



IT 415 – PRINCIPLES OF TRAINING AND INDUSTRIAL LAYOUT

UNIVERSITY VISION

A leading University in advancing scholarly innovation, multi-cultural convergence, and responsive public service in a borderless Region.

UNIVERSITY MISSION

The University shall primarily provide advanced instruction and professional training in science and technology, agriculture, fisheries, education and other related fields of study. It shall also undertake research and extension services, and provide progressive leadership in its areas of specialization.

UNIVERSITY STRATEGIC GOALS

- a. Deliver quality service to stakeholders to address current and future needs in instruction, research, extension, and production
- b. Observe strict implementation of the laws as well as the policies and regulations of the University
- c. Acquire with urgency state-of-the-art resources for its service areas
- d. Bolster the relationship of the University with its local and international customers and partners
- e. Leverage the qualifications and competences in personnel action and staffing
- f. Evaluate the efficiency and responsiveness of the University systems and processes

INSTITUTIONAL OUTCOMES (IO)

- a. Enhance competency development, commitment, professionalism, unity and true spirit of service for public accountability, transparency and delivery of quality services
- b. Provide relevant programs and professional trainings that will respond to the development needs of the region
- c. Strengthen local and international collaborations and partnerships for borderless programs
- d. Develop a research culture among faculty and students
- e. Develop and promote environmentally-sound and market-driven knowledge and technologies at par with international standards
- f. Promote research-based information and technologies for sustainable development
- g. Enhance resource generation and mobilization to sustain financial viability of the university

PROGRAM OUTCOMES (PO) COMMON TO ALL PROGRAMS AND ITS RELATIONSHIPS TO INSTITUTIONAL OUTCOMES

A graduate of Sultan Kudarat State University can:	INSTITUTIONAL OUTCOMES (IO)						
	a	b	c	d	e	f	g
a. articulate effectively and independently in multi-disciplinary and multi-cultural teams the latest development in the fields practiced such as Automotive, Architectural Drafting, Civil, Electrical, Electronics, Food and its allied discipline;	✓	✓		✓	✓	✓	✓
b. lead in the promotion and preservation of Filipino historical and cultural heritage, social empowerment and environmental sustainability in a professional and ethical approach;	✓	✓	✓	✓	✓	✓	✓
c. generate research-based information and technologies at par from international standards, and;	✓	✓	✓	✓	✓	✓	✓
d. promote and transfer knowledge and technologies for effective and efficient school-industry partnership.	✓	✓	✓	✓	✓	✓	✓

**COURSE CODE** IT415  
**COURSE TITLE** PRINCIPLES OF TRAINING AND INDUSTRIAL LAYOUT  
**3 PREREQUISITE** NONE  
**4 CREDITS** 3

### 5 COURSE DESCRIPTION

Strength of Materials covers the fundamental concepts of stress, strain, deformation, and the mechanical behavior of materials under various loading conditions. Emphasis is placed on the analysis and design of structural members subjected to axial, torsional, bending, and combined loads.

### 6 COURSE LEARNING OUTCOMES (CLO) AND ITS RELATIONSHIPS TO PROGRAM OUTCOMES

Course Learning Outcomes (CLO)	Program Outcomes			
	a	b	c	d
At the end of the course, a student can:				
a. Understand and explain the fundamental principles of industrial training methodologies and their applications in manufacturing and service industries.	✓		✓	
b. Analyze different types of industrial layouts and evaluate their suitability for various manufacturing processes to optimize workflow and productivity.	✓	✓		
c. Design effective training programs for industrial personnel, incorporating instructional strategies and safety protocols.		✓	✓	
d. Assess the impact of layout design on operational efficiency, safety, and cost-effectiveness in industrial settings.	✓			✓
e. Apply principles of industrial ergonomics and ergonomics-based layout planning to enhance worker comfort, safety, and efficiency.				✓

### 7 COURSE CONTENTS

WEEK	CONTENT	INTENDED LEARNING OUTCOMES (ILOs)	TEACHING AND LEARNING ACTIVITIES (TLA)	OUTCOMES-BASED ASSESSMENT (OBA)	COURSE LEARNING OUTCOMES (CLOs)
1	Course Orientation SKSU VMGO, Classroom Policies, Course Overview, Course Requirements, Grading System	At the end of the orientation, the teacher can: a. discuss the University's VMGO, classroom policies, course overview, requirements and grading system	Discuss the VMGO of the University, the classroom policies, scope of the course, course requirements and grading system		
2-3	Introduction Principles of Training and Industrial Layout a. Overview of industrial	a. Describe the fundamental concepts of industrial training and layout principles, including their definitions and scope. b. Explain the significance of effective training programs and well-designed industrial layouts	a. Brainstorming Session b. Group Discussions c. Comparative Analysis	a. Quiz b. Problem set	a

