Jazan University

College of Engineering

Architectural Engineering Department

Senior Projects Reference Guide

February 2023

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Overview

The Senior Design Project for the Architectural Engineering Department at Jazan University is constituted to develop the design skills of architectural engineering students related to real-time social and technical architectural problems. The Senior Design Project is planned so that the students are trained to observe and understand social/architectural issues to prepare and perform a complete design perspective in the related domains to achieve short-term and long-term solutions for problems. Furthermore, students formulate the design methodology with available codes and software for theoretical and technical modeling problems.

The significance of the architectural projects is to ensure the students' architectural engineering have the skills to work after graduation on complete architectural projects individually/in a group, especially in Saudi Arabia with all the rapid urban development for cities, repairing the economic and building area's social problems, and improving the buildings' environmental aspects in the cities in order to reach the economically productive country and community.

Senior Design Project in Architectural Engineering Department at Jazan University is divided into two related courses to cover design and calculation directions for ABET accreditation. While we will cover more criteria than those listed below, students will actively address and cover the following: Senior Design Project (1) course focuses on complete architectural design, and Senior Design Project (2) focuses on calculations, detailed drawings, and specialized design studies such as structural, lighting, acoustics, HVAC, and fire protection life safety.

The first level of the senior project is assigned for problem identification through a comprehensive literature review and preparing each student's two study proposals. Proposal presentation I and proposal presentation II of every student in the first level of senior projects will be conducted. Based on the presentations, the project proposals will be approved by the advisor faculty for further work to be carried out. These presentations include the following: literature review, problem identification, problem definition, problem constraints, societal/architectural objectives, and design execution plan.

At the end of the first level of the senior project, a committee composed of faculty members in the department will evaluate the project based on the evaluation forms prepared for this.

The student submits the architectural design and specialized studies to solve the problem. Then, the committee formed by all the faculty members in the department will evaluate the project based on the evaluation forms prepared for that.

Objectives of the Senior Design Project

The objectives of the Senior Design Project are as follows:

1. Explain the importance of the design program functionally, environmentally, sustainability, and aesthetically in the formation of multi-functional designs, focusing on studying the types of movement and the basic concepts of the spaces.
2. Identify the engineering applications in understanding building structural analysis.
3. Measure students' ability the configuration, formulate, and solve architectural problems.
4. Measure students' ability to use modern technology, skills, and modern engineering tools necessary for the practice of the job in architectural projects.
5. Employ what the students have learned in computer applications in the presentation of the architectural projects.
6. Measure students' ability to prepare accurate calculations for building structure, lighting, acoustics, and air conditioning requirements.

Outcomes of Senior Design Project

By the end of the Senior Design Project, students should be able to:

1. Develop the project concept.
2. Apply site studies (site analysis, environmental studies).
3. Design and develop the project spaces and components.
4. Work on professional architectural engineering presentation.
5. Provide a compelling visual and oral presentation of the project.

6. Conduct specialized calculations for one or more project spaces (structural systems, lighting, acoustics, HVAC systems).
7. To be disciplined, professional, and collegial and assume professional responsibilities.
8. Apply related standards and codes for the project.

Requirements of Senior Design Project Registration

To register for a Senior Design Project, students should complete 118 credit hours and pass all the necessary core and prerequisite courses. Additionally, students must finish Senior Design Project (1) to be able to continue with Senior Design Project (2) in one year (the first semester is a project (1), and the second semester is a project (2).

Senior Design Project Implementation Steps

1. Preparing an initial list of project titles proposed by the department's Graduation Projects Committee and distributing them to students and faculty members to express their proposals.
2. Holding a workshop by the Graduation Projects Committee and senior project instructors, each student should select their options from the projects list or their proposals if the proposals that comply with the criteria are discussed and accepted.
3. The student's proposed choices that do not comply with project criteria are rejected and then directed to choose one of the projects from the Graduation Project Committee suggested list.
4. Approval of the final list of student projects from the Graduation Project Committee, according to the workshop outputs, to achieve the requirements of the Academic Accreditation Commission.
5. Assigning students to approve their selected project option and work on it.
6. Coordinating the work of initial discussion panels (seminars) for the projects through which a report is made; that includes evaluation and recommendations for each project and submitted to the faculty advisors.
7. Coordinating with the department council to identify discussion committees, prepare reports after discussion, and submit them to the competent authorities.

Project Groups

Students are distributed to instructors to work on projects individually/in a group depending on students number and according to faculty advisors through the department registration committee considering the following,

- Students' desires and preferences
- Students' cumulative average, so the groups must balance in terms of abilities and level of design.

