



ಕರ್ನಾಟಕ ಸರ್ಕಾರ  
 ದೂರ ಸಂಪರ್ಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ಬೆಂಗಳೂರು

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಅಧೀನದಲ್ಲಿರುವ ದೂರ ಸಂಪರ್ಕ ಶಿಕ್ಷಣ ಇಲಾಖೆಯು  
 ವಿವಿಧ ವಿಷಯಗಳಲ್ಲಿ ಸಹಾಯಕಿಯರನ್ನು ನೇಮಿಸಲು ಈಗಾಗಲೇ ಪ್ರಕ್ರಿಯೆ ನಡೆಸುತ್ತಿದೆ.  
 ಈ ಸಂದರ್ಭದಲ್ಲಿ ಈಗಾಗಲೇ ನೇಮಿಸಿದ ಅಭ್ಯರ್ಥಿಗಳ ಹೆಸರುಗಳು ಕೆಳಕಂಡಂತಿವೆ.

ಆದರೆ ಈಗಾಗಲೇ ನೇಮಿಸಿದ ಅಭ್ಯರ್ಥಿಗಳ ಹೆಸರುಗಳನ್ನು ಈಗಾಗಲೇ  
 ನೇಮಿಸಿದ ಅಭ್ಯರ್ಥಿಗಳ ಹೆಸರುಗಳನ್ನು ಈಗಾಗಲೇ ನೇಮಿಸಿದ ಅಭ್ಯರ್ಥಿಗಳ  
 ಹೆಸರುಗಳನ್ನು ಈಗಾಗಲೇ ನೇಮಿಸಿದ ಅಭ್ಯರ್ಥಿಗಳ ಹೆಸರುಗಳನ್ನು ಈಗಾಗಲೇ

ನೇಮಿಸಿದ ಅಭ್ಯರ್ಥಿಗಳು

ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಬೆಂಗಳೂರು

ಇದೇ \_\_\_\_\_  
 ಅಧ್ಯಕ್ಷರು, ಶಿಕ್ಷಣ ಇಲಾಖೆ  
 ಬೆಂಗಳೂರು

ಇದೇ \_\_\_\_\_  
 ಅಧ್ಯಕ್ಷರು, ಶಿಕ್ಷಣ ಇಲಾಖೆ  
 ಬೆಂಗಳೂರು

1. **Introduction:** Primary succession

2. **Objectives:** secondary

3. **Materials:** fresh cowpungent from a tree in the laboratory

4. **Procedure:** 1. Preparation

5. **Results:** 1. Preparation

6. **Conclusion:** 1. Preparation

Sl. No.	Experiment Name	Concept & Objective	Materials	Procedure	Results
1	Preparation of secondary succession	secondary succession	fresh cowpungent from a tree in the laboratory	1. Preparation	1. Preparation

1. **Introduction:** Secondary succession

Sl. No.	Experiment Name	Concept & Objective	Materials	Procedure	Results	Conclusion	Precautions
1	Preparation of secondary succession	secondary succession	fresh cowpungent from a tree in the laboratory	1. Preparation	1. Preparation	1. Preparation	1. Preparation

1. Sectional View

2. Hidden Lines

3. Sectional Symbols

4. Sectional Views

5. Sectional Views

6. Sectional Views

7. Sectional Views

Part	Sectional View	Hidden Lines	Sectional Symbols	Sectional Views	Sectional Views	Sectional Views	Sectional Views
1	Sectional View	Hidden Lines	Sectional Symbols	Sectional Views	Sectional Views	Sectional Views	Sectional Views

8. Sectional Views

Part	Sectional View	Hidden Lines	Sectional Symbols	Sectional Views	Sectional Views	Sectional Views	Sectional Views
1	Sectional View	Hidden Lines	Sectional Symbols	Sectional Views	Sectional Views	Sectional Views	Sectional Views

## Experiment 6/2020/2021

1. Theory: [https://www.researchgate.net/publication/332211111](#)
  2. Software: [MATLAB](#)
  3. Program: [Kendall's Rank Correlation](#)
  4. Software: [MATLAB](#)
  5. Source: [MATLAB](#)
6. Configuration file:

	parameter	input string/number	configuration	output
1	input string and	parameter list	other input string and	output
2	other input string	parameter list	other input string and	output

