

# Student Activities Samples

## Architecture & Interior Design Engineering (AIDE)

### Program

Department of Architecture & Interior Design Engineering

College of Engineering

Majmaah University

December 2025

## Table of contents

INTRODUCTION .....	3
COURSEWORK-INTEGRATED ACTIVITIES .....	3
GRADUATION PROJECTS' SAMPLES: .....	7
EXTRACURRICULAR ACTIVITIES, VOLUNTEERING AND COMMUNITY SERVICE .....	8
EXTRACURRICULAR ACTIVITIES, NATIONAL AND INTERNATIONAL COMPETITIONS .....	11
CONCLUSION.....	14

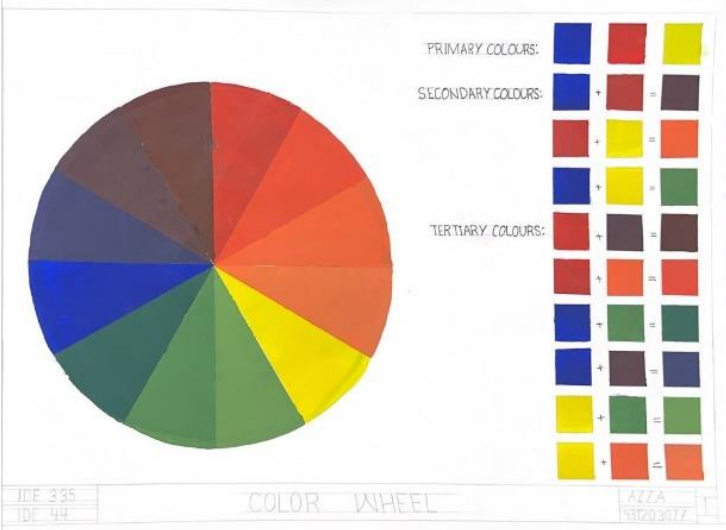
## Introduction

Student activities represent a vital component of the educational experience, complementing academic coursework and fostering the development of essential skills beyond the classroom. These activities provide students with opportunities to apply theoretical knowledge in practical contexts, engage in collaborative projects, and contribute meaningfully to their communities.

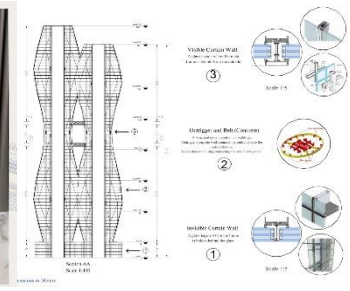
This report presents a comprehensive overview of student engagement across three key domains: Coursework-Integrated Activities, Extracurricular Activities, and Volunteering and Community Service.

## Coursework-Integrated Activities

- Architectural Design Projects
- Working Drawings and Construction Documentation
- Engineering Systems Applications

Link for students work	Samples of students work
<a href="#">IDE335 Color Design</a>	 <p style="text-align: center;"><b>IDE335 Color Design- Level 7</b></p> <p>In the <b>Color Design</b> course, foundational principles of color are established. This includes, for example, the preparation of a <b>color wheel</b> through practical color mixing and the documentation of primary, secondary, and tertiary color outcomes, along with recording blending samples, saturation levels, and color values. This exercise is employed to reinforce concepts of harmony, contrast, and color dominance, as well as to develop an understanding of relationships such as warmth/coolness and gradation—supporting informed design decisions in architecture and interior design. <b>Color management</b> is considered an integral aspect of shaping spatial identity, enhancing the legibility of architectural elements, and guiding visual movement. Furthermore, color is linked to materiality and lighting as design tools, which are later utilized in material boards (<b>mood boards</b>) and finish proposals for architectural projects.</p>

CE319 Structural Systems & Design



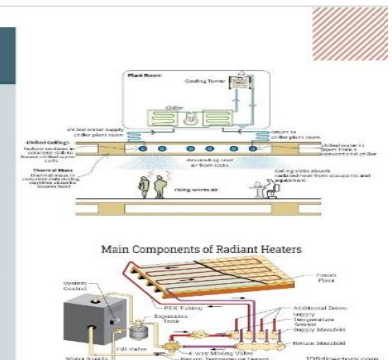
CE319 Structural Systems and Design - Level 7

