1. Understand the Dataset

Before creating a chart, we need to understand the data.

We will use a university student enrollment dataset.

Sample Dataset: Monthly Student Enrollment

Month	Students Enrolled
January	50
February	65
March	60
April	80
May	75
June	100
July	110
August	95
September	120
October	130
November	125
December	150

Understand the rows and columns

Consider the following example:

Month	Students Enrolled
January	50
February	65

- **Rows:** Each row represents one month's enrollment information.
- **Columns:** Each column represents a type of information.
- **Category:** Month is the category used to organize the records.
- **Numerical value:** Students Enrolled represents the number of students.

Understand the X-axis and Y-axis

A line chart normally has two axes.

X-axis

Horizontal axis

Month

January, February, March, and so on.

Y-axis

Vertical axis

Number of Students

50, 65, 60, 80, and so on.

How do values become points?

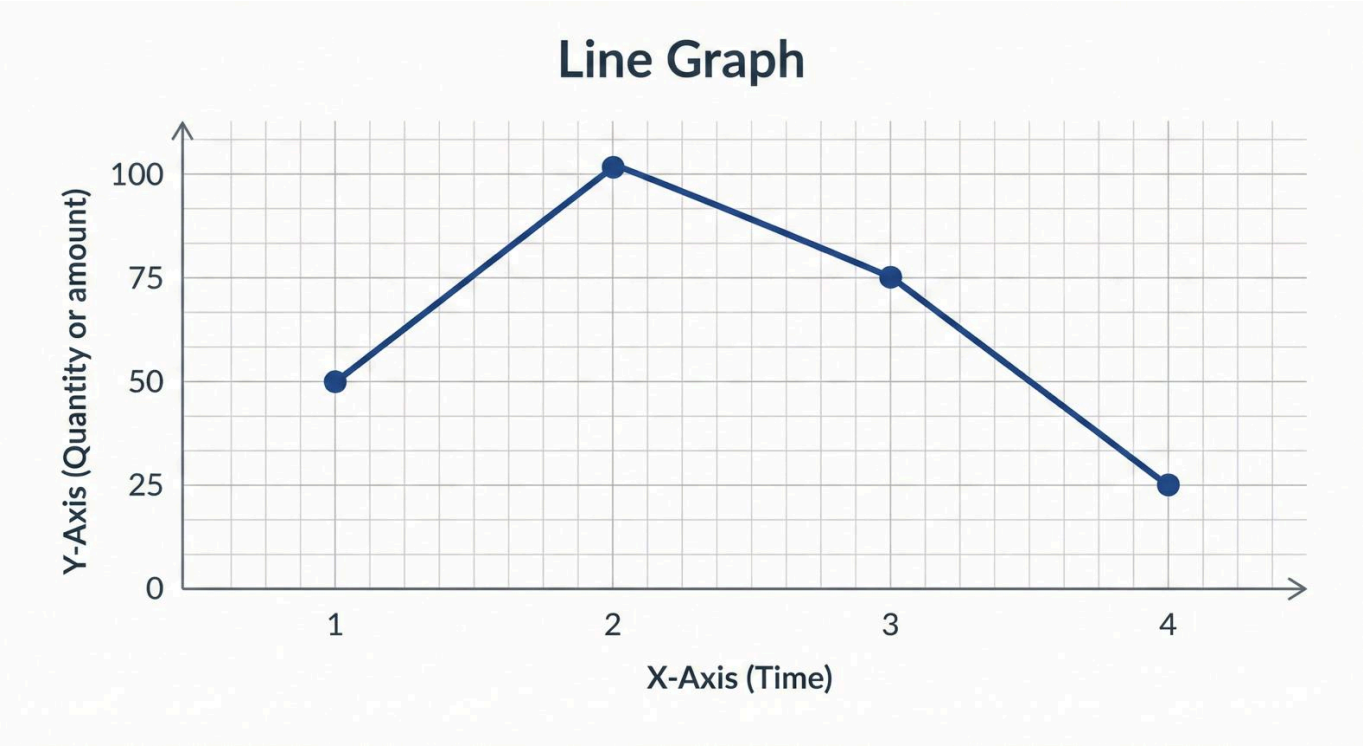
Each month has a corresponding enrollment value.

For example:

Month	Students	Chart point
January	50	January → 50
February	65	February → 65
March	60	March → 60
April	80	April → 80

The chart places each point according to its month and numerical value.

Then, the points are connected with lines.



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Important: The X-axis shows the order or position of the data, while the Y-axis shows the corresponding numerical values.

6. When to Use This Chart

When should we use a line chart?

Use a line chart when:

1. You want to show changes over time.
2. Your data has a meaningful order.
3. You want to identify trends.
4. You want to compare changes in multiple datasets.
5. You want to identify fluctuations or sudden changes.