Senior Design Project Proposal Option

Students must prepare a design proposal for the senior project submission. The submitted project proposal will review by the Senior Design Project Committee to meet the requirements of ABET. The proposal should contain the following information,

- Clear problem identification definition
- Constraints and problems
- Suggested site alternatives for the project.
- Objectives and research objectives of the project
- Complete plan and execution of the research methodology

Senior Design Project Duration and Academic Level

The Senior Design Project is part of the final year curriculum of the Architectural Engineering major. The final year level is assigned to the literature review problem identification, architectural design methodology, and proposal presentation, then executing the project work and writing a technical report with a final presentation. The students and faculty advisors with appropriate registration will discuss the project progress periodically.

Project Supervision

The Senior Design Projects are assigned to faculty members to guide and coordinate the students. The proposal option for the project should be submitted at the beginning of the semester to the Senior Design Project Committee. After approval, the concerned faculty

member will supervise the projects. The status of the project execution will be reviewed periodically and registered.

Senior Design Project Coordinator

1. Coordinating the work of the initial discussion panels (seminars) for the projects through a report that includes evaluations and recommendations for each project and then submitted to the supervisors.
2. Coordinating the work of second-panel discussion, which is open to faculty members and students, has already been announced at an earlier date; and evaluated with the development of recommendations sent to the supervisors of the projects for consideration.
3. Coordinated with the department council to identify discussion committees, prepare reports after discussion, and submit them to the competent authorities.
4. Preparing and coordinating all evaluation forms schedules and final project follow-up
5. Calculating average evaluations for projects by members of the evaluation committees
6. Periodic follow-up of the progress of the evaluation process and commitment to the evaluation phases of projects

Senior Design Project First Stage

To enroll in the Senior Design Project first stage, the following requirements should be fulfilled,

1. The student acquires a solid foundation in architecture engineering sciences, design, and practice.
2. This course helps the senior student prepare his final project proposal. The topics include client objectives, functional relationships, facility space requirement development, site development requirements, site analysis, prioritizing functions, spatial restrictions, budget constraints, etc.
3. The student will be able to develop their communication skills (written and oral) and be aware of modern architecture engineering education.
4. To implant in the students the value of knowledge and the practical means and confidence of learning new subjects in their specialty or other fields they determine to pursue.

Distribution of Semester Work Evaluation Criteria

The Senior Design Project (1) evaluation is divided into eight steps distributed and calculated by 100 marks for students.

- Process Step 1: Pre-Design analysis and iterative studies (5%)
- Process Step 2: Site and Environmental analysis, Conceptual Design (5%)
- Process Step 3: Design Development, Architectural Plans (20%)
- Process Step 4: Design Development, Building Elevations (10%)
- Process Step 5: Design Development, Building Sections (10%)
- Process Step 6: Design Development, 3D Perspectives, or Model - (semi-final submission (10%)
- Process Step 7: End of the design development stage, work on the final report and presentation - Design Development Documents (D.D. Documents), Final Report (10%)
- Process Step 8: Final submission and presentation, Physical/Digital Poster (30%)

While the evaluation of Senior Design Project (2) is divided into seven parts/checklists depending on the requirements, and all parts are calculated by 100 marks for students as follows.

- Part 1: Working Drawings Checklist for Plans, Sections, Elevations
- Part 2: Structural Plan Checklist
- Part 3: Lighting Drawings (Plan) Checklist
- Part 4: Acoustics Plan Checklist
- Part 5 HVAC Plan Checklist, plus Fire Protection and Life Safety Plan
- Part 6: Technical Report
- Part 7: Final Presentation

How Does the Semester Work Evaluation?

Supervisors of the Senior Design Project (1) should receive an electronic or printed copy of the Design Development Documents (D.D. Documents) in the tenth week of the semester, and each supervisor expresses their comments on the projects from a different design point of

view depending on their specialization (make notes to be considered in the next semester for Senior Design Project (2).

- Regarding Senior Design Project (2), the drawings document and checklist should be reviewed by each specialized faculty advisor, handed over to the Head of the Department, registered and signed on the date of delivery by the supervisor, and an electronic copy to be placed in the quality file.
- The grade of the Senior Design Project must be announced to the students in a timely manner.
- The semester work evaluation must be announced to the students before the final delivery of the project and the convening of the internal and external arbitration committee.
- The semester work evaluation is handed over to the Senior Design Project coordinator before the final arbitration of the project.
- The Projects Committee holds its meetings, and one of these meetings is held to discuss the extent of the student's project completion, which is in the tenth week.

The Senior Design Project Components

The report must include the following requirements:

1. Complete layout drawing, including dimensions.
2. The building's area, height, and building ratio.
3. The number and area of parking.
4. Green spaces area.
5. Surrounding street widths.
6. Complete acoustics calculations for the main part of the building
7. Complete lighting calculations for the main part of the building
8. Complete air conditioning calculations for the main part of the building
9. Determine the structural systems according to preliminary calculations.
10. Justifications for choosing structural systems.
11. Analysis of the used structural systems components

The student shall abide by the minimum requirements of the project, which include the master plan, horizontal planes, elevations, perspectives, and at least a section that shows the design concept and architectural, urban, and qualitative studies (sustainability studies, energy, lighting, acoustics, security, construction studies, etc.) and the model, each according to its compatibility with the quality of the project.