In the course **Structural Systems**, students study various structural systems, their components, types of loads, and the forces acting on each system, along with structural analysis techniques. The course trains students to determine the appropriate structural system based on span requirements, spatial configuration, and the functional needs of the building. A practical project is introduced to demonstrate the integration between architectural design and structural decision-making. For example, students were assigned (see attached in Drive) to **develop a high-rise tower project in Riyadh**, starting from conceptual design and massing, then modeling the project using Revit software, preparing detailed drawings of the structural system and its components, and constructing a physical structural model that illustrates the logic of the chosen system. **This model translates the relationships between loads, structural paths, and spatial organization into a tangible representation.** The outcome is directly linked to architectural engineering as it reinforces the principle that design quality is only complete when the solution is structurally feasible and supported by documentation and details that can be implemented within the execution and engineering coordination framework in real-world practice.

ME 410 - Mechanical systems

**THE CORE COMPONENT**  
The Major Components for Heating and Cooling in the System :

- **Heat or Cooling Source:** Boilers or heat pumps provide hot or chilled water. In design, source selection should match climate conditions and ensure high energy efficiency.
- **Pipes:** Transport water to radiant surfaces, often made of PEX for durability. Design criteria include pipe diameter, spacing, and proper insulation.
- **Radiant Surfaces:** Floors, walls, or ceilings that distribute thermal energy. Effective design requires suitable material thickness (e.g., concrete) and good insulation to reduce heat loss.
- **Distribution Network & Manifolds:** Control and direct water flow to different circuits. Proper design includes balancing valves and isolation valves for equal distribution and easy maintenance.
- **Controls & Thermostats:** Regulate temperature per zone. Advanced design may include humidity sensors and smart controls to maximize efficiency and comfort.
- **Pumps:** Ensure continuous water circulation. Pump selection must consider flow rate and pressure to meet the building's heating/cooling demand.



ME410 Mechanical Systems – Level 9

In the Mechanical Systems course, the learning outcomes are application-oriented, focusing on **integrating building service systems (HVAC)** within architectural design. The deliverables (see attached in Drive) included research on **radiant heating and cooling systems, identifying their main components, water circulation paths, and control mechanisms**, while highlighting their direct impact on architectural decisions—such as reducing ductwork, addressing structural thickness requirements, insulation and moisture considerations, and allocating a mechanical room with adequate operational and maintenance clearances. The course also addressed safety aspects through code-compliant requirements for escape stairs and smoke control (stair pressurization), illustrating the connection between architectural design and mechanical systems in terms of evacuation safety and coordination between spatial planning and building services.

ARE224 Architectural Design Studio (2)



ARE224

Architectural Design Studio (2)- Level 5

In **Architectural Design Studio II** the student outputs involved developing a fast-food restaurant design with a drive-thru lane on a proposed site within Majmaah University, covering an area of 2,000 m<sup>2</sup> and limited to a maximum of two floors. Architectural theories were applied through site analysis and movement relationships, followed by **transforming functional requirements into an integrated, executable architectural solution while ensuring the application of an appropriate architectural style**. The final deliverable was documented through a site plan, floor plans, sections, elevations, and supporting diagrams, complemented by 3D perspectives (see attached in Drive). This demonstrates the direct connection between design decisions and architectural requirements such as location, function, circulation, and the surrounding urban context.