### Configuration file

id	parameter	input string/number	configuration	output
1	input string and	parameter list	other input string and	output
2	other input string	parameter list	other input string and	output

1.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

2.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

3.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$        $\text{Ca}^{2+}$        $\text{Mg}^{2+}$        $\text{Ca}^{2+}$        $\text{Mg}^{2+}$        $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

4.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

5.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

6.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

Sample	Color	Flame Test	Reaction with $\text{NaOH}$	Reaction with $\text{NH}_3$	Reaction with $\text{CO}_3^{2-}$	Reaction with $\text{S}^{2-}$	Reaction with $\text{PO}_4^{3-}$
1	White precipitate	Orange-red	White precipitate	White precipitate	White precipitate	White precipitate	White precipitate

1.  $\text{Ca}^{2+}$        $\text{Mg}^{2+}$

Sample	Color	Flame Test	Reaction with $\text{NaOH}$	Reaction with $\text{NH}_3$	Reaction with $\text{CO}_3^{2-}$	Reaction with $\text{S}^{2-}$	Reaction with $\text{PO}_4^{3-}$
1	White precipitate	Orange-red	White precipitate	White precipitate	White precipitate	White precipitate	White precipitate

anforderung	erwartung	erwartung	erwartung	erwartung	erwartung	erwartung	erwartung
...	...	...	...	...	...	...	...

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## Project and the Industry

- 1. Industry: Consumer electronics
- 2. Product: Smartwatch
- 3. Project: Development of a new smartwatch model
- 4. Objective: Increase sales and market share
- 5. Strategy: Focus on innovation and user experience

### Project Management

Task	Description	Start Date	End Date	Duration	Dependencies
1	Project Initiation	2023-01-01	2023-01-15	15 days	
2	Requirements Gathering	2023-01-15	2023-02-15	31 days	1
3	Product Design	2023-02-15	2023-04-15	61 days	2
4	Development	2023-02-15	2023-06-15	121 days	2, 3
5	Testing	2023-05-15	2023-06-15	31 days	4
6	Deployment	2023-06-15	2023-06-15	1 day	5





## Experiment 4: Banking

- 1. Identify: Name of exchange
  - 2. Identify: Instruments
  - 3. Identify: Bank's liabilities - assets (total) of its a) assets b) liabilities
  - 4. Identify: Instruments
  - 5. Identify: Instruments
6. **Accounting 1001**

	Assets	Liabilities	Equity	
1	Bank of Italy	Reserves	Capital	

### a) **Assets**

#	Instrument	Value	Quantity	Unit	Rate	Maturity	Risk	Liquidity
1	Government	1000	1000	€	5%	1/1/2025	Low	High



### Experiment 4: Light Rays

1. **Object:** Laser pointer

2. **Materials:** Water tank

3. **Diagram:** 

4. **Procedure:** Laser pointer

5. **Observation:** Laser pointer

6. **Conclusion:**

Sl. No.	Observation	Result	Conclusion
1	When a laser beam is directed from air to water, it bends towards the normal.	Refraction of light	Light travels faster in air than in water.

7. **Precautions:**

Sl. No.	Precautions	Result	Conclusion
1	Use a laser pointer in a dark room.	Clear path of the ray	Light travels in a straight line.
2	Use a white card to see the ray.	Visible ray	Light travels in a straight line.
3	Use a normal to see the refraction.	Refraction of light	Light travels faster in air than in water.





- 1. Bauteile: Bauteilnummer
- 2. Bauteile: Bauteilname
- 3. Bauteile: Bauteilmaterial
- 4. Bauteile: Bauteilmenge
- 5. Bauteile: Bauteilgewicht
- 6. Bauteile: Bauteilwert
- 7. Bauteile: Bauteilwert

	1. Bauteile	2. Bauteile	3. Bauteile	4. Bauteile	5. Bauteile	6. Bauteile	7. Bauteile
1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1

2. Bauteile

1	2	3	4	5	6	7	8
1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1

### Experiment 4 (continued)

1. safety: harmless

2. odors: none

3. colors: dark blue, brown, white

4. reactions: strong

5. products: white

6. observations:

	observations	assess/identify	conclusion	conclude
1	reaction of the mixture of the two solutions was very strong	precipitation	precipitation of the white solid	white
2	formation of a white precipitate	precipitation	precipitation of the white solid	white
3	formation of a white precipitate	precipitation	precipitation of the white solid	white
4	formation of a white precipitate	precipitation	precipitation of the white solid	white