Senior Design Project First Stage Delivery

To award the final grade for the senior projects, the student should submit the following requirements for the Senior Design Project first stage to the project coordinator:

- Physical/Digital Poster, size 1.0×2.1 m, for the studies and ideas completed in the project.
- An electronic copy of the final poster and report.
- A physical/digital copy of the whole Senior Design Project (1) report

Final Project Second Stage Delivery

To award the final grade for the senior projects, the student should submit the following requirements for Senior Design Project (2) to the project coordinator.

The following documents are the requirement for the graduation project:

- Physical/Digital Poster of the project, size 1.0×2.1 m, included border graphics.
- Three A3 paper copies of the posters
- A digital copy of the complete project files and report in PDF format
- A digital copy of the graduation project program on flash memory
- Hard and digital copies of the final report

The Report Components

Senior Design Project (1) report should include the following chapters,

Design Development Documents “D.D. Documents” to pass Senior Design Project (1) and continue with Project 2, students must submit the following as design development documents “D.D. Documents” (architectural design work):

- **Chapter 1: Introduction,** that chapter includes the project definition, goal, problem constraints, project elements, Design confrontations, capacity, programming, and the requirement of the different Saudi Building Codes (SBC).
- **Chapter 2: Environmental and Sustainable Studies,** which include site analysis, location, environmental analysis, and access analysis.
- **Chapter 3: Design Development Drawings** that include the conceptual design, architectural plans, sections, elevations, understanding of building envelope, structural basics, dimensions, and grids (horizontally/vertically), and representation of a building's "rendering design."

Senior Design Project (2) report should include and update chapters from Senior Design Project (1) and the following chapters,

- **Chapter 1**: Introduction (problem definition, project objectives and justification, sustainability, environmental impact, and project dimensions).
- **Chapter 2:** Problem Constraints (site constraints, environmental constraints, design fundamentals, local and international legislation, and codes).
- **Chapter 3:** Project Studies (architectural, sustainability, acoustics, lighting, HVAC system, and structure system studies).
- **Chapter 4:** Design Procedure and Implementation (propose a functional program, area program, and design implementation)
- **Chapter 5:** Concept Development (iteration 1, iteration 2, and concept philosophy)
- **Chapter 6:** Project Outcomes **(**master plan, plans, elevations, sections, perspective and shots, and Senior Design Project checklist)
- **Chapter 7:** Conclusion and Recommendations (conclusion and recommendations)

References

Appendixes

References

[1] B. Karagözoğlu, A guide to engineering design methodologies and technical presentation, Scientific Publishing Center, King Abdulaziz University, 2008.

[2] Senior Project and Professional Documents Manual, Collage of Agriculture, California Polytechnic State University, California, 2010.

[3] Society Policy, American Society of Mechanical Engineering, https://www.asme.org/

[4] Code of ethics, Saudi Council of Engineers, http://www.saudieng.sa/English/Pages/default.aspx

[5] Ashraf Saad, Senior Capstone Design Experiences for ABET Accredited Undergraduate Electrical and Computer Engineering Education, IEEE, 2007, P. 294-299.

[6] Senior Design Guidelines, College of Engineering, King Faisal University, 2014. https://www.kfu.edu.sa/en/Colleges/AhsaEngineering/Documents/Senior%20Design/Sen ior%20Design%20Guidelines.pdf

[7] Senior Design Project Handbook, Department of Electrical Engineering, College of Engineering, Qatar University, 2010.

Appendixes

Senior Design Project Forms

1. **Form 1:** Senior Project Proposal Format
2. **Form 2:** Graduation project registration undertaking form.
3. **Form 3:** Announcement of Declared Graduation Projects for Student (Individual/Work)
4. **Form 4:** Senior Design Project (1) Evaluation Form
5. **Form 5:** Senior Design Project (2) Evaluation Form
6. **Drawings Checklists** (1. Working Drawings Checklist for 1. Plans, 2. Sections. 3. Elevations, 4. Structural Plan Checklist, 5. Lighting Drawings (Plan) Checklist, 6. Acoustics Plan Checklist, 7. HVAC Plan Checklist, plus 8. Fire Protection and Life Safety Plan)
7. **Form 6:** Senior Design Project (1) Completion Form
8. **Form 7:** Senior Design Project (2) Completion Form
9. Student Report layout for Senior Design Project (2)

General Requirements for the Proposal Format

Problem Definition

The point of a few different elements in the project in terms of functionality and the type of users will be a significant challenge for the project designer. Appropriate projects and areas required for Senior Design Project (1) will be given to all the students registered for the Senior Design Project (1) course by the projects committee. In addition, the project must contain a hall, conference space, theater or exhibition hall, etc., and be attached to many service and administrative areas. The requirements of the Senior Design Project (1) cover the design aspects and call for diversity in blocks, shapes, and materials and will require structural, sustainable solutions and an extensive collection of studies to plan and operate the project, as well as prepare students for Senior Design Project (2) course which require calculations and detailed design studies.