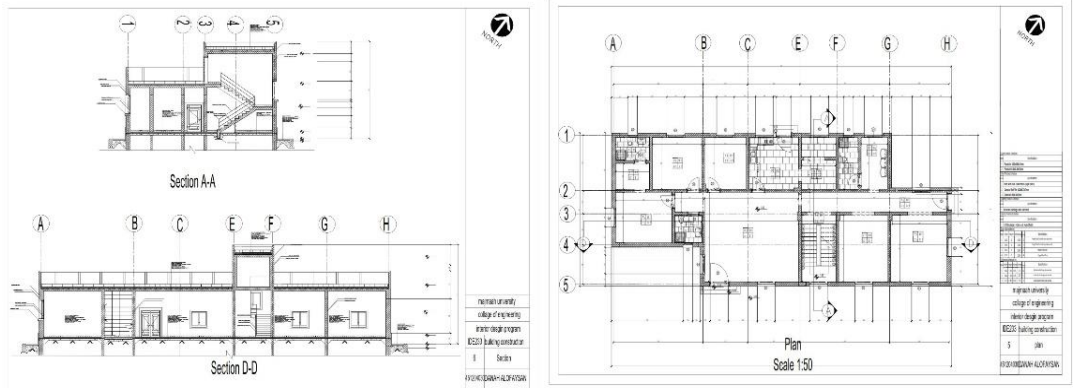
ARE120 Design Basics



ARE120 Design Basics-Level 3

Architectural Design Studio emphasizes the **fundamentals of architectural design**. For example, the course outputs (see attached in Drive) include a design exercise for a *small residential apartment/studio*, where students analyzed functional requirements and identified key spaces and their relationships (living, sleeping, kitchen, and service areas). These were organized through bubble diagrams and zoning diagrams, accompanied by a space schedule detailing dimensions, furniture layouts, and circulation paths. The solution was then developed into scaled architectural drawings, including **floor plans and sections that illustrate heights and internal composition, along with a physical model that translates the concept into tangible spatial configurations**. This outcome is directly related to architectural engineering as it trains students in core design principles—function, circulation, dimensions, and scale—and demonstrates how to transform a program into architectural documents that can later serve as a foundation for advanced studio work and construction drawings.

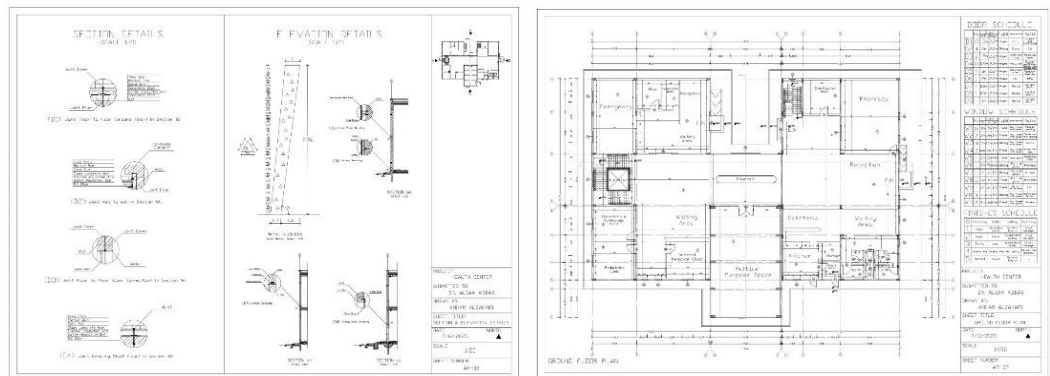
IDE 233 - Building construction 2



IDE233 Building Construction (2)- Level 5

The Architectural Construction II course focuses on **reinforcing the principles of construction drawings for architectural designs** and training students on how to specify dimensions, levels, and illustrate **details of structural systems and finishes** as part of the requirements for building execution documents. For example, the course outputs (see attached in Drive) demonstrate **how to transform an architectural solution for a small building into executable drawings**, including floor plans with grids and dimensions, finish schedules for floors, walls, ceilings, and skirting, as well as door and window schedules that indicate material selections within the building. The drawings also include vertical sections showing levels, main heights, and both vertical and horizontal construction elements, reflecting an understanding of the relationships between spaces, structural systems, and building layers.

