Predoctoral implant dentistry curriculum survey: European dental schools

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Purpose: In 2002 a survey of European dental schools was conducted. The purpose of the survey was to determine the curricular structure, teaching philosophies and materials used in predoctoral implant dentistry courses.

Materials and methods: Fifty-six European dental schools were randomly selected from the Association for Dental Education in Europe representing 33 countries. A questionnaire was mailed to the predoctoral implant dentistry director/chairperson of the selected European dental schools. Of these, 40 schools returned the completed survey, resulting in a response rate of 71%. The mean, median and range of responses were computed where applicable.

Results: The results from this survey show that 80% of the responding schools required a course in implant dentistry. Between 1997 and 1999 over a third of responding schools (36%) incorporated a predoctoral implant dentistry course into their curriculum. Eighty-seven per cent of the schools have some prosthodontists teaching the course. Thirty-seven per cent of schools are offering a laboratory course in conjunction with the implant course. Sixty-three per cent of the schools are not restoring implant cases at the predoctoral level. However, 68% of schools reported students are required to be present during implant surgery. Ten per cent of schools require that the implant-related laboratory work be completed by the students.

Conclusions: Predoctoral implant dentistry educational programmes vary from school to school. Yet a large percentage of schools agree on certain topics, including the importance of including implant education in predoctoral dental programmes.

Key words: endosseous implants; dental implant education; implant dentistry; dental curriculum; oral implantology.

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The use of oral implants in the rehabilitation of partially dentate and completely edentulous jaws has been a well-established and accepted contemporary clinical method (1). In 1988, a symposium was held in Toronto on the topic ‘Towards Optimized Treatment Outcomes for Dental Implants’. Following this symposium, a consensus report was developed which delineated the criteria that should be used with clinical trials evaluating the efficacy of implant therapy. A careful assessment of these criteria will disclose that the discipline of implant dentistry has indeed matured tremendously in the past two decades (2).

Studies conducted in the early 1990s revealed that an increasing number of schools in the United States have been including implant dentistry in their teaching curricula (3–8). There have been additional publications comparing dental school education in Europe and the United States (9, 10). One study looked at undergraduate implant training in the European Union and reported a significant variation in the curricula (11). The investigators also gave information on the number of hours devoted to each subject taught. Implant dentistry had a mean of 34 h and a range of 3–84 h devoted to its study. Another study investigated the incorporation of implant dentistry within the predoctoral dental curriculum in the United Kingdom and Eire (12). They found that 16 of 17 schools offered courses in implant dentistry to predoctoral and postdoctoral students. It is, therefore, apparent that more and more dental schools around the globe are incorporating implant dentistry into their curricula.

There has not been any recently published surveys assessing the trends in predoctoral implant education in European dental schools. The aim of this survey was to determine the current trends in predoctoral implant education, course content and departmental jurisdictions, and to determine what reported educational techniques and materials are currently being used by European dental schools.

Materials and methods

Fifty-six European dental schools were randomly selected from the Association for Dental Education in Europe in 2002 representing 33 countries. Between
one and four schools were randomly selected per country and a questionnaire was mailed to the director/chairperson of the prosthodontic/restorative departments of the selected dental schools requesting information on their predoctoral implant dentistry curricular content. (The questionnaire will be incorporated in the on-line version of the paper.) Following second, third and fourth mailings within a 9-month period, 40 of the 56 schools responded representing 23 countries, yielding a response rate of 71%.

The survey contained 33 questions and respondents were asked to circle all responses that applied to their programmes some of which were similar to previous surveys relating to predoctoral fixed prosthodontics curricula (13), preclinical complete denture curricula (14), predoctoral removable partial denture curricula (15), and predoctoral implant programmes in the United States (16). The questions were pilot-tested by four faculty members from the University of Pennsylvania as well as by 10 faculty members from other dental schools who approved of the questionnaire.

**Results**

The results are reported by summarising responses to each of the 32 questions in the survey.

**Requirement to take implant dentistry course in predoctoral curriculum (question 1)**

Thirty schools (75%) reported that they require the predoctoral students to take an implant dentistry course; 10 (25%) reported that they did not because they did not have a programme.

