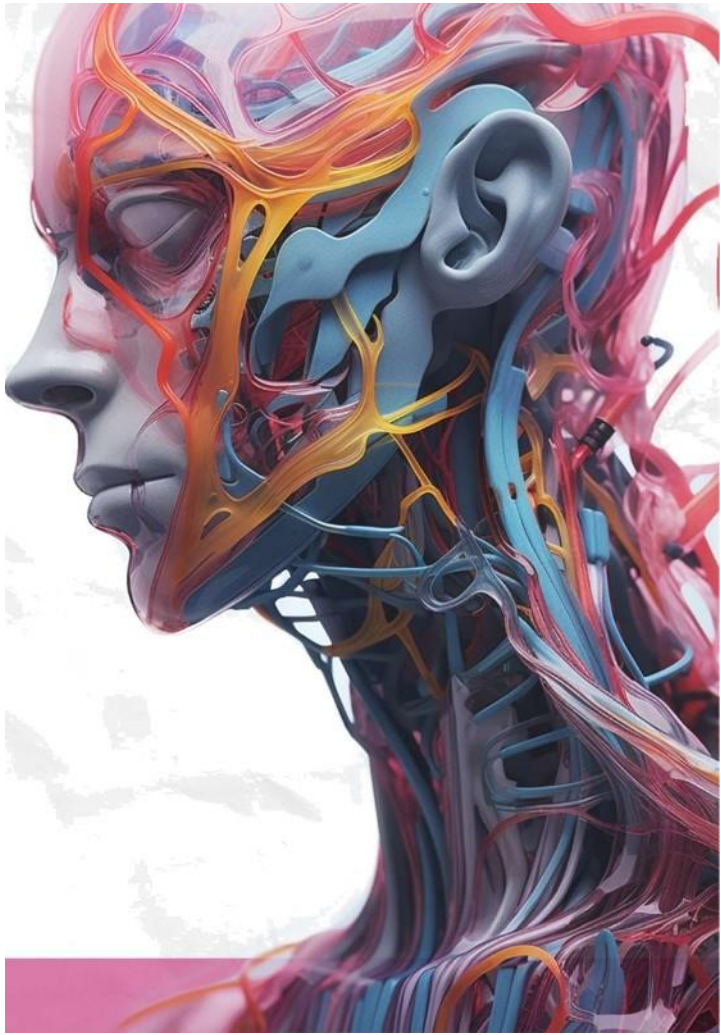
HEAD and NECK

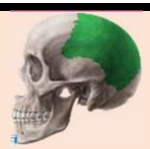
Summary

Bones of skull(that covers and protect the brain and provides facial sk.),orbit
vertebral bone, Cranial Cavities

Lecture's information in this colour



Bones of skull – Cranial bones

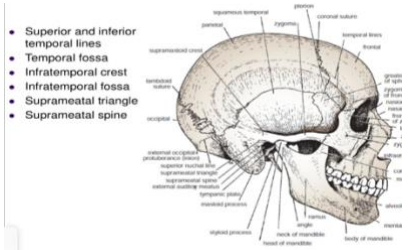
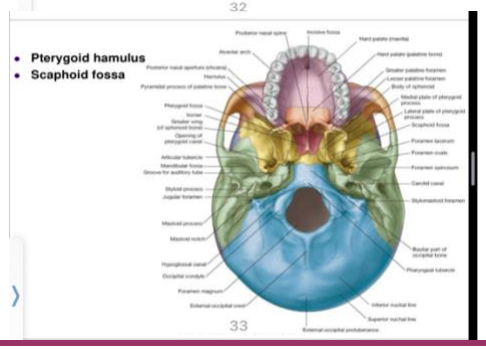
Name	Content	Features	Figure
Frontal (1)	1. Frontal squama (a thick plate of bone) 2. Supraorbital margin 3. Supraorbital foramen (forms the roof of the orbit) 4. Frontal sinuses	• Makes forehead	
Parietal (2)	• external surface convex • internal surface concave	• Quadrilateral shape • Inferior border : bevelled • Other borders : denticulat	
Ethmoid (1)	1. Lateral masses (the wall between the nasal cavity and the orbits). 2. Perpendicular plate forms the superior portion of the nasal septum. 3. Cribriform plate (horizontal) lies in the anterior floor of the cranium and forms the roof of the nasal cavity => olfactory foramina => olfactory I nerves 4. Crista galli: triangular process(point of attachment for the falx cerebri). 5. Superior and middle nasal concha	• Delicate bone located in the anterior part of the cranial floor between the two orbits (spongelike in appearance) forms: 1) part of the anterior portion of the cranial floor 2) medial wall of the orbits 3) the superior portion of the nasal septum (perpendicular plate) 4) superior sidewalls of the nasal cavity	
Sphenoid (1)	• Body (hollowed, cubelike medial portion between the ethmoid and occipital bones) , Sphenoidal sinus (paranasal sinuses) drains via a narrow opening into the superior aspect of the nasal cavity. • Sella turcica: bony, saddle-shaped structure, we see it from superior side. • Greater wings (project laterally from the body forming the anterolateral floor of the cranium) • Tuberculum sellae (anterior ridge) • Lesser wings (anterior and superior to the greater wings, they form part of the floor of the cranium and the posterior part of the orbit of the eye) • Hypophyseal fossa (depression contains the	• Middle part of the base of the skull, keystone of the cranial floor (butterfly),articulation with all cranial bones. • foramen: 1. Optic foramen (anterior to the sella turcica, the optic II nerve and ophthalmic artery pass into the orbit), it passage way between middle cranial fossa and optic cavity. 2. Superior orbital fissure (triangular slit, lateral to the body, between greater and lesser wings, anterior view of the orbit), passage way for third,forth and sixth cranial nerves. 3. Rotundum (junction of the anterior and	