#### 1. Write conclusions:

step	observations	conclusion	assess/identify	conclusion	conclude	conclude
1	reaction of the mixture of the two solutions was very strong	precipitation	precipitation of the white solid	white	precipitation of the white solid	white
2	formation of a white precipitate	precipitation	precipitation of the white solid	white	precipitation of the white solid	white
3	formation of a white precipitate	precipitation	precipitation of the white solid	white	precipitation of the white solid	white
4	formation of a white precipitate	precipitation	precipitation of the white solid	white	precipitation of the white solid	white

### Experiment 4: Biology

- 1. Identify the basic components of a cell.
- 2. Describe the structure and function of the nucleus.
- 3. Explain the process of mitosis and meiosis.
- 4. Discuss the role of enzymes in biological processes.
- 5. Investigate the effects of temperature on enzyme activity.

Experiment No.	Title	Objective	Materials	Procedure	Observations	Conclusion
1	Microscopic Study of Cells	To observe and identify the basic components of a cell.	Microscope, Slides, Stains	Prepare slides of onion skin and human cheek cells. Stain with iodine solution. Observe under microscope.	Onion skin cells are rectangular with cell walls. Cheek cells are irregular and lack cell walls.	Cells are the basic units of life.

#### 1. Preparation of Slides

Step	Procedure	Diagram	Notes
1	Preparation of Onion Skin Slide		Cells are rectangular with thick cell walls.
2	Preparation of Human Cheek Cell Slide		Cells are irregular in shape and lack cell walls.

## Experiment 10

1. Name of the compound: Chloroacetic acid
2. Molecular weight: 94.5
3. Molecular formula: ClCH<sub>2</sub>COOH
4. Structure: Cl-CH<sub>2</sub>-COOH
5. Preparation: Hydrolysis of acetyl chloride
6. Properties: Colorless liquid, boiling point 190°C, melting point 61°C, density 1.48 g/cm<sup>3</sup>
7. Tests: Positive for Cl<sup>-</sup> and CO<sub>3</sub><sup>2-</sup>

Sl. No.	Observation	Chemical Reaction	Interpretation	Conclusion
1	White precipitate formed	$\text{Cl}^- + \text{Ag}^+ \rightarrow \text{AgCl} \downarrow$	Presence of Cl <sup>-</sup>	Chloride ion
2	White precipitate formed	$\text{CO}_3^{2-} + 2\text{H}^+ \rightarrow \text{H}_2\text{O} + \text{CO}_2 \uparrow$	Presence of CO <sub>3</sub> <sup>2-</sup>	Carbonate ion
3	White precipitate formed	$\text{CO}_3^{2-} + \text{Ba}^{2+} \rightarrow \text{BaCO}_3 \downarrow$	Presence of CO <sub>3</sub> <sup>2-</sup>	Carbonate ion
4	White precipitate formed	$\text{CO}_3^{2-} + \text{Ca}^{2+} \rightarrow \text{CaCO}_3 \downarrow$	Presence of CO <sub>3</sub> <sup>2-</sup>	Carbonate ion

1. *Epilobium ciliatum* Linn.

Date	particulars	Rs.	paise	Total	Rs.	paise	Remarks
1	...	...	...	...	...	...	...

### Aufgabenstellung

1. Skizze: Längs- und Querschnitt

2. Bauteile: Material

3. Fertigung: Handverfertigung (Voll- oder Halbfabrikat) in 1 oder 2 Schritten

4. Antriebe: Elektromotor

5. Steuerung: mechanisch

6. Abfertigung: ZBZ

1	2	3	4	5	6	7
Bezeichnung	Werkstoff	Material	Material	Material	Material	Material

### Zusammenfassung

1	2	3	4	5	6	7
Bezeichnung	Werkstoff	Material	Material	Material	Material	Material

## Experiment 4: Solubility

1. Purpose: How to compare
2. Objective: experiment
3. Materials: Qualitative analysis reagents from a series of substances
4. Procedure: procedure
5. Results: results
6. Conclusions: conclusion

no	substance	solubility	solubility	solubility	solubility	solubility
1	AgNO <sub>3</sub>	soluble	soluble	soluble	soluble	soluble
2	AgCl	insoluble	insoluble	insoluble	insoluble	insoluble
3	Ag <sub>2</sub> CO <sub>3</sub>	insoluble	insoluble	insoluble	insoluble	insoluble

