

DAILY ASSESSMENT FORMAT

Date:	17-07-2020	Name:	POOJA K S
Course:	Coursera	USN:	4AL17EC070
Topic:	Mathematics for Machine Learning: Linear Algebra	Semester & Section:	6 th SEM and 'B'section
Github Repository:	pooja-shivanna		



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FORENOON SESSION DETAILS(9.00am to 1.00pm)

The screenshot shows a Coursera video player interface. The title of the video is "Solving the apples and bananas problem: Gaussian elimination". On the left, there is a sidebar with a navigation menu for "Mathematics for Machine Learning: Linear Algebra" and a list of video and quiz options under "Matrix Inverses". The main content area features a video of a man in a purple shirt standing in front of a blue chalkboard. On the chalkboard, there is handwritten mathematical notation: $(2 \ 3) \begin{pmatrix} a \\ b \end{pmatrix} = \begin{pmatrix} 8 \\ 13 \end{pmatrix}$ and $A \ r = s$. Below the video, there are buttons for "Save Note", "Discuss", "Download", and social sharing icons. At the bottom, there is a language selection dropdown set to "English" and a "Help Translate" link.

The screenshot shows a Coursera video player interface. The title of the video is "Going from Gaussian elimination to finding the inverse matrix". On the left, there is a sidebar with a navigation menu for "Mathematics for Machine Learning: Linear Algebra" and a list of video and quiz options under "Matrix Inverses". The main content area features a video of a man in a purple shirt standing in front of a blue chalkboard. On the chalkboard, there is handwritten mathematical notation: $[A^{-1} \ A = I]$, $B = A^{-1}$, $AA^{-1} = I$, and $A \ B = I$. Below these, there is a complex matrix equation involving matrices A , B , and I , with handwritten labels "row" and "column" pointing to specific elements. The man is holding a marker and looking towards the board. Below the video, there are buttons for "Save Note", "Discuss", "Download", and social sharing icons. At the bottom, there is a language selection dropdown set to "English" and a "Help Translate" link.



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Welcome to Mathematics for Machine Learning: Linear Algebra > Week 4 > Matrices changing basis

Matrices as objects that map one vector onto another; all the types of matrices

- Video: Introduction: Einstein summation convention and the symmetry of the dot product 9 min
- Practice Quiz: Non-square matrix multiplication 8 questions
- Practice Quiz: Example: Using non-square matrices to do a projection 6 questions

Matrices transform into the new basis vector set

- Video: Matrices changing basis 11 min
- Video: Doing a transformation in a changed basis 4 min

Matrices changing basis

Bear's basis vectors $\begin{bmatrix} 3 \\ 1 \end{bmatrix}$, $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$ in my space.

$\begin{bmatrix} 3 & 1 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 5 \\ 2 \end{bmatrix}$

Bear's basis my vector in my coordinate system

B
 B^{-1}

$\frac{1}{2} \begin{bmatrix} 1 & -1 \\ -1 & 3 \end{bmatrix}$
my basis in Bear's world

Save Note Discuss Download



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Vectors and matrices :

Scalars, Vectors and Matrices

A **vector** is a list of numbers (can be in a row or column), A **matrix** is an array of numbers (one or more rows, one or more columns).

vector in matrix algebra

It can be said that the **matrix algebra** notation is shorthand for the corresponding scalar longhand. **Vectors**. A **vector** is a column of numbers. $\{\bf a\} = [\begin{array}{c} a_1 \\ a_2 \\ \vdots \\ a_p \end{array}]$ The scalars a_i are the elements of **vector** $\{\bf a\}$.

Row Matrix and example

In an $m \times n$ **matrix**, if $m = 1$, the **matrix** is said to be a **row matrix**. Definition of **Row Matrix**: If a **matrix** have only one **row** then it is called **row matrix**. Examples of **row matrix**: ... [13025] is a **row matrix**.



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Elements of Matrix :

The numbers, symbols, or expressions in the **matrix** are called its entries or its **elements**. The horizontal and vertical lines of entries in a **matrix** are called rows and columns, respectively.

So as long as we stick to **matrices** of the same size, we do in fact have a **vector space**. So the long and short of it is that **vectors** can be **matrices** and **matrices** can be **vectors**. Now, **Matrices** are **vectors** - from the **vector space** of **matrices** - but not all **vectors** are **matrices**.

Scalars, Vectors and Matrices

A **vector** is a list of numbers (can be in a row or column), A **matrix** is an array of numbers (one or more rows, one or more columns).

Vectors are a type of matrix having only one **column** or one **row**. A **vector** having only one **column** is called a **column vector**, and a **vector** having only one **row** is called a **row vector**. For example, matrix a is a **column vector**, and matrix a' is a **row vector**.

A **matrix** is a collection of numbers arranged into a fixed number of rows and columns. Usually the numbers are real numbers. In general, **matrices** can contain complex numbers but we won't see those here. Here is an **example** of a **matrix** with three rows and three columns: The top row is row 1.

The series primarily consists of a trilogy of science fiction action films beginning with **The Matrix** (1999) and continuing with two sequels, **The Matrix Reloaded** and **The Matrix Revolutions** (both in 2003), all written and directed by the Wachowskis and produced by Joel Silver.