**Reason why an implant dentistry course is not offered (question 2)**

One of the six schools not offering an implant dentistry course reported ‘lack of curriculum time’ and ‘should not be in predoctoral curriculum’. Two schools (50%) reported ‘lectures are incorporated in a restorative/prosthodontics course’; another school (25%) reported ‘lack of curriculum time’ and ‘lack of financial resources’. Another school reported ‘lack of curriculum time’, ‘lack of financial resources’, ‘emphasis on postdoctoral program’ and ‘lectures are incorporated in a restorative/prosthodontics course’. One school did not offer an explanation.

**Year in which the implant dentistry course was first introduced in the curriculum (question 3)**

The results for the year that the implant dentistry course was first offered are summarised in Table 1.

**Department offering the implant dentistry course (question 4)**

Table 2 summarises which department is offering the implant dentistry course.

**Year(s) in the dental school that the implant dentistry course was offered (question 5)**

Table 3 summarises which year of dental school the implant dentistry course was offered.

**Time period during which the implant dentistry course was offered (question 6)**

Twelve schools (40%) reported that the duration of the implant dentistry course is less than 2 months; 14 (46%) reported that the duration of the implant dentistry course is between 3 and 6 months; three (10%) reported that the duration is between 7 and

<table>
<thead>
<tr>
<th>Answer</th>
<th>Number of responding schools (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 1990</td>
<td>3 (10)</td>
</tr>
<tr>
<td>1991–93</td>
<td>2 (7)</td>
</tr>
<tr>
<td>1994–96</td>
<td>7 (23)</td>
</tr>
<tr>
<td>1997–99</td>
<td>11 (37)</td>
</tr>
<tr>
<td>2000–01</td>
<td>4 (13)</td>
</tr>
<tr>
<td>2002–present</td>
<td>0 (0)</td>
</tr>
<tr>
<td>No response</td>
<td>3 (10)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department offering the predoctoral implant dentistry course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosthodontics and oral surgery</td>
</tr>
<tr>
<td>Prosthodontics only</td>
</tr>
<tr>
<td>Oral surgery only</td>
</tr>
<tr>
<td>Periodontics, prosthodontics and oral surgery</td>
</tr>
<tr>
<td>Restorative dentistry only</td>
</tr>
<tr>
<td>Periodontics only</td>
</tr>
<tr>
<td>Periodontics and prosthodontics</td>
</tr>
<tr>
<td>Restorative dentistry, periodontics, prosthodontics and oral surgery</td>
</tr>
<tr>
<td>Periodontics and oral surgery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3. Year of dental school in which predoctoral implant course is offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>First year only</td>
</tr>
<tr>
<td>Second year only</td>
</tr>
<tr>
<td>Third year only</td>
</tr>
<tr>
<td>Fourth year only</td>
</tr>
<tr>
<td>Fifth year only</td>
</tr>
<tr>
<td>Sixth Year only</td>
</tr>
<tr>
<td>Second and fourth years</td>
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<tr>
<td>Third and fourth years</td>
</tr>
<tr>
<td>Fourth and fifth years</td>
</tr>
<tr>
<td>Fifth and sixth years</td>
</tr>
</tbody>
</table>
12 months, and one (3%) reported that the duration is more than 13 months. The mean duration of the implant course was 4.2 months, with a median of 4.5 and the range was 2–13 months.

**Topics included in lecture series (question 7)**
Five of the schools (18%) reported that they included all 26 of the biological and clinical topics mentioned in question 7 of the survey. Because the remaining schools listed different combinations of topics, this question produced variable choices for the schools.

**Lecture hours devoted to the implant dentistry course (question 8)**
Nine schools (30%) reported between 11 and 20 lecture hours for their predoctoral implant dentistry course; seven (23%) reported between 21 and 30 h; nine (30%) reported fewer than 10 h; three (10%) reported between 31 and 40 h; one (3%) reported between 41 and 50 h; and one (3%) reported more than 50 h. The mean number of lecture hours was 20.3, the median was 15.5 h and the range was 10–50 h.

**Lecture availability on the Internet (question 9)**
Twenty-six schools (87%) reported that their lectures are not available on the Internet for students to review whilst three (10%) reported that their lectures are available. One school (3%) did not respond to this question.

**Textbook(s) as a requirement for the implant dentistry course (question 10)**
Nine schools (30%) reported they do not require a textbook(s) for their course, whilst 10 schools (33%) reported they do require a textbook for this course. Eleven schools (37%) did not respond to this question.

