# Course Specification
## (Bachelor)

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|---|---|
| **Course Title:** | *Global Sustainable Supply Chain Management.* |
| **Course Code:** | *INE 5354.* |
| **Program:** | *Bachelor of Industrial Engineering.* |
| **Department:** | *Industrial Engineering.* |
| **College:** | *Engineering.* |
| **Institution:** | *King Khalid University.* |
| **Version:** | *1* |
| **Last Revision Date:** | *20/11/2025.* |

## Table of Contents

## A. General information about the course:

### 1. Course Identification

| | | | | | |
|---|---|---|---|---|---|
| **1. Credit hours: (3)** | | | | | |
| **The course is consisting of 3 credit hours in total, where 2 are theory and 1 is practical/tutorial.** | | | | | |
| **2. Course type** | | | | | |
| **A.** | ☐ University | ☐ College | ☐ Department | ☐ Track | ☐ Others |
| **B.** | ☐ Required | | ☒ Elective | | |
| **3. Level/year at which this course is offered: (10th level / 5th Year)** | | | | | |
| **4. Course General Description:** | | | | | |

This course provides an integrated introduction to global sustainable supply chain management, emphasizing economic, environmental, and social sustainability dimensions across multinational networks. It examines upstream supplier sustainability performance, and multi-tier visibility. Students learn principles of circularity, decarburization pathways, traceability systems, and ESG-driven procurement. The course incorporates global standards such as ISO 9001, ISO 14001, ISO 20400, and the GHG Protocol, along with data-driven monitoring of sustainability indicators. Case studies highlight applications relevant to Saudi Vision 2030.

**5. Pre-requirements for this course** (if any)**:**

**The pre-required course is INE 4351**

**6. Co-requisites for this course** (if any)**:**

NIL

**7. Course Main Objective(s):**

**- Establish foundational knowledge of global and sustainable supply chain structures and practices.**
**- Identify upstream supplier sustainability challenges and performance gaps.**
**- Compare qualitative, semi-quantitative, and digital/AI-enabled sustainability assessment approaches.**
**- Apply sustainability and performance metrics ($CO_2e$, defect ppm, OTIF, SCRI).**

- Introduce tools including LCA basics, ISO frameworks, and GHG Protocol scopes.
- Foster ethical and ESG-oriented decision-making.

## 2. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom/LAB | 60 | 100 |

## 3. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | Lectures | 30 |
| 2. | Laboratory/Studio | 30 |
| Total | | 60 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| 1.0 | Knowledge and understanding | | | |
| 1.1 | Explain core principles of global sustainable SCM, circularity, and decarburization. | K1 | Lectures and LAB | Assignments, Quizzes, and Exams |
| 1.2 | Describe qualitative and semi-quantitative sustainability assessment tools. | K2 | | |
| 2.0 | Skills | | | |
| 2.1 | Evaluate supplier sustainability performance using structured tools. | S1 | Lectures and LAB | Assignments, Quizzes, and Exams |

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| 2.2 | Apply digital/AI-enabled sustainability analytics using basic software. | S2 | Lectures and LAB | Assignments, Quizzes, and Exams |
| 2.3 | Integrate environmental, social, and economic indicators into recommendations. | S3 | Lectures and LAB | Assignments, Quizzes, and Exams |
| 3.0 | Values, autonomy, and responsibility | | | |
| 3.1 | Justify ethical and ESG-aligned procurement decisions. | V1 | Lectures and LAB | Assignments, Quizzes, and Exams |
| 3.2 | Demonstrate teamwork and professional responsibility. | V2 | LAB | LAB Assignments, |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | Foundations of Global & Sustainable SCM; Vision 2030 context | 4 |
| 2. | Circularity, eco-design, triple bottom line, circularity | 4 |
| 3. | Reverse logistics & circular options | 4 |
| 4. | green logistics and “lean & green” operations | 4 |
| 5. | Global sourcing, traceability & ESG | 4 |
| 6. | Qualitative and Semi-quantitative sustainability assessment | 4 |
| 7. | Standards & carbon accounting concepts (Scope 1–3); | 4 |
| 8. | Life-cycle thinking & basic LCA boundaries; | 4 |

| | | |
|---|---|---|
| 9. | Sustainability metrics and Sustainability metrics modeling | 4 |
| 10. | Digital sustainability analytics | 4 |
| 11. | Supplier responsibility & due diligence and supplier sustainability compliance checklist | 4 |
| 12. | Social impact of sustainable supply chain | 4 |
| 13. | Sustainability Risk & resilience | 4 |
| 14. | Cost–service–sustainability trade-offs | 4 |
| 15. | Policy, ethics & governance for sustainable SCM | 4 |
| Total | | 60 |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | 4 Assignments | 3, 5, 7, 9 | 30 |
| 2. | Quiz 1 | 10 | |
| 3. | Quiz 2 | 12 | |
| 4. | Mid Term Exam | 7 | 30 |
| 5. | Final Exam | 16 | 40 |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| Essential References | 1- Yanamandra, R., & Wahab, S. N. (Eds.). (2023). Handbook of research on designing sustainable supply chains to achieve a circular economy. IGI Global. ISBN: 978-1668476642.<br>2- Sarkis, J. (Ed.). (2019). Handbook on the sustainable supply chain. Edward Elgar Publishing. ISBN: 978-1786434265 |
| Supportive References | Mitra, A. (Ed.). (2020). Handbook of research on sustainable supply chain management for the global economy. IGI Global. ISBN: 978-1799846017<br>Grant, D. B., Trautrims, A., & Wong, C. Y. (2017). Sustainable Logistics and Supply Chain Management: Principles and Practices for Sustainable Operations and Management. Kogan Page. |
| Electronic Materials | Course page on Blackboard |

| Other Learning Materials | Lecture handouts |
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## 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| **facilities**<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | **Classrooms, computer Lab** |
| **Technology equipment**<br>(projector, smart board, software) | **Excel and Minitab** |
| **Other equipment**<br>(depending on the nature of the specialty) | |

## F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Student and Faculty | Indirect through Online Surveys |
| Effectiveness of student's assessment | Faculty and Quality Committee | Direct through Result Analysis |
| Quality of learning resources | Faculty and Students | Indirect through Online Surveys |
| The extent to which CLOs have been achieved | Faculty and Quality Committee | Direct through Exam and Result Analysis (Excel Sheet/Rubrics) |

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

## G. Specification Approval

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| **COUNCIL /COMMITTEE** | **REVIEWED BY CURRICULUM COMMITTEE**<br>**APPROVED BY QUALITY COMMITTEE** |
| **REFERENCE NO.** | **9-6-47** |
| **DATE** | 25/06/1447 |