Project Objectives and Justification

Such a project could be a gateway to prepare the students to work after graduation on complete architectural projects individually/in a group, especially in Saudi Arabia, which is witnessing a rapid urban renaissance. Additionally, such projects will enhance the role of future architectural engineers and experts and represent a structure that combines all the specialized systems for elite buildings. Furthermore, the scientific entertainment part of this project is an attraction factor to increase awareness and knowledge of architectural engineering science.

Sustainability and Environmental Impact

Under the size/area of this project and its demand for presence, the most effective form of sustainability will be the building's energy consumption due to the need for large air conditioning units. However, solutions have to be studied regarding this point where the glass facades are treated modernly, where enough natural light enters and significantly reduces heat gain in the building. The sustainable solutions will be discussed in the senior design report.

Project Dimensions

The project committee's selected land area should not exceed 10,000 square meters, where this figure is the average area of most projects that contain a hall, conference space, theater or exhibition hall, etc., and be attached to many service and administrative areas.

FORM 1

Architectural Engineering Department

Senior Design Project (1)

Proposal

FORM 2

Graduation Project Registration Undertaking Form

Academic Advisor	
Student Name	
ID	
Department	
GPA	
Mobile number:	
E-mail:	
Date of application submission (day and date)	

I pledge that I am the student whose data is shown above; if my registration for the graduation project course for the first semester of the academic year 144.... / 144… is accepted, I undertake to study and implement the Senior Design Project over a full academic year. Also, I pledge to contact the project supervisor / or department head no later than a week from the date of adding the course. I pledge to abide by attendance on the dates determined by the department and the research supervisor. If 20% of the total number of project lectures failed to attend or were vacated by one of the project's conditions, the department has the right to take whatever it deems appropriate and committed to fully cooperating with the research team of students in the graduation project and implement what is required of me to complete the graduation project in an honorable manner. The project report and presentation will be delivered at specified times.

Student Name:

Signature:

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Architectural Engineering Dept.
Senior Design Project Committee

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لجنة مشاريع التخرج

FORM 3

Individual Work

Announcement of Declared Graduation Projects for Architectural Engineering Students

(Semester:……)

S.N	Project Title	Professor Supervisor	Student Name
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

Senior Design Project Committee **Name**…….

Head of Architectural Engineering Department **Name**…….

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FORM 3

Group Work

Announcement of Declared Graduation Projects for Architectural Engineering Students

(Semester:……)

S.N	Project Title	Professor Supervisor	Student Name
1			
2			
3			
4			
5			
6			
7			
8			

Senior Design Project Committee **Name:**…….

Head of Architectural Engineering Department **Name:**……...

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FORM 4

Evaluation of Senior Design Project (1)

#	I.D.	Name	**Process Step 1**	**Process Step 2**	**Process Step 3**	**Process Step 4**	**Process Step 5**	**Process Step 6**	**Process Step 7**	**Process Step 8**	**Total**
			Pre-Design analysis and iterative studies	Site, Environmental analysis, and Conceptual Design	Design Development				Report	Final Presentation	
					Architectural Plans	Building Elevations	Building Sections	3D Views	Design Development Documents (D.D. Documents)		
			5 Marks	5 Marks	20 Marks	10 Marks	10 Marks	10 Marks	10 Marks	30 Marks	100 Marks
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Examination Committee Member

Examination Committee (60%) and Advisor evaluation along semester (40%)

Name: ……

Signature: ……

Date: ……

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Senior Design Project Committee

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FORM 5

Evaluation of Senior Design Project (2)

#	I.D.	Name	Examination Committee								Advisor	Total
			Working Drawings Checklist			Structural Plan Checklist	Lighting Drawings (Plan) Checklist	Acoustics Plan Checklist	HVAC Plan Checklist + Fire Protection and Life Safety Plan	Final Presentation	Technical Report	
			Plans	Sections	Elevations							
			7 Marks	7 Marks	7 Marks	7 Marks	7 Marks	7 Marks	8 Marks	10 Marks	40 Marks	100 Marks
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Examination Committee Member

Examination Committee (60%) and Advisor evaluation along semester (40%)

Name: ……

Signature: ……

Date: ……

1. Working Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/5	
2	☐	Axis	/10	
3	☐	External Dimensions	/5	
4	☐	Internal Dimensions	/5	
5	☐	Doors/Windows No.	/5	
6	☐	Structural System	/10	
7	☐	Levels	/5	
8	☐	Stairs Data& Dimensions	/10	
9	☐	Drawing Name	/5	
10	☐	Fixed Furniture and sanitary	/5	
11	☐	Drawing Scale	/5	
12	☐	Line tone and thickness(Pen Assignment)	/10	
13	☐	Symbols & indications	/5	
14	☐	Finishing Materials &Tables	/10	
15	☐	Space name &ID	/5	
16	☐	Sheet Block Title	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

