

SYLLABUS
ORT 610 - CRANIO-FACIAL FORM
CEPHALOMETRICS FOR THE SPECIALIST
COURSE DIRECTOR: DR. G. THOMAS KLUEMPER

COURSE DESCRIPTION

This is a two credit-hour seminar course that introduces the graduate student to the basic concepts and principles of cephalometrics in diagnosis and treatment. The course places this important diagnostic and treatment evaluation tool into historic as well as contemporary perspective.

COURSE OBJECTIVES

The student will be able to:

1. Identify the anatomic relationships and morphologic features of all the bones in the human cranio-facial complex.
2. Identify all cephalometric landmarks used in the UK analysis and correlate them with the anatomy of the human skull.
3. Perform the UK cephalometric analysis with understanding and accuracy.
4. Compare and contrast the accuracy of the Dolphin Imaging cephalometric analysis with the by-hand version.
5. Describe the historical contribution of cephalometrics to human growth and development, and to orthodontic diagnosis and treatment planning.
6. Discuss, through literature, the significance and essential procedures in the following analyses: Downs, Wylie, Steiner, Ricketts, McNamara, Sassouni, Bjork, and Burstone.

COURSE EVALUATION

The course grade will be determined by:

- quality of seminar preparation and interaction
- performance on practical exams
- performance on comprehensive oral final, combined with ORT 660

**COURSE SCHEDULE
ORT 610**

DIRECTOR: DR. G. THOMAS KLUEMPER
ORT 610: CRANIO-FACIAL FORM

<u>SESSION</u>	<u>TOPIC</u>	<u>INSTRUCTOR</u>
1	Introduction	Dr. Kluemper
2	Cephalometric Analysis: Variations on a Central Diagnostic Theme	Dr. Kluemper
3	Findings on Radiographs Made for Orthodontics	Dr. Yepes
4	“Just Do It”: Tracing a Lateral Cephalometric Head Film	Dr. Kluemper
5	Extraoral Projections for Orthodontic Graduate Students	Dr. Yepes
6	Kentucky Analysis and Interpretation	Dr. Kluemper
7	Kentucky Analysis and Interpretation	Dr. Kluemper
8	“Show me the data!”: Cephalometrics in Research	Dr. Kluemper
9	Film Production for Orthodontics (This portion in Radiology Interpretation Room-D106G)/ Dolphin Interpretation (D412)	Dr. Yepes/Dr. Kluemper
10	Cephalometric Interpretation	Dr. Hicks
11	Superimposition	Dr. Hicks
12	Surgery Predictions/Tracing Part I	Dr. Kluemper
13	Advanced Imaging Techniques	Dr. Yepes
14	Cephalometric History	Dr. Hicks
15	Tweed & Steiner Analysis	Dr. Hicks
16	Ricketts & McNamara Analyses/ Dolphin Report	Dr. Kluemper
17	Sassouni & Bjork Analyses	Dr. Hicks
18	Landmark Practical Exam	Dr. Kluemper
19	Frontal Analysis and Template Analysis	Dr. Hicks

COURSE OUTLINE AND READING ASSIGNMENTS

SESSION 1: INTRODUCTION

DR. KLUEMPER

(For session #2: read all of the following articles and be prepared to lead the discussion on the paper to which you are assigned)

SESSION 2: CEPHALOMETRIC ANALYSIS: VARIATIONS ON A CENTRAL DIAGNOSTIC THEME

DR. KLUEMPER

(For session # 4: Complete the CD Computer Assisted Module, Part I, II and III, and complete cephalometric tracing on C.S. and prepare to report values and summaries, reference articles listed)

Assigned articles listed below:

1. Steiner CC: The use of cephalometrics as an aid to planning and assessing orthodontic treatment. Am J Orthod 46:721-735, 1960.
2. Tweed CH: The Frankfort-mandibular incisor angle (FMIA) in orthodontic diagnosis, treatment planning and prognosis. Angle Orthod 24: 121-169, 1954.
3. Cooke MS: Five-year reproducibility of natural head posture: a longitudinal study. Am J Orthod Dentofacial Orthop 97: 489-494, 1990.
4. Sassouni VA: A classification of skeletal facial types. Am J Orthod 55:109-123, 1969.
5. Kim JC, Masacarenhas AK, Joo BH, Vig KWL, Beck FM, Vig PS: Cephalometric variables as predictors of Class II treatment outcome. Am J Orthod 118:636-640, 2000
6. Jacobson A: The “Wits” appraisal of jaw disharmony. Am J Orthod 67: 125-138, 1975.
7. McNamara JA Jr, Brudon WL: Cephalometric Evaluation, Ch. 28 in Orthodontics and Dentofacial Orthopedics (2001), 487-517.
8. Proffit, W.R.: Contemporary Orthodontics: Pages 170-185

SESSION 3: FINDINGS ON RADIOGRAPHS MADE FOR ORTHODONTICS

DR. YEPES

SESSION 4: “JUST DO IT” TRACING A LATERAL CEPHALOMETRIC HEAD FILM

DR. KLUEMPER

(For session #6 and 7, complete cephalometric analysis on patient assigned with full records and prepare to make case presentation)

Recommended resources:

1. UK Cephalometric Procedure Manual
2. Van der Linden, FPGM: A study of roentgenocephalometric bony landmarks. AJO 59 (2): 111-125, February 1971.