### Experiment 5: Solubility

no	substance	solubility	solubility	solubility	solubility	solubility
1	AgNO <sub>3</sub>	soluble	soluble	soluble	soluble	soluble
2	AgCl	insoluble	insoluble	insoluble	insoluble	insoluble
3	Ag <sub>2</sub> CO <sub>3</sub>	insoluble	insoluble	insoluble	insoluble	insoluble

Experiment 10: Biology

- 1. Introduction
- 2. Objectives
- 3. Materials
- 4. Procedure
- 5. Observations
- 6. Conclusion

Sl. No.	Observations	Result	Conclusion
1.	When a leaf is placed in a test tube containing calcium hydroxide solution, the solution turns milky.	Calcium hydroxide solution turns milky.	Presence of carbon dioxide.

Experiment 11: Chemistry

Sl. No.	Observations	Result	Conclusion
1.	When a piece of zinc metal is placed in a test tube containing dilute hydrochloric acid, bubbles of gas are evolved.	Bubbles of gas are evolved.	Zinc reacts with dilute hydrochloric acid to form zinc chloride and hydrogen gas.



## Experiment 10: Diffusion

1. Objective: To observe the rate of diffusion of a gas.

2. Apparatus: A glass jar, a beaker, a piece of paper, a candle, a glass of water.

3. Procedure: A candle is placed in a beaker and lit. The beaker is inverted and placed in a glass of water. The candle is extinguished and the beaker is removed. The water level in the beaker is observed.

4. Observation: The water level in the beaker rises.

5. Conclusion: The water level rises because the air inside the beaker is replaced by water.

6. Precautions: The candle should be lit properly.

Sl. No.	Observation	Conclusion	Precautions
1	The water level in the beaker rises.	The air inside the beaker is replaced by water.	The candle should be lit properly.

### 10.1 Diffusion of Gases

Sl. No.	Apparatus	Procedure	Observation	Conclusion	Precautions	Diagram
1	Two test tubes, one containing water and the other containing a solution of potassium permanganate.	The test tubes are placed in a beaker of water. The test tube containing the solution is inverted and placed in the water. The test tube containing water is placed upright.	The color of the solution spreads throughout the water.	Diffusion of gases occurs.	The test tubes should be placed in a beaker of water.	

1. Velocity Transverse velocity

2. Acceleration Centripetal

3. Kinematics Kinematics (Motion of particles)

4. Dynamics Dynamics (Force and Motion)

5. Optics Optics (Reflection and Refraction)

6. Thermodynamics Thermodynamics

Sl. No.	Topic	Sub-Topic	Unit	Weightage	Remarks
1	Mechanics	Kinematics	1	15%	
2	Mechanics	Dynamics	2	15%	
3	Optics	Ray Optics	3	15%	
4	Optics	Wave Optics	4	15%	
5	Thermodynamics	Thermodynamics	5	15%	

2. Preparation for

Sl. No.	Topic	Sub-Topic	Unit	Weightage	Remarks
1	Mechanics	Kinematics	1	15%	
2	Mechanics	Dynamics	2	15%	
3	Optics	Ray Optics	3	15%	
4	Optics	Wave Optics	4	15%	
5	Thermodynamics	Thermodynamics	5	15%	

1. **Phylum:** Chordata2. **Class:** Mammalia3. **Order:** Carnivora4. **Family:** Felidae5. **Genus:** Felis6. **Species:** Felis tigris

1. <b>Characteristics:</b>	vertebrate	amniote	endotherm	placental	herbivore	terrestrial	diurnal	solitary
2. <b>Adaptations:</b>	sharp claws	teeth	flexible spine	large brain	social behavior	territorial	communication	camouflage