	pituitary gland). • Pterygoid processes (two processes,medial and lateral, we see them in base of skull. They extend from the inferior part of the sphenoid bone, lateral posterior region of the nasal cavity), articulation with palatine bone inferiorly. • Dorsum sellae (forms the back of the saddle,posterior ridge) • Pterygoid hamulus • Scaphoid fossa, it superior end to medial pterygoid.	medial parts of the sphenoid bone, the maxillary branch of trigeminal V nerve), passage way between middle cranial and ptregopalatine fossea. 4. Ovale (base of the lateral pterygoid process in the greater wing(mandibular branch of trigeminal)). 5. Spinosum (lies at the posterior angle of the sphenoid and transmits the middle meningeal blood vessels. 6. Lacerum (is bounded anteriorly by the sphenoid bone and posteriorly by temporal and occipital bone), it filled by cartilage.	
Temporal (2)	• Temporal squama (thin, flat) • Mandibular fossa (socket on the inferoposterior surface of the zygomatic process of the temporal bone), articulation with condyle process in mandible. • zygomatic process • Articular tubercle (rounded elevation anterior to the mandibular fossa) • Tympanic process • Petrous portion (pyramidal,located at the base of the skull between the sphenoid and occipital bones) 1.internal and middle ear 2.carotid foramen 3.jugular foramen. • Mastoid process(is a rounded projection of the mastoid portion posterior and inferior to the external auditory meatus), it is muscle attachment to sternocledomastoid. • Styloid process (projects inferiorly from the inferior surface of the temporal bone), it is muscle attachment to sylohyoid muscle.	• Stylomastoid foramen (facial nerve and stylomastoid artery passes) • Internal auditory meatus (facial VII and vestibulocochlear VIII) • External auditory meatus • Carotid canal • Jugular foramen: posterior to the carotid foramen and anterior to occipital bone, passage way for jugular vein. • There are 2 temporal lines in temporal bone (superior and inferior), extend anteriorly from frontal bone and posteriorly curved and reach to mastoid process.	

Occipital (1)	1. Occipital condyles (two oval processes with convex surfaces, one on either side of the foramen magnum), articulation with first cervical vertebral. 2. External occipital protuberance (superior to the foramen magnum the most prominent midline projection on the posterior surface of the bone) 3. superior and inferior nuchal lines	• Foramen magnum (medulla oblongata, the vertebral arteries, spinal arteries and accessory XI nerve) • Hypoglossal canal (superior to each occipital condyle on the inferior surface of the skull) , (hypoglossal XII nerve)	

