SGT UNIVERSITY

VALUE ADDED COURSES

Faculty of Dental Sciences 2024-25

About the University

SGT University, established in 2013 and recognized by the University Grants Commission (UGC), has set its sights on fostering a culture of research, innovation, and interdisciplinary education. Nestled on a sprawling 70-acre campus on the outskirts of Gurgaon, the university boasts state-of-the-art resources and infrastructure designed to facilitate cutting-edge academic and research achievements.

Driven by a relentless pursuit of excellence, SGT University has earned the prestigious NAAC A+ accreditation, becoming one of the youngest institutions in the country to receive this honour. This recognition highlights the university's commitment to maintaining high standards in education and research.

Among its broad array of academic programs, the university offers premier medical courses through the SGT Medical College, Hospital & Research Institute, which are considered among the best in the nation. These programs are seamlessly integrated with practical training and research opportunities, ensuring that students receive a comprehensive, world-class education in the medical field.

Our Vision

To nurture individual's excellence through value based, cross-cultural, integrated and holistic education adopting the contemporary and advanced means blended with ethical values to contribute in building a peaceful and sustainable global civilization.

Our Mission

- To impart higher education at par with global standards that meets the changing needs of the society
- To provide access to quality education and to improve quality of life, both at individual and community levels with advancing knowledge in all fields through innovations and ethical research.
- To actively engage with and promote growth and welfare of the surrounding community
- through suitable extension and outreach activities
- To develop socially responsible citizens, fostering ethical values and compassion through participation in community engagement, extension and promotion activities.
- To create competitive and coordinated environment wherein the individual develops skills and a lifelong learning attitude to excel in their endeavours.

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INTRODUCTION

In the dynamic and ever-changing global landscape, the need for lateral thinking, innovation, and entrepreneurial spirit has never been greater. Traditional educational approaches that focus solely on specific skill sets often become outdated due to the rapid pace of technological advancements. As such, no university curriculum can comprehensively address all areas of importance or relevance. To ensure that students are better equipped to meet industry demands, it is crucial for higher education institutions to supplement the core curriculum, helping students develop both their aptitudes and interests.

Objectives:

The primary objectives of the Value-Added Course (VAC) are:

1. To enhance industry understanding: Equip students with knowledge of industry expectations and requirements.
2. To improve employability: Enhance students' employability skills, making them more competitive in the job market.
3. To bridge skill gaps: Address existing gaps in skills and ensure students are industry ready.
4. To foster inter-disciplinary skills: Provide students with opportunities to develop diverse skills across various disciplines.
5. To encourage entrepreneurship: Inspire students to become job creators rather than just job seekers.

Course Design

Departments designing Value-Added Courses should begin by conducting a **Training Need Analysis** and engaging with industry experts, alumni, and employers to identify skill gaps and emerging trends. This will guide the creation of a syllabus tailored to current demands.

Conduction of Value-Added Courses

- Voluntary Participation: VAC is not a mandatory requirement for completing any academic program, and the credits earned through these courses are additional to the degree's total credit requirement.
- Learning Format: VAC is an instructor-supported learning course, available to all students without any additional fee. Classes are typically scheduled during reserved time slots, beyond regular class hours, and may also be conducted on weekends or during vacations.
- Course Registration: Students may register for only one Value-Added Course per semester, preferably offered by their own department. However, with prior permission from the Dean, they can take courses from other departments.

- Minimum Participants: A minimum of 5 students must opt for a course for it to be offered.
- Industry and Expert Involvement: Eminent industry professionals or academicians may conduct VACs. This broadens students' exposure and enhances the learning experience.

Course Duration and Structure

- Duration: Each Value-Added Course should last at least 30 hours, with a balanced structure of 18 hours (60%) theory and 12 hours (40%) practical. The exact division of theory and practical hours will be determined by the course instructor with the approval of the Dean.
- Location: The courses will be conducted within the respective schools, with classrooms assigned by the Dean based on student numbers.

REGISTRATION PROCEDURE

1. Course Listings: A list of available Value-Added Courses, along with syllabi, will be posted on the university website.
2. Registration Process: Students must complete and submit a registration form to enroll in a course. The Department Head will group students based on their choices and send them to the Dean for final approval.
3. Attendance and Assessment Records: The course instructor is responsible for maintaining attendance and assessment records, including details on assignments, seminars, and other activities. These records must be signed by both the course instructor and the Department Head and kept for future reference.
4. Attendance Requirements: Students must maintain at least 75% attendance in the Value-Added Course to be eligible for a certificate. Up to a 10% relaxation in attendance may be granted for valid reasons, such as illness or extracurricular participation.

Certification

Upon successfully completing a Value-Added Course, students will be awarded a **certificate** signed by the authorized university signatories, recognizing their accomplishment in the course.