### Discussion:

1. <b>Phylum:</b> Chordata	<b>Class:</b> Mammalia	<b>Order:</b> Carnivora	<b>Family:</b> Felidae	<b>Genus:</b> Felis	<b>Species:</b> Felis tigris
2. <b>Characteristics:</b>	vertebrate	amniote	endotherm	placental	herbivore
3. <b>Adaptations:</b>	sharp claws	teeth	flexible spine	large brain	social behavior

## Experiment 10

1. Objective: To determine the molar mass of a volatile liquid.

2. Apparatus: Conical flask, analytical balance, boiling tube, rubber stopper, water bath.

3. Procedure: A small amount of the liquid is placed in a conical flask which is then sealed with a rubber stopper. The flask is then immersed in a boiling water bath and the liquid is allowed to vaporize. The flask is then cooled and the mass of the condensed liquid is determined.

4. Results: The mass of the condensed liquid is found to be 0.50 g.

5. Discussion: The molar mass of the liquid is calculated to be 44 g mol<sup>-1</sup>.

6. Conclusion: The molar mass of the liquid is 44 g mol<sup>-1</sup>.

Step	Observation	Calculation	Result
1. Weighing of the flask	Mass of flask = 10.00 g		
2. Weighing of the flask containing the condensed liquid	Mass of flask + condensed liquid = 10.50 g		
3. Calculation of the mass of the condensed liquid	Mass of condensed liquid = 10.50 g - 10.00 g = 0.50 g		
4. Calculation of the molar mass of the liquid	Molar mass = $\frac{\text{Mass of condensed liquid}}{\text{Moles of condensed liquid}}$		
			44 g mol <sup>-1</sup>

7. Precautions: The flask should be cooled in a water bath to prevent the liquid from solidifying.

Step	Observation	Calculation	Result
1. Weighing of the flask	Mass of flask = 10.00 g		
2. Weighing of the flask containing the condensed liquid	Mass of flask + condensed liquid = 10.50 g		
3. Calculation of the mass of the condensed liquid	Mass of condensed liquid = 10.50 g - 10.00 g = 0.50 g		
4. Calculation of the molar mass of the liquid	Molar mass = $\frac{\text{Mass of condensed liquid}}{\text{Moles of condensed liquid}}$		
			44 g mol <sup>-1</sup>



- 1. Hypothese: Keine Veränderung
- 2. Hypothese: Expansion
- 3. Hypothese: Kontraktion
- 4. Hypothese: Keine Veränderung
- 5. Hypothese: Keine Veränderung

	1. Hypothese	2. Hypothese	3. Hypothese	4. Hypothese
1	Keine Veränderung	Keine Veränderung	Keine Veränderung	Keine Veränderung
2	Keine Veränderung	Keine Veränderung	Keine Veränderung	Keine Veränderung
3	Keine Veränderung	Keine Veränderung	Keine Veränderung	Keine Veränderung
4	Keine Veränderung	Keine Veränderung	Keine Veränderung	Keine Veränderung





1. Name of the compound: Ammonium chloride

2. Molecular weight: 78.08

3. Formula:  $\text{NH}_4\text{Cl}$  (Molecular weight: 78.08)

4. Structure:  $\text{NH}_4^+\text{Cl}^-$

5. Preparation: Ammonia

6. Properties: White solid

Sl. No.	Preparation method	Yield of product (%)	Characteristics	Other observations	Conclusion
1	Ammonia gas is passed over a solution of hydrochloric acid.	100%	White solid	Ammonium chloride	Ammonium chloride

7. Chemical reaction:

Sl. No.	Chemical reaction	Observations	Conclusion
1	$\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$	White solid	Ammonium chloride



## Experiment 2: Equilibria

1. Equilibrium constant  $K_c$

2. Equilibrium constant  $K_p$

3. Equilibrium constant  $K_c$  from a series of titration curves

4. Equilibrium constant  $K_c$

5. Equilibrium constant  $K_c$

6. Equilibrium constant  $K_c$

Experiment	Equilibrium constant $K_c$	Equilibrium constant $K_p$	Equilibrium constant $K_c$ from a series of titration curves	Equilibrium constant $K_c$	Equilibrium constant $K_c$	Equilibrium constant $K_c$
1						
2						
3						
4						
5						
6						

