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Modern Physics: Understanding the Content Taught in the US

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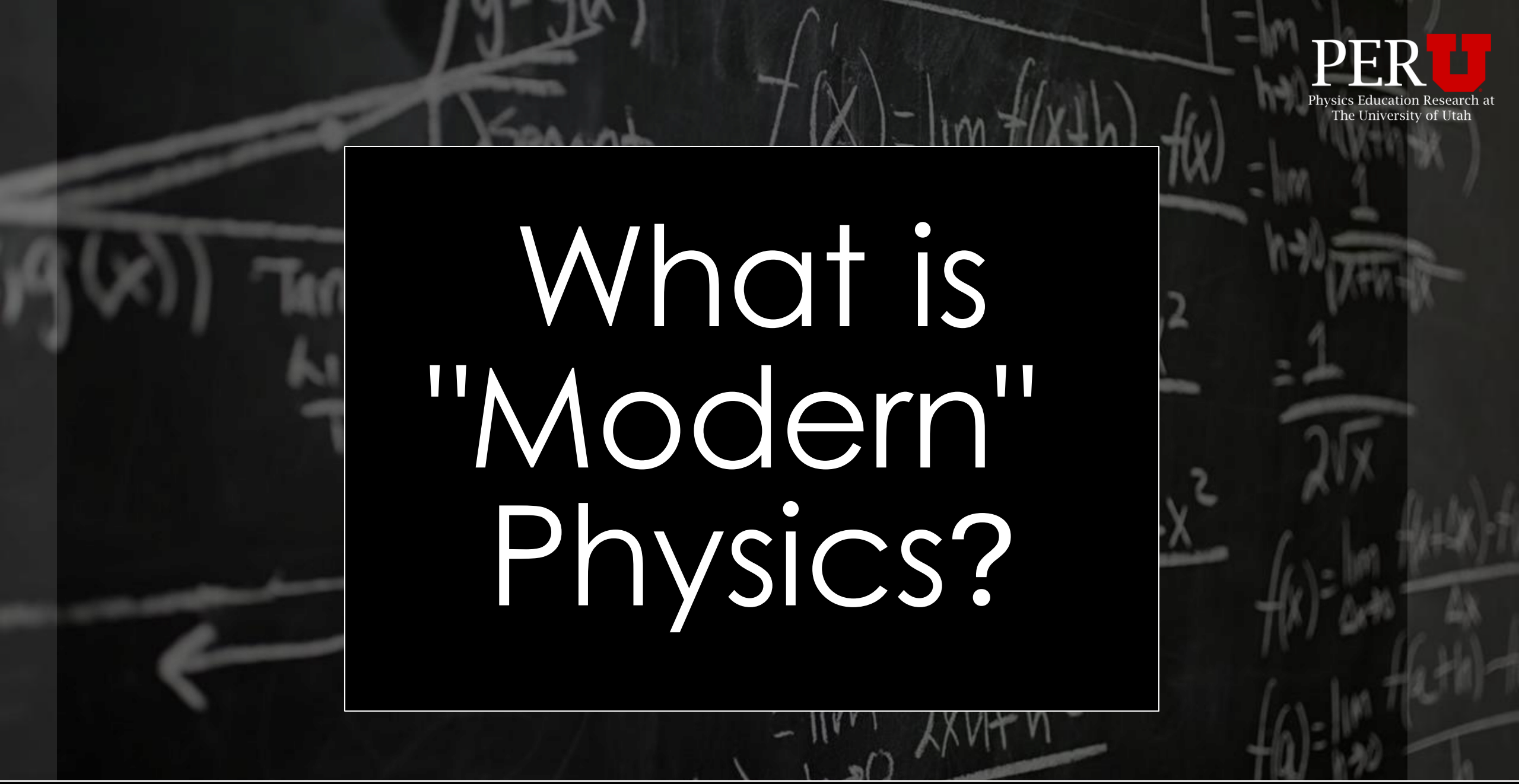

What is "Modern" Physics?