2. Working Drawings (Elevation) Checklist

No.		Item	Grade	Comments
1	☐	Line tone and thickness(Pen Assignment)	/20	
2	☐	Main Axis	/10	
3	☐	External Dimensions	/10	
4	☐	Internal Dimensions	/10	
5	☐	Doors/Windows Direction	/5	
6	☐	Sections Symbol	/5	
7	☐	Finishing Materials	/5	
8	☐	Details' Elements	/5	
9	☐	Finishes tables	/5	
10	☐	Levels' data	/5	
11	☐	Drawing Name	/5	
12	☐	Drawing Scale	/5	
13	☐	Sheet Block Title	/10	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

3. Working Drawings (Section) Checklist

No.		Item	Grade	Comments
1	☐	Line tone and thickness(Pen Assignment)	/20	
2	☐	Axis	/10	
3	☐	External Dimensions	/10	
4	☐	Internal Dimensions	/10	
5	☐	Sections Symbol	/5	
6	☐	Structural System	/5	
7	☐	Doors/Windows Openings	/5	
8	☐	Floor and Roof Finishing	/10	
9	☐	Details' Arrows	/5	
10	☐	Levels' Arrows/Symbol	/5	
11	☐	Drawing Name	/5	
12	☐	Drawing Scale	/5	
13	☐	Sheet Block Title	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

4. Structural Plan Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis	/5	
3	☐	Axis Number	/5	
4	☐	External Dimensions	/5	
5	☐	Internal Dimensions	/5	
6	☐	Structure Stability	/10	
7	☐	Structural Elements ID	/5	
8	☐	Expansion joint (if applicable)	/5	
9	☐	Stairs/voids	/5	
10	☐	Slab Drawing	/2.5	
11	☐	Slab thicknesses	/5	
12	☐	Column Dimensions	/5	
13	☐	Columns Directions	/5	
14	☐	Bench marking point	/2.5	
15	☐	Starting Coordinate/angle	/2.5	
16	☐	Sections Symbol	/2.5	
17	☐	Elevations Symbol	/2.5	
18	☐	Drawing Name	/5	
19	☐	Drawing ID	/5	
20	☐	Drawing Scale	/5	
21	☐	Sheet Name	/5	
22	☐	Sheet ID	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

5. Lighting Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis	/2.5	
3	☐	Axis Number	/2.5	
4	☐	External Dimensions	/2.5	
5	☐	Internal Dimensions	/2.5	
6	☐	Space Name	/2.5	
7	☐	Lighting System and Wirings	/15	
8	☐	Light Switches	/5	
9	☐	Lighting Calculation Table	/50	
10	☐	Drawing Name	/2.5	
11	☐	Drawing Scale	/2.5	
12	☐	Sheet Name	/2.5	
13	☐	Sheet ID	/2.5	
14	☐	Legend Table	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

6. Acoustics Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis	/2.5	
3	☐	Axis Number	/2.5	
4	☐	Aux. Axis	/2.5	
5	☐	External Dimensions	/5	
6	☐	Internal Dimensions	/5	
7	☐	Reverberation Time Calculation	/55	
8	☐	Caustics Treatment	/15	
9	☐	Drawing Name	/2.5	
11	☐	Drawing Scale	/2.5	
12	☐	Sheet Name	/2.5	
14	☐	Space Name	/2.5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

7. HVAC Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis and Axis Number	/5	
3	☐	External and Internal Dimensions	/5	
4	☐	Number of zones with activity	/2.5	
5	☐	Cooling capacity in a ton of refrigeration	/15	
6	☐	Cooling air volume in CFM or m^3/sec	/10	
7	☐	Area of fan rooms in m^2	/10	
8	☐	HVAC supply or return ducts length and sizing (main and branch Ducts)	/5	
9	☐	Mechanical room location	/5	
10	☐	Supply and Return Ducts (drawings)	/20	
11	☐	Number of Diffusers (Supply and Return)	/5	
12	☐	Drawing Name, ID, Scale, Sheet Name, Sheet ID, Sheet Block Title & Drawing Areas	/15	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

8. Fire Protection and Life Safety Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis and Axis Number	/5	
3	☐	External and internal Dimensions	/5	
4	☐	Sprinklers I.D.s, Sprinklers numbers	/2.5	
5	☐	Sprinklers Radial Coverage	/20	
6	☐	Portable fire extinguisher types, numbers, and Locations	/15	
7	☐	Occupant load capacity for your building	/10	
8	☐	Travel distance (main and secondary) to the exit and dimensions of travel distance	/20	
10	☐	Legend (Specs)	/5	
11	☐	Drawing Name, ID, Scale, Sheet Name, Sheet ID, Sheet Block Title & Drawing Areas	/15	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

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FORM 6

Senior Design Project (1) Completion Form

Dear Senior Design Project Committee and advisors of Senior Design Project (1) in the Architectural Engineering Department,

This letter is to inform you to hold a meeting to discuss the progress of the Senior Design Projects in the department, provide the completion rates, and discuss the obstacles for each student working individually/in a group.

