The perception of somatosensation requires that all components of the anatomical sensory pathway are intact. The primary anatomical considerations are:

- **Sensory Receptors** – each responds to a specific type of stimulation
  - Mechanoreceptors (cutaneous and deep [muscle, tendon and joint proprioceptors]) – respond to:
    - Touch
    - Pressure
    - Stretch
    - Vibration
  - Chemoreceptors – respond to chemicals released by cells secondary to inflammation, injury or infection
  - Thermoreceptors – respond to changes in temperature

- **Afferent nerve fibers from sensory receptors**
- **Sensory cell body** – located in the dorsal root ganglia
- **Spinal cord or brainstem synapses**
- **Sensory pathways or tracts**
  - Spinothalamic tracts
    - Anterolateral spinothalamic tracts (ALSpTh)
      - Nociceptive (pain) and thermal
      - Crude touch
    - Fibers cross to opposite side of spinal cord within a few segments
  - Dorsal Columns/ Medial Lemniscus system (DC/ML)
    - Discriminatory touch
      - Stereognosis
      - Barognosis
      - Graphesthesia
      - Texture recognition
    - Two-point discrimination
    - Pressure
    - Kinesthesia
    - Proprioception
    - Vibration
    - Fibers remain uncrossed until the level of the medulla
  - Spino cerebellar Tracts (SC)
    - Unconscious sensation for motor control

- **Primary Synaptic connections within the brain**
  - Thalamus
  - Somatosensory cortex
  - Reticular formation
  - Cerebellum
  - Vestibular cortex