

AMC DENTAL COLLEGE AND HOSPITAL

Value added course on 3 - D PRINTING

ACADEMIC YEAR 2018-19

1. Nomenclature of the Course:

“Value added course in **3 – D PRINTING**”

Background:

The emergence of 3D (3-Dimensional) printing technology into the field of dentistry has afforded the practitioner capabilities that have recently been restricted to dental laboratories. Over the last 10 years, 3D printing technology has become more attainable for clinicians and has allowed them to deliver more accurate, cost effective, and time efficient treatments to patients. This revolutionary modality allows for the fabrication of working models, prosthodontic restorations, orthodontic appliances, surgical guides for implant placement, and maxillofacial prostheses

2. Objectives of program

This comprehensive three-day course module delves deeply into various aspects of 3D printing specific to dentistry, offering theoretical understanding, practical hands-on sessions, and discussions on applications, regulatory aspects, and future directions in dental 3D printing

3. Who Can Participate in the Course

Any interested students, post graduates, faculties at Amc Dental College and Hospital can participate in the course.

4. Duration of the Course

The total duration of the course is 21 hours

5. Course Fee: There will be no fee for the course

6. Award of Certificate

The students completing 80 % attendance will be awarded the course completion certificates.

7. Course Content

Day 1: 8 hours

Fundamentals of 3D Printing in Dentistry

Session 1: Introduction to 3D Printing in Dentistry

- **Overview of Additive Manufacturing in Dentistry:** Understanding the role and significance of 3D printing technology in dental applications.
- **Types of 3D Printing Techniques:** Exploring specific 3D printing methods used in dentistry such as Stereolithography (SLA), Digital Light Processing (DLP), and Fused Deposition Modeling (FDM).

Session 2: Digital Imaging and Scanning

- **Digital Imaging Techniques:** Exploring various digital imaging modalities used in dentistry for capturing patient data (CT scans, intraoral scanners).
- **Data Acquisition and Processing:** Understanding the process of converting scan data into 3D models.

Session 3: 3D Modeling and CAD Software for Dentistry

- **Introduction to CAD Software:** Familiarizing participants with software specifically designed for dental applications.
- **Designing Dental Prosthetics and Devices:** Hands-on session on designing crowns, bridges, aligners, and other dental prosthetics using CAD software.

Day 2: 8 hours

Session 4: Materials and Printing Techniques in Dentistry

- **Dental-grade Materials:** Exploring materials like biocompatible resins and polymers used for dental applications.
- **Printing Considerations:** Optimizing printing parameters for accuracy, strength, and biocompatibility in dental prints.

Session 5: Hands-on Workshop: Design and Printing

- **Dental Model Design Practice:** Guided practice session for participants to design dental models using CAD software.
- **Printing Demonstration:** Live demonstration of 3D printing dental models or prototypes.

Advanced Applications and Practical Implementation

Session 6: 3D Printing in Dental Prosthetics

- **Dental Prosthesis Fabrication:** Understanding the workflow for creating crowns, bridges, dentures, and orthodontic appliances using 3D printing.
- **Customization and Patient-Specific Devices:** Exploring the advantages of personalized dental devices for patient care.

Session 7: Surgical Planning and Guides

- **Surgical Guides:** Understanding the use of 3D-printed surgical guides for precise implant placement and oral surgeries.
- **Case Studies:** Analyzing successful implant surgeries using 3D-printed guides.

Day 3: 5 hours

Session 8: Digital Dentistry Integration

- **Integration with Digital Workflows:** Understanding how 3D printing integrates into digital dentistry workflows alongside other technologies like CAD/CAM systems.
- **Automation and Efficiency:** Exploring how digital workflows enhance efficiency in dental practices.

Session 10: Future Trends and Innovations

- **Emerging Technologies in Dental Printing:** Exploring the latest advancements and future trends in 3D printing for dentistry.
- **Innovations and Research Directions:** Discussing ongoing research and potential breakthroughs.

Session 11: Conclusion and Certificates

- **Summary and Key Takeaways:** Recapitulating the essential learnings and highlights of the course.
- **Certificates of Completion:** Providing certificates to participants for successful completion of the course

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