3. Cephalometric Landmark & Anatomic Correlations. (CD Rom) by Dr. E. Preston Hicks

4. Krogman and Sassouni: Chapter III. Atlas (handout).

SESSION 5: EXTRAORAL PROJECTIONS FOR ORTHODONTICS DR. YEPES

SESSION 6: KENTUCKY ANALYSIS AND INTERPRETATION DR. KLUEMPER

1. UK Cephalometric Procedure Manual

SESSION 7: KENTUCKY ANALYSIS AND INTERPRETATION DR. KLUEMPER

1. UK Cephalometric Procedure Manual.
(for session #8, everyone read paper by Tulloch, et al, and read paper to which you are assigned and prepare to lead discussion on that material)

SESSION 8: "SHOW ME THE DATA!" CEPHALOMETRICS IN ORTHODONTIC RESEARCH DR. KLUEMPER

All students will need to read the article listed below:

Tulloch JFC, Proffit WR, Phillips C: Outcomes in a 2-phase randomized clinical trial of early Class II treatment. AJODO 125:657-667, 2004.

Assigned articles listed below:

1. Hamilton, DC: The emancipation of dentofacial orthopedics. AJODO 113:7-10, 1998.
2. Baccetti T, Franchi L, McNamara JA: Cephalometric variables predicting the long-term success or failure of combined rapid maxillary expansion and facial mask therapy. AJODO 126:16-22, 2004.
3. Kajiyama K, Murakami T, Suzuki A: Comparison of orthodontic and orthopedic effects of a modified maxillary protractor between deciduous and early mixed dentitions. AJODO 126: 23-32, 2004.
4. Ko Y, Bak S, Mah J, Yang W: Determinants of successful chin cup therapy in skeletal Class III malocclusion. AJODO 126:33-41.
5. Yehezkel S, Turley PK: Changes in the African American female profile as depicted in fashion magazines during the 20th century. AJODO 125:407-417, 2004.
6. Baik HS, Jee, SH, Lee KJ, Oh TK: Treatment effects of Frankel functional regulator III in children with Class III malocclusions. AJODO 125:294-301, 2004.
7. Saitoh K: Long-term changes in pharyngeal airway morphology after mandibular setback surgery. AJODO 125:556-561, 2004.
8. Schaefer AT, McNamara JA, Franchi L, Baccetti T: A cephalometric comparison of treatment with the Twin-block and stainless steel crown Herbst appliances followed by fixed appliance therapy. AJODO 126:7-15, 2004.

SESSION 9: FILM PRODUCTION FOR ORTHODONTICS/ DRS. YEPES/KLUEMPER

DOLPHIN INTERPRETATION

SESSION 10: CEPHALOMETRIC INTERPRETATIONS

DR. HICKS

1. Sarhan OA: Sella-Nasion line revisited. *Journal of Oral Rehabilitation* Dec; 22(12): 905-908, 1995.
2. Fine M: Commentary: Skeletal jaw relationships. *The Angle Orthodontist* 64(4):309-310, 1994.
3. Nanda RS, Merrill RM: Cephalometric assessment of sagittal relationship between maxilla and mandible. *AJODO* 105(4):328-344, 1994.
4. Hall-Scott J: The maxillary-mandibular planes angle (MM) bisector: A new reference plane for anteroposterior measurement of the dental bases. *AJODO* 105(6):583-591, 1994.
5. Moorrees CFA: Natural head position--a revival. Guest Editorial. *AJODO* 105(5):512-513, 1994.
6. Practice exercises

SESSION 11: SUPERIMPOSITION

DR. HICKS

Composite Tracing Procedures (handout)

Sakima MT, Sakima CG, Melsen B: The validity of superimposing oblique cephalometric radiographs to assess tooth movement: an implant study. *AJODO* 126:344-353, 2004.

Ghafari J, Engel FE, Laster LL: Cephalometric superimposition on the cranial base: a review and a comparison of four methods. *AJODO* 91:403-413, 1987.

Assigned articles listed below:

1. Baumrind S, Korn EL, Ben-Bassat Y, West EE: Quantitation of maxillary remodeling. 1. A description of osseous changes relative to superimposition on metallic implants. *AJODO* 91:29-41, 1987.

