

## Degree and Study Plan

|                           |                                    |
|---------------------------|------------------------------------|
| <b>College</b>            | Engineering                        |
| <b>Department</b>         | Energy and Sustainable Engineering |
| <b>Program</b>            | Sustainable Systems Engineering    |
| <b>Degree Level</b>       | Bachelor of Science                |
| <b>Total Credit Hours</b> | 138                                |
| <b>Cohort</b>             | 2024 and above                     |

| Summary of Credits           |     |
|------------------------------|-----|
| University Requirements (UR) | 12  |
| University Electives (UE)    | 6   |
| College Requirements (CR)    | 32  |
| Program Requirements (PR)    | 79  |
| Program Electives (PE)       | 9   |
| Total                        | 138 |

**For more information contact:** Dr. Mohamed Abd El-Hameed, HoD

**HoD:**



**Dean:**



**Date:** 30/09/2024

| Year One | Semester 1 (Fall)   |                                                 |         |                          |          |
|----------|---------------------|-------------------------------------------------|---------|--------------------------|----------|
|          | Course Code         | Course Title                                    | Credits | Pre-Request/ Co-Request* | Category |
|          | ENGR111             | Computer Applications                           | 3       |                          | CR       |
|          | ARAB101             | Arabic                                          | 3       |                          | UR       |
|          | PHYS101             | Physics I                                       | 3       |                          | CR       |
|          | ENGL101             | English Communication Skills I                  | 3       |                          | UR       |
|          | MATH101             | Calculus I                                      | 3       |                          | CR       |
|          | PHYS181             | Physics I Lab                                   | 1       | PHYS101*                 | CR       |
|          | Total Credits       |                                                 | 16      |                          |          |
|          | Semester 2 (Spring) |                                                 |         |                          |          |
|          | Course Code         | Course Title                                    | Credits | Pre-Request/ Co-Request* | Category |
|          | SSEN112             | Introduction to Sustainable Systems Engineering | 3       |                          | PR       |
|          |                     | University Elective                             | 3       |                          | UE       |
|          | MATH102             | Calculus II                                     | 3       | MATH101                  | CR       |
|          | CHEM101             | Chemistry I                                     | 3       |                          | CR       |
|          | ENGL102             | English Communication Skills II                 | 3       | ENGL101                  | CR       |
|          | CHEM181             | Chemistry Lab                                   | 1       | CHEM101*                 | CR       |
|          | Total Credits       |                                                 | 16      |                          |          |

| Year Two | Semester 3 (Fall)   |                                  |         |                             |          |
|----------|---------------------|----------------------------------|---------|-----------------------------|----------|
|          | Course Code         | Course Title                     | Credits | Pre-Request/ Co-Request*    | Category |
|          | ENGR201             | Engineering Drawing              | 3       |                             | CR       |
|          | EGEN221             | Circuit Theory                   | 3       | MATH102                     | PR       |
|          | SSEN211             | Mass and Energy Balance          | 3       | ENGR111                     | PR       |
|          | CVEN361             | Environmental Engineering        | 3       | CHEM101                     | PR       |
|          | OMNS101             | Oman Society                     | 3       |                             | UR       |
|          | EGEN222             | Circuit Theory Lab               | 1       | MATH102, EGEN221*           | PR       |
|          | Total Credits       |                                  | 16      |                             |          |
|          | Semester 4 (Spring) |                                  |         |                             |          |
|          | Course Code         | Course Title                     | Credits | Pre-Request/ Co-Request*    | Category |
|          | EGEN251             | Fluid Mechanics                  | 3       | MATH102                     | PR       |
|          | MATH204             | Probability and Statistics       | 3       | MATH102                     | CR       |
|          | EGEN261             | Engineering Mechanics            | 3       | MAHT102                     | PR       |
|          | EGEN262             | Thermodynamics and Heat Transfer | 3       | PHYS101                     | PR       |
|          | EGEN263             | Thermo-Fluid Lab                 | 1       | PHYS101, EGEN251*, EGEN262* | PR       |
|          | Total Credits       |                                  | 13      |                             |          |

| Year Three | Semester 5 (Fall)   |                                       |         |                          |          |
|------------|---------------------|---------------------------------------|---------|--------------------------|----------|
|            | Course Code         | Course Title                          | Credits | Pre-Request/ Co-Request* | Category |
|            | MNGT313             | Entrepreneurship                      | 3       |                          | UR       |
|            | EGEN344             | Power Systems                         | 3       | EGEN221                  | PR       |
|            | ENGR202             | Technical Writing and Presentation    | 3       | ENGL102                  | PR       |
|            | SSEN311             | Environmental Sustainability          | 3       | CVEN361                  | PR       |
|            | SSEN321             | Introduction to Life Cycle Assessment | 3       | CVEN361                  | PR       |
|            | Total Credits       |                                       | 15      |                          |          |
|            | Semester 6 (Spring) |                                       |         |                          |          |
|            | Course Code         | Course Title                          | Credits | Pre-Request/ Co-Request* | Category |
|            | SSEN322             | Sustainable Materials                 | 3       | CHEM101, SSEN112         | PR       |
|            | ENGR404             | Engineering Economics                 | 3       | MATH204                  | PR       |
|            | MATH305             | Numerical Methods                     | 3       | MATH102, ENGR111         | CR       |
|            | ENEN201             | Renewable Energy                      | 3       | SSEN112                  | PR       |
|            | MATH203             | Differential Equations                | 3       | MATH102                  | CR       |
|            | Total Credits       |                                       | 15      |                          |          |

