**Name of Program:** Orthodontic Graduate Residency Program

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**Person completing Report:** Gerald Minick, DDS, MS, MSD

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**University of Colorado Orthodontic Graduate Residency Program**

The University of Colorado Post-Graduate Orthodontics Residency Program is 1 of 75 accredited (CODA or CDAC) orthodontic residency programs in the U.S. and Canada. In 2018, the orthodontic residency program had 134 applicants for 15 available positions (an acceptance rate of 11.2%). This incoming class (Class of 2022) had an average dental school GPA of 3.76.

**Learning Outcomes for Students:**

The Department of Orthodontics uses internal and external outcome measures to determine if program goals and objectives are currently being met and to look for ways to address any deficiencies. An overview of the University of Colorado’s Orthodontic residency program with its results can be seen below.

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| **OUTCOMES ASSESSMENT MEASURES & RESULTS** | | | | | | |
| **Outcome Measures** | | Yr 15 | Yr 163 | Yr 17 | Yr 18 | Yr 19 |
| **INTERNAL** | 1. Didactic Course Grades (all courses) | P | P | P | P | P |
| 2. Written Comprehensive Examination (Aug Yr 1 & Feb Yr 3) | P | P | P | P | P |
| 3. Clinical Records Proficiency (Semester 2) | P | P | P | P | P |
| 4. Clinical Case Proficiency (Semester 5) | P | P | P | P | P |
| 5. Graduation ABO–Style Proficiency (Semester 8) | P | P | P | P | P |
| 6. Research Completion, Defense, Manuscript Proficiency | C | C | C | C | C |
| 7. Professional Evaluation | P | P | P | P | P |
| 8. Academic Evaluation | P | P | P | P | P |
| 9. Research Project Evaluation | P | P | P | P | P |
| 10. Summary Resident Evaluation | P | P | P | P | P |
| 11. Student Course Evaluations (semester) | C | C | C | C | C |
| 12. Student Exit Interview (end of program) | C | C | C | C | C |
| **EXTERNAL** | 1. ABO Phase II Written Exam | P | P | P | P | P |
| 2. Graduates Board Certified | D | D | D | D | D |
| 3. Published Manuscripts | D | D | D | D | D |

C = Completion P= Pass D = Data available N= Not available

**Program Goals Objectives:**

The orthodontic residency program has four stated goals with numerous objectives (see below). To address these goals and objectives, the faculty at the residency program uses an “Outcomes Assessment Plan” to specifically address each stated item (see below).

1. Goal I – the clinical care provided in the program is patient-based to provide the student proficiency in orthodontic care and the patient with high-quality care
   1. Objectives
      1. Patient selection to provide a diverse clinical experience appropriate to normal clinical practice
      2. Gather an appropriate and complete data base on each patient to provide a strong foundation for diagnosis, treatment planning, treatment consultation, treatment, and retention of the patient
      3. Use of a problem-based diagnostic and treatment planning strategy for all patients
      4. Utilization of craniofacial growth and development knowledge in planning and carrying out patient treatment
      5. Integration of relevant biological, clinical, and behavioral science into patient treatment
      6. Use of current biomechanical and biomaterial techniques and strategies in patient care
      7. Use of appropriate interdisciplinary consultation and care where appropriate
      8. Application of the principles of infection control and environmental safety to patient care and clinical operations
2. Goal II – the didactics provided to the student are broad-based and provide a strong basis for continued learning and clinical practice
   1. Objectives
      1. Use and understand basic scientific principles
      2. Provide sufficient supporting knowledge to allow the student to appropriately evaluate the literature and interact knowledgeably with other dental specialists
      3. Provide appropriate knowledge on business, legal, and ethical issues to aid the student in managing an orthodontic practice
3. Goal III – the research component of the program provides the foundational knowledge to allow the student to critically evaluate the literature and conduct research
   1. Objectives
      1. Provide familiarity with research design and statistical analysis
      2. Formulate a proposal, carry out a research project, analyze the results, and write the results in a publishable format
      3. Submit a publishable manuscript to a journal as a contribution to the clinical and scientific literature
      4. Develop characteristics of a life-long learner in the student
4. Goal IV – the service portion of the program will encourage the student toward socially responsible behavior
   1. Objectives
      1. Activity within organized dentistry, initially by attendance at local and national meetings
      2. Participation in craniofacial deformity and underprivileged patient clinics
      3. Education of non-orthodontists concerning orthodontics

**OUTCOMES ASSESSMENT Plan**

**Goal I Objective 1**

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| **Overall Objective** | Patient selection to provide a diverse clinical experience appropriate to normal clinical practice |
| **Outcomes Assessment Mechanism** | Student case distribution monitored through the following mechanisms:   1. Clinical Coordinator monitoring of patient distribution using Excel, moving to increasing use of Axium 2. Student Program Evaluation 3. Student Exit Interview |
| **How often conducted** | 1. Clinical Coordinator monitoring as patients are distributed (continuous) 2. Student Program Evaluation – end of program 3. Student Exit Interview – end of program |
| **Date to be conducted/ finished by** | 1. Student Program Evaluation – February prior to graduation 2. Student Exit Interview – February prior to graduation |
| **Results expected** | 1. Excellence in all areas. 2. Distribution of number and type of patients evenly between residents |
| **Results achieved** | 1. Clinical monitoring is on-going to provide an even distribution of types and quantity of patients required to provide an appropriate patient care experience 2. Student program evaluations have been conducted with general satisfaction with the program – results are available on-site 3. Student Exit Interviews have been conducted with each of the graduating classes – results are available on-site |
| **Assessment of results** | 1. A formal system of patient distribution and assignment is effective and includes an even and reasonable number of craniofacial anomaly and orthognathic surgical patients- documents are available on site 2. Exit interviews indicate general satisfaction with the program. |
| **Program improvement as a result of data analysis** | 1. Clinical monitoring for even distribution of number and type of patients to residents has been improved by implementing software (axiUm) to monitor distribution. 2. The number of craniofacial anomaly patients have increased steadily due to a close relationship with The Children’s Hospital. |
| **Date of next assessment** | Patient diversity is monitored as patients are distributed (continuous, ongoing basis). |

**Goal I Objective 2**

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| **Overall Objective** | Gather an appropriate and complete data base on each patient to provide a strong foundation for diagnosis, treatment planning, treatment consultation, treatment, and retention of the patient |
| **Outcomes Assessment Mechanism** | The patient data base is established through the recording of appropriate data in the clinical software (axiUm) and monitored when the faculty approves records and the treatment plan for each patient. In addition, they are monitored at each of the following evaluation points:   1. Clinical Records Proficiency 2. Clinical Case Proficiencies |
| **How often conducted** | 1. Faculty approval of records and treatment plan before treatment begins for each patient. 2. Clinical Records Proficiency – semester 2 3. Clinical Case Proficiencies – semester 5, 8 |
| **Date to be conducted/ finished by** | 1. Treatment planning session with faculty 2. Clinical Records Proficiency – April resident year 1 3. Clinical Case Proficiencies – April resident year 2 and January- February of year 3 |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | All residents have passed the required Clinical Proficiencies. Those that do not pass on the initial examination are asked to correct any deficiencies and retake the examination. |
| **Assessment of results** | Clinical Proficiency examinations at one point were all on the same day. This day seemed too long and there was concern that faculty fatigue might lead to a lack of consistency in evaluations. |
| **Program improvement as a result of data analysis** | The Clinical Proficiency examinations were separated so that each class has a separate day of testing. |
| **Date of next assessment** | 1. Faculty approval of records and treatment plans is continuous and ongoing. 2. February 2020 (Clinical Proficiency year 3) |

**Goal I Objective 3**

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| **Overall Objective** | Use of a problem-based diagnostic and treatment planning strategy for all patients |
| **Outcomes Assessment Mechanism** | The problem list, treatment objectives, and treatment plan are recorded in the clinical software (axiUm) and monitored through the following:   1. Faculty approval before beginning treatment 2. Treatment Planning Conferences 3. Clinical Records Proficiency 4. Clinical Case Proficiency 5. Table presentations |
| **How often conducted** | 1. Faculty approval of treatment plan before treatment for every patient 2. Treatment Planning Conferences – 4 to 5 days a week 3. Clinical Records Proficiency – semester 2 4. Clinical Case Proficiencies – semester 5, 8 5. Table presentations- all finished cases reviewed every year |
| **Date to be conducted/ finished by** | 1. Faculty approval of treatment plans- daily 2. Treatment Planning Conferences – 4 to 5 days a week 3. Clinical Records Proficiency – April resident year 1 4. Clinical Case Proficiency – March resident year 2, January- February resident year 3 5. Table presentations- scheduled throughout the year so that all finished cases are reviewed every year. |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | 1. Faculty approval of treatment plans occurs daily. 2. Treatment Planning Conferences occur 4 to 5 days a week 3. Clinical Records Proficiency – April resident year 1 4. Clinical Case Proficiency – March resident year 2, January- February resident year 3 5. Table presentations- scheduled throughout the year so that all finished cases are reviewed every year. |
| **Assessment of results** | 1. Proficiencies demonstrate a 100% pass rate. 2. Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of preparedness in understanding of the principles of diagnosis and treatment planning, on average per class, ranged between approximately 80 to nearly 100%. |

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| **Program improvement as a result of data analysis** | Improvements have been made in the practice management software that allows entering diagnostic, treatment objective, and treatment planning information to be drawn from the management software and stored in the patient’s electronic file. Procedures during the faculty/resident treatment planning conference were improved to assure faculty monitoring of the completion of the software workflows in the management software. |
| **Date of next assessment** | Faculty approval of diagnosis and treatment plans, along with Treatment Planning Conferences occur on a nearly daily basis. The next Clinical Case Proficiency will occur in January-February of 2020. |