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190 institutions with graduate degrees in physics offered

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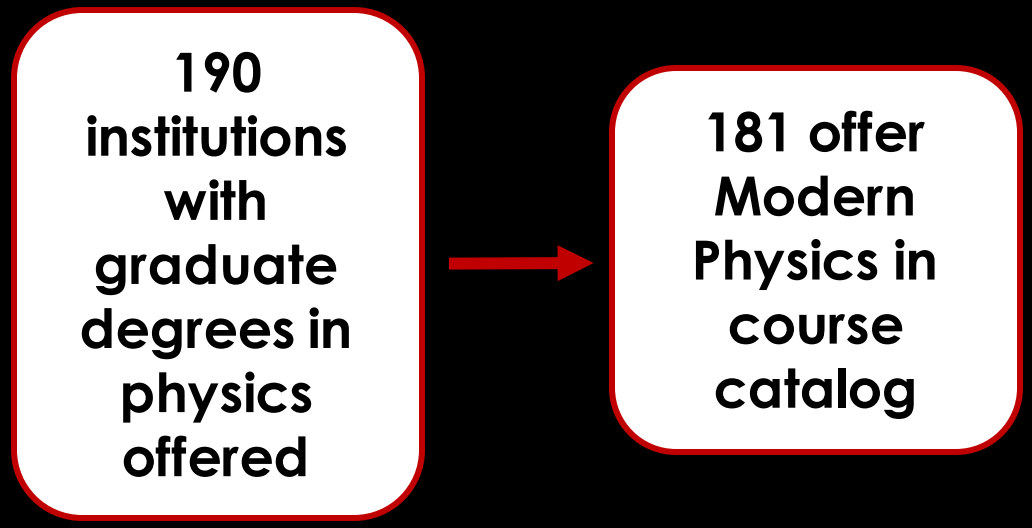

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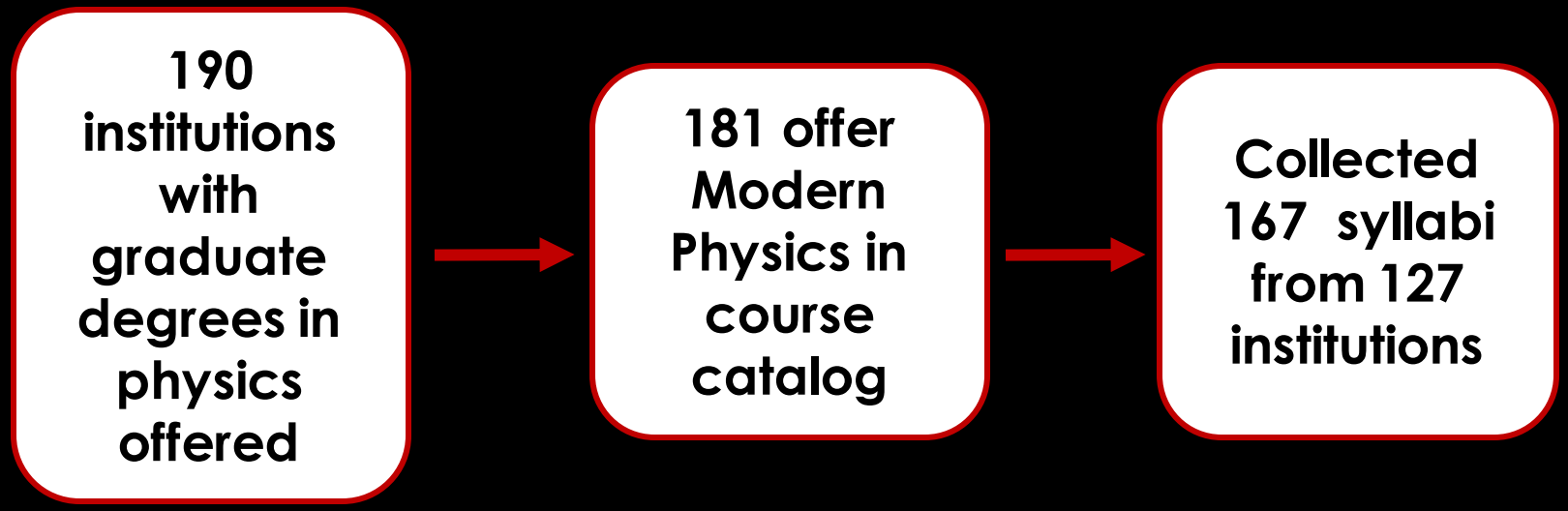

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190 institutions with graduate degrees in physics offered