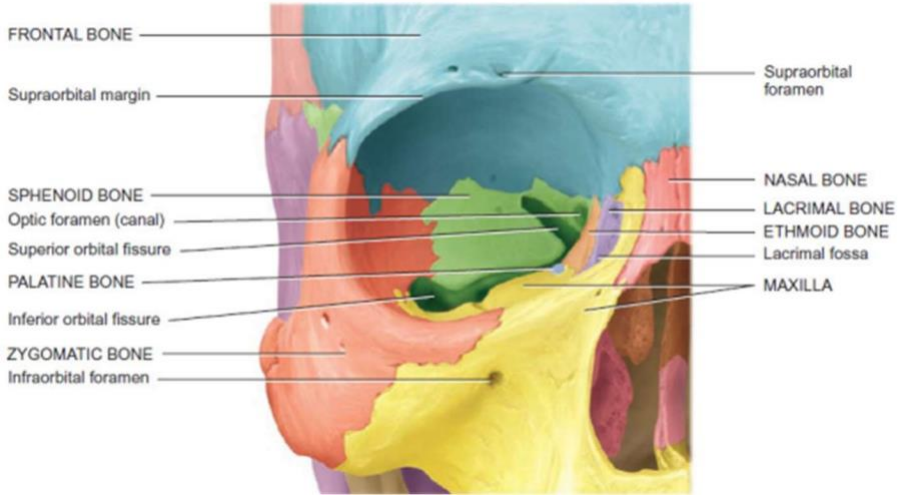
Bones of skull – Facial bones

Name	Content	Features	Figure
Zygomatic(2)	Temporal process projects posteriorly and articulates with the zygomatic process of the temporal bone (zygomatic arch)	Lateral wall and floor of each orbit Zygomaticofacial foramen (center of the zygomatic bone zygomaticofacial nerve and vessels).	
Maxilla (2)	Maxillary sinus: central body Alveolar proces ridge-like arch that contains the alveoli. Palatine process horizontal projection of the maxilla that forms the anterior three quarters of hard palate. Infraorbital foramen Inferior orbital fissure: between the greater wing of the sphenoid and posterior aspect of the maxilla.	Paired, separated by inter maxillary, form part of the floors of the orbits, part of the lateral walls and floor of nasal cavity and most of hard palate.	
Nasal(2)	Two flat bone. external nose contains two part, bony and cartilage.	Small, flattened, rectangular-shaped bones that form theof the nose	
Lacrimal (2)	lacrimal fossa: a vertical tunnel formed with the maxilla(lacrimal sac)	Thin and fingernail in size and shape, posterior and lateral to the nasal bones and form a part of the medial wall of orbit.	
Vomer (1)	In medial wall of nasal cavity, it cartilaginous part anteriorly.	• Triangular bone • Superiorly: with the perpendicular plate of the ethmoid bone and inferior surface the sphenoid bone. • Inferiorly: with both the maxillae and palatine forms inferior portion of the bony nasal septum..	

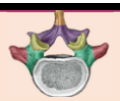
Palatine (2)	horizontal platesvertical plate	Paired posterior portion of the hard palate(, the anterior part of hard palate is maxillary and posterior part is palatine)Horizontal plates separates the nasal cavity fromthe oral cavity.	
Inferior Conchae (2)	3 (superior, middle and inferior)	Inferior to the middle nasal conchae of the ethmoid bone	
Mandible (1)	• Body :curved,horizontal portion • Rami: two perpendicular portions • Condylar process: articulates with the mandibular fossa and articular tubercle of the temporal bone. • Coronoid process: temporalis muscle attachment. • Mandibular notch: depression between the coronoid and condylar processes, passage way for masitric nerve and artery. • Alveolar process: ridge-like arch containing the alveoli mandibular teeth.(alveolar process=>alveolar socket =>root of teeth) • Mental spines(4 spines, 2 superiorly and 2 inferiorly) • Mylohyoid line: from mental spines to an area below and behind the third molar tooth. • Submandibular fossa(below mylohyoid line) • Sublingual fossa(above mylohyoid line) • Digastric fossa attached to digastric muscle) • Suprameatal triangle, it locates above meatuand accesses to mastoid antrum. • Pterygoid hamulus, it inferior end to medial pterygoid..	Arch shaped bone largest,strongest facial bone,the only movable skull bone. • Angle : : body meets the ramus , obtuse • Lingula: (tongue like) for the attachment of the sphenomandibular L. • Mandibular foramen: on the medial surface of each ramus. • Mental foramen: inferior to the second premolar tooth, opening to long canal(inferior alveolar canal) and it passage way for inferior alveolar nerve, tipis important in clinical cases in mandibular teeth.  32  33	؟ 

