



**INDIANA UNIVERSITY**

**SCHOOL OF DENTISTRY**

**IUPUI**

**Indiana University School of Dentistry**

**Report to the IUPUI Program Review and Assessment Committee**

**Doctor of Dental Surgery Program**

**2016-17**

# Indiana University School of Dentistry

## Doctor of Dental Surgery Program

### PRAC Report, 2016-17

#### Overview of Programs

The Indiana University School of Dentistry (IUSD) offers a certificate program in Dental Assisting, an Associate of Science degree in Dental Hygiene (DH), a Doctor of Dental Sciences (DDS) and post-graduate Advanced Education and Specialty programs degrees in Periodontics, Pediatric Dentistry, Oral Surgery, Endodontics, Prosthodontics, Orthodontics, Operative Dentistry, Dental Materials and Preventive Dentistry.

**This report contains the review of the DDS program which is a graduate level program. The PRAC reports for the Dental Hygiene program and the Dental Assisting program are each submitted under a separate cover.**

#### Introduction: DDS PROGRAM

Dental education in the U.S. is competency-based. The accrediting body of dentistry, the Commission on Dental Accreditation (CODA), permits each dental school to establish the specific learning outcomes and associated measures that, when demonstrated independently by each student, are deemed to be evidence of successful completion of the requirements of the degree. IUSD maintains detailed student-level tracking of all competencies via its outcomes measures documentation. At the program and institutional level there are additional measures used to track the progress of the school towards the stated Mission, Goals, and Vision of IUSD.

<https://www.dentistry.iu.edu/index.php/about-us/mission-and-goals/>

#### Accreditation and Ongoing Institutional and Program Review

In 2013, the DDS program IUSD was granted full accreditation for achieving or exceeding the basic requirements established and defined in the CODA Standards for Dental Education Programs. Ongoing Institutional and Program review is an expectation that must be demonstrated by all accredited dental programs. The DDS Curriculum and Assessment Committee (CAC), DDS Student Progress Committee and the IUSD Outcomes Assessment Committee (IOAC) are examples of standing committees charged with ongoing review of the DDS program, individual student achievement and the effectiveness of the institution, respectively.

Data used each year in the course and program reviews include:

- Analysis of student performance in courses, clinics, discipline competency examinations, and on National Written and Regional Clinical Boards
- Course syllabi
- Course/module review forms (completed by instructor)
- CoursEval reports (the electronic data base of student course evaluations)
- Student focus groups reports
- Senior Exit Interviews (IUSD and American Dental Education Association)

This information is collected by the IUSD Office of Academic Affairs and then routed to the appropriate faculty member, standing committee of the faculty council or administrative office in order to identify areas of strength or deficiencies, and for recommendations for improvement.

#### STUDENT LEARNING OUTCOMES, DOCTOR OF DENTAL SURGERY

To demonstrate successful completion of the curriculum, IUSD has established 20 Institutional Competencies that each student must achieve to be deemed competent for the beginning practice of general dentistry and to be eligible for graduation. Competency includes complex behaviors or abilities that include knowledge, experience, critical thinking

and problem-solving skills, professionalism, ethical values, and technical and procedural skills. The IUSD Institutional Competencies have been developed by the discipline, or disciplines working together, to measure student development across the program. The assessments used to evaluate student competence are outlined in the IUSD Competency Manual, which serves to guide faculty and students in the preparation for, and evaluation of, student competence. Each clinical assessment, developed by the related disciplines, is used as a direct measure of at least one IUSD Institutional Competency, and most map to all four of the IUPUI Principles of Graduate and Professional Learning (PGPL):

1. Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field
2. Thinking critically, applying good judgment in professional and personal situations
3. Communicating effectively to others in the field and to the general public
4. Behaving in an ethical way both professionally and personally

Students are tracked **individually** in their progress toward each of these competencies (student learning outcomes).

