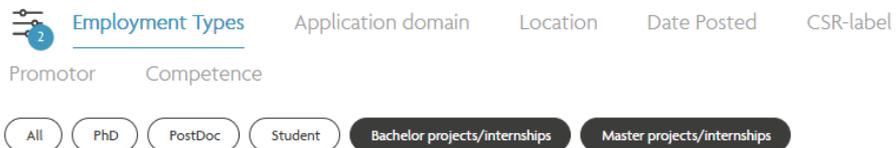
## 點擊“職缺類型”



## 預設為"student"



## 可按照需求選擇



# 選擇實習題目

下滑即可查看職缺，點擊即可查看實習內容

The screenshot shows the IMEC job portal interface. At the top, there are navigation tabs for "Employment Types", "Application domain", "Location", "Date Posted", and "CSR-label". Below these are filters for "Promotor" and "Competence". A row of buttons includes "All", "PhD", "PostDoc", "Student", "Bachelor projects/internships", and "Master projects/internships". A blue button with a bell icon says "More opportunities like this? Let me know!" and a bookmark icon shows "0 jobs saved". The list of opportunities includes:

- Extension of the In-house Simulation Framework for Emerging Memory Technologies as Buffer Memory** (Master projects/internships - Leuven | Just now)  
Explore the impact of imec's memory technology solutions on tomorrow's system architectures
- Non-ideality modeling and system analysis for sub-THz wireless communication** (Master projects/internships - Leuven | Just now)  
Bridge hardware and algorithms—design the next-gen physical layer for 6G wireless
- Student project: Mechatronic system design and development** (Research & development - Wageningen | More than two weeks ago)

也可輸入關鍵字查詢實習職缺

The screenshot shows the IMEC job portal interface with a search bar containing the text "BEOL". Above the search bar are tabs for "Career opportunities" and "Academic opportunities". Below the search bar are navigation tabs for "Employment Types", "Application domain", "Location", "Date Posted", and "CSR-label", and filters for "Promotor" and "Competence". A blue button with a bell icon says "More opportunities like this? Let me know!" and a bookmark icon shows "0 jobs saved". The search results include:

- BEOL TDDb model: predicting dielectric reliability across 3D BEOL structures in sub-30nm metal pitch** (Master projects/internships - Leuven | More than two weeks ago)  
Turning 3D geometry into reliability insights

# 實習內容概覽

## 實習題目

BEOL TDDb model: predicting dielectric reliability across 3D BEOL structures in sub-30nm metal pitch

Master projects/internships · Lucxen | More than two weeks ago

Turning 3D geometry into reliability insights.

## 點擊申請

Apply →

(目前此按鍵功能為寄信給開啟職缺者)

## 實習內容

(目標、背景、實習任務、所需技能...等)

### Objective:

This project aims to implement from scratch the Local E-Field Aware Model (LEFAM) described in the paper "Local Electric Field-Aware 3D TDDb model for BEOL reliability predictions" (see reference) using Python. The goal is to reproduce the model's predictions of dielectric breakdown time (tBD) and extend its applicability to novel interconnect structures beyond those originally simulated.

### Background:

As interconnect dimensions continue to scale below 30 nm, local geometrical variations such as line-edge roughness (LER), via misalignment (VM), and tip-to-tip spacing variations significantly impact backend-of-line (BEOL) dielectric reliability. LEFAM improves upon previous approaches by integrating finite element simulations of the local E-field (Eloc), defect generation dynamics, and percolation theory to model dielectric breakdown more realistically.

### Internship Tasks:

- Study and interpret the LEFAM-based TDDb model, including:
  - Finite Element Method (FEM) simulations of Eloc under geometric variability
  - E-field-dependent and defect density-dependent defect generation
  - Local defect clustering and percolation-based breakdown triggering
- Reconstruct the LEFAM framework in Python based on the article
- Validate the model against published figures or synthetic geometries
- Simulate tBD distributions for custom L/L and V/L structures under varying variability settings (e.g.,  $\sigma_{LER}$ , VM)
- Fit clustering distributions to non-Weibull tBD outputs and compare with SPP model predictions
- Perform sensitivity analysis to assess the influence of geometry and variability on TDDb lifetime metrics

### Skills to be Gained:

- Practical experience with reliability modeling of semiconductor interconnects
- Proficiency in Python for FEM simulation, statistical modeling and Monte Carlo methods
- Insight into the role of geometry-aware modeling in reliability predictions

### Requirements:

- Background in electrical engineering, physics, materials science, or a related field
- Familiarity with Python and numerical simulation
- Basic understanding of dielectric breakdown mechanisms is a plus

Reference: Y. Fang et al., "Local Electric Field-Aware 3D TDDb Model for BEOL Reliability Predictions," 2025 IEEE International Reliability Physics Symposium (IRPS), Monterey, CA, USA, 2025, pp. 1-8, doi: 10.1109/IRPS48104.2025.10962953.

Type of project: Internship

Duration: 6 months

Required degree: Master of Engineering Technology, Master of Science, Master of Engineering Science

Supervising scientist(s): For further information or for application, please contact: Yu Fang (Yu.Fang@imec.be)

imec allowance will be provided for students studying at a non-Belgian university.

Apply →

## 職缺類型

## 職缺時長

## 所需條件

## 實習導師

(此為學生自我參考用，最終決定權為職缺開啟者決定)