Digital Dentistry

Course Code: VAC/FDSC/004

COURSE OBJECTIVES:

- To familiarize students with key concepts in digital dentistry, including digital imaging, 3d Scanning, and cad/cam technology.
- To introduce various digital tools used in dental practices and their role in diagnostics, treatment planning, and restorative procedures.
- To explore the integration of AI and cloud technology in dental practices, improving efficiency and patient outcomes.
- To provide practical exposure to digital workflows, including the basics of intraoral scanning, 3D printing, and designing dental restorations.
- To understand the impact of digital dentistry on patient experience, practitioner workflow, and the overall future of dental care.
- To prepare students for future roles in dental technology support, design, and research related to digital dentistry.

COURSE OUTCOMES:

- Understand the fundamentals of digital dentistry and how it improves traditional dental techniques.
- Be able to explain the role of key digital tools, such as 3D imaging, CAD/CAM systems, intraoral scanners, and AI in dental care.
- Identify the benefits of digital workflows in diagnostics, treatment planning, and restoration procedures.
- Gain an appreciation for 3D printing applications in creating dental models, surgical guides, and implants.
- Analyze real-world case studies to understand how digital tools are applied in dental practices.

COURSE CONTENT:

Module I: Introduction to Digital Dentistry

- Basic dental concepts and common procedures.
- Introduction to digital tools in dentistry.
- How technology is transforming dental practices.
- Introduction to CAD/CAM, digital imaging, 3D printing, and AI in dental practice.

Digital Imaging and X-Rays in Dentistry

- Digital radiography, CBCT (Cone Beam Computed Tomography), and 3D imaging.
- Sensors, software, and processing.
- Diagnostic and treatment planning uses.
- Accuracy, radiation exposure, and patient safety.

Module II: CAD/CAM Systems in Dentistry

- CAD/CAM Systems in Dentistry
- Restorative treatments like crowns, veneers, and bridges.
- From digital impressions to designing and manufacturing dental restorations.
- Popular tools and platforms used in the industry.

Printing and Intraoral Scanning

- Introduction to intraoral scanning technology and how it replaces traditional impressions.
- Use of 3D printers to create dental models, prosthetics, and surgical guides.
- Real-life examples of 3D printing in action in dental practices.

Module III: Artificial Intelligence and Data Integration in Dentistry

- How AI is being integrated into diagnostics and treatment planning.
- Cloud storage, data management, and telemedicine.
- How AI can assist in identifying potential dental issues before they become sever

Ethical Considerations and Future Trends

- Data privacy, patient consent, and AI decision-making.
- Innovations on the horizon (e.g., virtual reality, AI-driven robotic surgeries).
- Exploring roles for non-medical professionals in digital dentistry (e.g., tech support, CAD designers, data analysts).

Module IV: Practical Application & Case Studies

- Basic digital tools like scanning software or CAD software simulations.
- Review real-life case studies of digital dentistry applications.
- Students design a digital dental restoration (e.g., a crown or bridge) using CAD/CAM software.

Review, Assessment, and Conclusion

- Course Review: Key takeaways and final recap.
- Final Assessment: Presentation of the final project or a written test on digital tools and workflows.
- Career Guidance: Discuss potential career paths in the field of digital dentistry

REFERENCES:

- Pandit S. CAD/CAM in Dentistry: A New Era in Dental Technology. 1st ed. New Delhi: Jaypee Brothers Medical Publishers; 2018.
- Gogia SS, L Shalini. Digital Dentistry: A Comprehensive Reference and Review. 1st ed. New York: Springer; 2020.
- Vassallo MJ. 3D Printing in Medicine. 2nd ed. London: Academic Press; 2020.
- Nassar M, Al-Khalifa K, Al-Kandari F. The impact of digital technologies on the practice of dentistry. J Dent Res. 2019;98(3):1-8.
- Gonzalez-Montes R, Rios-Fernandez R, Martin-Gonzalez J. Artificial intelligence in dentistry: Current applications and future perspectives. J Dent Sci. 2021;16(2):104-11.
- McCabe JP, Wada D, Kim I. 3D Printing for dental implants: A review. J Prosthet Dent. 2022;128(1):9-18.
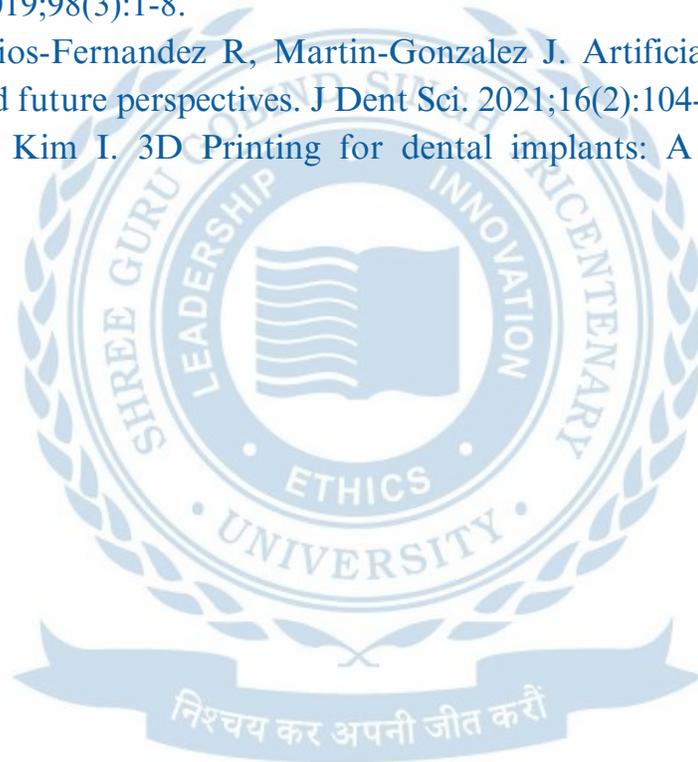
Facial Aesthetics

