Republic of the Philippines
SULTAN KUDARAT STATE UNIVERSITY
Isulan Campus, Isulan Sultan Kudarat
College of Industrial Technology

AT 112– Car Care Servicing, Emission Control and Tune-up

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 the BIndTech program can:	INSTITUTIONAL OUTCOMES (IO)						
	a	b	c	d	e	f	g
a. Analyze broadly defined industrial technology processes by using analytical tools that enhance creativity, innovativeness, and intellectual curiosity to improve methods, processes, and systems that meet the industry standards;	✓	✓				✓	
b. Design and implement broadly defined industrial systems, components, products, or processes to meet specific industry needs with proficiency and flexibility in the area of specialization in accordance with global standards;	✓	✓		✓		✓	

Apply appropriate techniques, resources, and state-of-the-art industrial technology tools to meet current industry needs and use these modern tools and processes to improve and increase entrepreneurial activities upholding the safety and health standards of business and industry;	✓		✓	✓	✓		
d. Communicate with diverse groups of clienteles the appropriate cultural language with clarity and persuasion, in both oral and written forms, including understanding and giving of clear instructions, high comprehension level, effectiveness in delivering presentations and writing documents, and articulating technological innovation outputs;	✓	✓	✓	✓	✓		
e. Develop leadership and management skills in a team-based environment by making informed decisions, keeping the team motivated, acting and delegating responsibility, and inspiring positive changes in the organization by exercising responsibility with integrity and accountability in the practice of one's profession;	✓	✓	✓	✓	✓		
f. Practice the moral responsibilities of an industrial technologist to manage and balance wider public interest and uphold the norms and safety standards of the industrial technology profession;				✓	✓	✓	✓
g. Demonstrate enthusiasm and passion for continuous personal and professional development in broadly defined industrial technology and effecting positive changes in the entrepreneurial and industrial endeavor; and	✓	✓	✓	✓	✓	✓	✓
h. Recognize the need for, and an ability to engage in lifelong learning.	✓	✓	✓	✓	✓	✓	✓

1 COURSE CODE AT 112
2 COURSE TITLE Car Care Servicing, Emission Control and Tune-up
3 PREREQUISITE None
4 CREDITS 3 units

5 COURSE DESCRIPTION
This course deals with the principle and techniques in conducting preventive maintenance in automotive vehicles both gasoline and diesel following the required Periodic Maintenance Schedule (PMS). It enables the students to get familiarized with the use of service manuals and acquired skills based upon standard requirements of the industry.

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

Course Learning Outcomes (CLO)	Program Outcomes							
At the end of the course, a student can:	a	b	c	d	e	f	g	h
a. Identify and safely operate various automotive tools and equipment essential for preventive maintenance.	✓	✓	✓	✓	✓	✓	✓	✓
b. Utilize measuring tools effectively to perform precise diagnostics and maintenance tasks.	✓	✓	✓	✓	✓	✓	✓	✓
c. Apply systematic diagnostic methods to assess vehicle conditions and identify common issues during vehicle reception.	✓	✓	✓	✓	✓	✓	✓	✓
d. Create and effectively utilize a Periodic Maintenance Schedule (PMS) checklist to ensure timely and appropriate vehicle maintenance.	✓	✓	✓	✓	✓	✓	✓	✓
e. Conduct engine tune-ups and perform diagnostic activities to enhance engine performance and resolve issues.	✓	✓	✓	✓	✓	✓	✓	✓
f. Execute emission testing procedures, interpret results, and ensure compliance with environmental regulations.	✓	✓	✓	✓	✓	✓	✓	✓

arry out thorough pre-delivery inspections to ensure vehicles meet quality and safety standards before delivery to customers.	✓	✓	✓	✓	✓	✓	✓	✓

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 week, the student 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	a. Participation in discussions	abcdefg
2	**Equipment Operation and Safety** a) Overview of automotive tools and equipment b) Safe handling practices for tools c) Personal protective equipment (PPE) requirements d) Safety protocols in the workshop environment	a) Identify various tools and safety measures in automotive maintenance. b) Demonstrate safe operation of automotive tools. c) Explain the importance of PPE for safety. d) Recognize common hazards in the automotive workshop.	a. Hands-on demonstrations of tool usage and safety protocols. b. Safety workshops focused on equipment handling. c. Group activities simulating safe tool operation.	a. Quiz b. participation c. activity outputs	abcdefg
3	**Measuring Tools and Equipment** a) Introduction to measuring tools used in maintenance	a) Identify and utilize measuring tools effectively in maintenance tasks. b) Explain the significance of accurate measurements in diagnostics. c) Demonstrate the use of various	a) Practical sessions on using measuring tools. b) Group activities measuring various automotive components.	a) Quiz results b) Video presentation	abcdefg

	b) Types of measuring instruments (calipers, gauges, etc.) c) Applications of measuring tools in diagnostics d) Importance of precision in measurements	measuring instruments. d) Assess the impact of precision on vehicle performance.	c) Quizzes to reinforce understanding of tool applications.		
3	**Receiving and Diagnosis** a) Procedures for receiving vehicles b) Initial inspection techniques c) Diagnostic tools and methods d) Documentation of vehicle condition upon receipt	a) Apply diagnostic techniques to assess vehicle conditions accurately. b) Explain the process of receiving and evaluating vehicles. c) Document findings and communicate them effectively. d) Propose preliminary solutions based on initial assessments.	a) quizzes	a) quizzes results	abcdefg
4	**Periodic Maintenance Schedule (PMS) Checklist** a) Understanding the PMS and its components b) How to create and utilize a PMS checklist c) Maintenance activities based on mileage and time intervals	a) Utilize the PMS checklist effectively for preventive maintenance. b) Conduct maintenance activities according to scheduled intervals. c) Analyze the effectiveness of a PMS in vehicle upkeep. d) Document maintenance activities accurately.	a) Group projects analyzing maintenance schedules.	a) Project output.	abcdefg