→

181 offer Modern Physics in course catalog

→

Collected 167 syllabi from 127 institutions

→

78% R1 Institutions
20% R2 Institutions*

*2 institutions not classified

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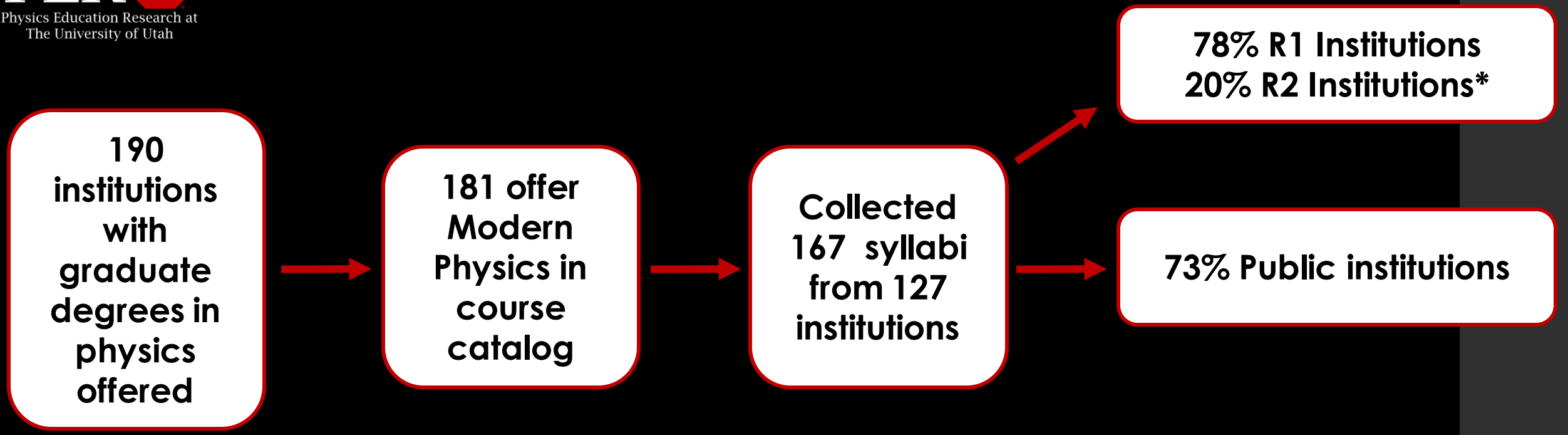

*2 institutions not classified

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190 institutions with graduate degrees in physics offered

→ 181 offer Modern Physics in course catalog

→ Collected 167 syllabi from 127 institutions

→ 78% R1 Institutions
20% R2 Institutions*

→ 73% Public institutions

→ 51.5% collected from public searches

48.5% collected from private communication

*2 institutions not classified

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Quantum
TISE
Wave/Particle Duality
Uncertainty
...

Nuclear
Nucleus
Nuclear Atom
Radioactivity
...

Mathematics Skills
Eigenvalues
Fourier Analysis
Complex Variables
...

Relativity
Special Relativity
General Relativity
Einstein's postulates
...

Molecular
Molecules
Bonds
Molecular Spectra
...

Programming Skills
Numerical Investigation
Computational Project
Python
...

Atomic
Bohr Model
Thomson Model
Emission/Absorption
...

Thermal
Entropy
Ideal Gas Law
Carnot Cycle
...

History
Historical Experiments
Development of Atomic Models
...

Class	Date	Content	Reading
1	Aug 22nd	Introduction Waves: Oscillations	Ch 15
2	24th	Waves: Traveling	Ch 16
3	29th	Waves: Super Position	Ch 17
4	31st	Thermodynamics Work and 1st Law	Ch 18/19
5	Sept 5th	Labor Day	
6	7th	Thermodynamics: Micro/Macro Connec.	Ch 20
7	12th	Foundations of Modern Physics	Ch 37
8	14th	Photoelectric Effect and Photons	Ch 38
9	19th	Bohr Model and Hydrogen Spectrum	Ch 38
10	21st	Quantization Challenging Problems	Ch 38
11	26th	Double Slit Exp. & Wave Functions	Ch 39
12	28th	Normalization and Uncertainty	Ch 39
13	Oct 3rd	Wave Func.: Challenging Problems	Ch 39
14	5th	Exam 1 Review	
Recit.	***7th***	***Exam 1***	