### **The IUSD Institutional Competencies for the Dental Graduate:**

The IUSD graduate **must be competent** in:

1. patient assessment, diagnosis, and referral (PGPL 1,2,3,4)
2. treatment planning (PGPL 1,2,3,4)
3. communicating and collaborating with individuals and groups to prevent oral disease and promote oral and general health in the community (PGPL 1,2,3,4)
4. control of pain and anxiety, clinical pharmacology, and management of related problems (PGPL 1,2,3,4)
5. prevention and management of dental and medical emergencies (PGPL 1,2,3,4)
6. detection, diagnosis, risk assessment, prevention, and management of dental caries (PGPL 1,2,3,4)
7. diagnosis and restoration of defective teeth to form, function and esthetics (PGPL 1,2,3,4)
8. replacement of teeth including fixed, removable and dental implant prosthodontic therapies (PGPL 1,2,3,4)
9. diagnosis and management of periodontal disorders (PGPL 1,2,3,4)
10. prevention, diagnosis and management of pulpal and periradicular diseases (PGPL 1,2,3,4)
11. diagnosis and management of oral mucosal and osseous disorders (PGPL 1,2,3,4)
12. collecting and assessing diagnostic information to plan for and perform uncomplicated oral surgical procedures (PGPL 1,2,3,4)
13. recognizing and diagnosing malocclusion and space management needs (PGPL 1,2,3,4)
14. discerning and managing ethical issues and problems in dental practice (PGPL 1,2,3,4)
15. understanding and application of the appropriate codes, rules, laws and regulations that govern dental practice (PGPL 1,2,3,4)
16. behavioral patient management and interpersonal skills (PGPL 1,2,3,4)
17. understanding the fundamental elements of managing a dental practice (PGPL 1,2,3,4)
18. performing and supervising infection control procedures to prevent transmission of infectious diseases to patients, the dentist, the staff and dental laboratory technicians (PGPL 1,2,3,4)
19. providing evidence-based patient care in which they access, critically evaluate, and communicate scientific and lay literature, incorporating efficacious procedures with consideration of patient needs and preferences (PGPL 1,2,3,4)
20. recognizing the role of lifelong learning and self-assessment to maintain competency (PGPL 1,2,4)

Student preparation for and evaluation of competence occur as an integrated part of all aspects of the DDS program with multiple measures of student mastery of knowledge, skills, behaviors and attitudes. Each discipline defines, annually reviews and revises as needed, the quantity and quality of experiences necessary to be eligible to challenge a summative written or clinical competency examinations. The IUSD Office of Academic Affairs meets with the discipline directors and key faculty to provide support in their review of the discipline assessments.

Formative and summative assessments utilized in the program are summarized in **Table 1**.

<b>TABLE 1. Formative and Summative Assessments in Pre-doctoral Dental Education</b>		
<b>Assessment Area</b>	<b>Formative Assessments</b>	<b>Summative Assessments</b>
Clinical Procedures	<ul style="list-style-type: none"> <li>• Applied patient management activities</li> <li>• Daily comp care clinical assessment</li> <li>• Rotation clinical evaluations</li> <li>• Lab examinations</li> <li>• Objective structured clinical examination (OSCE)</li> <li>• Rounds presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Case-based assignments</li> <li>• Evidence-based literature critique</li> <li>• Lab examinations</li> <li>• OSCE</li> <li>• Written examinations</li> <li>• Clinical competency assessments</li> </ul>
Problem Solving	<ul style="list-style-type: none"> <li>• Applied patient management activities</li> <li>• Daily comp care clinical evaluation</li> <li>• Rotation clinical evaluation</li> <li>• Lab examinations</li> <li>• OSCE</li> <li>• Reflective writing, including ethics and behavioral sciences</li> <li>• Rounds presentations</li> <li>• Written examinations</li> </ul>	<ul style="list-style-type: none"> <li>• Case-based exams</li> <li>• Lab examinations</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Written Examinations</li> <li>• Clinical competency assessments</li> </ul>
Clinical Reasoning	<ul style="list-style-type: none"> <li>• Applied patient management activities</li> <li>• Daily comp care clinical evaluations</li> <li>• Rotation clinical evaluations</li> <li>• Lab examinations</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Rounds presentations</li> <li>• Written examinations</li> <li>• Annotated Bibliography Assignments</li> </ul>	<ul style="list-style-type: none"> <li>• Case-based exams</li> <li>• Lab examinations</li> <li>• Reflective writing</li> <li>• Written Examinations</li> <li>• Clinical competency assessments</li> </ul>
Professionalism	<ul style="list-style-type: none"> <li>• Applied patient management activities</li> <li>• Clinical professionalism 360 evaluation</li> <li>• Daily comp care clinical evaluations</li> <li>• Rotation clinical evaluations</li> <li>• Ethical sensitivity assessment</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Rounds presentations (ethical, clinical and behavioral rounds)</li> <li>• Written examinations</li> </ul>	<ul style="list-style-type: none"> <li>• Case-based exams</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Written examinations Clinical competency assessments</li> </ul>