Suitable data for line charts

- Daily temperature.
- Monthly sales.
- Annual population.
- Weekly attendance.
- Quarterly revenue.
- Monthly student enrollment.

Importance of ordered data

Line charts work best when the X-axis follows a meaningful sequence.

For example:

January → February → March → April

This order makes sense because months follow a natural sequence.

However, consider these unrelated categories:

Computer Science → English → Physics → Biology

Connecting these subjects with a line may suggest a continuous progression that does not actually exist.

A bar chart would usually be more appropriate for comparing unrelated subjects.

When NOT to use a line chart

Avoid line charts when:

- You are comparing unrelated categories.
- The data has no meaningful order.
- Connecting the points would create a misleading relationship.
- You have too many lines and the chart becomes difficult to read.

- You only need to compare individual values.

Line Chart vs Bar Chart vs Area Chart vs Scatter Plot

Feature	Line Chart	Bar Chart	Area Chart	Scatter Plot
Purpose	Show trends	Compare values	Show trends and magnitude	Show relationships
Suitable data	Ordered data	Categories	Ordered data	Paired numerical values
Best use case	Monthly sales	Sales by product	Population growth over time	Height vs weight
Main difference	Connects points	Uses rectangular bars	Fills area below line	Uses unconnected points

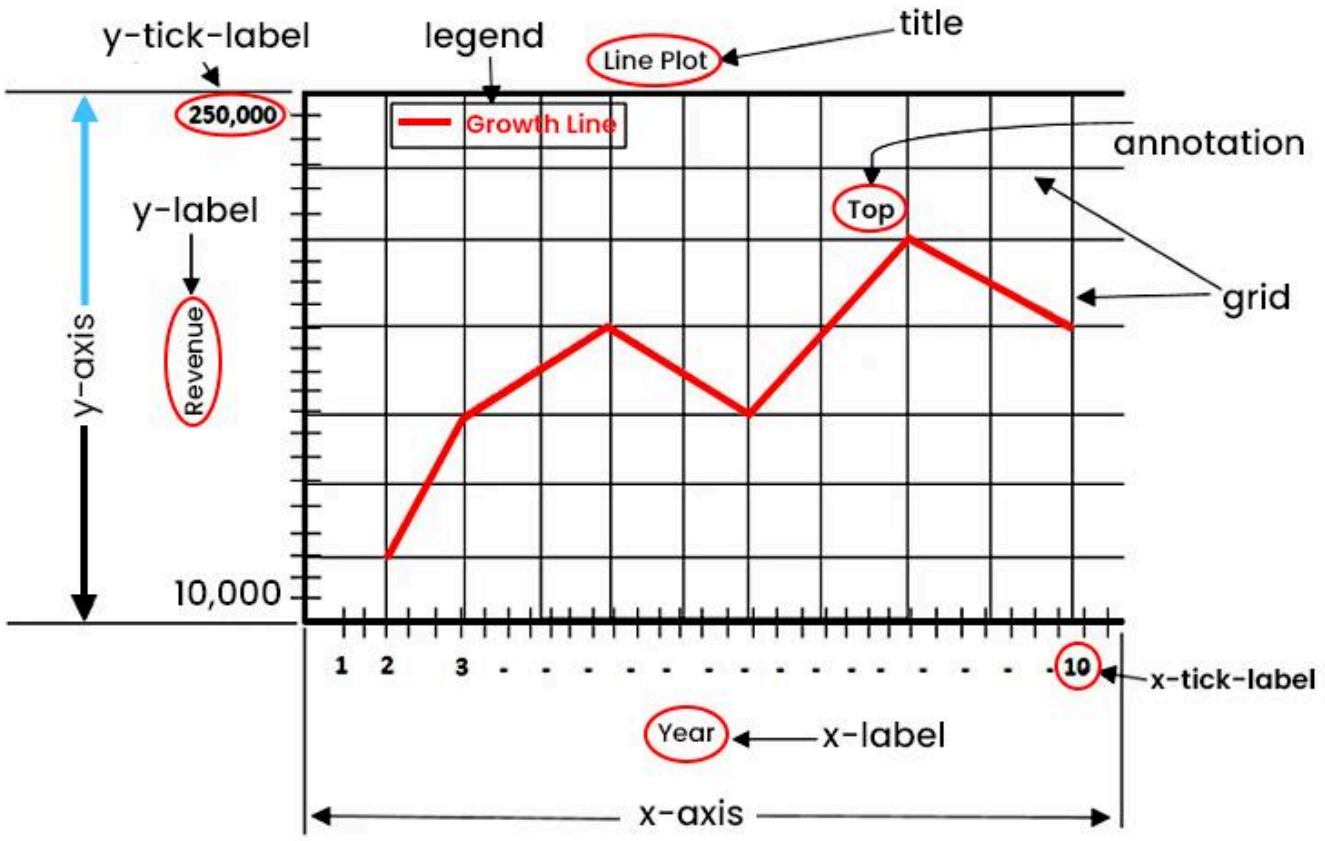
Practical examples:

- Line chart: Monthly sales from January to December.
- Bar chart: Sales of different products.
- Area chart: Total revenue growth over time with emphasis on magnitude.
- Scatter plot: Relationship between study hours and examination marks.