	<p>training and layout principles</p> <p>b. Importance in manufacturing and industrial sectors</p>	<p>in enhancing operational efficiency and safety within manufacturing and industrial sectors.</p> <p>c. Explain the significance of effective training programs and well-designed industrial layouts in enhancing operational efficiency and safety within manufacturing and industrial sectors.</p> <p>d. Explain the significance of effective training programs and well-designed industrial layouts in enhancing operational efficiency and safety within manufacturing and industrial sectors.</p>			
4-5	<p><b>Principles of Industrial Training</b></p> <p>a. Needs Analysis</p> <p>b. Designing Effective Training Programs</p>	<p>a. Explain the importance of conducting a needs analysis to identify training requirements within an industrial setting.</p> <p>b. Describe the steps involved in performing a needs analysis, including data collection and assessment methods.</p> <p>c. Describe the steps involved in performing a needs analysis, including data collection and assessment methods.</p> <p>d. Describe the steps involved in performing a needs analysis, including data collection and assessment methods.</p> <p>e. Describe the steps involved in performing a needs analysis, including data collection and assessment methods.</p> <p>f. Describe the steps involved in performing a needs analysis, including data collection and assessment methods.</p>	<p>a. Lecture</p> <p>b. Demonstration</p> <p>c. Hands-on activity</p>	<p>a. Problem set</p> <p>b. Short quiz</p>	a b d
6	<p><b>Layout Design Principles</b></p> <p>a. Types of Industrial Layouts</p> <p>b. Factors Influencing Layout Design</p>	<p>a. Identify and describe various types of industrial layouts commonly used in manufacturing and service industries.</p> <p>b. Analyze the factors that influence the selection and design of an appropriate industrial layout, such as space utilization, workflow, safety, and cost.</p> <p>c. Explain key principles of layout design that contribute to operational efficiency, safety, and flexibility.</p>	<p>a. Lecture</p> <p>b. Group work</p> <p>c. Drawing exercises</p>	<p>a. Problem set</p> <p>b. Practical quiz</p>	a b c

	c. Layout Design Principles d. Modern Layout Trends	d. Compare traditional and modern layout trends, understanding their advantages and limitations in current industrial practices. e. Apply layout design principles to develop or evaluate industrial layouts that improve productivity and optimize resource use. f. Evaluate the impact of emerging trends and technologies on modern layout planning and design.			
7	<b>MIDTERM EXAMINATION</b>				
8	<b>Integration of Training and Layout Principles</b>	a. Explain the significance of integrating training programs with industrial layout principles to enhance operational efficiency. b. Identify how effective layout design can facilitate better training environments and improve worker productivity. c. Analyze the relationship between layout features and training needs, including safety, workflow, and ergonomic considerations. d. Apply principles of layout design to create or modify workspaces that support both operational goals and effective training. e. Evaluate the impact of integrated layout and training strategies on overall industrial performance and safety. f. Develop recommendations for optimizing layout and training alignment to achieve continuous improvement in industrial settings.	a. Lecture b. Case study c. Group Activity	a. Problem-set b. Quiz	a d
10	<b>Safety, Ergonomics, and Sustainability</b>	a. Describe the fundamental concepts of safety, ergonomics, and sustainability in industrial and workplace environments. b. Identify key safety hazards and ergonomic factors that affect worker health, safety, and productivity. c. Analyze how sustainable practices can be integrated into industrial layouts and operational processes to minimize environmental impact.	a. Lecture b. Problem-solving c. Demonstration	a. Problem set b. Quiz	a b d

		<ul style="list-style-type: none"> <li>d. Apply safety and ergonomic principles to design or assess workspaces that promote worker well-being and operational efficiency.</li> <li>e. Evaluate the role of sustainable practices in achieving long-term industrial viability and compliance with regulatory standards.</li> <li>f. Develop strategies for implementing safety, ergonomic improvements, and sustainable practices within industrial settings.</li> </ul>			
11	<b>Case Studies and Practical Applications</b>	<ul style="list-style-type: none"> <li>a. Analyze real-world case studies to identify key principles and challenges related to training, layout, safety, ergonomics, and sustainability.</li> <li>b. Apply theoretical concepts to practical scenarios, demonstrating problem-solving skills in industrial and workplace contexts.</li> <li>c. Evaluate the effectiveness of different strategies and solutions implemented in case studies to improve operational performance and safety.</li> <li>d. Develop practical recommendations based on case study insights for optimizing training, layout design, safety protocols, and sustainable practices.</li> <li>e. Integrate knowledge from case studies to enhance decision-making skills in planning, designing, and managing industrial environments.</li> </ul>	<ul style="list-style-type: none"> <li>a. Lecture</li> <li>b. Case study</li> </ul>	<ul style="list-style-type: none"> <li>a. Problem set</li> <li>b. Quiz</li> </ul>	ce
12	<b>FINAL EXAMINATION</b>				