Ethical Decision-making	<ul style="list-style-type: none"> <li>• Applied patient management activities</li> <li>• Clinical professionalism 360 evaluation</li> <li>• Daily comp care clinical evaluations</li> <li>• Rotation clinical evaluation</li> <li>• Ethical sensitivity assessment</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Rounds presentations (ethical, clinical and behavioral)</li> <li>• Written examinations</li> <li>• Annotated Bibliography Assignments</li> </ul>	<ul style="list-style-type: none"> <li>• Case-based exams</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Written examinations</li> <li>• Clinical competency assessments</li> </ul>
Communication Skills	<ul style="list-style-type: none"> <li>• Clinical professionalism 360 evaluation</li> <li>• Daily comp care clinical grading</li> <li>• Rotation clinical grading</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Rounds presentations</li> <li>• Written examinations</li> <li>• Annotated Bibliography Assignments</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical competency assessments</li> <li>• Critical incident reports</li> <li>• OSCE</li> <li>• Reflective writing</li> <li>• Written examinations</li> </ul>

In dentistry, clinical assessments are highly authentic, and “capstone” student experiences are very similar to those required of a practicing general dentist. As an example, a student's ability to diagnose, treatment plan, clinically prepare and evaluate the finished work for a patient requiring multiple dental procedures is done by direct evaluation of these skills (patient management and communication, diagnosing, treatment planning, clinically providing the needed treatment and then evaluating the outcomes of the treatment) within the context of an actual patient. Students who are not successful on competency examinations are remediated as needed, given additional opportunities to master the skills and then must attempt the competency again. In addition to the successful completion of all of the required courses in the curriculum, students are not eligible to graduate until they have demonstrated achievement for all 20 IUSD Institutional Competencies.

Student outcomes for each of the 20 IUSD Institutional Competencies are continuously tracked and compiled annually for use by Faculty Standing Committees in planning and decision making. Other student measures, including Focus Group Data and Senior Exit Surveys provide data used in program development, benchmarking, and for curricular and advising assessment. Examples of these standing committees are:

1. Department, Discipline, Course and Module faculty to evaluate curriculum and classroom assessment, competency measures, and content.
2. Curriculum and Assessment Committee for ongoing curricular review.
3. IUSD Progress Committee to certify students are prepared for the independent practice of dentistry prior to approving the student for graduation.
4. Institutional Outcomes Assessment Committee to evaluate the effectiveness of the program and curriculum.

### Indirect Measures

Indirect measures are also used to evaluate student outcomes and programmatic effectiveness. Student Focus Groups are used to collect student feedback on a broad range of issues, including unplanned curricular redundancy, applicability of content in courses and the effectiveness of new curricular components incorporated into the program. IUSD also has a student-run, faculty attended Student Curriculum and Assessment Committee that meets regularly and which provides input directly to the DDS Curriculum and Assessment Committee (CAC). Each DDS class has a non-voting representative on the CAC to provide the student perspective.

Each DDS student completes a Senior Exit Survey for the American Dental Education Association and an additional Exit Survey for IUSD. These surveys provide information about student satisfaction with advising, the curriculum, their

sense of preparedness to practice and job placement. Recent exit interviews indicate that approximately 25% of IUSD DDS graduates go on to advanced programs; and most others who had searched for a position of employment had secured a job that they would begin upon obtaining their license.