	d) Importance of documentation in maintenance				
5	**MIDTERM EXAM**				
6	**Mileage/Periodic Activities** a) Overview of maintenance activities based on mileage b) Importance of regular inspections and services c) Common tasks performed during periodic maintenance d) Tracking and recording maintenance activities.	a) Identify key maintenance tasks based on vehicle mileage. b) Explain the significance of regular inspections. c) Conduct periodic maintenance activities accurately. d) Document and track maintenance history effectively.	a) Hands-on workshops conducting mileage-based maintenance. b) Group discussions on best practices for periodic activities. c) Simulations of tracking maintenance records.	a. Group presentation	abcdefg
7	**Engine Tune-Up Activities** a) Techniques for conducting engine tune-ups b) Common components involved in tune-ups c) Tools used in tuning engines	a) Conduct engine tune-up procedures to enhance performance. b) Identify components involved in engine tuning. c) Diagnose common engine performance issues. d) Propose solutions based on tuning results.	a) Hands-on lab sessions for engine tuning. b) Group discussions on troubleshooting techniques. c) Demonstrations of tuning tools and equipment.	A. Practical assessment.	abcdefg

	d) Steps for diagnosing and fixing performance issues				
8	**Engine Diagnostic Activities** a) Methods for diagnosing engine performance issues b) Use of diagnostic tools and software c) Common engine symptoms and their implications d) Steps for conducting comprehensive diagnostics	a) Perform engine diagnostic activities and interpret results. b) Identify symptoms of common engine problems. c) Propose solutions based on diagnostic findings. d) Utilize diagnostic tools effectively.	a) Simulation exercises using diagnostic equipment. b) Group discussions on troubleshooting techniques c) Hands-on practice with diagnostic tool	a. Practical assessment.	abcdefg
9	**Emission Testing/ Pre-Delivery Inspection** a) Procedures for conducting emission testing b) Types of emissions tests (gas analyses, opacity tests) c) Importance of emissions compliance d) Documentation and reporting of	a) Perform emission testing and interpret results accurately. b) Explain the significance of emissions testing in vehicle maintenance. c) Identify common issues found during emissions testing. d) Document and report emission test findings effectively. e) Execute thorough pre-delivery inspections to ensure vehicle readiness. f) Identify common issues to address during PDI. g) Explain the significance of PDIs in delivering quality service. h) Document PDI findings accurately.	a) Workshops on interpreting emission test results. b) Group activities simulating emissions testing scenarios. c) Hands-on sessions for conducting PDI. d) Workshops on best practices for vehicle readiness.	a. Group discussion	abcdefg

	emission test results e) Procedures for conducting pre-delivery inspections f) Key factors to check before vehicle delivery g) Importance of PDIs in customer satisfaction h) Documentation of PDI findings				
10	**FINAL EXAMINATION**				

Total No. of Hours : 54

8 COURSE REQUIREMENTS AND COURSE POLICIES

COURSE REQUIREMENTS

Each student is required to:

1. submit accomplished assignments, and activities;
2. make a PowerPoint presentation, and a written summary of the assigned report;
3. participate actively in all discussion;
4. discuss an assigned topic to report and participate in class discussions and
5. pass the major exams (midterm and final)

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 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. A scientific calculator (e.g. Casio fx-991ES) shall be utilized in solving if applicable.

GRADING SYSTEM AND RUBRICS FOR GRADING

GRADING SYSTEM

Midterm Grade

Midterm Examination	45%
Attendance/ Class Participation	10%
Quizzes	10%
Project	20%
Report	15%
TOTAL	100%

Final Term Grade

GRADE

Final Term Examination	45%
Attendance/Class Participation	10%
Quizzes	10%
Project	20%
Report	15%
TOTAL	100%

FINAL

Midterm Grade	50%
Final Term Grade	50%
TOTAL	**100%**

Materials used: Laptop, Powerpoint presentations and video clips
Books, Magazines, Online slides, Teacher-made slides

References:

Gilles, T. (2019). Automotive maintenance and light repair. Pearson.
Erjavec, J., & Thompson, R. (2019). Automotive technology: A systems approach. Delmar Cengage Learning.
VanGelder, K. (2020). Fundamentals of automotive technology. Jones & Bartlett Learning.
SAE International. (n.d.). Journals and technical papers. Retrieved from https://www.sae.org/publications/journals
U.S. Department of Energy. (n.d.). Vehicle maintenance. Retrieved from https://www.energy.gov/articles/vehicle-maintenance
National Institute for Automotive Service Excellence. (n.d.). Automotive repair and maintenance. Retrieved from https://www.ase.com
Preventive maintenance for your car. Retrieved from https://www.youtube.com/watch?v=ZtA_0mA9-RQ
How to perform an oil change. Retrieved from https://www.youtube.com/watch?v=H9Q5z3fHhI0
Understanding your vehicle's maintenance schedule. Retrieved from https://www.youtube.com/watch?v=O6Z1aNwu8EU
Basic car maintenance tips. Retrieved from https://www.youtube.com/watch?v=9HhA2dBYwOw
How to diagnose engine problems. Retrieved from https://www.youtube.com/watch?v=QZQ7U6t6GvE

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