IDE 352- Working Drawing 1



IDE352 Working Drawing (1) – Level 7

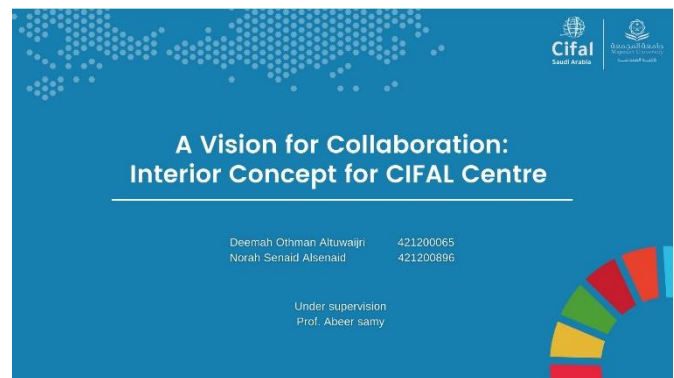
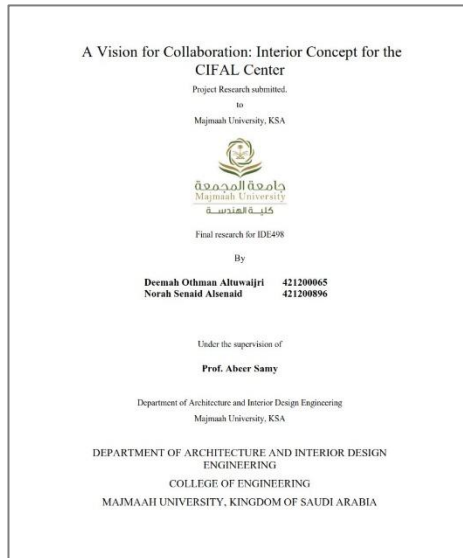
In the Working Drawings course, an **advanced applied outcome** is documented through the preparation of a **comprehensive set of professional construction drawings** for a large-scale project (such as a healthcare center, as attached in Drive) previously developed in the design studio. **The architectural concept is transformed into execution drawings that emphasize precision in dimensions, levels, and scales, and demonstrate coordination among plans, sections, and elevations while adhering to drafting standards** (line types, symbols, hatching, and annotations) and completing all necessary construction data. Engineering considerations are integrated through the selection of an appropriate structural system, determination of grid lines, column locations, structural joints, and expansion/settlement joints, ensuring constructability, stability, and functional compatibility. The drawing set is finalized with multiple sheets, including floor and ceiling plans, sections and elevations, detailed drawings, stair details, and reflected ceiling, electrical, and plumbing layout clearly illustrating the course's direct connection to architectural engineering in producing execution documents and multidisciplinary coordination required in professional practice.

## Graduation Projects' samples:

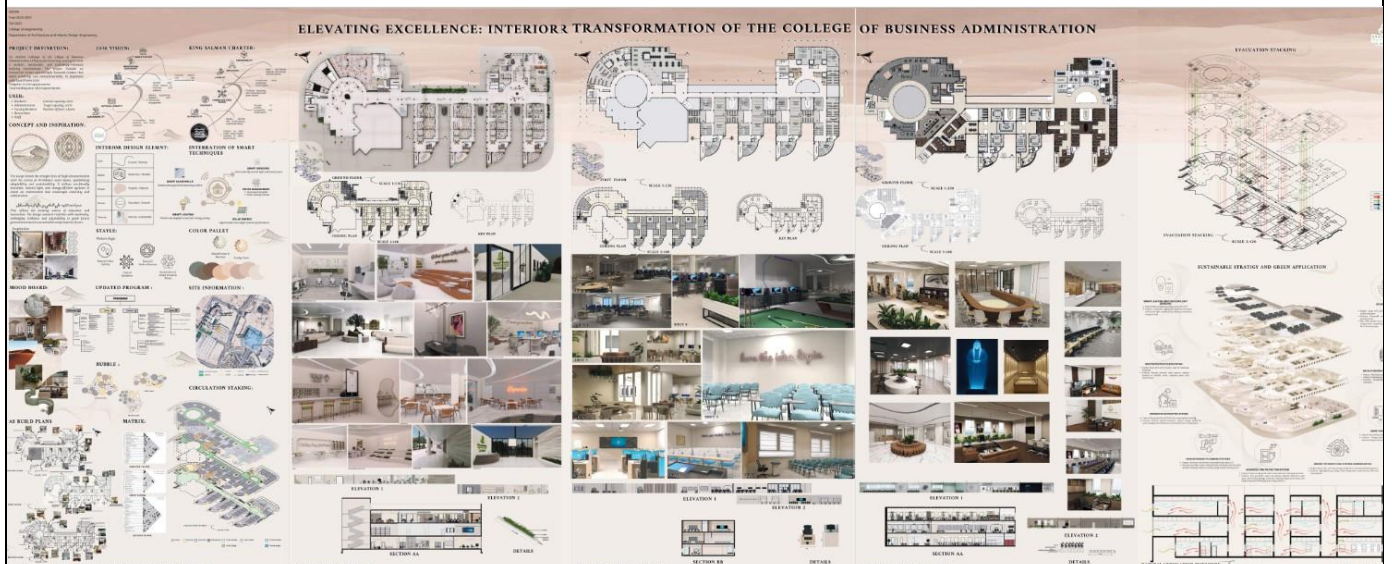
Graduation projects in the Interior Design Engineering program are based on existing buildings approached from an integrated architectural and engineering perspective. Students' progress through several design phases that reflect the nature of architectural engineering, followed by the interior design stage, which is treated as an extension of the architectural solution rather than a separate process.