**Goal I Objective 4**

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| **Overall Objective** | Utilization of craniofacial growth and development knowledge in planning and carrying out patient treatment |
| **Outcomes Assessment Mechanism** | The treatment plan and treatment of the patient for the appropriate use of craniofacial growth and development are reviewed at each of the following:   1. Faculty approval of treatment plan before beginning treatment 2. Treatment Planning Seminars 3. Clinical Records Proficiency 4. Clinical Case Proficiencies 5. Graduation ABO-Style Proficiency 6. Written Proficiency Examinations |
| **How often conducted** | 1. Faculty approval of treatment plan before beginning treatment- occurs daily 2. Treatment Planning Seminars- 4 to 5 days a week 3. Clinical Records Proficiency – semester 2 4. Clinical Case Proficiency – semester 5 5. Graduation ABO-Style Proficiency – semester 8 6. Written Proficiency Examinations – August 1st Yr & in 3rd Yr |
| **Date to be conducted/ finished by** | 1. Faculty approval of treatment plan before beginning treatment- daily 2. Treatment Planning Seminars – end of each semester 3. Clinical Records Proficiency – April resident year 1 4. Clinical Case Proficiency – April resident year 2 5. Graduation ABO-Style Proficiency – January-February resident year 3 6. Written Proficiency Examinations – August 1st Yr & in 3rd Yr |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Knowledge of craniofacial growth and development is utilized effectively in the management and treatment of growing patients. Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness in understanding human growth and development, on average per class, ranged in percentage from the low 70s to the high 90s. |
| **Assessment of results** | Results have been excellent. The evaluation of growth status is a standardized portion of the diagnostic and treatment planning procedures. Utilizing growth modification is a significant component of patient care delivered. |
| **Program improvement as a result of data analysis** | Maintain excellence in this area. |
| **Date of next assessment** | Faculty approval of treatment plans and Treatment Planning Seminars are ongoing. The next Proficiency will occur in January- February 2020. |

**Goal I Objective 5**

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| **Overall Objective** | Integration of relevant biological, clinical, and behavioral science into patient treatment |
| **Outcomes Assessment Mechanism** | The appropriate integration of biological, clinical, and behavioral sciences into the treatment plan and treatment of the patient are reviewed at each of the following:   1. Treatment Planning Seminars 2. Clinical Records Proficiency 3. Clinical Case Proficiencies 4. Graduation ABO-Style Proficiency 5. Written Proficiency Examinations – August 1st Yr & in 3rd Yr |
| **How often conducted** | 1. Treatment Planning Seminars – 4 to 5 days a week 2. Clinical Records Proficiency – semester 2 3. Clinical Case Proficiency – semester 5 4. Graduation ABO-Style Proficiency – semester 8 5. Written Proficiency Examinations – August 1st Yr & in 3rd Yr |
| **Date to be conducted/ finished by** | 1. Treatment Planning Seminars – end of semester 2. Clinical Records Proficiency – April resident year 1 3. Clinical Case Proficiency – March/April resident year 2 4. Graduation ABO-Style Proficiency – January-February of 3rd year 5. Written Proficiency Examinations – August 1st Yr & in 3rd Yr |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Treatment plans and case presentations demonstrate the integration of relevant biological, clinical, and behavioral science into patient treatment and treatment planning.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to diagnose, treatment plan, and execute orthodontic therapy, on average per class, ranged in percentage from the mid- 80s to the high 90s. |
| **Assessment of results** | Course grades, passing of Proficiency Examinations and Alumni surveys indicate that the desired results have been achieved. |
| **Program improvement as a result of data analysis** | Continued evaluation of treatment planning, patient care, Proficiency Examinations, and course grades are done. Improvements continue to be made in the quality of the didactic course material offered to the resident. |

**Date of next assessment**

Treatment Planning Seminars are assessed 4-5 days a week and are ongoing. The next Proficiency examination is in January-February of 2020.

**Goal I Objective 6**

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| **Overall Objective** | Use of current biomechanical and biomaterial techniques and strategies in patient care |
| **Outcomes Assessment Mechanism** | The treatment plan, treatment, and results of the patient are reviewed at each of the following to assess the use of current biomechanical and biomaterial techniques and strategies:   1. Treatment Planning Conferences 2. Clinical Records Proficiency 3. Clinical Case Proficiency 4. Graduation ABO-Style Proficiency |
| **How often conducted** | 1. Treatment Planning Conferences – 4 to 5 days a week 2. Clinical Records Proficiency – semester 2 3. Clinical Case Proficiency – semester 5 4. Graduation ABO-Style Proficiency – semester 8 |
| **Date to be conducted/ finished by** | 1. Treatment Planning Conferences – 4 days a week 2. Clinical Records Proficiency – April resident year 1 3. Clinical Case Proficiency – April resident year 2 4. Graduation ABO-Style Proficiency – January-February of 3rd year |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Patient presentations and Proficiency Examinations demonstrate that a wide variety of current biomechanical and biomaterial techniques and strategies in patient care are being utilized, including newer bonding materials, the latest self-ligating bracket designs, lingual computer-aided design appliances and temporary osseous anchorage devices, etc.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness in understanding biomechanics, on average per class, ranged in percentage from the low 60s to the mid- 90s. |
| **Assessment of results** | Results have been assessed during the treatment presentations as well as on Clinical Proficiency Examinations and course grades. The assessment indicates good results have been achieved. |
| **Program improvement as a result of data analysis** | The program has continued to evaluate the latest in biomechanics and biomaterials and is utilizing those that appear to have the greatest promise in clinical care. Changes and improvements are made as the materials and techniques change. |

**Date of next assessment**

Treatment Planning Conferences are assessed 4 -5 days a week and are ongoing. The next Proficiency examination is in January- February of 2020

**Goal I Objective 7**

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| **Overall Objective** | Use appropriate interdisciplinary consultation and care where appropriate |
| **Outcomes Assessment Mechanism** | The appropriate use of interdisciplinary consultation and care is monitored by the following:   1. Course grades in courses in other specialty areas (i.e., Ortho- Perio seminar, Advanced Oral Pathology) 2. Treatment Planning Conference 3. Clinical Proficiency Examinations |
| **How often conducted** | 1. Course grades in courses in other specialty areas – semester 2. Treatment Planning Conference – 4 -5 days a week 3. Clinical Proficiency Examinations – 3 times during residency |
| **Date to be conducted/ finished by** | 1. Course grades in courses in other specialty areas – end of semester 2. Treatment Planning Conference – end of semester 3. Clinical Proficiency Examinations – semesters 2, 5, & 8 |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Interdisciplinary care has continued to improve since the initiation of the program. A combined periodontics/orthodontics course and a joint perio/ortho advanced oral pathology course are taught by a periodontist and oral pathologist. Both courses include the orthodontic and periodontal residents to integrate orthodontic a more comprehensive approach to oral care. A significant number of patients are under treatment both with restorative dentistry and periodontics. |
| **Assessment of results** | Results have continued to improve and are at a good level at this time. Improvements continue to be made in the system of referral within the School of Dental Medicine and with other specialty programs. |
| **Program improvement as a result of data analysis** | Improvements continue to be made. The Pediatric Dental Clinic associated with The Children’s Hospital is now located on the same campus with the School of Dental Medicine. Orthodontic faculty are providing didactic and clinical instruction in the pediatric dental residency program. |

**Date of next assessment**

Treatment Planning Conferences are assessed 4 – 5 days a week and are ongoing. Course grades are evaluated at the end of each semester. The next Proficiency examination is in January-February of 2020.

**Goal I Objective 8**

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| **Overall Objective** | Application of the principles of infection control and environmental safety to patient care and clinical operations |
| **Outcomes Assessment Mechanism** | The appropriate application of infection control and environmental safety in clinical care is monitored by the faculty on a daily basis with immediate corrective action as needed and longer term evaluation through the following:   1. Semester Clinical Course Grades 2. Professional Rating |
| **How often conducted**  **Date to be conducted/ finished by** | 1. Semester Clinical Course Grades – evaluation during daily clinical operations 2. Professional Rating– end of each semester 3. Semester Clinical Course Grades – end of each semester 4. Professional Rating – end of each semester |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Infection control standards have been developed by the School of Dental Medicine and implemented in the Orthodontic Clinic.  Training and monitoring of infection control and environmental safety procedures occurs on a daily basis. |
| **Assessment of results** | Sterilization protocols have been updated and include a higher utilization of central sterilizing and computerized tracking. |
| **Program improvement as a result of data analysis** | Computerized tracking of instruments from student check-out and clinical use, then through sterilization allows monitoring and detection of any lapses of the sterilization protocol. |
| **Date of next assessment** | Assessment occurs on an ongoing basis. |

**Goal II Objective 1**

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| **Overall Objective** | Use and understand basic scientific principles |
| **Outcomes Assessment Mechanism** | The use and understanding of basic scientific principles is monitored by the following:   1. Didactic course grades 2. Written Comprehensive Examinations 3. Treatment Planning Conference |
| **How often conducted** | 1. Didactic course grades – each semester 2. Written Comprehensive Examination–Aug-end 1st & January-February of the 3rd year. 3. Treatment Planning Conference – 4-5 days a week |
| **Date to be conducted/ finished by** | 1. Didactic course grades – end of each semester 2. Written Comprehensive Examination–Aug 1st Yr & January-February of 3rd Yr 3. Treatment Planning Conference – 4-5 days a week |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Course grades and successful completion of written proficiency examinations indicate success at integration of basic scientific principles into the program.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to evaluate scientific and clinical literature, on average per class, ranged in percentage from the mid- 70s to the mid- 90s. |
| **Assessment of results** | Assessment through semi-annual comprehensive evaluation of the residents indicates performance at or above the acceptable level. |
| **Program improvement as a result of data analysis** | Continuous monitoring occurs to maintain performance at or above the acceptable level in this area. |
| **Date of next assessment** | Treatment Planning Conferences are assessed 4-5 days a week and are ongoing. Didactic courses are evaluated at the end of each semester. The next Proficiency examination is in January-February of 2020 |