Course Code	Course Name	Date	Meeting Time
AE			

Please, fill in the attached table with the correct information and signature and send it through email before the meeting date.

Best regards.

Advisor Name:	
Student Name:	
Project Title:	
Abstract About the Project (100 Words in English and Arabic)	
Project Goals	
Completion Rates	
Obstacles (If Any)	

Table 1. Shows completion rate of Senior Design Project (1) requirements.

No.	Project Steps	Deadline (Week No.)	Completion Rate (%)
1.	Pre-Design Analysis and Iterative Studies		
2.	Site, Environmental analysis, and Conceptual Design		
3.	Architectural Plans		
4.	Building Elevations		
5.	Building Sections		
7.	3D Perspectives		
8.	Design Development Documents (D.D. Documents)		
9.	Final Presentation		
Total			**%**

Advisor: ……

Signature: …… **Date:** ……

Student: ……

Signature: …… **Date:** ……

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Senior Design Project Committee

جامعة جازان
كلية الهندسة
قسم الهندسة المعمارية
لجنة مشاريع التخرج

FORM 7

Senior Design Project (2) Completion Form

Dear Senior Design Project Committee and advisors of Senior Design Project (2) in the Architectural Engineering Department,

This letter is to inform you to hold a meeting to discuss the progress of the Senior Design Projects in the department, provide the completion rates, and discuss the obstacles for each student working individually/in a group.

Course Code	Course Name	Date	Meeting Time
AE			

Please, fill in the attached table with the correct information and signature and send it through email before the meeting date.

Best regards.

Advisor Name:	
Student Name:	
Project Title:	
Abstract About the Project (100 Words in English and Arabic)	
Project Goals	
Completion Rates	
Obstacles (If Any)	

Table 2. Shows completion rate of Senior Design Project (2) requirements.

	Project Steps	Checklist	Deadline (Week No.)	Completion Rate (%)
1	Working Drawings	Plans Checklist		
2		Sections Checklist		
3		Elevations Checklist		
4	Structural Drawings	Checklist		
5	Lighting Drawings	Checklist		
6	Acoustics Drawings	Checklist		
7	HVAC, Fire Protection, and Life Safety Drawings	Checklist		
8		Checklist		
Total				

Advisor: ……

Signature: …… **Date:** ……

Student: ……

Signature: …… **Date:** ……

Jazan University

College of Engineering

Architectural Engineering Department

Project Title

By Student

Student Name

Student ID

Student ID Number

Project Advisor: Project Advisor Name

A Senior Project report submitted in partial fulfillment.
of the requirement for the degree of Bachelor of Science (B.Sc.),
in
Architectural Engineering

College of Engineering
Architectural Engineering Department

(Project Title)

APPROVAL RECOMMENDED:

1- Dr. Name

2- Dr. Name

3- Dr. Name

4- Dr. Name

5- Eng. Name

6- Eng. Name

7- Eng. Name

8- Eng. Name

PROJECT ADVISOR — Project Advisor Named

Signature

DEPARTMENT HEAD — Department Head Name

Signature

COURSE INSTRUCTOR — Course Instructor Name

Signature

APPROVED DATE: / /14 – / / 20

DEAN, COLLEGE OF ENGINEERING — Dean Name

Signature

ABSTRACT

(Project Title)

Senior project submitted to the Department of Architectural Engineering. ----------
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DEDICATION

I dedicate this project to my ----------

ACKNOWLEDGEMENT

This project was developed under the direction and supervision of ----------

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I would like to express my sincere appreciation for his interest and assistance.

Table of Contents

1. CHAPTER I: INTRODUCTION

This chapter contains four sections, starting with problem definition, then project objectives and justification, then sustainability and environmental Impact, and finally, project dimensions. More detail about each section will be provided in this chapter. ----------

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1.1 Problem Definition

1.2 Project Objectives and Justification

1.3 Sustainability and Environmental Impact:

1.4 Project Dimensions:

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2. CHAPTER 2: PROBLEM CONSTRAINTS.