### نماذج اعمال الطالبات في مشروع التخرج

IDE498 Samples link: [IDE498](#)




IDE499 Samples link: [IDE499](#)



## Extracurricular Activities, Volunteering and Community Service

Community engagement activities by students in the Architectural and Interior Design Engineering program contribute to applying architectural and engineering knowledge and skills in serving the local community. These initiatives reflect students' ability to integrate architectural and interior design within real-world contexts and enhance professional awareness of the architect's role in community service.

Initiatives	Samples of Community engagement activities
<p>Initiative for Enhancing and Sustaining the University City Environment – 2023</p>	<div data-bbox="347 645 1501 1413"> <p>...                      كلية الهندسة                      @ce_mu_                      نظمت الإدارة العامة للصحة المهنية والبيئة بالتعاون مع طالبات و موظفات                      #كلية_الهندسة                      بتنفيذ نشاط ميداني ( مبادرة و تحسين بيئة المدينة الجامعية واستدامتها لعام                      ٢٠٢٢م)                      وذلك يوم الخميس الموافق ٢٠٢٢/١٠/١٩م                      #جامعة_المجمعة</p>  </div> <p>The initiative “Enhancing and Sustaining the University City Environment – 2023” reflects the commitment of the Department of Architecture and Interior Design to its societal role in promoting quality of life within the campus. The initiative aims to develop green spaces, improve urban design, and implement innovative resource management solutions to achieve environmental sustainability. This project provides students with the opportunity to apply sustainable design concepts in practice, bridging academic knowledge with community service. It also demonstrates the department’s role in creating a healthy and safe educational environment that supports the vision of Saudi Arabia’s Vision 2030.</p>

Orientation Session for the Department of Architecture and Interior Design for 12th-Grade Female Students



The orientation session for the Department of Architecture and Interior Design aims to introduce 12th-grade female students to the prospects of engineering and creative disciplines through a hands-on experience within the department. The students were hosted to explore innovative architectural projects and 3D models created by current students, offering them an opportunity to learn about design methods, modern technologies, and the significance of creativity in shaping the built environment. This session contributes to enhancing professional awareness and encourages students to choose academic pathways aligned with their interests and future aspirations.

Activation of the “Engineering and Economics” Program



The activation of the “Engineering and Economics” program is implemented through presenting a design project concept for a commercial complex and cafeteria using 3D models, illustrating the integration between the engineering aspect and the economic dimension in studying the fundamentals of architectural engineering and their linkage to courses in engineering economics. This activity aims to demonstrate how to achieve economic feasibility in architectural projects through innovative design that addresses market needs and promotes sustainability. It also provides students with the opportunity to understand the relationship between aesthetic design and operational efficiency, reinforcing the concept that architecture is not merely an art form but a strategic tool to support economic development and improve quality of life.



### لجنة الانشطة الطلابية مع لجنة التطوع وخدمة المجتمع

مسابقة تصميمية بمناسبة اليوم العالمي للمدن.