**Goal II Objective 2**

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| **Overall Objective** | Provide sufficient supporting knowledge to allow the student to appropriately evaluate the literature and interact knowledgeably with other dental specialists |
| **Outcomes Assessment Mechanism** | The supporting knowledge to appropriately evaluate the literature and interact with other dental specialists occurs throughout the curriculum, but can be specifically monitored by the following:   1. Didactic course grades in research methodology, literature evaluation courses and courses with other specialties 2. Written Proficiency Examinations 3. Current Literature Review |
| **How often conducted** | 1. Didactic course grades in research methodology and literature evaluation courses and courses with other specialties – semester 2. Written Proficiency Examinations – Aug 1st Yr & January- February of 3rd Yr 3. Current Literature Review – weekly |
| **Date to be conducted/ finished by** | 1. Didactic course grades in research methodology and literature evaluation courses and courses with other specialties – end of semester 2. Written Comprehensive Examinations—August 1st Yr & January-February of 3rd Yr 3. Current Literature Review—end of semester |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Course grades in the courses indicated above have been passing. All residents have passed the written proficiency examinations. Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to evaluate scientific and clinical literature, on average per class, ranged in percentage from the mid- 70s to the mid- 90s. |
| **Assessment of results** | Results appear to be above the acceptable level. |
| **Program improvement as a result of data analysis** | Maintain results at above acceptable levels. |

**Date of next assessment**

Course grades are evaluated at the end of each semester. The next Written Proficiency examination is in January-February of 2020

**Goal II Objective 3**

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| **Overall Objective** | Provide appropriate knowledge on business, legal, and ethical issues to aid the student in managing an orthodontic practice |
| **Outcomes Assessment Mechanism** | The knowledge on business, legal, and ethical issues is gained throughout the resident’s education, but can be specifically monitored by the following:   1. Course grade DSOR6201 (Ethics, Practice Management, and Jurisprudence Course) 2. Interaction with part-time faculty 3. Professional Rating |
| **How often conducted** | 1. Treatment Planning Conferences 2. Course grade DSOR6201– Fall semester year 2 3. Interaction with part-time faculty – daily 4. Professional Rating – each semester 5. Treatment Planning Conferences – 4-5 days a week |
| **Date to be conducted/ finished by** | 1. Course grade DSOR6201– end Fall semester year 2 2. Interaction with part-time faculty – daily 3. Professional Rating – 2 times per year 4. Treatment Planning Conferences – 4 times a week |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | All residents completed Course DSOR6201 with a passing grade. Part-time faculty discuss aspects of their practice management with residents and practice management matters are discussed during treatment planning conferences. |
| **Assessment of results** | Results appear to be favorable with residents gaining a knowledge of the business aspects of orthodontics as well as jurisprudence and proper ethical behavior. Residents are encouraged to visit private practices to observe practices. |
| **Program improvement as a result of data analysis** | Many guest speakers from the professional community have presented on their areas of expertise in DSOR6201. |
| **Date of next assessment** | Treatment Planning Conferences are assessed 4 -5 days a week and are ongoing. Didactic courses are evaluated at the end of each semester. Professional ratings are reviewed twice a year. |

**Goal II Objective 4**

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| **Overall Objective** | Develop characteristics of a life-long learner in the student |
| **Outcomes Assessment Mechanism** | Development of the characteristics of a life-long learner are monitored by progress on the following measurements:   1. Academic Rating 2. Professional Rating 3. Research Project Rating 4. Summary Evaluation 5. Alumni Survey |
| **How often conducted** | 1. Academic Rating – 2 times per year 2. Professional Rating – 2 times per year 3. Research Project Rating – 2 times per year 4. Summary Evaluation – 2 times per year 5. Alumni Survey – every 5-8 years, first given to the first 5 graduating classes |
| **Date to be conducted/ finished by** | 1. Academic Rating – 2 times per year 2. Professional Rating – 2 times per year 3. Research Project Rating – 2 times per year 4. Summary Evaluation – 2 times per year 5. Alumni Survey – every 5-8 years, first given to the first 5 graduating classes |
| **Results expected** | Excellence in all areas.  Required attendance at professional meetings during the residency. |
| **Results achieved** | Residents are getting acceptable and above ratings in all of the Academic and Professional Ratings. Attendance at required meetings has been very good.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to:   1. Evaluate scientific and clinical literature, on average per class, ranged in percentage from the mid- 70s to the mid- 90s. 2. Understand the relevance of research to clinical practice, on average per class, ranged in percentage from the upper 60s to the low 90s. |
| **Assessment of results** | Results are acceptable up to this time. |
| **Program improvement as a result of data analysis** | Time is provided during the curriculum to attend both local and national meetings with 1 per year being a required meeting. |

**Date of next assessment**

Academic, Professional, Research Project Ratings and a Summary Evaluation are performed twice a year.

**Goal III Objective 1**

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| **Overall Objective** | Provide familiarity with research design and statistical analysis |
| **Outcomes Assessment Mechanism** | Familiarity with research design and statistical analysis is monitored by the following:   1. Didactic course grades in the following courses:    1. Scientific Writing and Evaluation    2. Research Methodology and Biostatistics 1 & 2    3. Current Literature Review    4. Research Courses 1 – 8 2. Research Project Rating |
| **How often conducted** | 1. Didactic course grades in the following courses:    1. Scientific Writing and Evaluation – summer semester year 2    2. Research Methodology and Biostatistics 1 & 2   – fall and spring semesters year 1   * 1. Current Literature Review – each semester   2. Research Courses 1 – 8 – each semester  1. Research Project Rating – 2 times per year |
| **Date to be conducted/ finished by** | 1. Didactic course grades in the following courses:    1. Scientific Writing and Evaluation– end summer semester yr 2    2. Research Methodology and Biostatistics 1 & 2   – end fall and spring semesters year 1   * 1. Current Literature Review – end each semester   2. Research Courses 1 – 8 – end each semester  1. Research Project Rating – 2 times per year |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | All residents completed all of the above courses with an above passing grade. Research ratings have been very good or excellent. Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to understand statistical methods utilized in scientific and clinical research, on average per class, ranged in percentage from the low 60s to the low 90s. |
| **Assessment of results** | All residents have successfully completed their research requirements. |
| **Program improvement as a result of data analysis** | Course development will continue to occur as residents provide feedback after graduation. |
| **Date of next assessment** | Didactic courses are assessed at the end of each semester. Research ratings are performed twice a year. |

**Goal III Objective 2**

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| **Overall Objective** | Formulate a proposal, carry out a research project, analyze the results, and write the results in a publishable format |
| **Outcomes Assessment Mechanism** | Progress in carrying out a research project is monitored by the following:   1. Research Courses 1 – 8 2. Research Project Rating |
| **How often conducted** | 1. Research Courses 1 – 8 – each semester 2. Research Project Rating – each semester |
| **Date to be conducted/ finished by** | 1. Research Courses 1 – 8 – end each semester 2. Research Project Rating – end each semester |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Research Courses and Research Project Ratings have all been regularly reported with the all residents doing acceptably.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to do scientific writing, on average per class, ranged in percentage from the low 70s to the high 80s. |
| **Assessment of results** | All research manuscripts have been completed for all graduates of the program. |
| **Program improvement as a result of data analysis** | Topics, procedures, and protocols for research have continued to be improved as the program has developed. Greater emphasis has been placed on timely proposal submission, data collection, and manuscript completion as a result of analysis of the results.  Students with clinical projects now meet regularly with their primary investigator for semester for progress reviews. |
| **Date of next assessment** | Didactic courses are assessed at the end of each semester. Research ratings are performed twice a year. |

**Goal III Objective 3**

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| **Overall Objective** | Write a publishable manuscript that can be submitted to a journal as a contribution to the clinical and scientific knowledge base and literature. |
| **Outcomes Assessment Mechanism** | The writing of the manuscript is monitored by the following:   1. Research Courses 1 - 8 2. Research Project Rating 3. Research Committee Meetings |
| **How often conducted** | 1. Research Courses 1 - 8 – each semester 2. Research Project Rating – semi-annually 3. Research Committee Meetings - weekly |
| **Date to be conducted/ finished by** | 1. Research Courses 1 - 8 – end each semester 2. Research Project Rating – March and August 3. Research Committee Meetings - weekly |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | All graduates have completed a publishable manuscript. A few clinical studies have not entered the number of patients agreed on by the committee and dictated by the sample size calculation.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to do scientific writing, on average per class, ranged in percentage from the low 70s to the high 80s. |
| **Assessment of results** | Some of the clinical studies that did not enroll their target number of patients might have had improved outcomes if the residents were more closely monitored. Primary investigators have been appointed for each project for progress monitoring. |
| **Program improvement as a result of data analysis** | One faculty member of the Research Committee has been meeting monthly with residents who are involved in clinical studies- to monitor and encourage progress. |
| **Date of next assessment** | Didactic courses are assessed at the end of each semester. Research ratings are performed twice a year. Research Committee meetings occur weekly. |

**Goal IV Objective 1**

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| **Overall Objective** | Activity within organized dentistry, initially by attendance at local and national meetings |
| **Outcomes Assessment Mechanism** | Activity within organized dentistry is monitored by the following:   1. Attendance at local and national meetings while in residency 2. Professional Rating |
| **How often conducted** | 1. Attendance at local and national meetings while in residency 2. Professional Rating – semi-annually |
| **Date to be conducted/ finished by** | 1. Attendance at local and national meetings while in residency – end of each year 2. Professional Rating – semi-annually |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Residents have attended the Colorado Orthodontists Association meetings and the American Association of Orthodontists annual meeting. The Professional Rating on all residents has been acceptable. |
| **Assessment of results** | Results are as expected for this stage in the residents’ training. |
| **Program improvement as a result of data analysis** | Continued assessment and analysis will be done. |
| **Date of next assessment** | Professional ratings are performed twice a year. |