Main point of the Matrix

The **Matrix** trilogy suggests that everyone has the individual responsibility to make the choice between the real world and an artificial world. Though Neo is the exemplar of free will, fate plays a large role in his adventure. Neo relies on the Oracle, and everything she says comes true in some way.

Application of Matrices

Almost every branch of physics, including classical mechanics, optics, electromagnetism,



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quantum mechanics, and quantum electrodynamics, **matrices** are used to study physical phenomena, such as the motion of rigid bodies.

Matrices have also come to have important applications in computer graphics, where they have been used to represent rotations and other transformations of images. A 2×3 matrix. A **matrix** with n rows and n columns is called a **square matrix** of order n .

Matrices are classified according to the number of rows and columns, and the specific elements therein. (i) **Row Matrix:** A **matrix** which has exactly one row is called a **row matrix**. The above two **matrices** are **row matrices** because each has only one row.

Matrices are a **useful** way to represent, manipulate and study linear maps between finite dimensional vector spaces (if you have chosen basis). **Matrices** can also represent quadratic forms (it's **useful**, for example, in analysis to study hessian **matrices**, which help us to study the behavior of critical points).

The numbers in a **matrix** can represent data, and they can also represent **mathematical equations**. Even more frequently, they're called upon to multiply **matrices**. Matrix multiplication can be thought of as solving linear equations for particular variables.

The term **matrix** was introduced by the 19th-century English mathematician James Sylvester, but it was his friend the mathematician Arthur Cayley who developed the algebraic aspect of **matrices** in two papers in the 1850s.

In biology, **matrix** is the material (or tissue) in animal or plant. Structure of connective tissues is an extracellular **matrix**. ... It is found in various connective tissue. It is generally used as a jelly like structure instead of cytoplasm in connective tissue.

In the **mitochondrion**, the **matrix** is the space within the inner membrane. The word "matrix" stems from the fact that this space is viscous, compared to the relatively aqueous cytoplasm.

The **extracellular matrix** (ECM) is the non-cellular component present within all tissues and organs, and provides not only essential physical scaffolding for the cellular constituents but also initiates crucial biochemical and biomechanical cues that are required for tissue morphogenesis, differentiation and homeostasis.



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The screenshot shows a web browser window with two tabs open: 'Welcome to Speak English Professionally' and 'Basics of Meeting Online'. The main content area displays a video player for a lecture titled 'Basics of Meeting Online' by Georgia Tech. The video features a woman in a blue dress speaking. The title 'Basics of Meeting Online' is at the top right of the video frame. Below the video, there is a call-to-action text: 'Make your online meetings SUCCESSFUL!'. At the bottom of the video frame, there are buttons for 'Save Note', 'Discuss', and 'Download'. The sidebar on the left lists course modules: 'Video Conferencing: Face to Face but Online' (selected), 'Reading: Additional Resources', 'Practice Quiz: Check Your Knowledge', 'Group Discussion Language', and 'Video Conference Role Play'. The Coursera logo is at the top left, and the URL 'coursera.org/learn/speak-english-professionally/lecture/ZoeXQ/basics-of-meeting-online' is in the address bar.



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Welcome to Speak English Profess... Group Discussion Language

coursera.org/learn/speak-english-professionally/lecture/xQl4H/group-discussion-language

Speak English Professionally: In Person, Online & On the Go Week 2 Group Discussion Language

Video Conferencing: Face to Face but Online

- Video: Basics of Meeting Online 5 min
- Reading: Additional Resources 10 min
- Practice Quiz: Check Your Knowledge 2 questions

Group Discussion Language

- Video: Group Discussion Language 5 min
- Practice Quiz: Check Your Knowledge 4 questions

Video Conference Role Play

Group Discussion Language

Leah Attria | Language Institute
Georgia Institute of Technology

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English Help Me Translate



Welcome to Speak English Profess... Group Discussion Language

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Group Discussion Language

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Video Conference Role Play

Group Discussion Language

Great then! Let's get started.

Ways to AGREE:

- Yes, I agree.
- It looks good to me.
- I think so, too.
- I definitely agree.

Georgia Tech

Save Note Discuss Download



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8 Tips to Make Professional English Part of Everyday Routine

- Focus on a profession. “Professional” is a catch-all category.
- Set up an RSS feed. RSS stands for “Rich Site Summary,” but it is often called “Really Simple” instead.
- Use Fluent videos.
- Listen to the radio.
- Always be listening.
- Mix business English with regular English.
- Use a social media aggregator.
- Go face to face.

Speak Like a Professional

- Use short, clear, declarative sentences. Short sentences focus your message and make it easier for your audience to follow.
- Speak in the active tense. Own your actions.
- Stay calm under pressure.
- Speak naturally.
- Say what you mean.
- Focus on what matters to your audience.
- Be specific.

Here are 8 steps to learn grammar easily on your own.

- Learn as many words as you can. To learn grammar easily, the basic element of any language is words.
- Talk to people.
- Watch and learn.
- Ask for corrections.
- Know the parts of speech.
- Look for patterns.
- Practice verb forms.



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- Use an app.

The **five** main components of **language** are phonemes, morphemes, lexemes, syntax, and context. Along with grammar, semantics, and pragmatics, these components work together to create meaningful communication among individuals.

Grammar and punctuation **skills** are essential in your classroom writing program. Your students need to be using parts of speech correctly, developing figurative language, extending their use of sentence structure, using punctuation accurately, and further learning how words work.



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