Goals: This series of lectures, the articles review and exercises should enable the resident to:
1. Define the various craniofacial anatomical structures.
2. Know selected cephalometric analyses and their interpretations.
3. Understand and use the Bolton standards templates.
4. Apply different methods of superimposition.

Objectives: At the end of this series, the resident should know how to:
1. Trace the basic cephalometric landmarks.
2. Apply the different cephalometric analyses to the same headfilms and interpret them according to the respective references.
3. Superimpose and compare treatment and growth changes between different lateral cephalometric X-rays.
COURSE DURATION AND SCOPE: This course is scheduled between October and December for the first year residents. It is given every Friday at a 1.5-hour session between 8:00 a.m. and 9:30 a.m. It includes the basics of cephalometric analysis that are pre-requisite to establish proper diagnosis and treatment plan.

POLICY ON EXAMINATIONS: One exam is given for this course, scheduled during the progress examination in December. During the course, a number of progress tests or assignments may be given. Their cumulative weight in proportion to the final grade may not exceed 50%.

CEPHALOMETRIC ANALYSIS

- CEPHALOMETRIC ANATOMY
- CEPHALOMETRIC LANDMARKS OF THE CRANIUM
- TRACING TECHNIQUES
- LINES AND PLANES
- CEPHALOMETRIC ANALYSES (CLINICAL CEPHALOMETRICS)
- SUPERIMPOSITION
- OTHER ANALYSES

SUMMARY OUTLINE

- OVERVIEW

COURSE OUTLINE

1. OVERVIEW

A. Definitions
   a. Anthropology
   b. Anthropometry
   c. Craniometrics
   d. Cross-sectional analysis

B. Historical overview
   a. B.Holly Broadbent
   b. Bolton-Brush Growth study center
   c. Case Western Reserve University-1931
   d. Cephalometer
   e. Longitudinal analysis
   f. Lateral & Frontal cephalograms
   g. Developmental growth of the face

C. Functions of cephalometrics
   a. Describe facial patterns
   b. Analyze normal growth
   c. Treatment design
   d. Analyze treatment changes
2. CEPHALOMETRIC ANATOMY

A. Landmarks
B. Anterior cranium
   a. Frontal bone
   b. Nasal bone (Nasion)
   c. Ethmoid bone
   d. Malar bone (Orbitale)
C. Posterior cranium
   a. Sphenoid bone (Sella, sphen-occipital synchondrosis)
   b. Pterygomaxillary fissure (Pt point)
   c. Occipital bone (Bolton point, Basion)
   d. Temporal bone (external auditory meatus, Porion)
D. Maxillo-mandibular
   a. Maxilla (ANS, PNS, A point)
   b. Mandible (B point, Pogonion, PM point)
E. Dental
   a. Maxillary teeth
   b. Mandibular teeth

3. CEPHALOMETRIC LANDMARKS OF THE CRANIUM

A. Lines
   a. Frankfort horizontal
   b. Pterygoid vertical
B. Points
   a. Center of face point
   b. Center of cranium
   c. XI point
   d. DC point
   e. Gonion
   f. Gnathion

4. TRACING TECHNIQUES

A. Soft tissue structures – Profile
B. Craniofacial structures
a. Nasal bone
b. Orbit
c. Key ridge
d. Pterygoid palatine fossa
e. Sphenoid-occipital region
f. External auditory meatus
g. Maxilla (hard palate)
h. Vertebrae (odontoid process)
i. Mandible (condyle and coronoid process)

C. Nasopharyngeal airway structures
   a. Soft palate
   b. Hyoid bone

D. Dental structures
   a. Teeth

5. LINES AND PLANES

A. Craniofacial region
   a. Frankfort Horizontal (FH)
   b. Pterygoid Vertical (PTV)
   c. Basion-Nasion (BA-N)
   d. SN Line (S-N)
   e. Facial plane (N-Po)
   f. Mandibular plane (MP)
   g. Facial Axis (FA)

B. Maxillomandibular region
   a. Condylar axis (DC-XI)
   b. ANS-XI Line (ANS-XI)
   c. Corpus Axis (XI-PM point)
   d. A Pogonion line (A-Po)

C. Dental region
   a. Occlusal Plane (Functional)
   b. Long axis of incisors

D. Soft tissue
   a. Esthetic Line (E-line)

6. CEPHALOMETRIC ANALYSES (CLINICAL CEPHALOMETRICS)
A. Down’s Analysis
   a. Landmarks and planes
   b. Skeletal pattern
   c. Facial Plane angle
   d. Angle of convexity
   e. A-B Facial plane
   f. Mandibular plane angle
   g. Y-axis angle
   h. Denture analysis
   i. Occlusal plane angle
   j. Interincisal angle
   k. Lower incisor to mandibular plane
   l. Tweed triangle
   m. Lower incisor to Occlusal Plane
   n. Upper incisor to APo line

B. Modified Steiner/Riedel Analysis
   a. SNA angle
   b. SNB angle
   c. ANB angle
   d. Upper incisor to SN
   e. Upper incisor to NA (linear)
   f. Upper incisor to NA (angle)
   g. Lower incisor to NB (angle)
   h. Lower incisor to NB (linear)
   i. Pogonion to NB

C. Ricketts Analysis
   a. Overview
   b. Lines and planes
   c. Facial Axis angle
   d. Facial angle
   e. Mandibular plane angle
   f. Lower Face height
      g. Mandibular arc
   h. Maxillary depth
   i. Convexity
   j. Mandibular Incision inclination
   k. Mandibular Incision protrusion
   l. Lower lip to E-line
7. - SUPERIMPOSITION

A. Mandibular
   a. Mandibular changes
   b. Maxillary molar change
B. Maxilla
   a. Maxillary change
C. Lower teeth
   a. Mandibular tooth changes
D. Upper teeth
   a. Maxillary tooth changes
E. Soft tissue
   a. Soft tissue profile changes

8. OTHER ANALYSES

A. Witts appraisal
B. McNamara’s analysis
C. The Bolton standards

REFERENCES