**Goal IV Objective 2**

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| **Overall Objective** | Participation in craniofacial deformity and underprivileged patient clinics |
| **Outcomes Assessment Mechanism** | Participation in craniofacial deformity and underprivileged patient clinics is monitored by grading and participation in the following courses that involve patient care:   1. Dento-/Craniofacial Anomalies Course 2. Treatment Planning Course 3. Clinical Courses 1 – 8 |
| **How often conducted** | 1. Dento-/Craniofacial Anomalies Course – spring semester 2. Treatment Planning Course – each semester 3. Clinical Courses 1 – 8 – each semester |
| **Date to be conducted/ finished by** | 1. Dento-/Craniofacial Anomalies Course – end of spring semester 2. Treatment Planning Course – end of each semester 3. Clinical Courses 1 – 8 – end of each semester |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Good results have been achieved toward this objective with a large number of underprivileged children treated in the orthodontic clinic through Medicaid Program. Most residents now have at least 2 craniofacial anomaly patients in treatment.  Alumni surveys revealed that our former resident’s (classes of 2006 to 2014) perceptions of their preparedness to:   1. Treat patients with cleft lip and palate, on average per class, demonstrates an improving trend; 2. Treat patients with other cranio-facial anomalies, on average per class, demonstrates an improving trend; 3. Treat patients with other special physical or psychological needs, on average per class, demonstrates an improving trend. |
| **Assessment of results** | Results indicate acceptable or above participation in this area. |
| **Program improvement as a result of data analysis** | Maintain acceptable or above participation in this area. |
| **Date of next assessment** | Didactic courses are assessed at the end of each semester. |

**Goal IV Objective 3**

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| **Overall Objective** | Education of non-orthodontists concerning orthodontics |
| **Outcomes Assessment Mechanism** | Educational activity is monitored by the following:   1. Grade in Fundamentals of Teaching Course 2. Grade in Pre-doctoral Laboratory Teaching Courses 3. Grade in Orthodontic Clinical Teaching Courses 4. Academic Rating 5. Professional Rating |
| **How often conducted** | 1. Grade in Fundamentals of Teaching Course – summer semester of year 2 2. Grade in Pre-doctoral Laboratory Teaching Courses – spring semester of 2nd year 3. Grade in Orthodontic Clinical Teaching Courses – spring and summer of 2nd year and spring semester of 3rd year 4. Academic Rating – semi-annually 5. Professional Rating –semi-annually |
| **Date to be conducted/ finished by** | 1. Grade in Fundamentals of Teaching Course – end of summer semester of year 2 2. Grade in Pre-doctoral Laboratory Teaching Courses – end of fall semester of 2nd year and fall semester of 3rd year 3. Grade in Orthodontic Clinical Teaching Courses – end of fall and summer of 2nd year and fall semester of 3rd year 4. Academic Rating – semi-annually 5. Professional Rating – semi-annually |
| **Results expected** | Excellence in all areas. |
| **Results achieved** | Residents have been trained in the basics of teaching and are involved in teaching pre-doctoral students as well as incoming orthodontic residents. |
| **Assessment of results** | Results up to this time have been good with good grades in all of the teaching courses. |
| **Program improvement as a result of data analysis** | Continued evaluation of the program will be done to enhance the ability of the residents to teach and interact with general dentists. |
| **Date of next assessment** | Didactic courses are assessed at the end of each semester. Academic and Professional ratings are performed twice a year. |

**Curriculum map**

A Curriculum map has been developed to determine which courses address which outcomes.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clinical proficiencies** | **Course Title** | **Year** | **Hrs** | **Seminar** | **Clinic** | **Scope and effectiveness of experience** |
|  |  |  |  |  |  |  |
| 50a Develop treatment plans | Clinical Orthodontics 1–8 | 1, 2, 3 | 2723 |  | X | Discussion and development of treatment plans with faculty during clinical patient care time. |
| Orthodontics 101 | 1 | 67 | X |  | An overview of treatment planning |
| Diagnosis and Treatment Planning 1  & 2 | 1 | 62 | X |  | Detailed instruction discussion of treatment planning |
| Biomechanics I | 1 | 56 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| 50b Use the concepts in embryology and genetics |  |  |  |  |  |  |
| Dentofacial Growth and Development 1 | 1 | 10 | X |  | Study of craniofacial embryology and research |
| Diagnosis and Treatment Planning 1 | 1 | 4 | X |  | Application of principles to treatment planning |
| Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Dento-and Craniofacial Anomalies | 2 | 16 | X |  | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 50c Include knowledge of anatomy and histology | Head and Neck Anatomy | 2 | 17 | X |  | Study of head and neck anatomy as it relates to the practice of orthodontics |

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| 50d Apply knowledge about pathology of oral tissues | Diagnosis and Treatment Planning 2 | 1 | 4 | X | Application of principles to treatment planning |
|  | Advanced Oral Pathology | 2 | 12 | X | Integration of pathology and microanatomy in diagnosis and treatment |
|  |  |  |  |  |  |
| 51 Comprehensive clinical experience | Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 | X | Orthodontic patient care under the supervision of orthodontic expert |
|  | Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X | Resident and faculty discussion of individual patient treatment plans and treatment progress |
|  | Dento-and Craniofacial Anomalies | 2 | 16 | X | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |
| 52 Treatment of  all malocclusions | Clinical Orthodontics 1-8 | 1, 2, 3 | 2723 | X | Orthodontic patient care under the supervision of orthodontic expert |
|  | Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X | Resident and faculty discussion of individual patient treatment plans and treatment progress |
|  | Biomechanics I | 1 | 56 | X | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
|  | Biomechanics II & III | 1 | 79 | X | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
|  | Dento-and Craniofacial Anomalies | 2 | 16 | X | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |
| 53a Interdisciplinary treatment plans | Diagnosis and Treatment Planning 1  & 2 | 1 | 62 | X | Application of principles to treatment planning |
|  | Orthognathic Surgical Treatment | 1 | 34 | X | Application of orthognathic surgical procedures to care of the patient with skeletal deformity |
|  | Management of the TMJ Patient | 1 | 28 | X | Application of TMD management principles and procedures to the care of patients with TMD syndrome |
|  | Implants in the Orthodontic Patient | 2 | 15 | X | Use of implants and skeletal anchorage in orthodontic care and prosthetic restoration of the dentition |

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| --- | --- | --- | --- | --- | --- | --- |
|  | Periodontic/Orthodo ntic Patient | 2 | 15 | X |  | Inter-relationship of orthodontics and periodontal disease in the routine orthodontic as well as in the patient with periodontal disease |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Dento-and Craniofacial Anomalies | 2 | 16 | X |  | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |  |
| 53b Treat developing problems | Dentofacial Growth and Development 1  & 2 | 1 | 10 | X |  | Study of craniofacial growth and development and the integration with developing problems |
| Treatment in Preadolescent Children | 1 | 22 | X |  | Study of treatment methods and other aspects of treating the growing and developing child, including intercepting developing problems |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Dento-and Craniofacial Anomalies | 2 | 16 | X |  | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |  |
| 53c Use dentofacial orthopedics | Biomechanics I | 1 | 10 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 20 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Dentofacial Growth and Development | 1 | 10 | X |  | Study of craniofacial growth and development and the integration with developing problems |
| Treatment in Preadolescent Children | 1 | 28 | X |  | Study of treatment methods and other aspects of treating the growing and developing child, including intercepting developing problems |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Treatment Planning 1  – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |

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|  | Dento-and Craniofacial Anomalies | 2 | 8 | X |  | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |  |
| 53d Treat dentofacial abnormalities | Biomechanics I | 1 | 30 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 40 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Dentofacial Growth and Development 1  & 2 | 1 | 20 | X |  | Study of craniofacial growth and development and the integration with developing problems |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 500 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Treatment Planning 1  – 8 | 1, 2, 3 | 452 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Orthognathic Surgical Treatment | 1 | 19 | X |  | Integration of orthognathic surgery and orthodontics in the treatment of dentofacial abnormalities |
| Dento-and Craniofacial Anomalies | 2 | 7 | X |  | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  |  |  |  |  |  |  |
| 53e Provide all phases of orthodontic treatment | Biomechanics I | 1 | 56 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Dentofacial Growth and Development | 1 | 20 | X |  | Study of craniofacial growth and development and the integration with developing problems |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Treatment Planning  1– 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Orthognathic Surgical Treatment | 1 | 38 | X |  | Integration of orthognathic surgery and orthodontics in the treatment of dentofacial abnormalities |
| Dento-and Craniofacial Anomalies | 2 | 5 | X |  | Application of principles of growth and development and orthodontic treatment to patients with craniofacial deformities |
|  | Management of the TMJ Patient | 1 | 22 | X |  | Application of TMD management principles and procedures to the care of patients with TMD syndrome |
|  | Implants in the Orthodontic Patient | 2 | 15 | X |  | Use of implants and skeletal anchorage in orthodontic care and prosthetic restoration of the dentition |
|  | Periodontic/ Orthodontic Patient | 2 | 15 | X |  | Inter-relationship of orthodontics and periodontal disease in the routine orthodontic as well as in the patient with periodontal disease |
|  | Orthodontics 101 | 1 | 67 | X |  | An overview of treatment planning |