Baumrind S, Korn EL, Ben-Bassat Y, West EE: Quantitation of maxillary remodeling. 2. Masking of remodeling effects when an "anatomical" method of superimposition is used in the absence of metallic implants. *AJODO* 91:463-474, 1987.
2. Springate SD, Jones AG: The validity of two methods of mandibular superimposition: a comparison with tantalum implants. *AJODO* 113:263-270, 1998.
3. Iseri H, Solow B: Growth displacement of the maxilla in girls studied by the implant method. *European Journal of Orthodontics* 12: 389-98, 1990.
4. Baumrind S, Ben-Bassat Y, Korn EL, Bravo LA, Curry S: Mandibular remodeling measured on cephalograms: 2. A comparison of information from implant and anatomic best-fit superimpositions. *AJODO* 102:227-238, 1992.
5. Cook AH, Sellke TA, BeGole EA: The variability and reliability of two maxillary and mandibular superimposition techniques. Part II. *AJODO* 106:463-471, 1994.

6. Iseri H, Solow B: Average surface remodeling of the maxillary base and the orbital floor in female subjects from 8 to 25 years. An implant study. *AJODO* 107: 48-57, 1995.
7. Efstratiadis SS, Cohen G, Ghafari J: Evaluation of different growth and orthodontic treatment outcome by regional cephalometric superpositions. *Angle Orthodontist* 114(6):709-712. 1998.
8. Arat ZM, Rubenduz M, Akgul AA: The displacement of craniofacial reference landmarks during puberty: a comparison of three superimposition methods. *Angle Orthodontist* 73:374-380, 2003.

SESSION 12: SURGERY PREDICTIONS/TRACING PART I

DR. KLUEMPER

Proffit WR and White RP: Cephalometric and cast prediction as a treatment planning tool. In Surgical-Orthodontic Treatment (St. Louis: Mosby-Year Book Inc., 1991), pp. 169-191.

SESSION 13: ADVANCED IMAGING TECHNIQUES

DR. YEPES

SESSION 14: CEPHALOMETRIC HISTORY

DR. HICKS

1. Hellman M: The face and occlusion of the teeth in man. *The International Journal of Orthodontia, Oral Surgery and Radiography* 13:921-945, 1927.
2. Broadbent BH: A new x-ray technique and its application to orthodontia. *The Angle Orthodontist* 1:45-66, 1931.
3. Brodie AG: Cephalometric roentgenology: History, technics and uses. *Journal of Oral Surgery* 7:185-198, 1949.
4. Thurow RC: Cephalometric methods in research and private practice. *The Angle Orthodontist* 21:104-116, 1951.

SESSION 15: TWEED AND STEINER ANALYSES

DR. HICKS

1. Tweed, CH: Clinical Orthodontics (St. Louis, Missouri: C.V. Mosby, 1966), Vol. I, pp. 13-82.
2. Steiner CC: The use of cephalometrics as an aid to planning and assessing orthodontic treatment. *AJO* 46:721-735, 1960.
3. Steiner CC: Instructions for using cephalometric measurements for treatment planning and assessment as used in the Steiner analysis.

SESSION 16: RICKETTS AND McNAMARA ANALYSES/DOLPHIN REPORT

DR. KLUEMPER

1. Ricketts R: Perspectives in the Clinical Application of Cephalometrics. *Angle Orthodontist* 51 (2): 115-150, 1981.
2. McNamara JA Jr, Brudon WL: Cephalometric Evaluation, Ch. 28 in Orthodontics and Dentofacial Orthopedics (2001), 487-517.

SESSION 17: SASSOUNI AND BJORK ANALYSES

DR. HICKS

1. Bjork A: The nature of facial prognathism and its relationship to normal occlusion of the teeth. AJO 37:106-124, 1951.
2. Enlow D: Bjork analysis, in Handbook of Facial Growth (1982), 320-322.
1. Sassouni V: A classification of skeletal facial types. AJO 55:109-123, 1969.
4. Handout: Appendix D, Procedures for Archial Analysis (Sassouni)

SESSION 18: LANDMARK PRACTICAL EXAM

DR. KLUEMPER

SESSION 19: FRONTAL ANALYSIS AND TEMPLATE ANALYSIS

DR. HICKS

1. Johnston, Lysle E. Jr.: Template analysis. JCO 21:585-590, 1987.
2. Grummons DC and Kappeyne van de Coppello MA: A frontal asymmetry analysis. JCO 21:448-465, 1987.
3. Wylie WL: The assessment of anteroposterior dysplasia. Angle Orthod 17:97-109, 1947.
4. Krogman and Sassouni. Chapter III. Atlas.