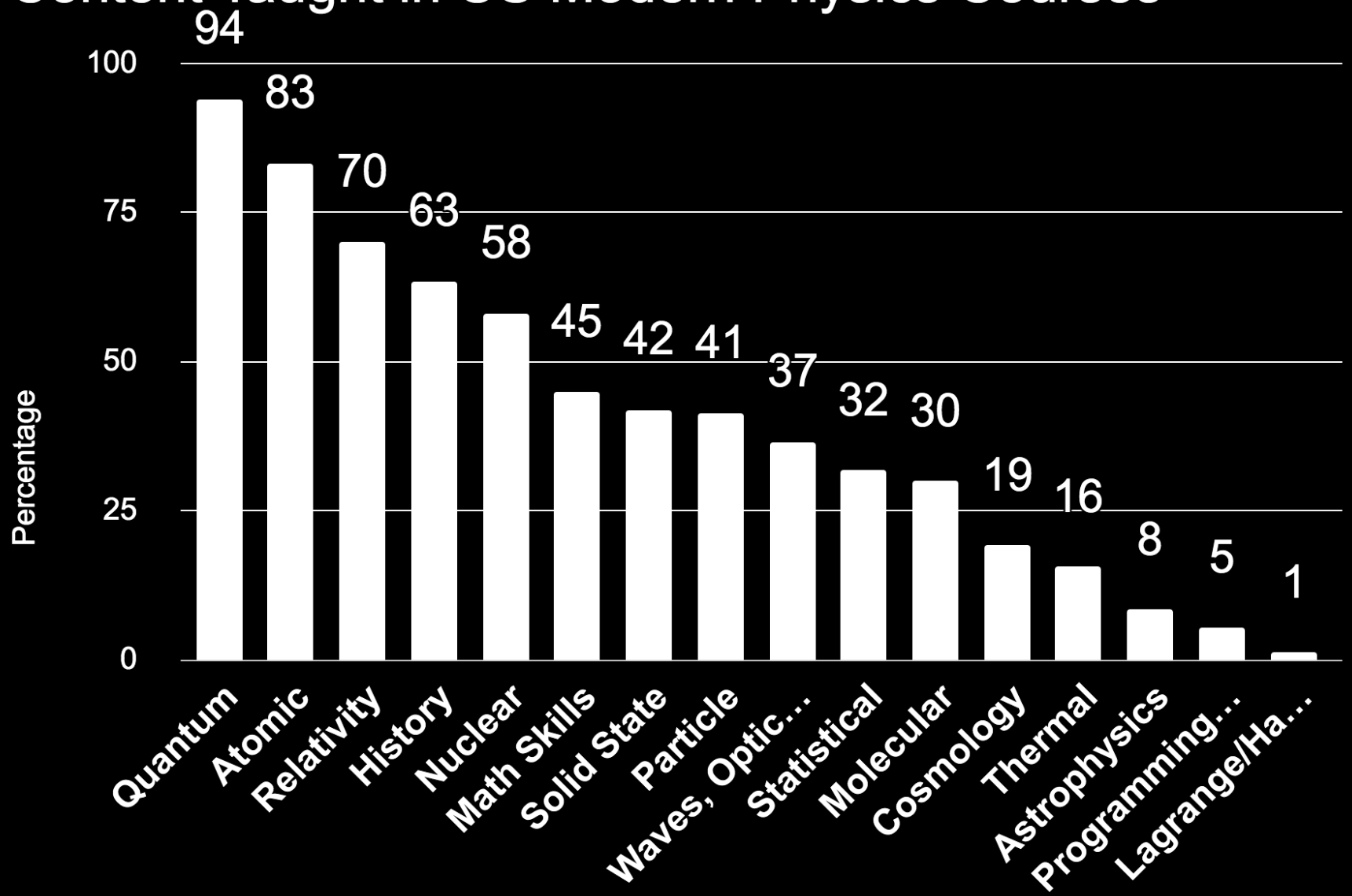
Waves

Thermal

Atomic

Quantum

Content Taught in US Modern Physics Courses



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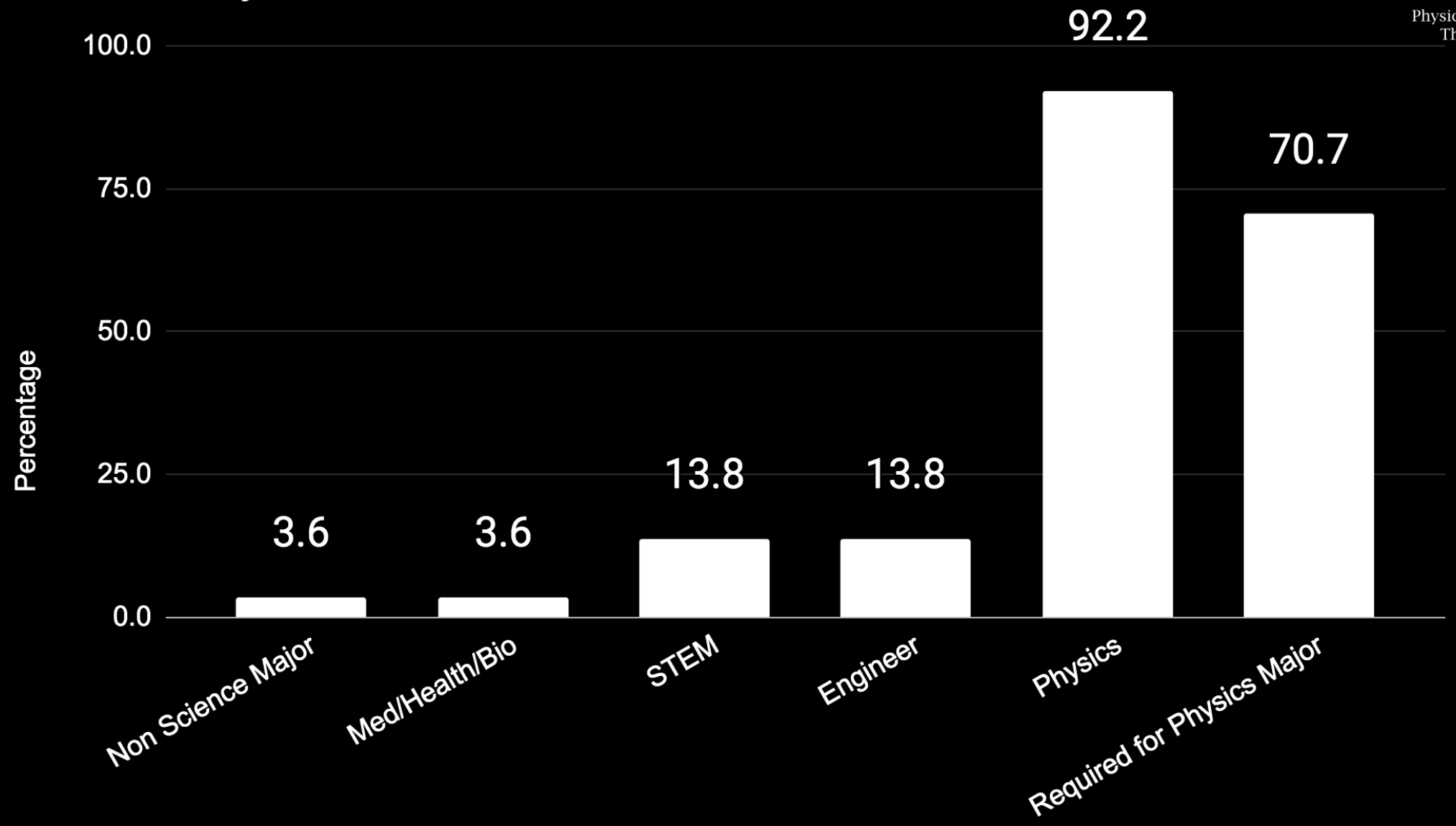
