Goals: This series of lectures should enable the resident to:

1. Complement his/her initial knowledge of and experience in cephalometrics with information on its scope and limitations, including:
   a. the effect of landmark identification on cephalometric measurements.
   b. misinterpreting information on growth and treatment outcome gathered from serial cephalographs.
2. Learn the philosophy of proportional cephalometric analysis, fully illustrated in the mesh diagram analysis.
3. Develop critical insights on frontal cephalometry.

Objectives: The resident should know:

1. How to use information on the errors and limitations of cephalometry to apply the associated guidelines derived for more accurate and critical use of cephalometric analyses.
2. How to integrate information gathered from linear and angular measurements with data from regional superimpositions (cranial base, maxillary, mandibular).
3. How to evaluate and formulate conclusions on mandibular displacement during treatment and/or growth not only from cranial superposition, but also from maxillary superposition.
4. The philosophy and rationale behind, as well as application and interpretation of findings from the mesh diagram analysis.
5. The role and details of frontal cephalometry in the complete three-dimensional cephalometric diagnosis.

COURSE DURATION AND SCOPE: This course is an adjunct to the courses on Cephalometrics. It includes information that complements or supplements knowledge on radiographic assessment of the craniofacial complex. It is given at a 2-hour session on a weekly basis (5 weeks) and imparts fundamental knowledge that is important for treatment planning and evaluation of orthodontic treatment.

POLICY ON EXAMINATIONS: At least 2 biannual examinations (progress and final) are given for all courses, if a course spans the entire year. If classes terminate before the end of a semester, the final
examination is given at the semi-annual examination that is closest to the end of the course, unless the course director schedules the final examination earlier. During a course, any number of progress tests or assignments may be given. Their cumulative weight in proportion to the final grade may not exceed 50%.

**CEPHALOMETRICS: APPLICATION TO DIAGNOSIS, MESH DIAGRAM, FRONTAL CEPHALOMETRY**

--- **SUMMARY OUTLINE**

- SUMMARY of basic cephalometric information needed for diagnosis of malocclusion
- MISINTERPRETING growth and treatment outcome from serial cephalographs
- EFFECT OF LANDMARK IDENTIFICATION ON CEPHALOMETRIC MEASUREMENTS
- Guidelines for Cephalometric Analyses
- THE MESH DIAGRAM ANALYSIS
- INSIGHTS ON FRONTAL CEPHALOMETRY

--- **COURSE OUTLINE**

### 1. MAKING SENSE OF CEPHALOMETRIC DIAGNOSIS

**Information Sought from Lateral and Posteroanterior Cephalometric Tracing to assist in diagnosis of malocclusion**

<table>
<thead>
<tr>
<th>INFORMATION NEEDED</th>
<th>REPRESENTATIVE MEASUREMENTS</th>
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<tbody>
<tr>
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<td>Sagittal</td>
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<table>
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<tr>
<th>Relationship between</th>
<th>-ANB; Wits appraisal</th>
<th>-Palatal plane/mandibular</th>
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<tbody>
<tr>
<td>jaws plane</td>
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IN CASE OF DISCREPANCY, INFORMATION IS NEEDED ABOUT THE POSITION OF EACH JAW:

- *SNA*:
- J to vertical axis (mm°)
- *SNB*:
- AG to vertical axis (mm°)
- *MP*; MP/SN

<table>
<thead>
<tr>
<th>Relationship between</th>
<th>-Maxillary incisors to</th>
<th>-Inclination of the occlusal</th>
<th>-</th>
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**2. MISINTERPRETING GROWTH AND TREATMENT OUTCOME FROM SERIAL CEPHALOGRAPHS**

Effect of spatial displacement of nasion, point A and point B on SNA and SNB.

Example:
In a Class II, division 1 malocclusion.

A. Both angles would increase from the forward growth of nasion.

B. A downward movement of point A would account for the decrease of SNA, suggesting that such a decrease does not reflect an absolute retraction of the maxilla with the headgear.

C. A straight downward movement of point B could account for the increase of SNB, signifying that such an increase does not necessarily indicate a forward position of the mandible with the function regulator.

**3. MESH DIAGRAM ANALYSIS**

A. Foundations of the Mesh Coordinate System: Generating an individualized norm
   a. Orientation of The Mesh Coordinate System: Natural Head Position
   b. Mesh Coordinate System study: Construction and Findings

B. Procedure for Mesh utilization
a. Normal location of landmarks within the grid rectangles  
b. Mesh distortion  
c. Mesh superimposition  

C. Mesh transverse analysis  
   Mesh Coordinate System Study:  
   a. Construction  
   b. Frindings  

D. Proportional analysis of the human face and cephalometry in perspective  
   a. Proportion in facial diagnosis  
   b. Cephalometric norms, variations and errors  
   c. The face in all dimensions  

4. INSIGHTS ON FRONTAL CEPHALOMETRY  

A. The complete cephalometric analysis  
   Origin and Development: Prelude to Three-Dimensional Analysis  

B. Frontal analysis  
   a. Structures and landmarks  
   b. Evaluation of symmetry  
   c. Angular and linear analysis  
   d. Proportional analysis  
   e. Errors in frontal cephalometrics  

C. Studies and applications  
   a. Transverse development of the jaws  
   b. Orthopedic treatment with palatal expansion  

D. Posteroanterior cephalometry in perspective  
   a. Relevance of frontal cephalometrics in diagnosis, growth evaluation and treatment  
   b. Anthropometric perspective  

REFERENCES  