7. Chart Components

A line chart contains several important components.

Visual illustration



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Explanation of each component

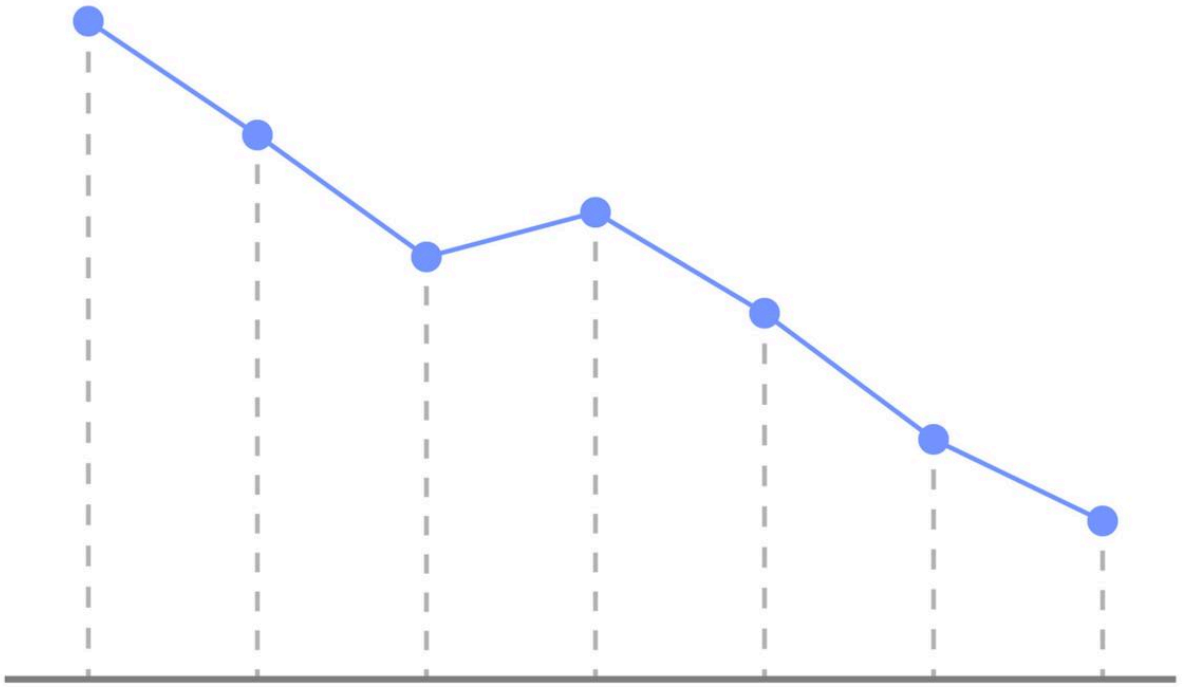
Component	Explanation
Chart Title	Describes what the chart represents.
X-axis	Horizontal axis, usually representing time or ordered categories.
Y-axis	Vertical axis, representing numerical values.
X-axis Values	Values displayed along the horizontal axis.
Y-axis Values	Numerical scale displayed along the vertical axis.
Data Points	Individual points representing observations.
Connecting Lines	Lines joining data points.
Axis Labels	Names describing each axis.
Tick Marks	Small marks showing positions on an axis.
Gridlines	Reference lines that help read values.
Legend	Identifies different lines when multiple datasets are displayed.

Understand different trends

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Increasing Trend

Values move upward.