تصميم بوستر يُعبر عن

" دور طالبات كلية الهندسة في الحفاظ على البيئة وحماية المدن "



Design Competition on the Occasion of World Cities Day

As part of the celebration of World Cities Day, the Department of Architecture and Interior Design is launching a design initiative titled “The Role of Female Engineering Students in Environmental Preservation and Urban Protection,” aimed at promoting community awareness of sustainability and environmental improvement for the year 2025. This initiative forms part of the department’s social responsibility, which is closely linked to the study of architecture. It seeks to encourage students to present innovative solutions and creative designs that contribute to reducing pollution, recycling resources, and achieving a balance between urban development and environmental conservation. Through this initiative, the college emphasizes the role of architecture in creating sustainable, eco-friendly models and solutions, reflecting students’ commitment to active participation in community service and advancing the goals of sustainable development.



### لجنة الانشطة الطلابية مع لجنة التطوع وخدمة المجتمع

زيارة مدرسة ثانوي لتعريف الطالبات ببرنامج هندسة التصميم الداخلي



High School Visit to Introduce Female Students to the Interior Design Engineering Program





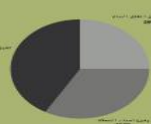
رحلة الى مدرسة الثانوية الاولى

- خلال الزيارة تم التعريف بتخصص الهندسة المعمارية والتصميم الداخلي.
- وشرح أهدافه ومجالاته المتنوعة سواء في الجانب الأكاديمي أو المهني.
- كما تضمنت الزيارة توضيح لمسار العمل في المشاريع التصميمية ابتداءً من تكوين الفكرة، مروراً بمرحلة تطويرها ورسم المخططات، وصولاً إلى الإخراج النهائي.
- وتم كذلك عرض نماذج من أعمال ومشاريع الطالبات لتوضيح آلية التطبيق العملي داخل التخصص.
- إضافة إلى ذلك، رافقت الزيارة مجموعة من الأنشطة التطبيقية الخفيفة مثل اختبار الألوان والخامات المناسبة، مع عرض مجسمات ولوحات توضيحية تُبرز طبيعة العمل في هذا المجال.



## Extracurricular Activities, National and International Competitions

Female students in the Architectural and Interior Design Engineering program participate in a number of architectural competitions both within and outside the university. These participations reflect the students' ability to apply architectural engineering knowledge and skills in a competitive and professional context.

Competition Name	Samples of Students Work in different competitions
<p>“Humanizing Cities” Initiative Presented by Majmaah University – College of Engineering</p>	<div style="text-align: center;">  <h3>مقترح تطوير حضري لأنسنة شارع الملك فهد الرئيسي في مدينة المجمعة وفق مبادئ التخطيط الحضري (الاهتمام بالهوية البصرية)</h3> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">  </div> <div style="width: 30%;"> <h4>الأهداف</h4> <ul style="list-style-type: none"> <li>• تحليل الوضع الحالي للشارع الرئيسي في محافظة المحممة من حيث الحركة، الراحة المناخية، والبنية التحتية.</li> <li>• تقييم مدى ملائمة الموقع لتطبيق مبادئ أنسنة الشوارع وتحسين جودة الحياة في الفضاءات العامة.</li> <li>• قياس المعايير المتعلقة براحة المشاة مثل التظليل، السلامة، أماكن الجلوس، والتشجير.</li> <li>• اقتراح حلول تصميمية لتحويل الشارع إلى مساحة أكثر إنسانية تراعي احتياجات السكان والمشاة بمختلف فئاتهم.</li> <li>• تعزيز العلاقة بين الإنسان والمكان من خلال تدخلات عمرانية بسيطة وفعالة تدعم الاستخدام اليومي للشارع.</li> </ul> </div> <div style="width: 30%;"> <h4>النسب المثوية</h4> <h4>المشهد البصري</h4> <h4>رضا المستخدم</h4>   <h4>سكتشات للواجهات</h4>  </div> </div> <div style="margin-top: 10px;"> <p> <span style="color: green;">→</span> حركة المشاة                <span style="color: yellow;">★</span> نقاط جذب                <span style="color: green;">●</span> مظلات أو أشجار  <span style="color: red;">→</span> حركة السيارات                <span style="color: blue;">●</span> جلسات         </p> </div> <p>The Project concept focuses on evaluating and redeveloping King Fahd Road through the lens of “Humanizing Cities,” a concept aimed at making cities more connected to human needs and daily life. The idea involves a field and analytical study of the road in terms of its current design, infrastructure, ease of movement, availability of services, public spaces, and its capacity to encourage walking and social and cultural interaction.</p> <p>The project emphasizes several key aspects, including improving the urban environment, providing comfortable pathways for pedestrians and cyclists, enhancing public safety, supporting community activities, and creating an eco-friendly setting through greenery and clean energy solutions. It also seeks to propose practical and innovative recommendations for upgrading the road in line with modern urban planning standards, serving diverse community groups—particularly the elderly and people with special needs.</p> <p>Through this project, we aim to highlight the importance of designing streets that prioritize human comfort and interaction with the surroundings, reinforcing the human dimension in urban development. This contributes to creating an integrated and sustainable environment that reflects societal aspirations and future ambitions. <a href="#">تقرير مبادرة أنسنة المدن</a></p>