This chapter contains three constraints: site constraints, environmental constraints, and design fundamentals. More detail of each constrain will be provided as follows:

2.1 Site Constraints

2.2 Environmental Constraints

2.3 Design Fundamentals:

2.4 Local and International Legislation and Codes

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3. CHAPTER 3: PROJECT STUDIES

This chapter contains seven study sections, starting with architectural studies and sustainability studies, followed by structure system, lighting, acoustics, HVAC studies, last but not least, and finally, fire protection and life safety studies. More detail about each study will be discussed in this chapter. ----------
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3.1 Architectural Studies

3.2 Sustainability Studies

3.3 Structure System Studies

3.4 Lighting Studies

3.5 Acoustics Studies

3.6 HVAC Studies

3.7 Fire Protraction and Life Safety Studies

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4. CHAPTER 4: DESIGN PROCEDURE AND IMPLEMENTATION

This chapter contains three sections, starting with the proposed functional program, then the area program, and finally, design implementation. More detail about each section will be discussed in the following pages. ----------
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4.1 Propose Functional Program

4.2 Area Program

4.3 Design Implementation

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5. CHAPTER 5: CONCEPT DEVELOPMENT

This chapter includes two concepts: concept development and concept philosophy. More detail about each concept will be addressed as follows:

5.1 Concept Development

5.1.1 Iteration 1

5.1.2 Iteration 1

5.2 Concept Philosophy

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6. CHAPTER 6: PROJECT OUTCOMES

This chapter includes five concepts, which clearly present the master plan followed by plans, elevations, and sections, and at the end, perspective and shots will be shown.

6.1 Master Plan

6.2 Plans

6.3 Elevations

6.4 Sections

6.5 Perspective and Shots

Senior Design Project Checklist

Project Title: ----------

Supervisor: ----------

Student Name: ----------

	Item	Implemented		
		Yes	**No**	**Indicate page(s) in the report for "YES", cite reason(s) for "NO"**
1	Problem definition & Objectives			
2	Problem constraints			
3	Legislation and Codes			
4	Project studies			
5	Design procedure and implementation			
6	Alternative solutions			
7	Impact of engineering solutions			
8	Final product			

7. CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

A. Conclusion:

At the end of my research on the project, ----------

B. Recommendations:

REFERENCES

[1] ----------

[2] ----------

[3] ----------

[4] ----------

APPENDIXES

Start to Place all the Project Drawings

DETAILS AND DRAWINGS CHECKLISTS

Each stage for Senior Design Project (2) will have details, drawings, and documents to be evaluated through the advisor and the checklists such as the followings,

1. Working Drawings Checklist (Plans)
2. Working Drawings Checklist (Sections)
3. Working Drawings Checklist (Elevations)
4. Structural Plan Checklist
5. Lighting Plan Checklist
6. Acoustics Plan Checklist
7. HVAC Plan Checklist
8. Fire Protection and Life Safety Checklist

1. Working Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/5	
2	☐	Axis	/10	
3	☐	External Dimensions	/5	
4	☐	Internal Dimensions	/5	
5	☐	Doors/Windows No.	/5	
6	☐	Structural System	/10	
7	☐	Levels	/5	
8	☐	Stairs Data& Dimensions	/10	
9	☐	Drawing Name	/5	
10	☐	Fixed Furniture and sanitary	/5	
11	☐	Drawing Scale	/5	
12	☐	Line tone and thickness(Pen Assignment)	/10	
13	☐	Symbols & indications	/5	
14	☐	Finishing Materials &Tables	/10	
15	☐	Space name &ID	/5	
16	☐	Sheet Block Title	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

2. Working Drawings (Elevation) Checklist

No.		Item	Grade	Comments
1	☐	Line tone and thickness(Pen Assignment)	/20	
2	☐	Main Axis	/10	
3	☐	External Dimensions	/10	
4	☐	Internal Dimensions	/10	
5	☐	Doors/Windows Direction	/5	
6	☐	Sections Symbol	/5	
7	☐	Finishing Materials	/5	
8	☐	Details' Elements	/5	
9	☐	Finishes tables	/5	
10	☐	Levels' data	/5	
11	☐	Drawing Name	/5	
12	☐	Drawing Scale	/5	
13	☐	Sheet Block Title	/10	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

3. Working Drawings (Section) Checklist

No.		Item	Grade	Comments
1	☐	Line tone and thickness(Pen Assignment)	/20	
2	☐	Axis	/10	
3	☐	External Dimensions	/10	
4	☐	Internal Dimensions	/10	
5	☐	Sections Symbol	/5	
6	☐	Structural System	/5	
7	☐	Doors/Windows Openings	/5	
8	☐	Floor and Roof Finishing	/10	
9	☐	Details' Arrows	/5	
10	☐	Levels' Arrows/Symbol	/5	
11	☐	Drawing Name	/5	
12	☐	Drawing Scale	/5	
13	☐	Sheet Block Title	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