7. Equilibrium constant  $K_c$

Experiment	Equilibrium constant $K_c$	Equilibrium constant $K_p$	Equilibrium constant $K_c$ from a series of titration curves	Equilibrium constant $K_c$	Equilibrium constant $K_c$	Equilibrium constant $K_c$
1						
2						
3						
4						
5						
6						
7						



## Importance of Quality

1. Higher quality → lower cost of capital

2. Higher quality → stronger reputation

3. Higher quality → greater flexibility to raise a new round of financing

4. Higher quality → greater market power

5. Higher quality → greater customer loyalty

6. Higher quality → greater employee loyalty

Quality Dimension	Measurement	Impact on Financial Performance	Impact on Customer Satisfaction	Impact on Employee Satisfaction
Product Quality	Defect Rate	Higher Quality → Lower Defect Rate → Lower Cost of Goods Sold → Higher Profit	Higher Quality → Higher Customer Satisfaction	Higher Quality → Higher Employee Satisfaction
Service Quality	Customer Complaints	Higher Quality → Lower Customer Complaints → Lower Cost of Sales → Higher Profit	Higher Quality → Higher Customer Satisfaction	Higher Quality → Higher Employee Satisfaction
Employee Quality	Employee Turnover	Higher Quality → Lower Employee Turnover → Lower Cost of Labor → Higher Profit	Higher Quality → Higher Customer Satisfaction	Higher Quality → Higher Employee Satisfaction

### Quality Dimensions

Quality Dimension	Measurement	Impact on Financial Performance	Impact on Customer Satisfaction	Impact on Employee Satisfaction
Product Quality	Defect Rate	Higher Quality → Lower Defect Rate → Lower Cost of Goods Sold → Higher Profit	Higher Quality → Higher Customer Satisfaction	Higher Quality → Higher Employee Satisfaction
Service Quality	Customer Complaints	Higher Quality → Lower Customer Complaints → Lower Cost of Sales → Higher Profit	Higher Quality → Higher Customer Satisfaction	Higher Quality → Higher Employee Satisfaction
Employee Quality	Employee Turnover	Higher Quality → Lower Employee Turnover → Lower Cost of Labor → Higher Profit	Higher Quality → Higher Customer Satisfaction	Higher Quality → Higher Employee Satisfaction



1. Normen : Normen sind

2. Normen : Normen sind

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14. Normen : Normen sind

15. Normen : Normen sind

16. Normen : Normen sind

17. Normen : Normen sind

Norm	Definition	Beispiel	Eigenschaften
1-norm	$\ x\ _1 =  x_1  +  x_2  + \dots +  x_n $	$\ (1, 2, 3)\ _1 = 6$	Manhattan-Metrik
2-norm	$\ x\ _2 = \sqrt{x_1^2 + x_2^2 + \dots + x_n^2}$	$\ (1, 2, 3)\ _2 = \sqrt{14}$	Euklidische Metrik
∞-norm	$\ x\ _\infty = \max( x_1 ,  x_2 , \dots,  x_n )$	$\ (1, 2, 3)\ _\infty = 3$	Maximum der Absolutwerte

Norm	Definition	Beispiel	Eigenschaften
1-norm	$\ x\ _1 =  x_1  +  x_2  + \dots +  x_n $	$\ (1, 2, 3)\ _1 = 6$	Manhattan-Metrik
2-norm	$\ x\ _2 = \sqrt{x_1^2 + x_2^2 + \dots + x_n^2}$	$\ (1, 2, 3)\ _2 = \sqrt{14}$	Euklidische Metrik
∞-norm	$\ x\ _\infty = \max( x_1 ,  x_2 , \dots,  x_n )$	$\ (1, 2, 3)\ _\infty = 3$	Maximum der Absolutwerte

- 1. Statistik: Deskription und Inferenz
- 2. Experiment: Design und Analyse
- 3. Feldforschung: Qualitative und quantitative Methoden
- 4. Interviews: Strukturinterviews und Leitfadeninterviews
- 5. Fokusgruppen: Gruppendiskussionen
- 6. Ethnografie: Feldforschung
- 7. Netzwerkanalyse: Soziale Netzwerke
- 8. Online-Forschung: Weblogs, Social Media
- 9. Experimentelle Methoden: Laborexperimente und Feldexperimente

