

# Introduction to Phonetics and Phonology

## Introduction to Phonetics & Phonology

Key concepts, terminology, and relationships – organized for quick review.

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## 1. What They Study

| Discipline       | Focus                                                     | Main Question                                                      |
|------------------|-----------------------------------------------------------|--------------------------------------------------------------------|
| <b>Phonetics</b> | Physical properties of speech sounds                      | <i>How are speech sounds produced, transmitted, and perceived?</i> |
| <b>Phonology</b> | Abstract, systematic organization of sounds in a language | <i>How do sounds function to create meaning and patterns?</i>      |

**Bottom?up ? Top?down** – Phonetics describes the raw material; phonology explains how that material is organized in the mind.

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## 2. Branches of Phonetics

### 1. **Articulatory Phonetics** – How the vocal tract shapes sound.

- *Places of articulation* (bilabial, alveolar, velar, etc.)
- *Manners of articulation* (stop, fricative, nasal, approximant...)
- *Voicing* (voiced vs. voiceless)

### 2. **Acoustic Phonetics** – Physical signal (frequency, intensity, duration).

- Waveform, spectrogram, formants (F1, F2, F3)
- Pitch (fundamental frequency, F0)

### 3. **Auditory Phonetics** – How the ear & brain perceive sounds.

- Cochlear mechanics, auditory filters, categorical perception
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## 3. Basic Articulatory Terminology

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| Term                                  | Description                                | Example                             |
|---------------------------------------|--------------------------------------------|-------------------------------------|
| Place of articulation                 | Location where airflow is obstructed       | /p/ = bilabial, /t/ = alveolar      |
| Manner of articulation                | Type of obstruction                        | /s/ = fricative, /m/ = nasal        |
| Voicing                               | Vibration of vocal folds                   | /b/ = voiced, /p/ = voiceless       |
| Airstream mechanism                   | Source of airflow                          | Pulmonic egressive (most languages) |
| IPA (International Phonetic Alphabet) | Standardized symbols for all speech sounds | /ʔ/, /ʔ/, /ʔ/                       |

## 4. From Phones to Phonemes

| Level        | Definition                                         | Illustration                                  |
|--------------|----------------------------------------------------|-----------------------------------------------|
| Phone        | Concrete speech sound, measured acoustically       | [pʔ] vs. [p] in English “pin” vs. “spin”      |
| Phoneme      | Abstract mental category; contrasts create meaning | /p/ vs. /b/ in <i>pat</i> vs. <i>bat</i>      |
| Allophone    | Variant of a phoneme conditioned by context        | [p] vs. [pʔ] are allophones of /p/ in English |
| Minimal pair | Two words differing by a single phoneme            | <i>bat</i> /bæt/ – <i>pat</i> /pæt/           |

## 5. Core Concepts in Phonology

1. **Phonemic Inventory** – Set of phonemes a language uses.
2. **Phonotactics** – Rules governing permissible sound sequences.
  - *Syllable structure* (e.g., CV, CVC)
  - *Onset & coda restrictions* (English permits *str* onset, not *ztr*)
3. **Distinctive Features** – Binary (+/-) properties that differentiate phonemes.

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- [+voice], [+nasal], [+continuant], [+coronal] ...

## 4. Natural Classes – Groups of sounds sharing the same feature set.