Total No. of Hours : 54

## COURSE REQUIREMENTS AND COURSE POLICIES

### COURSE REQUIREMENTS

Each student is required to:

1. attend and participate in all class sessions and activities;
2. complete all assigned problem sets, quizzes, and assignments;
3. pass the midterm and final examinations; and
4. adherence to automotive drafting standards and conventions

### COURSE POLICIES

**Attendance:** A student will be marked late if he/she enters the class 5 minutes after start of class period. Any student who comes to class 15 minutes after the scheduled time or always late for three consecutive meetings shall be marked absent.

**Missed work or exam:** Any student who missed to submit a work assignment or to take a test should consult the concerned instructor for immediate compliance  
**Cheating and Plagiarism:** Any student who committed any form of academic dishonesty (e.g., copy-paste plagiarism) shall be given disciplinary action provided in the SKSU Student's Handbook

**Use of Technology:** Cell phones should be turned off while the session is in progress. Using laptops, notebook PCs, smart phones, and tablets shall be allowed only when needed.

### 9 GRADING SYSTEM AND RUBRICS FOR GRADING

#### GRADING SYSTEM

Midterm Grade	
Midterm Examination	40%
Attendance/ Class Participation	15%
Quizzes/Assignments	15%
Project (Report)	30%
<b>TOTAL</b>	<b>100%</b>

Final Term Grade	
Final Term Examination	40%
Attendance/Class Participation	15%
Quizzes/Assignments	15%
Project	30%
<b>TOTAL</b>	<b>100%</b>

FINAL GRADE	
Midterm Grade	50%
Final Term Grade	50%
<b>TOTAL</b>	<b>100%</b>

### RUBRIC FOR PROJECT REPORTS

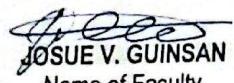
CRITERIA	5 – Excellent (100%)	4 – Very Good (90%)	3 – Satisfactory (80%)	2 – Needs Improvement (70%)	1 – Poor (60%)
ACCURACY	All calculations and analyses are correct; solutions are precise and error-free.	Minor computational or conceptual errors; overall solution is highly accurate.	Some errors in calculations or concepts, but main approach is correct.	Several errors in calculations or concepts; solution needs revision.	Major errors; solution is incorrect or does not address the problem.
COMPLETENESS	All steps, explanations, and required elements are thoroughly presented and well-organized.	Missing 1 minor step or explanation; work is still clear and complete.	Missing 2–3 steps or explanations; work is generally understandable.	Several missing steps or explanations; work is incomplete.	Most steps/explanations missing; work is largely incomplete.
APPLICATION OF THEORY	Demonstrates excellent understanding and application of relevant principles, formulas, and concepts.	Applies most relevant principles and formulas correctly; minor misapplication.	Applies some relevant principles; some misapplication or misunderstanding.	Many principles/formulas misapplied or misunderstood.	Does not apply appropriate principles or formulas.
PRESENTATION & ORGANIZATION	Exceptionally clear, logical, and professional presentation; work is neat and easy to follow.	Mostly clear and well-organized; minor lapses in neatness or logic.	Adequate organization; some sections unclear or disorganized.	Disorganized or difficult to follow; several lapses in clarity or neatness.	Disorganized, unclear, and unprofessional presentation.

IMELNESS	Submitted on or before deadline.	1 day late.	2 days late.	3 days late.	More than 3 days late.
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References:  
Textbooks

- Fellows, R., & Liu, A. (2015). Design of Industrial Facilities (4th Edition). McGraw-Hill Education.  
 Chary, S. N. (2011). Industrial Engineering and Production Management (7th Edition). Tata McGraw-Hill Education.  
 Muther, R. (1978). Systematic Layout Planning. Cahners Books.  
 Hutchinson, J. M. (2001). *Industrial Engineering and Management*. Elsevier.

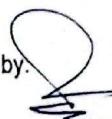
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