**Required textbooks for the implant dentistry course (question 11)**
Of the 10 schools that required a textbook, six (60%) were using Spiekermann’s ‘Implantology’, three (30%) were using Brånemark’s ‘Tissue Integrated Prosthesis Osseointegration in Implant Dentistry’, and one (10%) was using Misch’s ‘Contemporary Implant Dentistry’ (25%).

**Recommended textbooks (question 12)**
The most commonly used textbook was Brånemark’s ‘Tissue Integrated Prosthesis Osseointegration in Implant Dentistry’ (39%) followed by Spiekermann’s ‘Implantology’. Both textbooks were used either exclusively or in combination with other textbooks.

**Adjunct teaching aids utilised in this course (question 13)**
Table 4 summarises the teaching aids used in the predoctoral implant dentistry.

**Existence of laboratory course in conjunction with implant dentistry course (question 14)**
Eleven schools (37%) reported that they have a laboratory course in conjunction with the implant course and 19 schools (63%) reported that they did not.

**Total number of laboratory hours for this course (question 15)**
Of the schools with a laboratory component to their implant course, six (55%) reported between 6 and 10 laboratory hours; four (36%) reported <5 h; one (9%) reported between 21 and 25 h. The mean number of laboratory hours was 8.3, the median was 8 h and the range was 5–23 h.

**Use of partially dentate dentoform/model for the laboratory component of the implant dentistry course (question 16)**
Of the 11 schools that offer a laboratory course 10 (91%) used a partially dentate dentoform/model for the laboratory course whilst one did not.

**Use of a manikin head for the laboratory component of the implant dentistry course (question 17)**
Five (45%) of the 11 schools that offer a laboratory course used a manikin head whilst five (45%) did not. One school (9%) did not respond.

**TABLE 4. Adjunct teaching aids**

<table>
<thead>
<tr>
<th>Answers</th>
<th>Number of responding schools (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) only</td>
<td>1 (3)</td>
</tr>
<tr>
<td>(b) only</td>
<td>2 (7)</td>
</tr>
<tr>
<td>(c) only</td>
<td>0 (0)</td>
</tr>
<tr>
<td>(d) only</td>
<td>3 (10)</td>
</tr>
<tr>
<td>(e) only</td>
<td>4 (13)</td>
</tr>
<tr>
<td>(f) slides</td>
<td>1 (3)</td>
</tr>
<tr>
<td>(c), (e)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>(d), (e)</td>
<td>2 (7)</td>
</tr>
<tr>
<td>(a), (b), (c)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>(c), (d), (e)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>(a), (b), (d), (e)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>(a), (c), (d), (e)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>(b), (c),(d), (e)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>(a), (b), (c), (d), (e)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>No response</td>
<td>4 (13)</td>
</tr>
</tbody>
</table>

(a) CD-ROMs; (b) Brochures; (c) Videos; (d) Manuals/catalogues (provided by implant companies); (e) Demonstration kits for prosthetic components; (f) Other (slides).

*Rounding error; does not equal 100%.
Use of live demonstrations for the laboratory component of the implant dentistry course (question 18)
Of the 11 schools offering a laboratory component, five (45%) reported that they use live demonstrations whilst five (45%) did not. One school (9%) did not respond.

Use of pre-recorded video demonstrations for the laboratory component of the implant dentistry course (question 19)
Eight (73%) of the 11 schools that offered a laboratory course reported that they used pre-recorded video demonstrations and one (9%) did not. Two schools (18%) did not respond.

Student-to-faculty ratio for laboratory course (questions 20)
Four of the schools (37%) with a laboratory component reported a ratio of 10:1; three (27%) reported a ratio of <5:1; three (27%) reported a ratio of 5:1 and one (9%) reported a ratio of >15:1.

Prosthodontic faculty teaching predoctoral implant dentistry course (question 21)
Twenty-four schools (80%) reported that some of the faculty who teach the implant dentistry course are prosthodontists and one (3%) reported that they are not. Five schools (17%) did not respond.

Percentage of prosthodontic faculty (question 22)
The results for the percentage of prosthodontic faculty teaching are summarised in Table 5.

Faculty who are board-certified prosthodontists (question 23)
Eighteen schools (60%) indicated that the prosthodontic faculty who teach this course are board-certified and 10 (33%) indicated that they are not. Two schools (7%) did not respond.

Ratio of faculty who are board-certified prosthodontists (question 24)
Eight schools (27%) indicated that the ratio of the faculty who are board-certified to the faculty teaching implant dentistry was <2:6; three (10%) indicated that the ratio was 2:6; one (3%) indicated the ratio was 3:6 and three (10%) indicated 6:6. Fourteen schools (47%) did not respond.