The Orbit

ROOF	parts of the frontal and sphenoid bones
LATERAL WALL:	frontal and sphenoid bones
MEDIAL WALL:	parts of the maxilla, lacrimal, ethmoid, and sphenoid
FLOOR	: parts of the maxilla, zygomatic, and palatine bones



Vertebral Bones

Bone	content	features	Figure
Typical Vertebra	• Body • Vertebral arch • 2 Pedicles • 2 laminae • 7 processes	Mostly found	
Atlas (C1)	• Communicates superiorly with skull (atlanto occipital j), inferiorly with axis	• (ring-like bone) • no body • no spinous process	

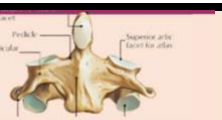
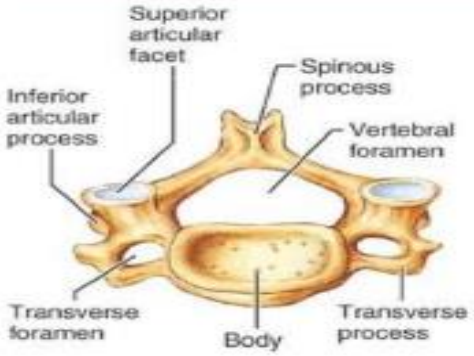
	(atlanto-axial j). • ant. & post. Arches • 2 lateral masses • 2 transverse foramina		
Axis (C2)ة	Dens body And other content like typical	Odontoid process (dens= tooth): binds to atlas at A-A join	
Hyoid bone (not vertebral)	body, two greater horns, andtwo lesser horns.	central quadrilateral-shaped	

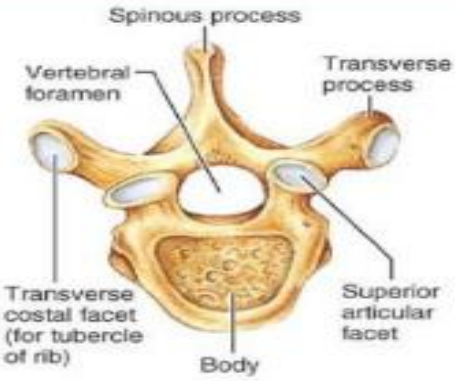
TABLE 7.2 Regional Characteristics of Cervical, Thoracic, and Lumbar Vertebrae

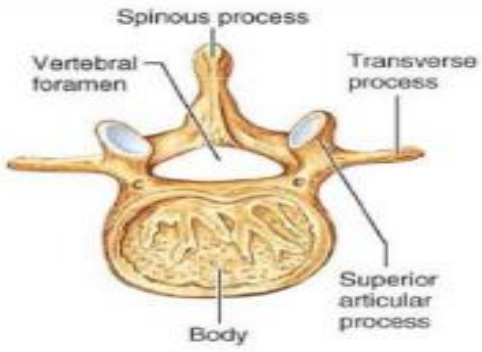
CHARACTERISTIC	CERVICAL (3–7)	THORACIC	LUMBAR
Body	Small, wide side to side	Larger than cervical; heart shaped; bears two costal facets	Massive; kidney shaped
Spinous process	Short; bifid; projects directly posteriorly	Long; sharp; projects inferiorly	Short; blunt; projects directly posteriorly
Vertebral foramen	Triangular	Circular	Triangular
Transverse processes	Contain foramina	Bear facets for ribs (except T_{11} and T_{12})	Thin and tapered
Superior and inferior articulating processes	Superior facets directed superoposteriorly	Superior facets directed posteriorly	Superior facets directed posteromedially (or medially)
	Inferior facets directed inferoanteriorly	Inferior facets directed anteriorly	Inferior facets directed anterolaterally (or laterally)
Movements allowed	Flexion and extension; lateral flexion; rotation; the spine region with the greatest range of movement	Rotation; lateral flexion possible but limited by ribs; flexion and extension prevented	Flexion and extension; some lateral flexion; rotation prevented

