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NE 112 *Linear algebra for nanotechnology engineering*

1.2 The Greek alphabet

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Introduction

- In this topic, we will
 - Introduce the Greek alphabet
 - Describe where you will use them
 - Give some history





The Greek alphabet

- In this course and in future courses, we will use Greek letters
 - Greek letters will be ubiquitous in quantum mechanics

- Like the Latin alphabet, there are both lower- and upper-case letters

- English tends to have short names that are never written

ai	bee	see	dee	ee	ef	gee	aitch
eye	jay	kay	el	em	en	oh	pee
kyou	are	es	tee	you	vee	double-you	
eks	why	zed					

- Greek names tend to be multisyllabic





Greek alphabet

A α alpha

B β beta

Γ γ gamma

Δ δ delta

E ε epsilon

Z ζ zeta

H η eta

Θ θ theta

I ι iota

K κ kappa

Λ λ lambda

M μ mu

N ν nu

Ξ ξ xi

O $\omicron$ omicron

Π π pi

P ρ rho

Σ σ sigma

T τ tau

Υ υ upsilon

Φ ϕ phi

X χ chi

Ψ ψ psi

Ω ω omega





Greek alphabet

Letters similar to Latin letters are often not used

A α alpha

B β beta

Γ γ gamma

Δ δ delta

E ε epsilon

Z ζ zeta

H η eta

Θ θ theta

I ι iota

K κ kappa

Λ λ lambda

M μ mu

N ν nu

Ξ ξ xi

O $\omicron$ omicron

Π π pi

P ρ rho

Σ σ sigma

T τ tau

Υ υ upsilon

Φ ϕ phi

X χ chi

Ψ ψ psi

Ω ω omega





Common Greek letters

Mathematics

π δ ε

Statistics

μ σ χ

Angles, angular frequency

θ ω

Quantum mechanics

Φ ϕ Ψ ψ

Algorithm analysis

ω Ω Θ O o

Système international (SI)

μ

This course

α β γ δ λ σ

English

alphabet (alpha-beta)





Some fun history

- Semitic languages focus on consonants (abjads)
 - Hebrew, Arabic and Phoenician likely adopted their alphabet from Egyptian hieroglyphics
 - Greeks trading with the Phoenicians adopted their alphabet
 - Certain letters became vowels

Phoenician		Hebrew		Arabic		Greek
<i>alep</i>	𐤀	<i>alef</i>	א	<i>'alif</i>	ا	alpha Αα
<i>bet</i>	𐤁	<i>bet</i>	ב	<i>ba'</i>	ب	beta Ββ
<i>giml</i>	𐤂	<i>gimel</i>	ג	<i>jim</i>	ج	gamma Γγ
<i>dalet</i>	𐤃	<i>dalet</i>	ד	<i>dal</i>	د	delta Δδ
<i>he</i>	𐤄	<i>hei</i>	ה	<i>ha'</i>	ه	epsilon Εε





Summary

- In this topic, we've introduced the Greek alphabet
 - You will use these throughout your undergraduate career
 - I'll introduce them again when I use them
 - Try, however, to familiarize yourself with them





References

- [1] https://en.wikipedia.org/wiki/Phoenician_alphabet
- [2] https://en.wikipedia.org/wiki/Greek_alphabet





Acknowledgments

None so far.





Colophon

These slides were prepared using the Cambria typeface. Mathematical equations use Times New Roman, and source code is presented using Consolas.

The photographs of flowers and a monarch butter appearing on the title slide and accenting the top of each other slide were taken at the Royal Botanical Gardens in October of 2017 by Douglas Wilhelm Harder. Please see

<https://www.rbg.ca/>

for more information.





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