

ARS Test

1. Yes
2. No
3. Maybe

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Using Audience Response Systems to Enrich Engineering Education

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Outline

- Audience Response Systems
- Why Use Audience Response Systems?
- Applications
- Interactive Examples
- Best Practices

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Audience Response Systems

- Audience Response Systems (ARS) allow all students to instantaneously respond to prompts posed by the instructor

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Audience Response Systems

1. Instructor composes prompt with multiple potential responses
2. Each student responds through a keypad (wired or wireless)
3. Centralized system receives and aggregates responses
4. Responses displayed via computer projector
5. Responses can be archived

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What is the SI unit of energy?

1. Watt
2. Watt-hour
3. Joule
4. Kelvin

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What is the SI unit of energy?

1. Watt
2. Watt-hour
3. Joule
4. Kelvin

Option	Percentage
Watt	25%
Watt-hour	25%
Joule	50%
Kelvin	0%

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Why Use and ARS?

- Increase the active learning component of a course
- Automatic and immediate results
- Results can be anonymous or linked to individual students
- Results can be archived

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Applications

- Increase familiarity with student preferences and expectations
 - Beginning-of-the-term survey
- Example prompts:
 - Graded component weighting
 - Lecture style

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The review for the exam should be in the form of:

1. An in-class practice exam
2. Lecture-style review
3. Examples worked out in class
4. Question and answer

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Applications

- Feedback on teaching before the term is over
 - Middle-of-the-term survey or as needed
- Example prompts:
 - Length of time spent of homework
 - Pace of lectures
 - Too many/too few examples?

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The pace of the lectures is too slow.

1. Strongly Agree
2. Agree
3. Disagree
4. Strongly Disagree

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Applications

- Help understand which content is difficult to master
 - Periodic quizzes
 - May or may not count toward grading
- Example prompts:
 - Qualitative questions
 - Quantitative questions
 - Student self assessment of mastery

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$X(X+Y) = ?$

1. X
2. Y
3. XY
4. X'

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Applications

- Allows for creative ways to introduce new material
 - Not easily implemented

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I prefer to use:

1. Macs
2. PCs

Platform	Percentage
Macs	30%
PCs	70%

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Fifteen minutes is adequate time to present a paper.

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

Response	Percentage
Strongly Agree	25%
Agree	43%
Neutral	4%
Disagree	21%
Strongly Disagree	7%

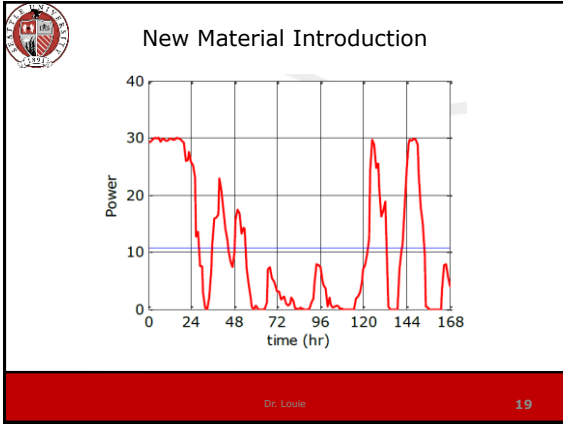
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ARS stands for what?

1. Active Response System
2. Audience Response System
3. Audience Receiver System

System	Percentage
Active Response System	21%
Audience Response System	79%
Audience Receiver System	0%

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New Material Introduction

- You are an energy trader
- You are employed by a wind plant
- Your goal is to schedule energy hour by hour
- The wind plant's maximum power output is 30 MW

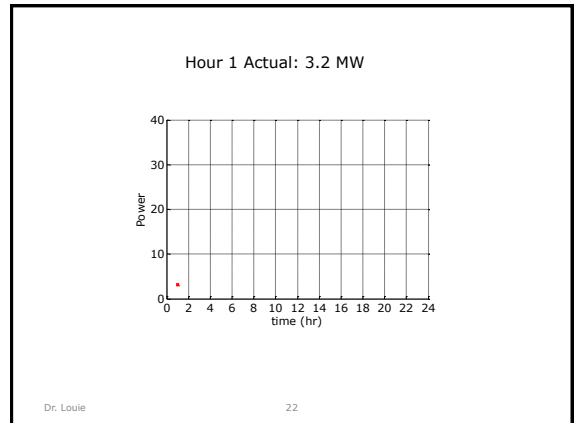
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Enter Your Schedule for Hour 1

A. 0 MW
 😊 B. 3 MW
 C. 6 MW
 D. 9 MW
 E. 12 MW
 F. 15 MW
 G. 18 MW
 H. 21 MW
 I. 24 MW
 J. 27 MW

Power (MW)	Percentage
0	8%
3	25%
6	31%
9	15%
12	12%
15	8%
18	4%
21	2%
24	1%
27	1%

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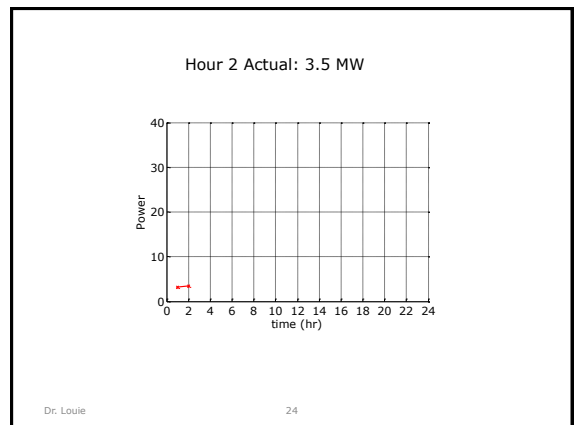


Enter Your Schedule for Hour 2

A. 0 MW
 😊 B. 3 MW
 C. 6 MW
 D. 9 MW
 E. 12 MW
 F. 15 MW
 G. 18 MW
 H. 21 MW
 I. 24 MW
 J. 27 MW

Power (MW)	Percentage
0	2%
3	25%
6	25%
9	29%
12	13%
15	2%
18	8%
21	2%
24	8%
27	2%

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Enter Your Schedule for Hour 3

- A. 0 MW
- B. 3 MW
- C. 6 MW
- 😊 D. 9 MW
- E. 12 MW
- F. 15 MW
- G. 18 MW
- H. 21 MW
- I. 24 MW
- J. 27 MW

Power (MW)	Percentage
9	75%
3	25%
0, 6, 12, 15, 18, 21, 24, 27	0%

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Hour 3 Actual: 11.8 MW

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Enter Your Schedule for Hour 4

- A. 0 MW
- B. 3 MW
- C. 6 MW
- D. 9 MW
- 😊 E. 12 MW
- F. 15 MW
- G. 18 MW
- H. 21 MW
- I. 24 MW
- J. 27 MW

Power (MW)	Percentage
12	35%
15	35%
18	35%
21	35%
0, 3, 6, 9, 13, 15, 24, 27	0%

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Hour 4 Actual: 9.6 MW



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Best Practices

- Do not use ARS just to use ARS
- Preparation of prompts is key
- Plan the logistics beforehand
- Clearly state if the responses are recorded/count toward grade
- Use icebreakers to gain familiarity/check functionality of devices
- Set a good pace
- Use the responses as an opportunity to stimulate debate and discussion

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Questions?



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