CERVICAL (3–7)	THORACIC	LUMBAR

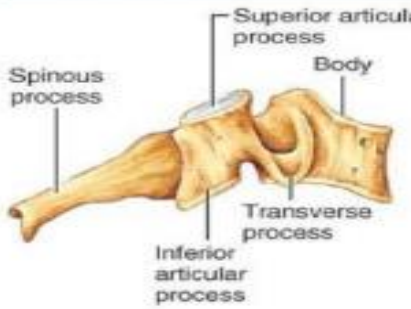
SUPERIOR VIEW

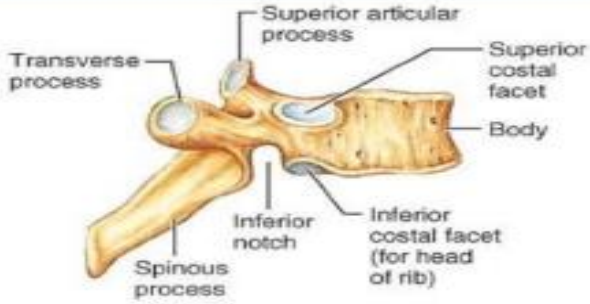


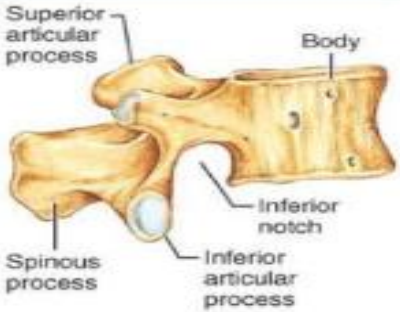




RIGHT LATERAL VIEW



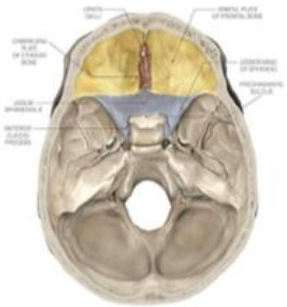


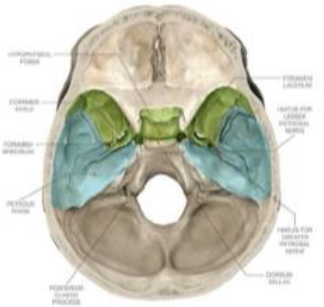


Cranial vault	
Sutures	• Coronal suture (between frontal and 2 parietals) • Sagittal suture (between 2 parietals). • Lambdoid suture (between 2 parietals and occipital).
Points	• Bregma (intersection of sagittal and coronal sutures) • Vertix (sup. Topmost point of the cranium) • Lambda (intersection of sagittal and lambdoid sutures). • Pterion (sup. To midpoint of zygomatic arch, indicated by H-shaped sutures, very dangerous area, because it weakest point and the middle meningeal artery is located below it).

Neonatal skull	
Fontanelles	Unossified membranous intervals
Anterior fontanelle	(Diamond) closed by 18 months
Posterior fontanelle	(Triangular) closed by 12 months
Other features	• Large cranium relative to the face. • No mastoid process. • Angle of the mandible is obtuse.

Cranial Fossea





anterior cranial fossa	
BOUNDARY LINE	Anterior and lateral - inner surface of the frontal bone Posterior - sphenoid bone Postero-medial - anterior border of the chiasmatic sulcus Postero-lateral - lesser wings of the sphenoid bone
CONTENT	• Frontal lobe of the cerebral cortex • Olfactory bulb • Olfactory tract • Orbital gyri
FORAMINA	• Cribriform foramina (olfactory foramina) • Foramen cecum • Anterior and posterior ethmoidal foramina

Middle cranial fossa	
BOUNDARY LINE	Anteriorly - anterior margin of the chiasmatic groove, posterior margins of the lesser wings, and part of the body of sphenoid bone Posteriorly - superior borders of the petrous part of the temporal bones, dorsum sellae of the sphenoid Laterally - squamous parts of the temporal bones, greater wings of the sphenoid bone, and part of the parietal bones
CONTENT	• Pituitary gland • Temporal lobes of the cerebral cortex
FORAMINA	• Optic canal • Superior orbital fissure • Foramen rotundum • Foramen ovale • Foramen spinosum • Carotid canal • Foramen lacerum • Hiatus of the greater petrosal nerve • Hiatus of the lesser petrosal nerve

Posterior cranial fossa

Boundary line	Anteriorly - dorsum sellae, superior margins of the petrous parts of the temporal bones Posteriorly - squamous part and internal occipital protuberance of the occipital bone, groove for the transverse sinus Laterally - petrous and mastoid parts of the temporal bones, lateral parts of the occipital bone
Content	• Brainstem • Cerebellum
Foramina	• Foramen magnum • Hypoglossal canal • Condyloid foramen • Jugular foramina • Mastoid foramen • Internal acoustic meatus • Opening of the vestibular canaliculus