Implant systems used surgically in predoctoral implant programme (question 25)
The implant systems used surgically in predoctoral implant programmes are summarised in the discussion.

Implant systems used in restorative phase in predoctoral implant programme (question 26)
The implant systems used in restorative phase of treatment in predoctoral implant programmes are summarised in the discussion.

Required presence of students during surgical placement of implants (question 27)
Nineteen schools (63%) reported that students are required to be present during the implant surgery whilst 11 (37%) reported that they are not.

Restoration of implants by predoctoral students (question 28)
Eleven schools (37%) reported that the students are restoring implant cases and 19 (63%) indicated that they do not.

Types of implant restorations treated by predoctoral students (question 29)
The responses to the types of implant cases restored by predoctoral students are summarised in the discussion.

Advocate connection of natural teeth with implants for fixed partial dentures (question 30)
Sixteen schools (54%) reported that they did not advocate the connection of natural teeth with implants for a fixed partial denture whilst 13 (43%) reported that they do advocate this. One school did not respond.

Required implant laboratory work (question 31)
Three schools (10%) reported that predoctoral students are required to do implant-related laboratory work and 27 (90%) reported that performance of laboratory work is not required.

<table>
<thead>
<tr>
<th>% of Prosthodontic faculty teaching implant course</th>
<th>No. of responding schools (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>76–100</td>
<td>2 (8)</td>
</tr>
<tr>
<td>51–75</td>
<td>1 (3)</td>
</tr>
<tr>
<td>41–50</td>
<td>1 (3)</td>
</tr>
<tr>
<td>26–40</td>
<td>4 (16)</td>
</tr>
<tr>
<td>11–25</td>
<td>9 (38)</td>
</tr>
<tr>
<td>5–10</td>
<td>7 (29)</td>
</tr>
</tbody>
</table>

*Rounding error; does not equal 100%.
Mandatory implant laboratory procedures performed by students (question 32)
Twenty-five schools (84%) did not respond to this question, possibly because it was directed at schools where students are required to perform implant laboratory procedures. Of the three that did respond, two (6%) responded that students pour up models, fabricate transitional and fabricate surgical stents. One school (3%) responded that students do all the related laboratory procedures.

Discussion
In recent years, implant dentistry has established a presence in the predoctoral dental curriculum. In US dental schools, the provision of implant dentistry has steadily increased from 33% in 1974 (17) to 89% in 1997 (18). Bavitz (3) predicted a rise in the number of predoctoral implant programmes in US dental schools. The current survey revealed that 75% of the responding European dental schools had an established implant dentistry programme by 2002. Although some schools did not offer predoctoral implant studies, they did incorporate implant-related lectures into their restorative and/or prosthodontic courses.

By 1999, most dental schools in Europe (77%) had already offered an implant dentistry course, and 13% started offering the course in 2000. Implant course lecture topics varied, as did the timing of the incorporation of the course into the dental curriculum. Thirty-seven per cent of dental schools offered their students an implant course in the fourth year. Fifty-seven per cent of schools offered the course after the fourth year in a combination of either the fourth and fifth year, the fifth and sixth year or the sixth year. The curriculum guidelines for predoctoral implant dentistry courses (19) define prerequisites including operative dentistry, fixed and removable partial dentures. In the European dental schools, the third year is focused on interdisciplinary study and the last 2 years are devoted to clinical dentistry, mainly in its integrated form (9).

Forty-six per cent of European dental schools reported that the duration of the implant dentistry course is between 3 and 6 months (mean 4.2 months). The total number of lecture hours given ranged between 11 and 50 h for the course.

In this survey only 37% of dental schools reported that the predoctoral students are restoring implant cases. This is consistent with a previous survey of the UK and Eire which reported that, almost without exception, the objective of undergraduate teaching is to provide patients with intelligent advice upon restoration of the dentition using implant procedures rather than to provide students with sufficient training to enable them to treat patients (12).

The performance of implant-related laboratory work by students is not required by the majority (90%) of European dental schools. This finding appears to correlate with the fact that in most schools predoctoral students are not actually treating patients with dental implants. Most schools, however, are placing importance on learning through observation, and therefore, are requiring these students to be present during implant surgeries.