## **2016-17 EXAMPLES OF PROGRAM REVIEW AND REVISIONS**

A number of factors are impacting the review, recommendations and revisions to the DDS Program at the School of Dentistry:

- September 23, 2016 marked the groundbreaking for the James J. Fritts, D.D.S. Clinical Care Center, a \$21.6 million building which will provide 45,000 square feet to house approximately 125 new clinical operatories. Set to be completed in March 2018, the expansion space allows for the evaluation of the learning environment and the opportunity to enhance the DDS curriculum in both the new and existing spaces as well as consideration for future space realignments, renovations, and upgrades.
- In 2013, an Academic Task Force was charged with reviewing the then current “megacourse” structure and determined that discipline-specific modules obscured student achievement. Based on discipline and content, the creation and implementation of independent *didactic* courses, primarily in the Year 1 and Year 2, were completed in A.Y. 2015-16. In A.Y. 2016-17, the IUSD Office of Academic Affairs continued the process of determining the discipline-specific *clinical* courses, primarily in the Year 3 and Year 4, by working with the department chairs and their faculty to discuss sequencing and expected student outcomes. Implementation of the independent *clinical* courses will occur in A.Y. 2017-18.
- In A.Y. 2014-15, the Curriculum and Assessment Committee (CAC) reviewed the clinical curriculum and recommendations regarding the clinical experiences during the four years of the DDS program included the following:
  1. Maximize early patient experiences appropriate to the stage in dental school
  2. Integrate basic, social and clinical sciences
  3. Build upon experiences of the previous semester(s)
    - a. Year 2: Allow for integration of past experiences to impact the development of Comprehensive Treatment Planning skills
    - b. Year 3: Continue to advance Comprehensive Treatment Planning skills
    - c. Year 4: Enhance skills, refine efficiency and continue excellence

As an example, for implementation in A.Y. 2017-18, the Department of Prosthodontics developed a sequence which divides the four years of prosthodontic experiences into three phases: preclinical, discipline clinic (demonstrate competency) and comprehensive care clinic (maintain competency). Clinical assessments in Year 3 and Year 4, designated as “Prosthodontic Readiness Experience” and “Prosthodontic Assessment of Competency” portfolios, align with the preclinical assessments utilized in the Year 1 and Year 2.

- In 2014, an IUSD committee was appointed to determine the feasibility of developing a Community Based Dental Education (CBDE) program for dental students in their D4 year with the intent of developing a culturally competent oral health care workforce and fostering an appreciation for the value of community service. In the summer semester of 2015, D4 students were given the opportunity to participate in a pilot program comprised of a 2-week elective rotation at a dental safety-net clinic. Based on CBDE Pilot I, modifications were made for CBDE Pilot II in the summer semester of 2016, including student selection for participation and preceptor resources. A CBDE Steering Committee was established and a Student Credentialing and Verification Process was drafted. In A.Y. 2017-18, under the leadership of the Director of Community Based Dental Education, who joined the IUSD team in September 2017, a CBDE program is on track to be a required part of the curriculum for all D4 students next academic year.
- A CAC subcommittee on Prescribing Practices, Opioid Use and Substance Abuse was charged to review the current status in the curriculum and make recommendations for future directions to consider in the DDS program in anticipation of a revision to CODA Standard 2-23e:

At minimum, graduates must be competent in providing oral health care within the scope of general dentistry, as defined by the school, including:

- e. local anesthesia, and pain and anxiety control, **including consideration of the impact of prescribing practices and substance abuse.**

The standard was approved for immediate implementation on August 4, 2017. The subcommittee reviewed the existing curriculum to establish DDS Program Goals and to identify potential opportunities for the topic to be introduced, practiced, and reinforced. In A.Y. 2017-18, CAC will provide recommendations to Department Chairs for the planning and implementation of assessments.

## **PROGRAM-LEVEL CURRICULUM ASSESSMENT: THE IUSD CURRICULUM AND ASSESSMENT COMMITTEE**

CODA Standard 2-7 states:

The dental school **must** have a curriculum management plan that ensures:

- a. an ongoing curriculum review and evaluation process which includes input from faculty, students, administration and other appropriate sources;
- b. evaluation of all courses with respect to the defined competencies of the school to include student evaluation of instruction;
- c. elimination of unwarranted repetition, outdated material, and unnecessary material;
- d. incorporation of emerging information and achievement of appropriate sequencing.

At IUSD, the policies and work that support this Standard are undertaken by the Curriculum and Assessment Committee. (CAC).