Thema	Inhalt	Methoden	Ergebnisse	Interpretation
1. Einführung in die empirische Sozialforschung	Grundbegriffe der empirischen Sozialforschung	Quantitative vs. qualitative Methoden	Deskription vs. Inferenz	Soziale Realität vs. soziale Konstruktion
2. Quantitative Methoden	Statistik, Experiment, Feldforschung	Strukturinterviews, Fragebogen, Experimente	Quantitative Daten	Statistische Inferenz
3. Qualitative Methoden	Interviews, Fokusgruppen, Ethnografie	Leitfadeninterviews, Gruppendiskussionen, Feldforschung	Qualitative Daten	Interpretive Sozialwissenschaft
4. Mixed-Methods-Ansätze	Kombination von quantitativen und qualitativen Methoden	Quantitative Methoden + Qualitative Methoden	Mixed-Methods-Daten	Triangulation

1. Einführung in die empirische Sozialforschung

Thema	Inhalt	Methoden	Ergebnisse	Interpretation
1. Einführung in die empirische Sozialforschung	Grundbegriffe der empirischen Sozialforschung	Quantitative vs. qualitative Methoden	Deskription vs. Inferenz	Soziale Realität vs. soziale Konstruktion
2. Quantitative Methoden	Statistik, Experiment, Feldforschung	Strukturinterviews, Fragebogen, Experimente	Quantitative Daten	Statistische Inferenz
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## Importance of Learning

- 1. Learning is essential for personal growth and development.
- 2. Learning is necessary for career advancement and success.
- 3. Learning is important for staying up-to-date in a rapidly changing world.
- 4. Learning is crucial for solving complex problems and making informed decisions.
- 5. Learning is a lifelong process that enriches the mind and expands horizons.

Learning Outcome	Assessment Method	Weightage	Passing Grade
1. Understand the importance of learning and its impact on personal and professional growth.	Written Exam	30%	B
2. Identify the various learning styles and their effectiveness.	Classroom Discussion	20%	C
3. Analyze the role of learning in career development and success.	Case Study Analysis	25%	B+
4. Evaluate the impact of learning on problem-solving and decision-making.	Group Project	25%	A

### Learning Objectives

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- 1. Derive the transfer function of the filter.
- 2. Derive the magnitude response of the filter.
- 3. Derive the phase response of the filter.
- 4. Plot the magnitude response of the filter.
- 5. Plot the phase response of the filter.

Input	Output	Transfer Function	Magnitude Response	Phase Response	Plot
1	1	$H(z) = \frac{1}{1 - 0.5z^{-1}}$	$ H(e^{j\omega})  = \frac{1}{\sqrt{1 - 0.5^2 \cos^2(\omega/2)}}$	$\angle H(e^{j\omega}) = \frac{\omega}{2}$	Figure 1: Magnitude and Phase Response of the Filter

2. Filter Characteristics

Filter Type	Order	Cutoff Frequency	Passband Gain	Stopband Attenuation	Phase Shift	Group Delay	Stability
Lowpass	1	0.5 rad/s	1	> 40 dB	0	0.5 s	Stable

- 1. Diffusion: movement of particles from high concentration to low concentration.
- 2. Osmosis: movement of water molecules from high water potential to low water potential.
- 3. Active transport: movement of particles from low concentration to high concentration.
- 4. Facilitated diffusion: movement of particles from high concentration to low concentration through a protein channel.

Process	Direction of movement	Energy requirement	Carrier	Specificity	Rate
Diffusion	High concentration to low concentration	Not required	None	Non-specific	Slow
Osmosis	High water potential to low water potential	Not required	Water channel	Specific	Fast
Active transport	Low concentration to high concentration	Required	Carrier	Specific	Fast
Facilitated diffusion	High concentration to low concentration	Not required	Carrier	Specific	Fast

Diffusion in a plant

Plant	Substance	Direction of movement	Energy requirement	Carrier	Specificity	Rate
1. Diffusion	Water	High concentration to low concentration	Not required	None	Non-specific	Slow
2. Osmosis	Water	High water potential to low water potential	Not required	Water channel	Specific	Fast
3. Active transport	Minerals	Low concentration to high concentration	Required	Carrier	Specific	Fast
4. Facilitated diffusion	Minerals	High concentration to low concentration	Not required	Carrier	Specific	Fast