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| **Clinical proficiencies** | **Course Title** | **Year** | **Hours** | **Seminar** | **Clinic** | **Scope and effectiveness of experience** |
|  |  |  |  |  |  |  |
| 53f Use contemporary orthodontic technique | Biomechanics I | 1 | 56 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
|  | Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
|  | Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
|  | Treatment Planning 1 – 8 | 1, 2, 3 | 452 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
|  |  |  |  |  |  |  |
| 53g Manage functional occlusal/TMD | Management of the TMJ Patient | 1 | 22 | X |  | Application of TMD management principles and procedures to the care of patients with TMD syndrome |
|  | Diagnosis and Treatment Planning 1 & 2 | 1 | 5 | X |  | Study of all aspects of orthodontic and dental diagnosis to provide comprehensive patient care |
|  | Treatment Planning 1 – 8 | 1, 2, 3 | 50 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
|  | Clinical Orthodontics 1 - 8 | 1, 2, 3 | 200 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 53h Treat orthodontic aspects of patients with periodontal problems | Periodontic/Ortho dontic Patient | 2 | 15 | X |  | Inter-relationship of orthodontics and periodontal disease in the routine orthodontic as well as in the patient with periodontal disease |
|  | Diagnosis and Treatment Planning 1 & 2 | 1 | 5 | X |  | Study of all aspects of orthodontic and dental diagnosis to provide comprehensive patient care |
|  | Treatment Planning 1 – 8 | 1, 2, 3 | 50 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
|  | Clinical Orthodontics 1 - 8 | 1, 2, 3 | 200 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
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| 53i Develop treatment plans using sound principles of appliance design and biomechanics | Biomechanics I | 1 | 60 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Treatment Planning 1 – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Diagnosis and Treatment Planning 1 & 2 | 1 | 62 | X |  | Study of all aspects of orthodontic and dental diagnosis to provide comprehensive patient care |
|  |  |  |  |  |  |  |
| 53j Obtain long term files of quality images | Diagnosis and Treatment Planning 1 & 2 | 1 | 8 | X |  | Study of all aspects of orthodontic and dental diagnosis to provide comprehensive patient care |
| Treatment Planning 1 – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
|  |  |  |  |  |  |  |
| 53k Use dental materials | Biomechanics I | 1 | 56 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Treatment Planning 1 – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
|  |  |  |  |  |  |
| Advanced Oral Biology | 2 | 2 | X |  | Dental Adhesives and photopolyerization |
|  |  |  |  |  |  |  |
| 53l Develop system of long-term treatment records | Diagnosis and Treatment Planning 1 & 2 | 1 | 8 | X |  | Study of all aspects of orthodontic and dental diagnosis to provide comprehensive patient care |
| Treatment Planning 1 – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |

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| 53m Practice ethical behavior | Ethics, Practice Management, Jurisprudence | 2 | 38 | X |  | Integration and study of ethics, practice management, and jurisprudence in the context of the clinical practice of orthodontics |
| Treatment Planning 1 – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
|  |  |  |  |  |  |  |
| 53n Manage patients in orthodontic treatment procedures | Treatment Planning 1 – 8 | 1, 2, 3 | 468 | X |  | Resident and faculty discussion of individual patient treatment plans and treatment progress |
| Clinical Orthodontics 1 - 8 | 1, 2, 3 | 2723 |  | X | Orthodontic patient care under the supervision of orthodontic expert |
| Diagnosis and Treatment Planning 1 & 2 | 1 | 62 | X |  | Study of all aspects of orthodontic and dental diagnosis to provide comprehensive patient care |
| Biomechanics I | 1 | 56 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
|  |  |  |  |  |  |  |
| 53o Study literature of this field | Orthodontics 101 | 1 | 67 | X |  | An overview of treatment planning |
|  |  |  |  |  |  |
| Retention 1 & 2 | 3 | 77 | X |  | Detailed literature review of retention strategies |
| Dentofacial Growth and Development  1 & 2 | 1 | 62 | X |  | Study of craniofacial embryology and research |
| Diagnosis and Treatment Planning 1 & 2 | 1 | 62 | X |  | Detailed instruction and discussion in orthodontic treatment planning |
| Biomechanics I | 1 | 56 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Biomechanics II & III | 1 | 79 | X |  | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities |
| Scientific Writing  & Evaluation | 2 | 22 | X |  | Development of student skills in scientific writing and evaluation of the scientific literature |

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|  | Treatment in Preadolescent Children | 1 | 19 | X |  | Develop knowledge of early treatment and treatment of the preadolescent child by a review of the literature |
|  | Dento- and Craniofacial Anamolies | 2 | 17 | X |  | Patient review as well as literature review in areas of craniofacial anomalies and treatment of the underprivileged |
|  | Current Literature Review | 1, 2, 3 | 102 | X |  | Review of current orthodontic and associated literature |
|  | Orthognathic Surgical Treatment | 1 | 38 | X |  | Review of the literature in the area of orthognathic surgery |
|  | Management of the TMJ Patient | 1 | 22 | X |  | Clinical and literature review of managing patients with TMD |
|  | Implants in the Orthodontic Patient | 2 | 15 | X |  | Clinical and literature review of the use of implants as both prosthesis support and as anchorage in orthodontic patients |
|  | Periodontic/ orthodontic Treatment | 2 | 15 | X |  | Clinical and literature of the inter- relationship between orthodontics and periodontics in orthodontic treatment |
|  | Ethics, Practice Management, and Jurisprudence | 2 | 38 | X |  | Review of pertinent literature in the areas of ethics, practice management, and jurisprudence |
|  | History of Orthodontics & Dentofacial Orthopedics | 2 | 15 | X |  | Review of orthodontic literature with a historical prospective on the development of orthodontics. |
|  | Research 1 – 8 | 1, 2, 3 | 545 | X |  | Independent study of the literature in the area of research interest |

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| **Familiarity** | **Course Title** | **Year** | **Hours** | **Seminar** | **Clinic** | **Scope and effectiveness of experience** |
|  |  |  |  |  |  |  |
| 54a Biostatistics | Research Methodology and Biostatistics 1 & 2 | 1 | 30 | X |  | Provide a working knowledge of statistics as it relates to orthodontics in the evaluation of research results and the literature |
|  | Research 1 – 8 | 1, 2, 3 | 50 |  |  | Use of statistical methods for the evaluation of research results and in evaluating research in the area of interest |
|  |  |  |  |  |  |  |
| 54b Orthodontic history | History of Orthodontics & Dentofacial Orthopedics | 2 | 15 | X |  | Review of orthodontic literature with a historical prospective on the development of orthodontics. |
|  |  |  |  |  |  |  |
| 54c Jurisprudence | Ethics, Practice Management, and Jurisprudence | 2 | 10 | X |  | Review of pertinent literature in the areas of ethics, practice management, and jurisprudence |
|  |  |  |  |  |  |  |
| 54d Oral Physiology | Orthodontics 101 | 1 | 2 | X |  | An overview of orthodontics, including aspects of oral physiology |
|  | Dentofacial Growth and Development 1 &  2 | 1 | 6 | X |  | Study of the development of oral physiology |
|  |  |  |  |  |  |  |
|  | Advanced Oral Biology | 2 | 34 | X |  | Genetic analysis, tooth development, facial clefting |
|  |  |  |  |  |  |  |
| 54e Pain and Anxiety Control | Treatment in Preadolescent Children | 1 | 2 | X |  | Methods of pain and anxiety control in children |
|  | Management of the TMJ Patient | 1 | 2 | X |  | Methods of pain and anxiety control in the adult patient |
|  | Diagnosis and Treatment Planning 2 | 1 | 2 | X |  | Methods of pain and anxiety control in child and adult patients |
|  |  |  |  |  |  |  |
| 54f Pediatrics | Treatment in Preadolescent Children | 1 | 4 | X |  | Integration of the orthodontic care of children with pediatrics and pediatric dentistry |
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| 54g Periodontics | | Periodontic/ orthodontic Treatment | | 2 | | 15 | | X | |  | | Clinical and literature of the inter- relationship between orthodontics and periodontics in orthodontic treatment | |
| Treatment Planning 1 – 8 | | 1, 2, 3 | | 70 | | X | |  | | Resident and faculty discussion of individual patient treatment plans and treatment progress with the integration of periodontal care as required | |
| Clinical Orthodontics 1 - 8 | | 1, 2, 3 | | 2723 | |  | | X | | Orthodontic patient care under the supervision of orthodontic expert with the integration of periodontal care as needed | |
|  | |  | |  | |  | |  | |  | |  | |
| 54h Pharmacology | | Diagnosis and Treatment Planning 1 | | 1 | | 1 | | X | |  | | Detailed instruction and discussion in orthodontic treatment planning with a discussion of the requirements pharmacology of premedication for medical conditions | |
| Management of the TMJ Patient | | 1 | | 2 | | X | |  | | Methods and pharmacology of pain and anxiety control in the adult patient | |
|  | |  | |  | |  | |  | |  | |  | |
| 54i Preventive Dentistry | | Orthodontics 101 | | 1 | | 2 | | X | |  | | An overview of orthodontics, including aspects of oral hygiene | |
| Diagnosis and Treatment Planning | | 1 | | 2 | | X | |  | | Detailed instruction and discussion in orthodontic treatment planning with a discussion of preventive dentistry in the orthodontic patient | |
| Treatment in Preadolescent Children | | 1 | | 2 | | X | |  | | Integration of the orthodontic care of children with pediatrics and pediatric dentistry including preventive aspects of care | |
| Clinical Orthodontics 1 - 8 | | 1, 2, 3 | | 2723 | |  | | X | | Orthodontic patient care under the supervision of orthodontic expert with the integration of preventive dentistry as a vital part of patient care | |
|  | |  | |  | |  | |  | |  | |  | |
| 54j Psychological Aspects | | Orthodontics 101 | | 1 | | 1 | | X | |  | | An overview of orthodontics, including aspects of psychological development | |
| Dentofacial Growth & Development 1 | | 1 | | 2 | | X | |  | | Development of social and behavioral of child | |
| Treatment in Preadolescent Children | | 1 | | 2 | | X | |  | | Integration of the orthodontic care of children with pediatrics and pediatric dentistry including psychological aspects of care | |
| Dento- and Craniofacial Anomalies | | 2 | | 1 | | X | | X | | Psychological aspects of the craniofacial anomaly and underprivileged patient | |
| Orthognathic Surgical Treatment | | 1 | | 1 | | X | |  | | Review of the literature in the area of orthognathic surgery including the psychological aspects | |
|  | | Management of the TMJ Patient | | 1 | | 1 | | X | |  | | Study of the psychological aspects of the chronic pain patient | |
|  | |  | |  | |  | |  | |  | |  | |
| 54k Public Health Aspects | | Dento- and Craniofacial Anomalies | | 1, 2, 3 | | 10 | | X | |  | | Care of the craniofacial anomaly and underprivileged patient | |
| Clinical Orthodontics 1 - 8 | | 1, 2, 3 | | 500 | |  | | X | | Orthodontic patient care under the supervision of orthodontic expert with the integration of public health dentistry as a vital part of patient care | |
|  | |  | |  | |  | |  | |  | |  | |
| 54l Speech Pathology and Therapy | | Dento- and Craniofacial Anomalies | | 2 | | 2 | | X | |  | | Care of the craniofacial anomaly and underprivileged patient | |
|  | |  | |  | |  | |  | |  | |  | |
| 54m Practice  Management | | Ethics, Practice Management, and Jurisprudence | | 2 | | 38 | | X | |  | | Review of pertinent literature in the areas of ethics, practice management, and jurisprudence | |
|  | |  | |  | |  | |  | |  | |  | |
| 54n Variety of  recognized techniques | | Biomechanics I | | 1 | | 56 | | X | |  | | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities | |
| Biomechanics II & III | | 1 | | 79 | | X | |  | | Study of biomechanical methods of treatment including different edgewise appliance philosophies and dentofacial orthopedic modalities | |
| Clinical Orthodontics 1 - 8 | | 1, 2, 3 | | 2723 | |  | | X | | Orthodontic patient care under the supervision of orthodontic expert | |
| Current Literature Review | | 1, 2, 3 | | 102 | | X | |  | | Review of current orthodontic and associated literature | |
| History of Orthodontics & Dentofacial Orthopedics | | 2 | | 15 | | X | |  | | Review of orthodontic literature with a historical prospective on the development of orthodontics. | |