| Year Four | Semester 7 (Fall)   |                                               |         |                          |          |
|-----------|---------------------|-----------------------------------------------|---------|--------------------------|----------|
|           | Course Code         | Course Title                                  | Credits | Pre-Request/ Co-Request* | Category |
|           | SSEN411             | Sustainable Infrastructure                    | 3       | SSEN322, SSEN311         | PR       |
|           | SSEN421             | Sustainable Water Resources                   | 3       | SSEN311                  | PR       |
|           | SSEN431             | Sustainable Energy Systems                    | 3       | EGEN344                  | PR       |
|           | SSEN441             | Application of Sustainable Engineering Design | 3       | SSEN311                  | PR       |
|           | EGEN482             | Instrumentation and Control Systems           | 3       | EGEN344                  | PR       |
|           | Total Credits       |                                               | 15      |                          |          |
|           | Semester 8 (Spring) |                                               |         |                          |          |
|           | Course Code         | Course Title                                  | Credits | Pre-Request/ Co-Request* | Category |
|           | EGEN471             | Modeling and Simulation of Energy Systems     | 3       | MATH305, MATH203         | PR       |
|           |                     | Sustainable Systems Engineering Electives     | 3       |                          | PE       |
|           | SSEN491             | Capstone Design Project I                     | 3       |                          | PR       |
|           | SSEN452             | Circular Economy                              | 3       | ENGR404                  | PR       |
|           |                     | University Elective                           | 3       |                          | UE       |
|           | SSEN462             | Sustainable Systems Engineering Lab           | 1       | SSEN421, SSEN431         | PR       |
|           | Total Credits       |                                               | 16      |                          |          |
|           | Summer              |                                               |         |                          |          |
|           | Course Code         | Course Title                                  | Credits | Pre-Request/ Co-Request* | Category |
|           | ENGR322             | Summer Internship                             | 0       |                          | CR       |

| Year Five | Semester 9 (Fall)    |                                           |           |                          |          |
|-----------|----------------------|-------------------------------------------|-----------|--------------------------|----------|
|           | Course Code          | Course Title                              | Credits   | Pre-Request/ Co-Request* | Category |
|           | CVEN471              | Engineering Project Management            | 3         | ENGR201                  | PR       |
|           |                      | Sustainable Systems Engineering Electives | 3         |                          | PE       |
|           | SSEN592              | Capstone Design Project II                | 3         | SSEN491                  | PR       |
|           | SSEN521              | Sustainable Development Strategy          | 3         | SSEN441                  | PR       |
|           |                      | Sustainable Systems Engineering Electives | 3         |                          | PE       |
|           | SSEN472              | Renewable Energy Lab                      | 1         | SSEN431                  | PR       |
|           | <b>Total Credits</b> |                                           | <b>16</b> |                          |          |

#### List of Program Elective Courses:

| A student must register in 3 courses with total of 9 credits hours following the program study plan: |                                 |         |                          |
|------------------------------------------------------------------------------------------------------|---------------------------------|---------|--------------------------|
| Course Code                                                                                          | Course Title                    | Credits | Pre-Request/ Co-Request* |
| SSEN531                                                                                              | Sustainable Transport Systems   | 3       | SSEN311                  |
| SSEN541                                                                                              | Sustainable Process Engineering | 3       | SSEN211                  |
| SSEN551                                                                                              | Urban Sustainability            | 3       | SSEN311                  |
| SSEN571                                                                                              | Advanced Energy Solutions       | 3       | ENEN201                  |
| SSEN581                                                                                              | Advanced Life Cycle Assessment  | 3       | SSEN321                  |
| SSEN591                                                                                              | Geomatics System and Technology | 3       | SSEN322                  |
| ENEN581                                                                                              | Climate Change                  | 3       | CVEN361                  |
| ENEN431                                                                                              | Water and Wastewater Treatment  | 3       | CVEN361                  |
| ENEN461                                                                                              | Solid Waste Management          | 3       | CVEN361                  |
| EGEN583                                                                                              | Low Carbon Energy Technology    | 3       | CVEN361                  |
| EGEN575                                                                                              | Energy Buildings                | 3       | CVEN361                  |
| EGEN577                                                                                              | Waste and Energy                | 3       | SSEN431                  |
| EGEN584                                                                                              | Air Pollution and Control       | 3       | CVEN361                  |
| EGEN511                                                                                              | Biofuel, Geothermal, & Biomass  | 3       | CVEN361                  |

**University Electives:**

| Choose 2 courses from this list: |                                    |         |                          |
|----------------------------------|------------------------------------|---------|--------------------------|
| Course Code                      | Course Title                       | Credits | Pre-Request/ Co-Request* |
| ARAB102                          | الأدب العربي                       | 3       |                          |
| ISLM101                          | Islamic Civilizations              | 3       |                          |
| PHIL101                          | Introduction to Logic (Philosophy) | 3       |                          |
| SOCI101                          | Sociology                          | 3       |                          |
| PSYC100                          | مدخل إلى علم النفس                 | 3       |                          |
| FINA202A                         | التمويل الشخصي                     | 3       |                          |
| ECON101                          | الاقتصاد الجزئي                    | 3       |                          |
| FAID101                          | First Aid                          | 3       |                          |
| PUHE211                          | Introduction to Public Health      | 3       |                          |
| LAWC101                          | القانون في حياتنا                  | 3       |                          |
| LAWC102                          | التشريعات الوظيفية                 | 3       |                          |
| LAWC103                          | نظام الأسرة                        | 3       |                          |