

**Lab (4)**  
**Acid-Base Titration**

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## Acid-Base Titration

It is also called neutralization titration curves since  $H^+$  that comes from acids or acidic solutions is neutralized with  $OH^-$  which comes from bases or basic solutions to form very slightly ionised water:



**Titration:** It is gradual addition of titrant which is always standard solution to the titrand which is always the analyte (the solution under test or unknown), in the presence of certain indicator. The titration is finished by the sudden change of indicator colour.

**Titrant:** It is the solution which is contained in the burette, and it is always the standard solution, but in some cases, it refers to the analyte or unknown.

**Titrand:** It is the solution which is always contained in a conical flask, and it is always the analyte, but sometimes it refers to standard solution.

**End point or equivalence point:** The end of titration when the indicator changes color, when the acid has reacted with all of the base.

**Experiment**

	<b>Chemicals</b>	<b>Quantity</b>	<b>Equipment and Instruments</b>
<b>1</b>	hydrochloric acid HCl	20 mL	Electronic Balance
<b>2</b>	Sodium hydroxide NaOH	0.216 g	Burette
<b>3</b>	Indicator Ph.Ph	2 drops	Conical flask
<b>4</b>	Distilled water	55 mL	Dropper

**Procedure**

- 1- Fill the burette with 0.1 N NaOH
- 2- Put 20 ml of hydrochloric acid (N=?) in the conical flask.
- 3- Add (2) drops of phenolphathalen as indicator.
- 4- Titration the acid with the base and have the end point when the change in the colorless to pink.

**Calculation:**

$$(N \cdot V)_{\text{HCl}} = (N \cdot V)_{\text{NaOH}}$$