COURSE OBJECTIVES:
- Understand the fundamental principles of facial aesthetics.
- Gain knowledge of skin biology, facial structures, and proportions.
- Learn about various non-invasive aesthetic procedures and treatments.
- Develop skills in facial analysis and aesthetic enhancement techniques.
- Explore career and entrepreneurial opportunities in the aesthetic industry.

COURSE OUTCOMES:
- Analyse facial proportions and assess aesthetic needs.
- Recommend suitable skincare regimens and non-invasive treatments.
- Apply knowledge of facial anatomy to enhance beauty safely.
- Understand the ethics and legal considerations in facial aesthetics.
- Build foundational knowledge for further specialization in aesthetics.

COURSE CONTENT:

Module I: Fundamentals of Facial Aesthetics
- Definition and Scope of Facial Aesthetics
- Historical Perspectives on Beauty
- Cultural Differences in Aesthetic Preferences
- Career Opportunities in Aesthetic Industry

Module II: Non-Invasive Aesthetic Procedures
- What Are Non-invasive Aesthetic Procedures?
- Overview of Available Treatments
- Safety and Risk Considerations

Module III: Advanced Aesthetic Techniques and Business Aspects
- Retinoids and Peptides in Anti-Aging
- Advanced Facial Rejuvenation Therapies
- Assessing Facial Proportions

Module IV: Hands-On Training and Career Guidance
- Practical Application of Skincare Techniques
- Demonstration of Non-Invasive Procedures
- Interactive Facial Assessment Sessions

References:

- Carruthers, J. , & Carruthers, A. (2017). Botulinum Toxin: Procedures in Cosmetic Dermatology Series. Elsevier Health Sciences.
- Goldstein, E. B. (2017). Sensation and Perception. Cengage Learning.
- Roberts, W. E. (2020). Facial Aesthetics: Concepts and Clinical Diagnosis. Wiley- Blackwell.
- Schmid, K. (2019). Skin Care Practices and Clinical Protocols: A Professional's Guide to Success in the Aesthetic Industry. Milady Publishing.
- Zimbler, M. (2021). Aesthetic Facial Analysis: Clinical and Artistic Principles. Thieme Medical Publishers.

Local Anesthesia Techniques

COURSE OBJECTIVES:

- Understand the principles behind different local anaesthesia techniques.
- Identify appropriate local anaesthesia techniques for various procedures.
- Safely administer local anaesthetics using proper techniques and equipment.
- Recognize potential complications and manage them appropriately.
- Apply these techniques in both medical and dental practice.

COURSE OUTCOMES:

- To explain the mechanisms and classifications of local anaesthetics, identify appropriate clinical situations, and recognize patient contraindications
- To gain proficiency in performing basic local infiltration and nerve block techniques, using appropriate landmarks and doses
- To evaluate patients for anaesthesia suitability, handle potential complications, and manage side effects effectively
- To apply learned techniques in real-world clinical scenarios, with proficiency in both technical and patient communication skills

COURSE CONTENT:

Module I: Overview of Local Anaesthesia

- Introduction to anaesthesia: Local vs. general anaesthesia
- Principles of action of local anaesthetics
- Pharmacology of commonly used local anaesthetics (e.g., Lidocaine, Bupivacaine, Articaine)

Module II: Indications and Contraindications

- Indications for using local anaesthesia in medical and dental practice
- Contraindications (e.g., allergic reactions, infections at injection sites, medical conditions like cardiac arrhythmias)
- Assessing patient suitability for local anaesthesia

Module III: Nerve Block Techniques

- Dental Nerve Blocks:
- Maxillary and mandibular blocks
- Technique and landmarks

Module IV: Complications and Adverse Effects
- Common complications: Nerve Injury, hematoma, infection, and allergic reactions
- Management of systemic toxicity (e.g., signs of overdose, convulsions, arrhythmias)
- Steps to take if complications arise during or after the administration of local anaesthesia

References:

- Handbook of Local Anesthesia by Stanley F Malamed
- Monheim's Local Anesthesia and Pain Control in Dental Practice • Author: C.Richard Bennett Edition: 7th
- Schabes GA. Monheim's Local Anesthesia and Pain Control in Dental Practice. Anesth Prog. 1978