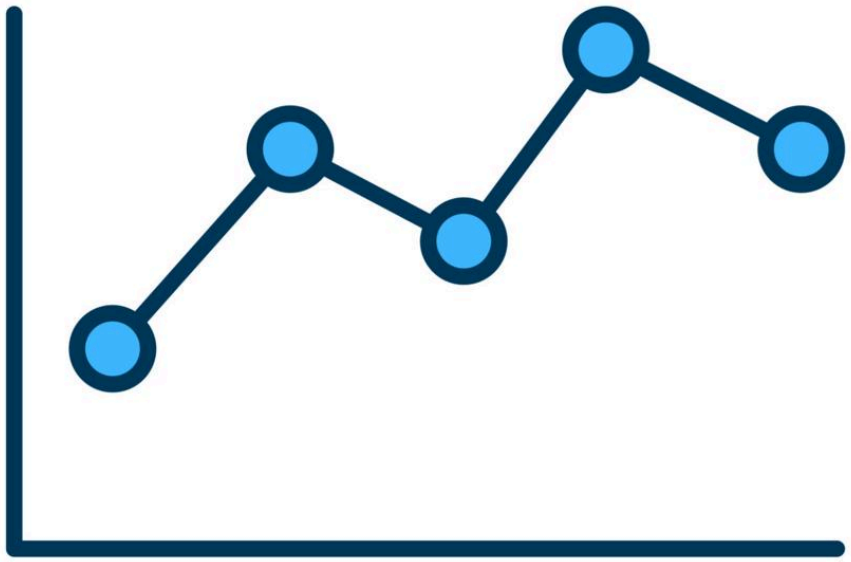
Decreasing Trend

Values move downward.



Constant Trend

Values remain unchanged.



Fluctuating Trend

Values repeatedly rise and fall.

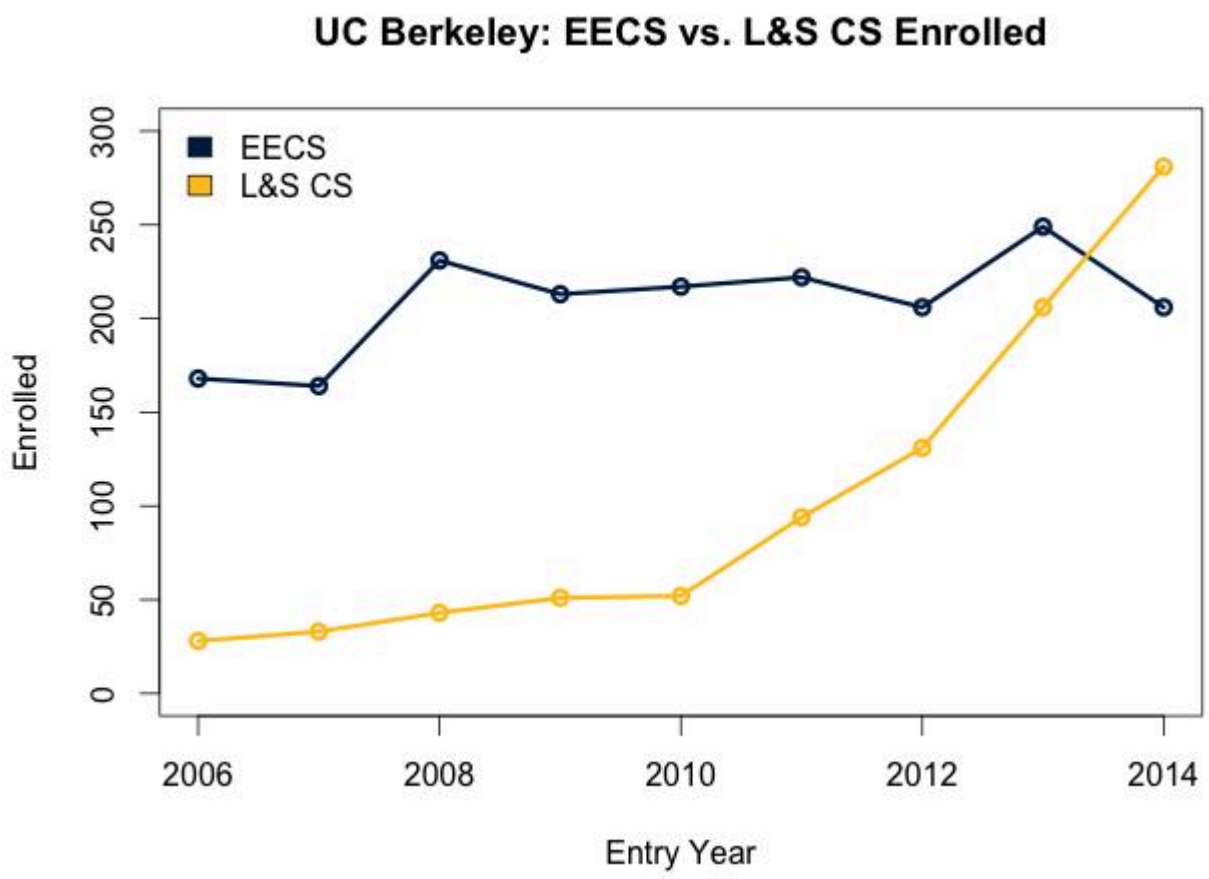
Multiple lines on one chart

A multiple line chart displays two or more datasets on the same chart.

For example, we can compare monthly enrollment in:

- Computer Science.
- Information Technology.

Each department gets a separate line and a legend identifies each line.



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Remember: Use different colors or markers to make multiple lines easy to distinguish.