**The Curriculum**

The curriculum is divided into 4 main components (Clinical, Didactic, Research, and Teaching). The breakdown of the Program’s hours and percentage allocation is listed below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Contact Hr | Code | Credit Hrs | % Program |
| Program Totals | 4769.5 |  | 185.5 | 100% |
| Clinical | 2722.5 | C | 86.1 | 57% |
| Didactic | 1267.0 | D | 50.6 | 27% |
| Research | 628.0 | R | 39.3 | 13% |
| Teaching | 152.0 | T | 9.5 | 3% |

Listed below is a course by semester breakdown with its associated contact hours and credits hours. All courses are evaluated by end of semester grades. Many of the courses utilize a combination of class attendance, individual participation, quizzes, and a final exam for grade determination. To date, residents have achieved a 100% pass rate.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course** | **Course Title** | **Course** | **Type** | **Contact** | **Credit** |
| **Number** |  | **Director** | **Course** | **Hours** | **Hours** |
|  | **Fall Semester Year 1** |  |  |  |  |
| DSOR 5101 | Orthodontics 101 – Boot Camp | Minick | D | 67.0 | 4.2 |
| DSOR 5102 | Dentofacial Growth and Development 1 (2hr/14 wks) | White | D | 28.0 | 1.8 |
| DSOR 5103 | Diagnosis and Treatment Planning 1 (2hr/14 wks) | Minick | D | 28.0 | 1.8 |
| DSOR 5104 | Biomechanics 1 (4hr/14 wks) | Shellhart | D | 56.0 | 3.5 |
| DSOR 5105 | Research Methodology & Biostatistics 1 (2hr/14 wks) | Shellhart | R | 28.0 | 1.8 |
| DSOR 5107 | Treatment Planning 1 ( 4hr/14 wks) | Minick | C | 56.0 | 3.5 |
| DSOR 5108 | Current Literature Review 1 ( 1hr/14 wks ) | Minick | D | 14.0 | 0.9 |
| DSOR 5111 | History of Orthodontics & Dentofacial Orthopedics (1 hr/14wks) | Miller | D | 14.0 | 0.9 |
| DSOR 5841 | Research 1 (Independent Study 1hr/14 wks) | Shellhart | R | 14.0 | 0.9 |
| DSOR 5931 | Clinical Orthodontics 1 | White | C | 308.0 | 6.4 |
|  | **TOTALS** |  |  | **613.0** | **25.7** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Spring Semester Year 1** |  |  |  |  |
| DSOR 5202 | Dentofacial Growth and Development 2 ( 2hr/17 wks) | White | D | 34.0 | 2.1 |
| DSOR 5203 | Diagnosis and Treatment Planning 2 ( 2hr/ 17 wks) | Minick | D | 34.0 | 2.1 |
| DSOR 5204 | Biomechanics 2 (3hr/17 wks) | Shellhart | D | 51.0 | 3.2 |
| DSOR 5205 | Research Methodology & Biostatistics 2 (2hr/ 17 wks) | Shellhart | R | 34.0 | 2.1 |
| DSOR 5207 | Treatment Planning 2 (4hr/17 wks ) | Minick | C | 68.0 | 4.3 |
| DSOR 5208 | Current Literature Review 2 (1 hr/17 wks) | Minick | D | 17.0 | 1.1 |
| DSOR 5321 | Orthognathic Surgical Treatment ( 2hr/17 wks) | Hernandez | D | 34.0 | 2.1 |
| DSOR 5842 | Research 2 ( Independent Study 2hr/17 wks) | Shellhart | R | 34.0 | 2.1 |
| DSOR 5932 | Clinical Orthodontics 2 | White | C | 357.0 | 7.4 |
|  | **TOTALS** |  |  | **663.0** | **26.5** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Summer Semester Year 1** |  |  |  |  |
| DSOR 5211 | Treatment in Preadolescent Children (2hr/14 wks) | Hernandez | D | 28.0 | 1.8 |
| DSOR 5304 | Biomechanics 3 ( 2hr/14 wks) | Shellhart | D | 28.0 | 1.8 |
| DSOR 5307 | Treatment Planning 3 (4hr/14 wks) | Minick | C | 56.0 | 3.5 |
| DSOR 5331 | Management of the TMJ Patient ( 2hr/14 wks) | Miller | D | 28.0 | 1.8 |
| DSOR 5341 | Fundamentals of Teaching/Communication (1hr/14 wks)) | Tilliss | D | 14.0 | 0.9 |
| DSOR 5344 | Advanced Radiology & Radiological Interpretation (2hr/14wks) | Potter | D | 28.0 | 1.8 |
| DSOR 5843 | Research 3 ( Independent Study 3hr/14 wks) | Shellhart | R | 80.0 | 5.0 |
| DSOR 6101 | Implants in the Orthodontic Patient ( 1 hr /14 wks ) | Minick | D | 14.0 | 0.9 |
| DSOR 5933 | Clinical Orthodontics 3 | White | C | 294.0 | 6.1 |
|  | **TOTALS** |  |  | **570.0** | **23.6** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Fall Semester Year 2** |  |  |  |  |
| DSOR 6201 | Ethics & Practice Management ( 2 hr/16 wks ) | Minick | D | 32.0 | 2.0 |
| DSOR 6107 | Treatment Planning 4 ( 4hr/16 wks ) | Minick | C | 64.0 | 4.0 |
| DSOR 6108 | Current Literature Review 4 ( 1hr/16 wks ) | Minick | D | 16.0 | 1.0 |
| DSOR 6111 | Periodontic/Orthodontic Treatment ( 1 hr /16 wks ) | White/Saunders | D | 16.0 | 1.0 |
| DSOR 6206 | Dento/Craniofacial Anomalies ( 1hr/16 wks ) | Hernandez | D | 16.0 | 1.0 |
| DSOR 6844 | Research 4 ( Independent Study 4hr/16 wks) | Shellhart | R | 104.0 | 6.5 |
| DSOR 6934 | Clinical Orthodontics 4 | White | C | 392.0 | 8.2 |
|  | TOTALS |  |  | **640.0** | **23.7** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Spring Semester Year 2** |  |  |  |  |
| DPER 8317 | Advanced Diagnosis of Oral Lesions ( 2hr/6 wks) | Greer | D | 12.0 | 0.8 |
| DSOR 6207 | Treatment Planning 5 ( 4hr/17 wks) | Minick | C | 68.0 | 4.3 |
| DSOR 6208 | Current Literature Review 5 ( 1hr/17 wks ) | Minick | D | 17.0 | 1.1 |
| DSGD 6209 | Surgical Anatomy & Osteology (1 hr/17 ) | Powell | D | 17.0 | 1.1 |
| DSOR 6845 | Research 5 ( Independent Study 5hrs/17 wks) | Shellhart | R | 114.0 | 7.1 |
| DSOR 6935 | Clinical Orthodontics 5 | White | C | 416.0 | 8.7 |
| DSOR 6936 | Review for American Board Exam (1hr/17 wks) | White | D | 17.0 | 1.1 |
|  | TOTALS |  |  | 661.0 | 24.2 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Summer Semester Year 2** |  |  |  |  |
| DSOR 7311 | Scientific Writing & Evaluation (2hr/ 14 wk) | Shellhart | R | 28.0 | 1.8 |
| DSOR 7107 | Treatment Planning 6 ( 4hr/14 wks) | Minick | C | 56.0 | 3.5 |
| DSOR 7108 | Current Literature Review 6 (1hr/14 wks) | Minick | D | 14.0 | 0.9 |
| DSOR 7112 | Orthodontic Clinical Teaching 1 ( 4hr/14 weeks) | Minick | T | 56.0 | 3.5 |
| DSOR 7846 | Research 6 (Independent Study 6hr/14wks ) | Shellhart | R | 80.0 | 5.0 |
| DSOR 7936 | Clinical Orthodontics 6 | White | C | 343.0 | 7.1 |
| DSOR 7938 | Clinical Problems 1 (1 hr/14 wks) | Miller | D | 14.0 | 0.9 |
|  | TOTALS |  |  | 591.0 | 22.7 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Fall Semester Year 3** |  |  |  |  |
| DSOR 7207 | Treatment Planning 7 (4hr/16 wks) | Minick | C | 64.0 | 4.0 |
| DSOR 7208 | Current Literature Review 7 (1hr/16 wks) | Minick | D | 16.0 | 1.0 |
| DSOR 7212 | Orthodontic Clinical Teaching 2 ( 4hr/16 wks) | Shellhart | T | 64.0 | 4.0 |
| DSOR 7847 | Research 7 ( Independent Study 6hr/16 wks) | Shellhart | R | 80.0 | 5.0 |
| DSOR 7937 | Clinical Orthodontics 7 | White | C | 392.0 | 8.2 |
| DSOR 7939 | Clinical Problems 2 (1hr/16 wks) | Miller | D | 16.0 | 1.0 |
| DSOR 7940 | Retention 1 ( 3hr/16 wks) | Miller | D | 48.0 | 3.0 |
|  | TOTALS |  |  | 680.0 | 26.2 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Spring Semester Year 3** |  |  |  |  |
| DSOR 7307 | Treatment Planning 8 ( 4hr/9 wks) | Minick | C | 36.0 | 2.3 |
| DSOR 7300 | Current Literature Review 8 (1hr/9 wks) | Minick | D | 9.0 | 0.6 |
| DSOR 7312 | Orthodontic Clinical Teaching 3 (2hr/9 wks) | Shellhart | T | 18.0 | 1.1 |
| DSOR 7848 | Research 8 (Independent Study 5hr/9wks) | Shellhart | R | 32.0 | 2.0 |
| DSOR 7934 | Clinical Orthodontics 8 ( 234 hrs ) | White | C | 220.5 | 4.6 |
| DSOR 7941 | Retention 2 (4 hr/9 wks) | Miller | D | 36.0 | 2.3 |
|  | TOTALS |  |  | 351.5 | 12.9 |