Who is Modern Physics being taught to?

Intended Major



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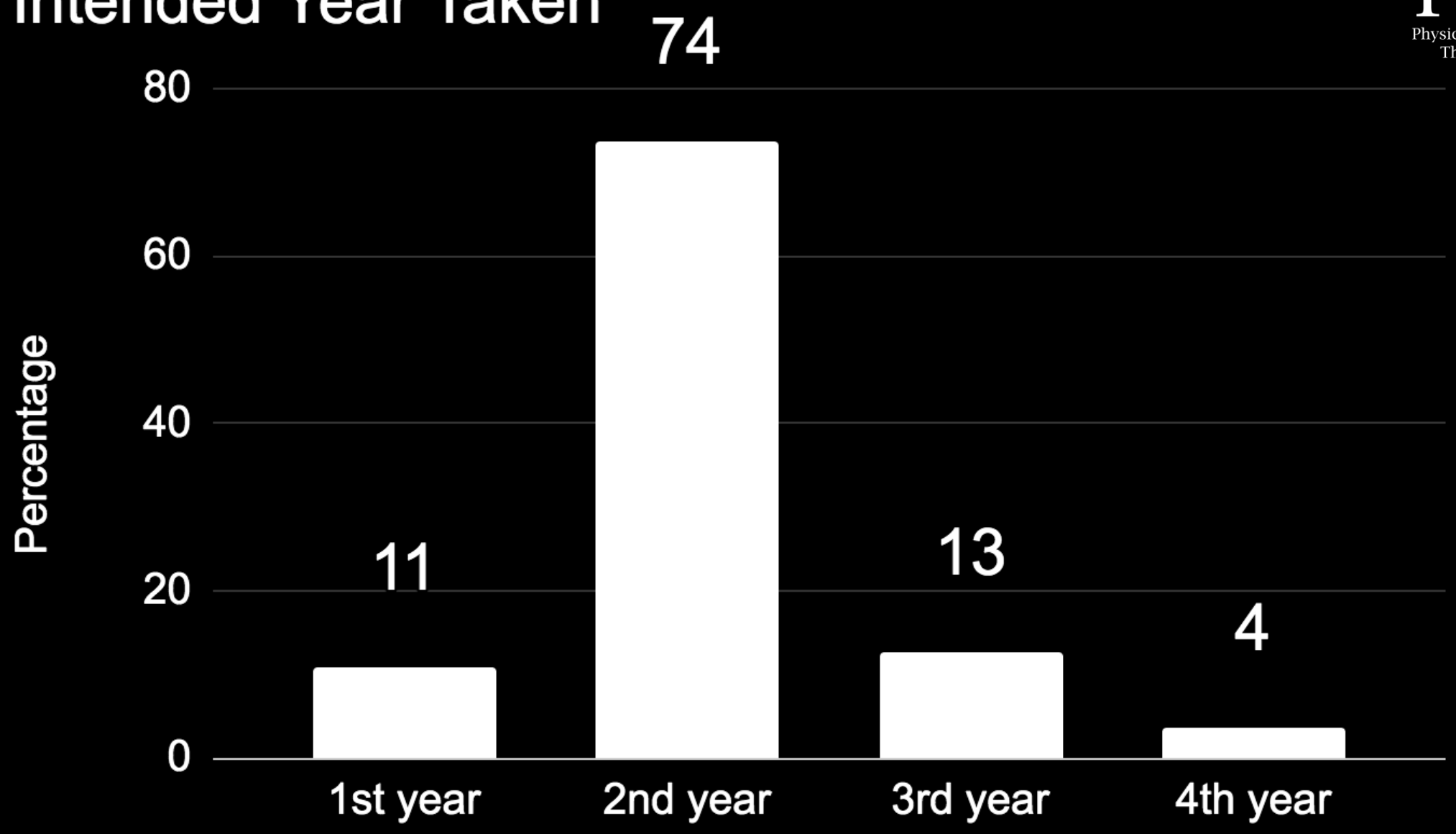
Intended Year Taken