Although the majority of schools (87%) do not have lectures available on the Internet, the majority of respondents are using a variety of other forms of teaching aids such as CD-ROMs and catalogues provided by implant companies as well as demonstration kits for prosthetic components. In addition, pre-recorded video demonstrations appear to be a popular teaching aid used by the majority of the school (73%).

The required textbook used most widely amongst European schools is Spiekermann’s ‘Implantology’, perhaps due to its high quality of photographs and the sequential manner in which different types of treatment plans have been described. The recommended textbook used most commonly (40%) was Bränemark’s ‘Tissue Integrated Prosthesis Osseointegration in Implant Dentistry’.

Nobel Biocare (Yorba Linda, CA) and ITI (Straumann, Waldenburg, Switzerland) implant systems were used most frequently, 15 and 19%, respectively, both in the surgical and restorative phases of treatment. Implant companies and educators are united in their efforts to introduce implant-related laboratory sessions to predoctoral students and implant companies often provide students with components and demonstration kits for hands-on applications.

Considering the increased usage and predictability of implants and the high demand from patients for implant restorations, surely implants will become a mainstay in the predoctoral curriculum. Maalhagh-Fard et al. (20) showed that recent graduates were more inclined to offer and restore implants in their practices when their dental school curricula included implant courses. Therefore, in order to prepare students well for viable use of dental implants in private practice, schools need to incorporate a combination of didactic, laboratory as well as clinical experience with dental implants in their predoctoral programmes.
Conclusion

The majority of responding schools (75%) required students to complete an implant dentistry course as part of their predoctoral training. Information acquired from the responding schools included quantitative curriculum structure and materials and educational techniques used. Tabulation of the responses revealed variability amongst schools in terms of certain aspects of the curriculum and the type of implants systems utilised. The data revealed some common trends as evidenced by the large percentage of schools agreeing on:
1. Unavailability of lectures on the Internet.
2. Lack of laboratory course in conjunction with the implant course.
3. Presence of students during implant surgery.
4. Student not being required to do implant-related laboratory work.
5. Predoctoral students not restoring implant cases.
6. Single-tooth implant restorations performed at the predoctoral level.

Questions with the most variable responses were:
1. Quantity of the lecture hours offered.
2. Course duration and the year the course was offered.
3. Educational qualification of the faculty.
4. Department jurisdiction.
5. Lack of required textbook.
6. Lecture topics taught.
7. Textbooks recommended.
8. Implant systems used both surgically and prosthetically in the course.

Acknowledgements

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References


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Appendix. Questionnaire sent to European dental schools

Implant Dentistry Survey of Predoctoral Programs

Instructions: Please circle all responses that apply to your school’s Implant Dentistry Curriculum. More than one answer may be selected.

1. In your curriculum, do you require the predoctoral students to take an Implant Dentistry course?
   a. yes
   b. no

2. If a predoctoral implant course is not offered, why?
   a. lack of curriculum time
   b. lack of financial resources
   c. emphasis on postdoctoral program
   d. lectures incorporated in a restorative/prosthodontic course
   e. lack of qualified faculty
   f. should not be in predoctoral curriculum
   g. concerns about long-term patient management

3. If you do offer the implant course to the predoctoral students, when did you start including the Implant Dentistry course as part of the curriculum?
   a. Prior to 1990
   b. 1991–1993
   c. 1994–1996
   d. 1997–1999
   e. 2000–2001
   f. 2002–

4. Which department offers the implant dentistry course to the predoctoral students?
   a. department of restorative dentistry
   b. department of periodontics
   c. department of prosthodontics
   d. department of oral surgery

5. In what year of dental school is this course offered?
   a. 1st year
   b. 2nd year
   c. 3rd year
   d. 4th year
   e. 5th year
   f. 6th year

6. What is the duration of this course?
   a. < 2 months
   b. 3–6 months
   c. 7–12 months
   d. > 13 months

7. Which of the following topics are included in the lecture series?
   a. historical overview of dental implantology
   b. concept of osseointegration classification and types of dental implants
   c. classification and types of dental implants
   d. implant biomechanics/biomaterials
   e. implant surface treatment
   f. anatomy and/or histology of the hard and soft tissue/implant interface
   g. implant patient education
   h. dental presurgical assessment of the implant patient
   i. medical presurgical assessment of the implant patient
   j. radiographic/image evaluation and analysis of the implant patient
   k. treatment planning for an implant-supported fixed partial denture
   l. treatment planning for an implant-retained overdenture
   m. treatment planning for partially edentulous cases
   n. treatment planning for fully edentulous cases
   o. treatment planning for the single tooth implant restoration
   p. screw-retained vs. cemented implant restoration
   q. occlusion on implant restorations
   r. craniofacial applications of implants
   s. implant site selection
   t. implant stage 1 and 2 surgical procedure
   u. implant postsurgical care
   v. adjunct surgical techniques for implant therapy (soft and hard tissue augmentation, sinus elevation techniques)
   w. implant surgical complications and management
   x. failing/ailing implants
   y. implant prosthetic complications and management
   z. current research and developments in implantology