**Semi-annual Evaluations**

The overall resident performance evaluation is based on the course grades, the clinical and written proficiency examinations, and the Academic, Professional, and Research Project Ratings. The Full-time faculty evaluate each resident and return completed evaluation forms to the program director on a semi-annual basis. The summary performance includes all aspects of the resident’s performance. Feedback is given to the resident at each evaluation time period in both written and oral form. An example of the evaluation is given below.

**Academic Rating**

**University of Colorado School of Dental Medicine -- Department of Orthodontics**

(Resident) (Evaluator) (Date)

**INSTRUCTIONS:Carefully evaluate the resident’s performance in each of the following areas during the last semester. Use the 5-point scale to make your evaluation. The highest evaluation is 5 and the lowest evaluation is 1. Please add any comments you feel appropriate. Comments are required for either a 1 or a 5 rating in any area, regarding how the resident can improve or why you feel they were outstanding in that area. Use the back of the rating sheet if more comment space is required.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNABLE TO EVALUATE** |  | **Definitely No**  **1** | **Below Average**  **2** | **Acceptable Or Average**  **3** | **Above Average**  **4** | **Definitely Yes**  **5** |
| **OBSERVED TRAIT** | |
| 1. Demonstrates open-mindedness, withholding judgment, examining contrary view. Changing his or her opinion in light of the facts, recognizes difference between facts and assumptions. | |  |  |  |  |  |
| 2. Demonstrates a developing intellectual curiosity, an interest in discovering and understanding problems | |  |  |  |  |  |
| 3. Asks good questions that are well thought out. | |  |  |  |  |  |
| 4. Asks questions primarily to gain information rather than to challenge the speaker or be argumentative. | |  |  |  |  |  |
| 5. Generally participates and is attentive in class; expresses opinions and/or asks questions readily in class. | |  |  |  |  |  |
| 6. Plays an active and constructive role in class. | |  |  |  |  |  |
| 7. Performance usually makes clear that he or she has read the assigned material. | |  |  |  |  |  |
| 8. Frequently asks for individual consultations on classroom and/or clinical problems. | |  |  |  |  |  |
| 9. Attends class regularly – rarely misses. | |  |  |  |  |  |
| 10. Is punctual in getting to class on time – rarely late. | |  |  |  |  |  |
| Additional Comments: | | | | | | |

**Professional Rating**

**University of Colorado School of Dental Medicine -- Department of Orthodontics**

(Resident) (Evaluator) (Date)

**INSTRUCTIONS:Carefully evaluate the resident’s performance in each of the following areas during the last semester. Use the 5-point scale to make your evaluation. The highest evaluation is 5 and the lowest evaluation is 1. Please add any comments you feel appropriate. Comments are required for either a 1 or a 5 rating in any area, regarding how the resident can improve or why you feel they were outstanding in that area. Use the back of the rating sheet if more comment space is required.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNABLE TO EVALUATE** |  | **Definitely No**  **1** | **Below Average 2** | **Acceptable Or Avrg**  **3** | **Above Average 4** | **Definitely Yes**  **5** |
| **OBSERVED TRAIT** | |
| 1. Is methodical, organized and thorough in his/her work, rarely careless or slipshod in patient care | |  |  |  |  |  |
| 2. Is conscientious, reliable, cooperative, and dependable, in carrying out suggestions and/or assigned tasks, or following through with patient care | |  |  |  |  |  |
| 3. Is mature, poised, and stable; demonstrates a sense of professional self- confidence | |  |  |  |  |  |
| 4. Demonstrates an understanding and/or acceptance or tolerance of the abilities, limitations, interests, and standards of behavior of co-workers and patients | |  |  |  |  |  |
| 5. Readily admits to making a mistake or to faulty reasoning and takes corrective action | |  |  |  |  |  |
| 6. Enjoys seeking knowledge for its own sake – attended local and/or national orthodontic meetings | |  |  |  |  |  |
| 7. Is active or interested in helping solve clinic or departmental problems | |  |  |  |  |  |
| 8. Adheres to clinic and departmental policies | |  |  |  |  |  |
| 9. Presents a professional appearance in terms of grooming, appearance, cleanliness, tidiness, etc. | |  |  |  |  |  |
| 10. Operatory unit and professional area neat and clean, including instruments, drawers, etc. – adheres to infection control procedures and environmental safety | |  |  |  |  |  |
| Additional Comments: | | | | | | |

**Research Rating**

**University of Colorado School of Dental Medicine -- Department of Orthodontics**

(Resident) (Evaluator) (Date)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNABLE TO EVALUATE** |  | **Definitely No**  **1** | **Below Average**  **2** | **Acceptable Or Average**  **3** | **Above Average**  **4** | **Definitely Yes**  **5** |
| **OBSERVED TRAIT** | |
| 1. Played an active and creative role in selecting his/her research topic | |  |  |  |  |  |
| 2. Thoroughly investigated the feasibility of the possible research topic before committing himself/herself to it | |  |  |  |  |  |
| 3. Played an active and creative role in working out the details of the research design | |  |  |  |  |  |
| 4. Developed a scholarly and comprehensive review of the literature | |  |  |  |  |  |
| 5. Submitted materials on schedule for review and comments | |  |  |  |  |  |
| 6. Incorporated criticisms and suggestions into the written material | |  |  |  |  |  |
| 7. Performance at final defense hearing demonstrated a thorough knowledge of the research topic as well as related and relevant area. (committee vote) | |  |  |  |  |  |
| 8. Demonstrated a mature, poised and professional demeanor during the final defense (committee vote) | |  |  |  |  |  |
| 9. The research is judged to be a comprehensive and scholarly piece of work. (committee vote) | |  |  |  |  |  |
| 10. Manuscript completed and in publishable format | |  |  |  |  |  |
| Additional Comments: | | | | | | |

**INSTRUCTIONS:Carefully evaluate the resident’s performance in each of the following areas during the last semester. Use the 5-point scale to make your evaluation. The highest evaluation is 5 and the lowest evaluation is 1. Please add any comments you feel appropriate. Comments are required for either a 1 or a 5 rating in any area, regarding how the resident can improve or why you feel they were outstanding in that area. Use the back of the rating sheet if more comment space is required.**

**Proficiency Exams**

A written comprehensive exam is given at the end of year one. It is a 4-hour written exam covering all of the course material for the 1st year of residency. Each faculty submits and grades individual portions of the exam to ensure the comprehensive nature of the exam. The exams are kept anonymous to the faculty to eliminate any potential bias during the grading process. To date, all residents have passed the written comprehensive exam.

Three Clinical Proficiency Exams ensure that residents are taking excellent orthodontic records, learning how to diagnose all types of orthodontic cases, creating realistic treatment objectives, formulating appropriate treatment plans, learning to evaluate and critique treatment results, and evaluating the ultimate success and short comings of their treatment strategy and utilized mechanics. The instructions and grading criteria for the clinical proficiency exams is given below.

**CLINICAL PROFICIENCY EXAMINATIONS 1 & 2**

**CU Department of Orthodontics**

**INSTRUCTIONS**

**(Revised 2-20-2019)**

I. Overview: The University of Colorado Proficiency Examinations are in two parts- written examinations and clinical examinations. Both parts of the examination are designed to test the residents’ progress toward or obtainment of proficiency in the specialty of Orthodontics and Dentofacial Orthopedics.

1. **Written Examinations**
   1. August – End of year 1
      1. Examination covers the didactic and patient care material given up to that time
   2. February – end of Program
      1. Examination concentrates on patient diagnosis, treatment planning and treatment
2. **Clinical Proficiency 1**
   1. Given during Semester 2
   2. Evaluates the quality of new patient records and record keeping
   3. Evaluates the problem list development, diagnosis, and treatment planning
   4. Patients presented in a modified American Board of Orthodontics format (Prior to 2019)
3. **Clinical Proficiency 2**
   1. Given during Semester 5
   2. Evaluates treatment progress through interim records
   3. Evaluates overall patient care and record keeping
   4. Patients presented in a modified American Board of Orthodontics format (prior to 2019).
   5. Treatment finish graded using American Board of Orthodontics criteria (prior to 2019).
4. **Clinical Proficiency 3 (Complete instructions are given in a separate document)**
   1. Given in Semester 8 (early February)
   2. Evaluates treatment finishing and progress through final or progress records
   3. Evaluates overall patient care and record keeping
   4. Patients presented in a modified American Board of Orthodontics format (prior to 2019).
   5. Treatment finish graded using American Board of Orthodontics criteria (prior to 2019).