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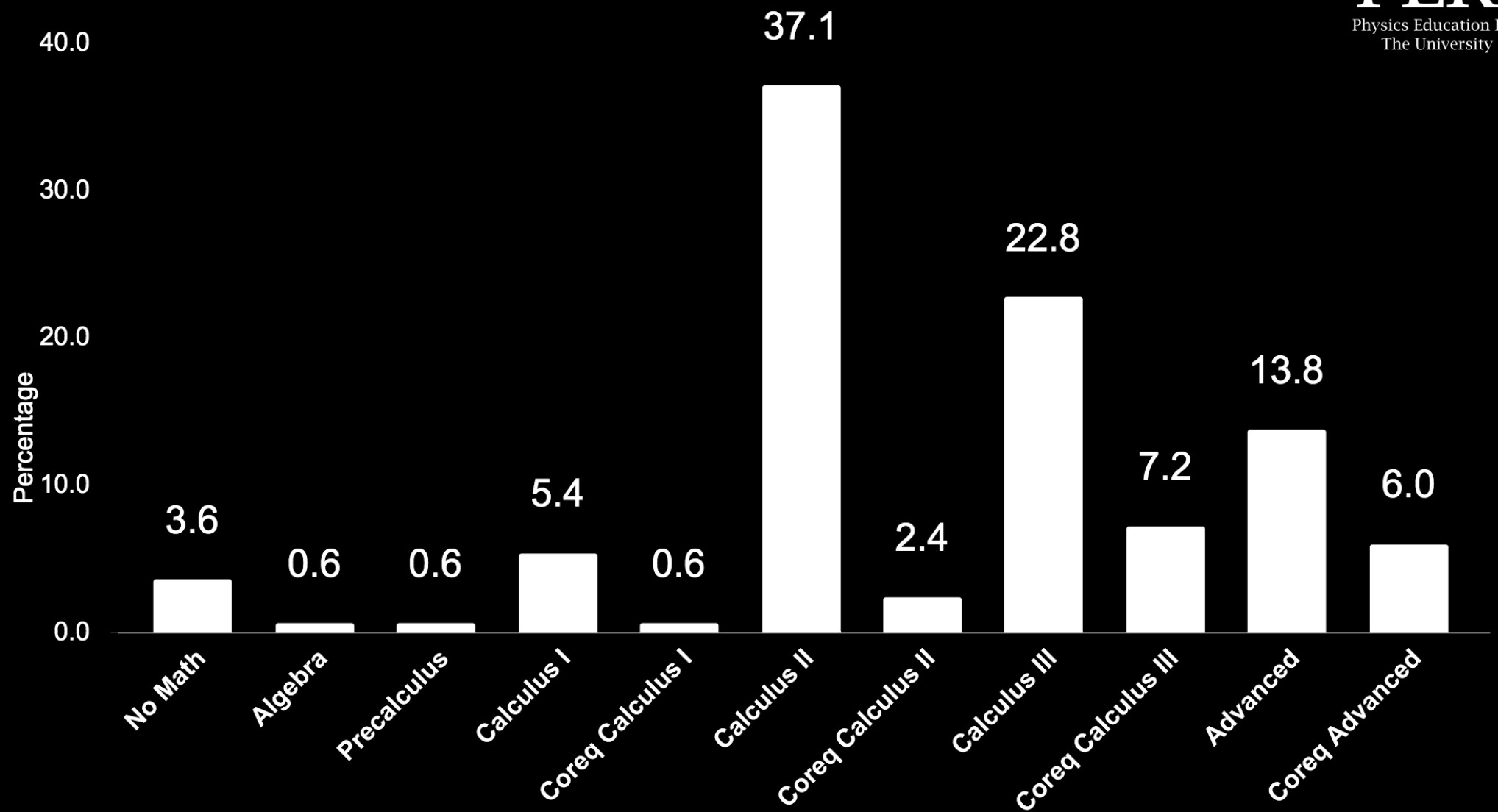
Mathematics Pre- and Co- Requisites