Transportation  
Hackathon –  
Fourth Edition

The Department of Architecture and Interior Design played a pivotal role in developing sustainable solutions during the Fourth Edition of the Transportation Hackathon. One of the students presented the concept of energy-generating smart sidewalks, highlighting the integration between architectural coursework and innovative solutions that incorporate advanced technologies into infrastructure to achieve sustainability and energy efficiency. Through this participation, the student emphasized the role of female engineers in shaping smart urban environments that support sustainable transportation and utilize renewable energy in urban elements such as sidewalks striking a balance between functionality and aesthetics while enhancing quality of life in cities. These ideas reflect the synergy between urban design, environmental engineering, and technology, underscoring the architect's essential role in building the cities of the future.



### Solution: Predictive Smart Application for Crowd Management



Our solution is a predictive smart application designed to enhance crowd safety and improve movement during large-scale events. Here's how it works:

- **Real-time Crowd Monitoring:** The app uses data from sensors and smartphone locations to monitor movement and detect crowd build-up.
- **AI-Powered Analysis:** A central AI system analyzes this data to predict congestion and notify security teams in advance.
- **Instant User Guidance:** Users receive alerts through notifications, color changes, or vibrations to help them avoid crowded areas.
- **Interactive Maps:** The app shows real-time crowd density and suggests the best navigation routes.
- **Energy Efficient:** Designed to run smoothly without draining phone battery.

This application effectively improves event organization, reduces risks, and enhances the spectator experience in a smart and proactive way.

Innovation  
and  
Sustainability  
Hackathon

## Solution



One of the effective solutions that we have devised to help reduce this problem is a sturdy iron structure composed of cross-stitched columns designed to bear weight and provide a stable surface for climbing in emergency situations such as drowning or other accidents. It is distributed along valleys and dams to prevent objects from drifting with the water currents in the valley. For remote places, especially shipwrecks and cars, it gives a warning to civil defense when a large object touches it, to increase the safety of the area and reduce the risk of accidents, by early detecting the presence of large objects touching the network, which allows time for the relevant authorities to take the necessary measures to maintain the safety of residents and property.



The participation of female students from the College of Engineering in the Innovation and Sustainability Hackathon reflects the vital role of architecture and interior design in developing innovative solutions that serve society and promote sustainability. Through ideas such as predictive applications for crowd management, the architect's role emerges in integrating modern technologies with urban design to create safe and efficient environments. This contribution goes beyond aesthetics, extending to improving quality of life, enhancing energy efficiency, and organizing urban mobility, thereby affirming that architectural engineering is a fundamental element in building smart and sustainable cities of the future.

“Smart  
Makkah  
Hackathon”



The participation of architecture students in the Smart Makkah Hackathon highlights the significance of human-centered design in developing innovative solutions that serve Makkah’s visitors and promote sustainability. The architect’s role here extends beyond aesthetics to include analyzing users’ actual needs, ensuring ease of implementation, and enabling scalability—thus guaranteeing practical solutions that enhance the experience of pilgrims and Umrah performers while aligning with the transition toward smart cities. This involvement underscores that architectural engineering is a key element in integrating technology with urban design to achieve quality of life and foster innovation.

## Conclusion

Student activities, both academic and non-academic, play a crucial role in shaping well-rounded graduates equipped with professional competencies and social responsibility. Continuous enhancement of these initiatives will ensure alignment with educational standards and societal needs.