In A.Y. 2015-16, IUSD established a four-year curriculum review plan that looks in detail at each course within a given semester and year. This serves as one foundation for systematic, on-going program review. The program review schedule has been mapped out through 2024 as follows:

Semester	Portion of the Curriculum for Review	Special Reviews
Fall 2015	Summer Session Year 1	
Spring 2016	Fall Semester of Year 1	
Fall 2016	Spring semester of Year 1/Summer Session Year 2	
Spring 2017	Fall Semester of Year 2	
Fall 2017	Spring semester of Year 2/Summer Session Year 3	
Spring 2018	Fall semester of Year 3	
Fall 2018	Spring semester of Year 3/Summer Session Year 4	
Spring 2019	Fall Semester of Year 4	
Fall 2019	Spring semester of Year 4	Evaluation of Recommendations and Action Plans Years 1-4
Spring 2020	Summer Session Year 1	
Fall 2020	Fall Semester Year 1	Accreditation
Spring 2021	Spring semester of Year 1/Summer Session Year 2	
Fall 2021	Fall Semester of Year 2	
Spring 2022	Spring semester of Year 2/Summer Session Year 3	
Fall 2022	Fall semester of Year 3	
Spring 2023	Spring semester of Year 3/Summer Session Year 4	
Fall 2023	Fall Semester of Year 4	
Spring 2024	Spring Semester Year 4	

In A.Y. 2016-17, the D1 Spring semester and D2 Fall semester were reviewed in depth by CAC, including evaluation of syllabi and course content, course director comments, student assessment of courses and student focus groups. Examples of course recommendations and current status are provided below:

Course (semester)	Recommendation	Status
D515/D615 Systems approach to Biomedical Sciences I and II (D1 Spring/D2 Fall)	Collaborate with course director of D661 Fundamentals of Clinical Medicine (D2 Spring) to create greater continuity between the courses	Course directors met to discuss learning objectives and sequencing for coordination of the courses in A.Y. 2017-18.
D560 Local Anesthesia (D1 Spring)	Develop a process to track and monitor clinical injection administration experiences in preparation for direct patient care	In Spring 2017, implementation of local anesthetic injection tracking form* in axiUm Clinical Activity Report (electronic record) to track experiences with the DDS Class of 2020. Students must have faculty approve a designated number successful injection experiences by the end of D2 year. Outcomes will be assessed in A.Y. 2018-19, when the students begin direct patient care.
D601 Applied Clinical Dentistry (D2 Fall)	Establish student learning outcomes for the mentor (D4) to maximize the benefits gained by both the mentor (D4) and mentee (D2) through the experience.	IUSD OAA moderated a meeting for the course director, D2, D3 and D4 students.

\*Local anesthetic injection tracking form used in D560:

## **STUDENT OUTCOMES, 2016-17**

Graduation rate for the Doctor of Dental Surgery program is generally over 90% of students graduating in four years. For the original D1 cohort of 104 students in the Class of 2017, 90 graduated in four years. All members of the Class of 2017 have successfully completed all 20 of the Institutional Competencies for an on-time graduation. The student success on written and clinical licensing exams is also high for the Class of 2017 with 100% pass rate for NBDE Part I and Part II.

Of the entire DDS Class of 2017 (n=109), 13 students were accepted in to 1-year advanced general dentistry residency programs and 9 students were accepted into multi-year Advanced Specialty Residency programs.

## **SUMMARY**

The IUSD Institutional Competencies define what a competent graduate will be able to do upon graduation. Multiple assessments are used to evaluate students across four years of the program and include the assessment of broad range of attributes, aligning with both the IUPUI Principles of Graduate and Professional Learning and CODA Standards for Dental Education Programs. Competency Assessment Exams serve as the final measurement of the defined set of knowledge, values and skills that have been developed through the formative daily feedback process.

The School has multiple processes in place to evaluate the content of the Doctor of Dental Surgery program, the measurement instruments used in student evaluation and the outcomes of those assessments which ensure that there is meaningful, ongoing evaluation of student learning. There are processes in place that provide for continuous evaluation of the program as a whole which result in ongoing improvements in student learning. The building expansion, set to open in spring 2018, has presented potential opportunities for innovation in student learning.