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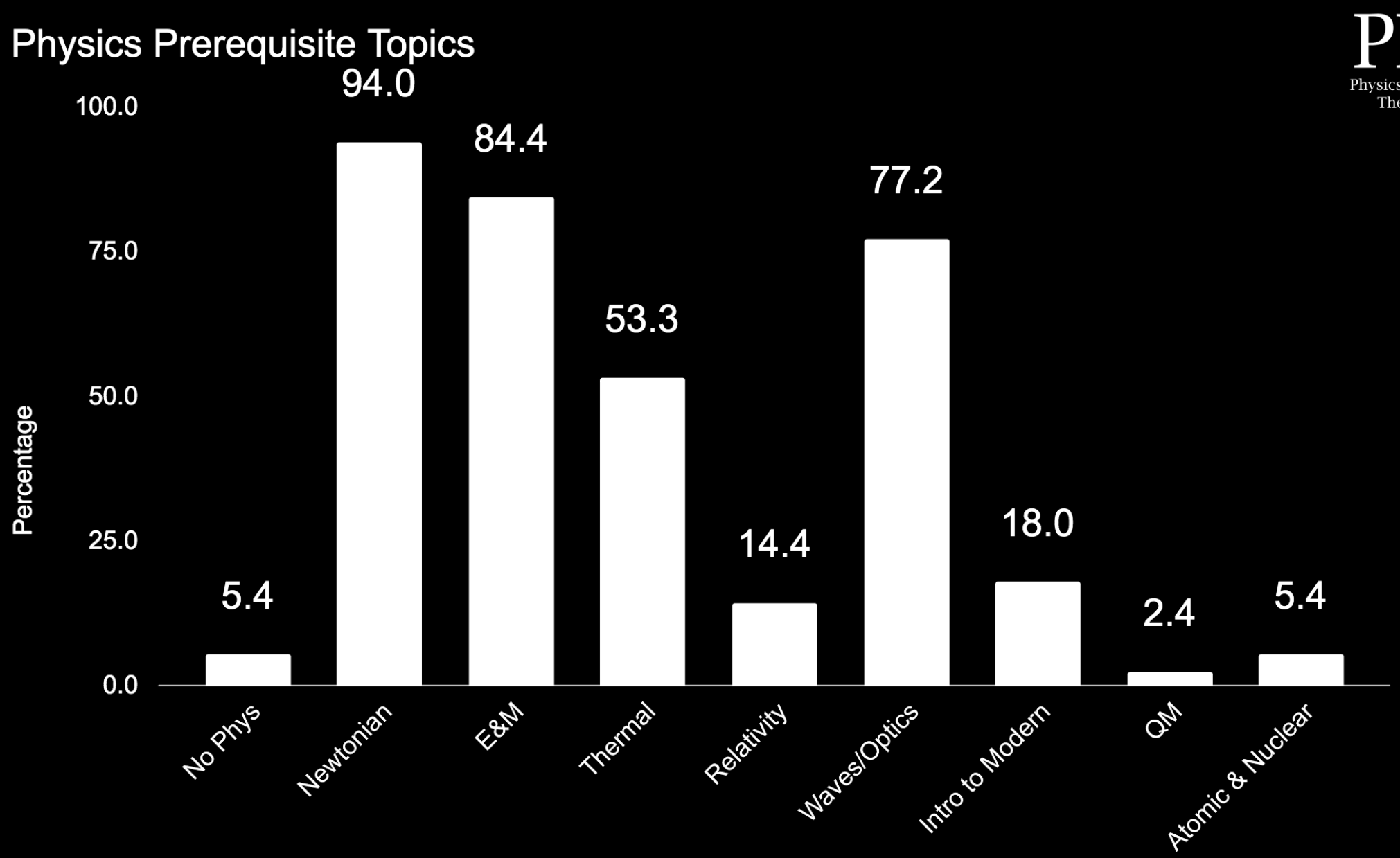

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Modern physics is most commonly students' first introduction to quantum concepts.