8. How many lecture hours are devoted to this course?
   a. < 10
   b. 11–20
   c. 21–30
   d. 31–40
   e. 41–50
   f. > 50

9. Are any of the lectures available on the Internet for the students to review?
   a. yes
   b. no

10. Are there any required textbook(s) for the implant course?
    a. yes
    b. no

11. Which textbook(s) is/are required for the Implant Dentistry course?
afsharzand et al.

e. Spiekermann, H. Implantology. Thieme, 1995

12. If there are no required textbooks for the course, are there any recommended book(s) for the Implant Dentistry course?
e. Spiekermann, H. Implantology. Thieme, 1995

13. Are there any adjunct teaching aids utilised in the course?
   a. cd roms
   b. brochures
   c. videos
d. manuals/catalogs (provided by implant companies)
e. prosthetic components demonstration kits

14. Do you have a laboratory course in conjunction with the implant course?
   a. yes
   b. no

15. What is the total number of laboratory hours for this course?
   a. < 5
   b. 6–10
c. 11–15
d. 16–20
e. 21–25
f. > 25

16. Do you utilise a partially dentate dentoform/model for the laboratory course?
   a. yes
   b. no

17. Do you use a manikin head for the laboratory course?
   a. yes
   b. no

18. Do you have live demonstrations for the laboratory course?
   a. yes
   b. no

19. Do you use pre-recorded video demonstrations for the laboratory course?
   a. yes
   b. no

20. What is the student-to-faculty ratio for the laboratory?
   a. < 5:1
   b. 5:1
c. 10:1
d. 15:1
e. > 15:1

21. Is/Are any of the faculty who teach the course prosthodontists?
   a. yes
   b. no

22. What percentage of the faculty are prosthodontists?
   a. < 5%
   b. 5–10%
c. 11–25%
d. 26–40%
e. 41–50%
f. 51–75%
g. 76–100%

23. Are any of the faculty board-certified prosthodontists?
   a. yes
   b. no

24. If so, what is the ratio of the faculty who is board-certified prosthodontists to faculty teaching implant dentistry?
   a. < 2:6
   b. 2:6
c. 3:6
d. 4:6
e. 5:6
f. 6:6

25. Which implant system(s) is/are utilised surgically in the predoctoral program?
   a. Nobelbiocare
   b. 3i
c. ITI
d. Steri-Oss
e. Astra Tech
f. Friatec
g. Paragon
h. Other

26. Which implant system(s) is/are utilised restoratively in the predoctoral program?
   a. Nobelbiocare
   b. 3i
   c. ITI
d. Steri-Oss
e. Astra Tech
f. Friatec
g. Paragon
h. Other

27. Are predoctoral students required to be present during surgical placement of implants?
   a. yes
   b. no

28. Are the predoctoral students restoring implant cases?
   a. yes
   b. no

29. What types of cases are the predoctoral students restoring?
   a. single-tooth implant restorations
   b. implant-supported fixed partial denture restorations
   c. implant-retained overdentures
d. implant-supported overdentures
e. fixed-detachable/ metal-resin implant-supported fixed partial dentures

30. Do you advocate a fixed partial denture prosthesis that connects natural teeth and implants?
   a. yes
   b. no

31. Are predoctoral students required (is it mandatory) to do any implant-related laboratory work?
   a. yes
   b. no

32. If implant-related laboratory work is mandatory, which procedures do they complete?
   a. pouring models
   b. fabricating transitional dentures
c. fabricating surgical/radiographic stents
d. fabricating laboratory processed provisionals for implants
e. fabricating custom abutments
f. fabricating the bar for a bar and clip type prosthesis
g. fabricating framework for a metal-acrylic implant-supported fixed partial denture
h. fabricating definitive restorations (i.e. crowns, overdentures, etc.)