

Master Program in Building and Construction Techniques Engineering / Structural Engineering Techniques	
برنامج الماجستير اختصاص تقنيات هندسة الانشاءات	
Program Educational Objectives	الأهداف التعليمية للبرنامج
Graduates of the Master's in Structural Engineering Techniques will be able to: 1. Lead advanced research and development activities to generate new knowledge in structural engineering. 2. Apply high-level analytical and computational skills to address complex engineering challenges innovatively. 3. Contribute to academic, professional, and industrial sectors through leadership, teaching, and consulting roles. 4. Adhere to advanced ethical, environmental, and societal responsibilities in their professional practice. 5. Pursue further research opportunities such as Ph.D. studies or advanced professional certification.	سيكون خريجو برنامج الماجستير في تقنيات هندسة الانشاءات قادرين على: ١. قيادة أنشطة البحث والتطوير المتقدمة لإنتاج معرفة جديدة في مجال الهندسة الإنشائية. ٢. توظيف مهارات تحليلية وحسابية عالية المستوى لمعالجة التحديات الهندسية المعقدة بطرق مبتكرة. ٣. الإسهام في القطاعات الأكاديمية والمهنية والصناعية من خلال أدوار قيادية أو تعليمية أو استشارية. ٤. الالتزام بالمسؤوليات الأخلاقية والبيئية والمجتمعية المتقدمة في الممارسة المهنية. ٥. متابعة فرص البحث الإضافي مثل الدكتوراه أو الشهادات المهنية المتقدمة.
(Student Learning Outcomes)	ثانياً: مخرجات التعلم للبرنامج
Integrate and apply advanced theoretical and practical knowledge in structural engineering.	١. دمج وتطبيق المعرفة النظرية والعملية المتقدمة في تقنيات الهندسة الإنشائية.
Independently conduct original research and critically evaluate findings within a specialized context.	١. إجراء بحوث أصلية بشكل مستقل وتقييم النتائج بشكل نقدي ضمن سياق تخصصي.
Formulate and solve complex structural problems using innovative, analytical, and computational tools.	٢. صياغة وحل مشكلات إنشائية معقدة باستخدام أدوات تحليلية وابتكارية متقدمة.
Synthesize information across disciplines and apply it to real-world structural systems.	٣. دمج المعارف متعددة التخصصات وتطبيقها على الأنظمة الإنشائية الواقعية.

Publish scientific work and communicate advanced engineering concepts effectively.	4. نشر الأعمال العلمية والتواصل الفعال حول مفاهيم هندسية متقدمة.
Exercise professional judgment aligned with ethical, legal, and societal standards.	5. ممارسة الحكم المهني وفقًا للمعايير الأخلاقية والقانونية والمجتمعية.
Design sustainable, safe, and economically viable structural solutions.	6. تصميم حلول إنشائية مستدامة وآمنة وقابلة للتطبيق اقتصاديًا.
Lead interdisciplinary teams and contribute to knowledge transfer and mentoring.	7. قيادة فرق متعددة التخصصات والمساهمة في نقل المعرفة والإشراف الأكاديمي.
Demonstrate autonomous learning and continuous professional development.	8. إظهار القدرة على التعلم الذاتي المستمر والتطوير المهني طويل الأمد.
Evaluate current literature and global advancements in structural engineering.	9. تقييم الأدبيات الحالية والتطورات العالمية في تقنيات الهندسة الإنشائية.

Mode and Duration of Study

The Master's Program in **Building and Construction Engineering Techniques/ Structural Engineering Techniques** is structured over a period of **two academic years** of full-time study.

- **First Year:** Students complete a structured curriculum comprising core and elective courses across two semesters, focused on foundational knowledge, advanced material science, and practical laboratory skills.
- **Second Year:** Students engage in independent research under academic supervision, culminating in the submission and defense of a **Master's thesis**.

The program offered in **full-time** modes to accommodate working professionals, with appropriate adjustments to the course load and thesis timeline, as approved by the department and university council.

Graduation Requirements

To graduate from the Master's Program in **Building and Construction Engineering Techniques/ Structural Engineering Techniques**, students must fulfil the following requirements:

- **Successful completion of coursework** totalling **26 credit hours**, including both core and elective subjects.
- **Completion of a Master's thesis**, equivalent to **20 credit hours**, based on original research in a specialized area of construction materials engineering.
- **Total credit hours required** for graduation: **36 credits**.

Additional provisions:

- A student who **fails a course** is permitted **one opportunity for a re-examination or course repetition**.
- Failure in the second attempt will result in **dismissal from the program**, in accordance with institutional academic regulations.
- The thesis must demonstrate scientific rigor, originality, and relevance to current challenges or innovations in construction materials.

First Course

Code	Subject	Hrs. Practical	Hrs. Theory	Credit
SET 501	Advanced Structural Analysis	-	3	3
SET 502	Advanced Concrete Design	-	3	3
SET 503	Theory of Elasticity	-	2	3
SET 504	Advanced Concrete Technology	-	2	3
SET 505	English Language	-	2	2
Sum. of Credits		-		14

Second Course

Code	Subject	Hrs. Practical	Hrs. Theory	Credits
SET 506	Finite element analysis	-	3	3
SET 507	Structural Dynamics	-	3	3
SET 508	Advanced Mathematic and Numerical Analysis	-	2	2
SET ###	Selective topic	-	2	2

SET 513	Research Methodology	-	2	2
Sum. of Credits				12

Research

Master Thesis			10
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OVERALL MASTER STUDY = 36 Credits

Selective subjects

Code	Subject	Hrs. Practical	Hrs. Theory	Credits
SET 509	Optimization Analysis		2	2
SET 510	Composite Structure Theory	-	2	2
SET 511	FRP Concrete Design	-	2	2
SET 512	Advanced Concrete Mechanics		2	2