Moving Forward

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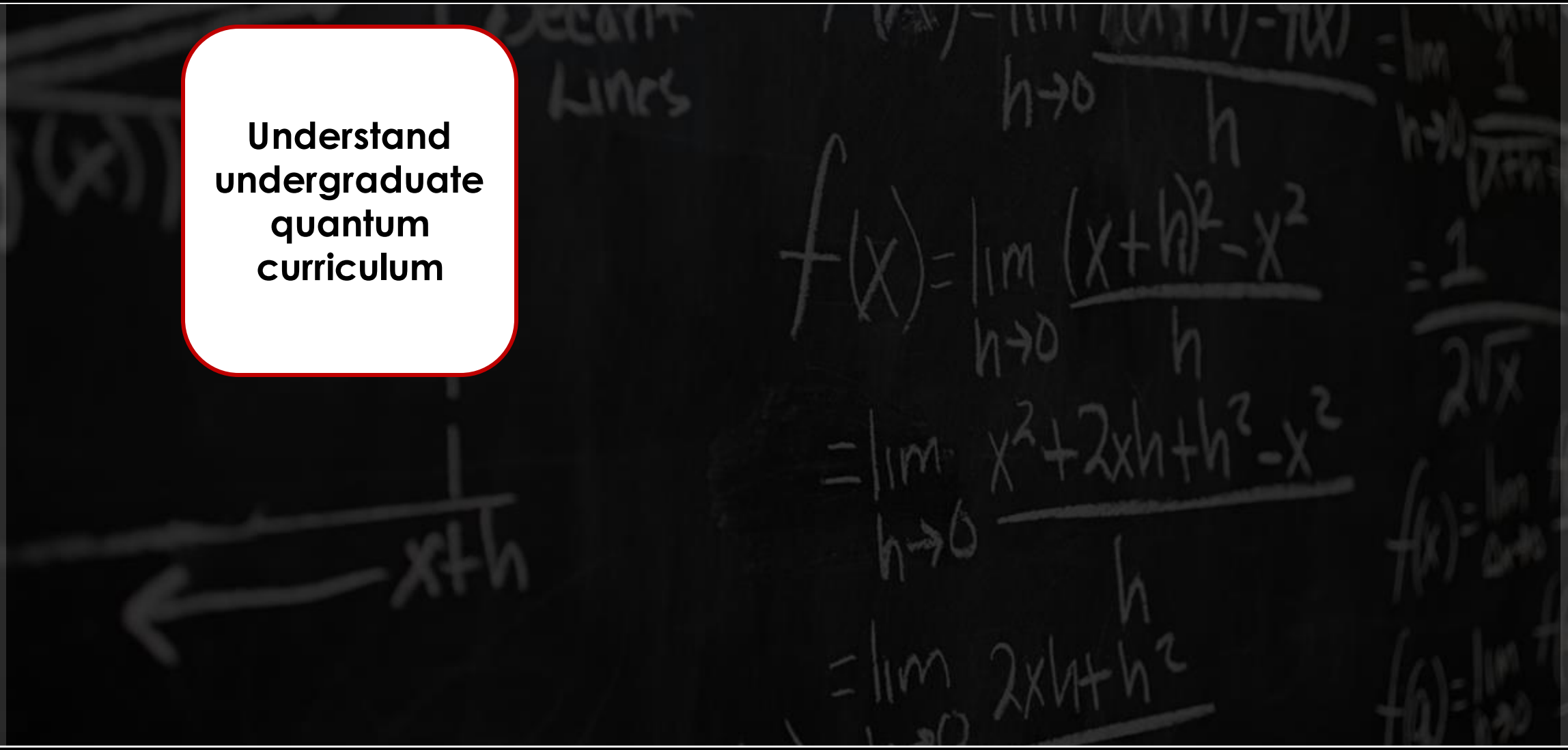
Understand undergraduate quantum curriculum



Moving Forward

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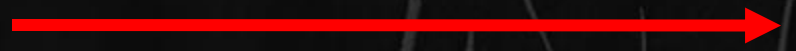
Understand undergraduate quantum curriculum



Determine skills needed in quantum industry and research

Moving Forward

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