MODIFIED UBD LESSON PLAN

STEM 101

COURSE: MIDDLE SCHOOL		
UNIT: ENVIRONMENTAL AND AGRICULTURAL CONCEPTS	**EXERCISE:** AUTOMATED GREENHOUSE	**TIME FRAME:** 3-5 Hours

PREPARATION: *Summary of "to do's" that the teacher should understand and prepare before bringing this lesson to the classroom.*

Teachers will need to ensure that the proper supplies are available for students to build their solutions.

From the kit you will need these items:

Materials:

- Automated Greenhouse kit from STEM 101

Tools:

- Located in the kit

SAFETY: *Summary of safety strategies in the lesson.*

Proper tool usage is important. Working with electronics needs to be done carefully to avoid injury or damage to components. Follow instructions carefully.

S1 DESIRED RESULTS:

ESTABLISHED GOALS:

Problem Solving Techniques and Applications Standards:

TRANSFER:

Students will be able to independently use their learning to…

- Understand greenhouses and the agricultural growing process

MEANING:

UNDERSTANDINGS

Students will understand that...

- Greenhouses allow controllable plant growth
- Automating a greenhouse helps with controlled plant growth
- Microcontrollers can automate many things

ESSENTIAL QUESTIONS

Students will keep considering...

- Uses for automated greenhouses
- Agricultural growing processes
- Uses for microcontrollers in the environment and agriculture

ACQUISITION OF KNOWLEDGE AND SKILL:

Students will know...

- Purpose of greenhouses
- Different growing processes
- Automation
- Programming and code

Students will be skilled at...

- Coding
- Assembly of greenhouse
- Wiring of Electronics
- Automation

S2 EVIDENCE:

EVALUATIVE CRITERIA:

ASSESSMENT EVIDENCE:

Performance Task(s):

Task Placeholder
Students will be assessed on the assembly and function of their greenhouse

Other Evidence:

- Online test at the end of the unit

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S3 LEARNING PLAN: *Summary of Key Learning Events and Instruction*

1. The content knowledge and project instructions will take you through the understanding of Greenhouses along with guiding you through the assembly and functionality of the Automated Greenhouse

Progress Monitoring:
Teacher should observe students and provide on-going feedback during the activity. While introducing the unit, the teacher will pause and ask for questions to make sure everyone understands.

Students will complete self-assessment and brainstorm how they could improve their skills in the future. At the end of the unit, there will be a quiz to measure their overall understanding.

DIFFERENTIATION: *Summary of Key Differentiation Techniques*

The ASCD Study Guide for Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe

Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe
ISBN-13: 978-1416602842
ISBN-10: 1416602844

Differentiating Reading Instruction
by Laura Robb.
ISBN13: 9780545022989

A Teacher's Guide to Differentiating Instruction
The Center for Comprehensive School Reform and Improvement

CAREER CONNECTIONS: *Summary of Career Opportunities Associated with this Lesson*

Good sources for career connections:

Occupational Outlook Handbook
http://www.bls.gov/ooh

The National Career Clusters® Framework
http://www.careertech.org/career-clusters

KEYWORDS: *Please Insert Keywords from this Lesson with their Definitions*

Use resources like dictionary.com to find definitions to your keywords