4. Structural Plan Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis	/5	
3	☐	Axis Number	/5	
4	☐	External Dimensions	/5	
5	☐	Internal Dimensions	/5	
6	☐	Structure Stability	/10	
7	☐	Structural Elements ID	/5	
8	☐	Expansion joint (if applicable)	/5	
9	☐	Stairs/voids	/5	
10	☐	Slab Drawing	/2.5	
11	☐	Slab thicknesses	/5	
12	☐	Column Dimensions	/5	
13	☐	Columns Directions	/5	
14	☐	Bench marking point	/2.5	
15	☐	Starting Coordinate/angle	/2.5	
16	☐	Sections Symbol	/2.5	
17	☐	Elevations Symbol	/2.5	
18	☐	Drawing Name	/5	
19	☐	Drawing ID	/5	
20	☐	Drawing Scale	/5	
21	☐	Sheet Name	/5	
22	☐	Sheet ID	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

5. Lighting Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis	/2.5	
3	☐	Axis Number	/2.5	
4	☐	External Dimensions	/2.5	
5	☐	Internal Dimensions	/2.5	
6	☐	Space Name	/2.5	
7	☐	Lighting System and Wirings	/15	
8	☐	Light Switches	/5	
9	☐	Lighting Calculation Table	/50	
10	☐	Drawing Name	/2.5	
11	☐	Drawing Scale	/2.5	
12	☐	Sheet Name	/2.5	
13	☐	Sheet ID	/2.5	
14	☐	Legend Table	/5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

6. Acoustics Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis	/2.5	
3	☐	Axis Number	/2.5	
4	☐	Aux. Axis	/2.5	
5	☐	External Dimensions	/5	
6	☐	Internal Dimensions	/5	
7	☐	Reverberation Time Calculation	/55	
8	☐	Caustics Treatment	/15	
9	☐	Drawing Name	/2.5	
11	☐	Drawing Scale	/2.5	
12	☐	Sheet Name	/2.5	
14	☐	Space Name	/2.5	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

7. HVAC Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis and Axis Number	/5	
3	☐	External and Internal Dimensions	/5	
4	☐	Number of zones with activity	/2.5	
5	☐	Cooling capacity in a ton of refrigeration	/15	
6	☐	Cooling air volume in CFM or m^3/sec	/10	
7	☐	Area of fan rooms in m^2	/10	
8	☐	HVAC supply or return ducts length and sizing (main and branch Ducts)	/5	
9	☐	Mechanical room location	/5	
10	☐	Supply and Return Ducts (drawings)	/20	
11	☐	Number of Diffusers (Supply and Return)	/5	
12	☐	Drawing Name, ID, Scale, Sheet Name, Sheet ID, Sheet Block Title & Drawing Areas	/15	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

8. Fire Protection and Life Safety Drawings (Plan) Checklist

No.		Item	Grade	Comments
1	☐	North Direction	/2.5	
2	☐	Main Axis and Axis Number	/5	
3	☐	External and internal Dimensions	/5	
4	☐	Sprinklers I.D.s, Sprinklers numbers	/2.5	
5	☐	Sprinklers Radial Coverage	/20	
6	☐	Portable fire extinguisher types, numbers, and Locations	/15	
7	☐	Occupant load capacity for your building	/10	
8	☐	Travel distance (main and secondary) to the exit and dimensions of travel distance	/20	
10	☐	Legend (Specs)	/5	
11	☐	Drawing Name, ID, Scale, Sheet Name, Sheet ID, Sheet Block Title & Drawing Areas	/15	
		Total	**/100**	

Checked by: …… Signature: …… Date: ……

Symbol	Meaning
A-A000	(رمز لترقيـــم الرســومات المعماريــة / Architectural Drawings)
A-W000	(رمز لترقيـــم الرســومات التنفيذيـــــة / Working Drawings)
A-S000	(رمز لترقيـــم رسـومات أعمال الإنشـاء / Structural Drawings)
A-E000	(رمز لترقيـــم رسـومات أعمال الإضـائة و الكهريـــاء / Lighting and Electrical Drawings)
A-AC000	(رمز لترقيـــم رسـومات أعمال الصـــوتيات / Acoustics Drawings)
A-M000	(رمز لترقيـــم رسـومات أعمال الميكانيكـــال / HVAC Drawings)
A-F000	(رمز لترقيـــم رسـومات أعمال السـلامة و الحـريق / Fire Protection and Life Safety Drawings)

Sheet List	
Sheet Number	Sheet Name
A-A000	Cover Sheet
A-A001	.....
A-A002	.....
A-A003	.....
A-A004	.....
A-W001	.....
A-W002	.....
A-W003	.....
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Jazan University
College of Engineering
Architectural Engineering Department

Senior Design Project Committee

Instructor:

Signature:

Examination Committee Member:

Specialization:

Signature:

Examination Committee Member:

Specialization:

Signature:

Examination Committee Member:

Specialization:

Signature:

Examination Committee Member:

Specialization:

Signature:

Examination Committee Member:

Specialization:

Signature:

Examination Committee Member:

Specialization:

Signature:

No.	Description	Date

AE 000-0_2022-2023

Project Name

Sheet Name

Date 01 January, 2000

Student Name:

Student ID:

A-A000

Scale 1/000