**II. Clinical proficiencies 1 & 2:**

\***1st year residents:** Present **10 cases you started** (progress and/or finished records not expected).

**\*2nd year residents:** Present **10 cases that you started, made significant progress on, and/or finished.**

* If you have final records – prioritize these cases 1st
  + Comprehensive cases are highly preferred
  + Can use a phase 1 case – must show significant progress
  + Can use a limited case - but it would be the unusual limited treatment case that would demonstrate your excellence in diagnosis, treatment planning, and treatment mechanics– so use these with caution (limit 1 case)
* If you do not have 10 cases that you started with final records:
  + Present all cases with final records 1st, then complete to 10 cases with cases that you started and have progress records
    - Must have recent full progress records demonstrating significant progress – (casts/scans may be required at faculty discretion).
    - If you must use a case you did not start (try to avoid these)

**What to Prepare:**

1. For each patient, please prepare a stapled packet of information as follows (a notebook is not appropriate):
2. Axium printouts (Treatment Planning & Final TABS) as appropriate

Please complete the appropriate TABs in Axium and printout to present for this proficiency. If you have a 4 page summary that was started prior to Axium conversion but has not been completed, please include it along with the Axium printouts.

**Remember: You will be graded on your knowledge of the treatment plan, your ability to assess the treatment plan success, and your ability to discuss alternative treatment plans that might have been more/less successful.**

1. Dolphin Printouts
   1. Composite 10 printout (Please place on the top for easy viewing)
   2. Scan of Models Printout (if appropriate)

3. Ceph Tracings (with the CU ceph measurements printed) and superimpositions (in-color) (second year residents only- when progress and/or final records are presented; use the superimposition method outlined in O:/Shared/Finished Case Forms/Superimpositions)

1. DI <all cases> - should be in axiUm printouts
2. Cast-radiograph evaluation forms (also known as OGS) – for completed cases that have casts (won’t work for digital scans that have not been printed).
   1. Completed cases with casts (**not scans**)
      1. (O:/Shared/Finished Case Forms/ DI, Eval, Mngmnt forms 2011-2012). \*The Esthetic Plane used in the Mngmnt Form is Rickett’s E Plane. A line is drawn from tip of nose to soft tissue Pogonion. The norm for the upper lip is 4 mm behind the line and the norm for the lower lip is 2 mm behind the line.
3. Grading Sheet - Please include with the packet but don’t staple to the packet
   1. Fill out (with your name and the patient’s name) one copy per case of the attached grading sheet (Clinical Proficiency Examination Evaluation)

3. PRESENTATION

A. On the day of the presentation, you will be assigned a time and a room.

B. Line up the patient write ups on the table with the study models (if available) sitting on top of the patient’s packet. The first patient that utilized an articulator should have the articulator present with the initial casts mounted on the articulator.

C. The faculty will call you when they are ready to examine you.

D. Grading will be done on the completeness and accuracy of the study models, mounting, radiographs, photos, and write ups. Your patient material and articulator should be neat, clean and reflect a high degree of professionalism.

**Clinical Proficiency Examination Evaluation**

**CU Dept of Orthodontics**

1/11/2008

Proficiency Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Proficiency Number:  **1 2 3**

Resident Name: ­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**OVERALL EVALUATION**

(Check Appropriate Box)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | NA | Excellent = 2 | Acceptable = 1 | Unacceptable = 0 |
| Completeness of Records |  |  |  |  |
| Quality of Records |  |  |  |  |
| Professional Appearance Folder |  |  |  |  |
| Quality of Write Up |  |  |  |  |
| Treatment Progress Evaluation |  |  |  |  |
| Completeness Chart Entries |  |  |  |  |
| Treatment Result Evaluation |  |  |  |  |
| Resident Familiarity with Patient |  |  |  |  |
| Resident Knowledge of Plan |  |  |  |  |
| Resident Knowledge of Progress |  |  |  |  |
| Resident Knowledge of Mechanics |  |  |  |  |
| Resident Knowledge of Result |  |  |  |  |
| Overall Evaluation |  |  |  |  |

Shaded areas for Proficiencies 2 & 3 only.

**ABO Written Exam Results**

An external measure we use to help determine the success rate of graduates is success in passing the American Board of Orthodontics Written examination.

|  |  |  |
| --- | --- | --- |
| **Success on American Board of Orthodontics Examination** | | |
|  | **Phase II Examination** | |
| **Year** | **# Examined/ Possible #** | **Pass Rate of Examined** |
| 2010 | 16/16 | 100% |
| 2011 | 15/15 | 100% |
| 2012 | 15/15 | 100% |
| 2013 | 15/15 | 100% |
| 2014 | 15/15 | 100% |
| 2015 | 15/15 | 100% |
| 2016 | 15/15 | 100% |
| 2017 | 15/15 | 93.3% |
| 2018 | 15/15 | 100% |
| 2019 | 15/15 | 100% |
| 2020 | 15/15 | 100% |

**ABO Written Exam Scores by class:**

Since the first graduating class in 2006, 198 of 199 graduates have taken and passed the ABO written examination.

The Class of 2018 had an average Written ABO score of 660 (National Average = 629). There were 12/15 that scored above the national average.

The class of 2019 had an average Written ABO score of 641 (National Average = 623). There were 11/15 that scored above the national average.

The class of 2020 had an average Written ABO score of 632 (National Average = 603). There were 12/15 that scored above the national average.

**ABO Clinical Examinations**

The American Board of Orthodontics clinical exam is an **optional** **(not required)** exam that may be challenged by graduates typically after their graduation. Currently, most practicing Orthodontists are not ABO certified. Until February 2019, graduates had to present six finished cases that met ABO selection criteria and receive a passing score on the board’s objective grading system. In addition to the case requirements portion of the ABO exam, graduates seeking board certification had to take and pass an oral exam.

Starting in February 2019, the ABO changed the exam format to a scenario based exam in an effort to increase the number of board certified orthodontists in the US and Canada. This has allowed candidates to take the exam immediately after the completion of a residency program (instead of waiting for several years while they collected cases they had completed in their private practices). As can be seen, the number of candidates challenging the board exam did increase in 2019 from prior graduating classes.

The CU Orthodontics graduate residency program encourages graduates to challenge the clinical exam but cannot require that they take it. In an effort to increase ABO certification, Dr. Minick (the program director) has become an advocate for the American Board of Orthodontics and promotes certification while preparing residents for a successful challenge of the exam. Over the past 2 years, Dr. Sabot (an ABO governing board member and invited guest speaker) has also been helping the faculty at CU Orthodontics to prepare its residents by presenting strategies for success in challenging the clinical exam. Currently, all fifteen residents from the class of 2020 have signed up to take the exam prior to graduation this year.

Below is the current number of ABO Certified graduates from program inception tabulated by class. **Note** – due to changing from a 27 month residency program to a 30 month residency program there is no class of 2011. (Graduation moved from November to February of the following year).

|  |  |
| --- | --- |
| **Graduation** | **Number** |
| **Year** | **Certified** |
| 2006 | 7 |
| 2007 | 2 |
| 2008 | 1 |
| 2009 | 1 |
| 2010 | 0 |
| 2012 | 1 |
| 2013 | 6 |
| 2014 | 1 |
| 2015 | 1 |
| 2016 | 2 |
| 2017 | 0 |
| 2018 | 1 |
| 2019 | 6 |

**Case Presentations / Table Presentations**

To ensure quality of patient care, case presentation and table clinic presentation are conducted on a routine basis. On a rotating schedule, all cases treated in the department are displayed in the residency room and reviewed by the residents and faculty. Most cases are also presented in a seminar format allowing for questions to be asked and answered by the treating resident and faculty on an individual case by case basis. Problematic cases are reviewed in the Clinical Problems course with the treating resident and faculty in an effort to gain perspective and achieve successful clinical outcomes.

**Program Improvement**

Each summer a faculty retreat is conducted to assess the success of the program and to make changes for future years. The Exit interviews from the graduating class, input from the current class presidents, and faculty and staff input are all utilized in an effort to make improvements to the program. Documentation from faculty retreats are available upon request.

One program goal that we have instituted in 2019 is to increase the number of Invisalign case starts per year. Currently, the residency program starts about 45 cases of Invisalign therapy on an annual basis. We have changed our pricing strategy to decrease barriers to entry and expect to increase the number of yearly starts for the program to 60-75 cases per year. This will substantially increase the number of Invisalign cases treated by each resident during their program.

Clear aligner therapy (Invisalign and other brands) continues to increase its presence in contemporary orthodontics. In addition to increasing case numbers, we are addressing educational need by adding a weekly seminar to teach modern principles of aligner therapy (new in Spring of 2019).

One concern that previous residents mentioned in their exit interviews was the Practice Management course was taught in the Spring semester of their 2nd year. They stated that the course should be moved earlier to allow for more time for them to prepare their practices before graduation. As a result, the course was moved to the Fall semester of their 2nd year in 2017. The move has been well received by the residents.

Technology continues to impact the practice of orthodontics. To address the recent changes in orthodontic imaging, the residency program has purchased (2018) an intraoral scanner and extra oral scanner. Intra oral scans of the patient dentition is reducing the amount of plaster casts generated and helping to educate our residents in 3D digital treatment planning. We are converting old plaster casts into 3D digital images that can be easily accessed and reviewed. A 3D radiographic imaging machine was purchased (2017) by the department of orthodontics in order to have better access for our patients.