

# Dental Radiography Systems

COURSE: BMED434 – MEDICAL IMAGING

AWAB ABDALLAH 22700366

DATE: 2/6/2025

# Introduction

- ▶ Importance of dental radiography
- ▶ Types of systems: Intraoral, Extraoral
- ▶ working principles
- ▶ device structure
- ▶ calibration, and safety
- ▶ Application

# What Is Dental Radiography?

- ▶ Imaging technique.. teeth, jaw, and oral structures
- ▶ diagnosis of decay, infection, bone loss, and more



# TYPES OF DENTAL X-RAYS



**Periapical**



**Interproximal**



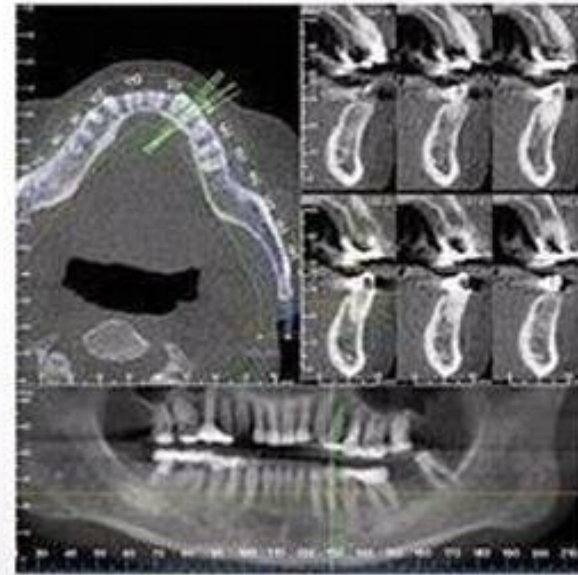
**Panoramic**



**Occlusal**



**Cephalometric**



**CBCT**





[ X-ray Machine ]

↓  
Sends X-rays

---> [ Mouth ]

↓  
Teeth & bones absorb  
X-rays → lighter  
Soft tissue passes  
X-rays → darker

--->

→

[ Sensor/Film ]

↓  
Image formed  
shows teeth,  
bones, cavities

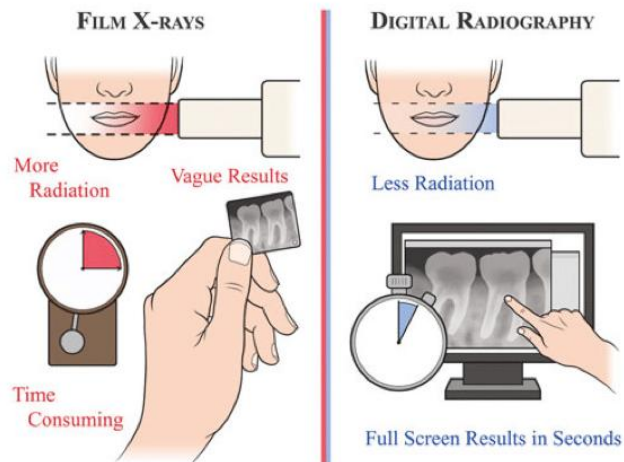


## System Components

Tube Head  
Extension Arm  
Control Panel

Image Receptor:  
Film, digital sensor

Embedded Systems



# Calibration Methods

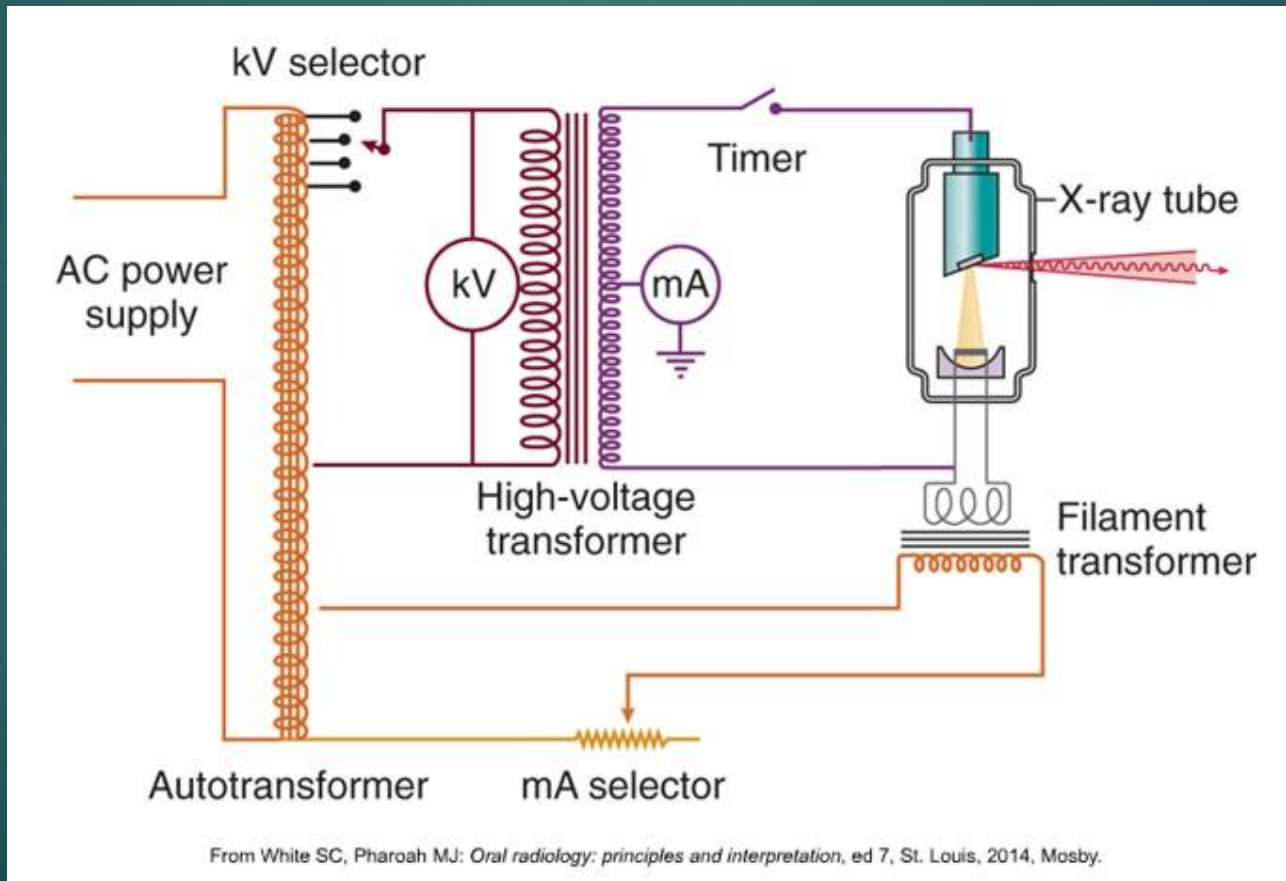
Mechanical Calibration: Beam alignment, movement check

Electrical Calibration: kVp, mA, exposure time, dose

# high-voltage circuit

# low-voltage circuit

# control circuits





# Standards & Regulations

Dental X-ray systems must follow

**IEC 60601** ensures the equipment is safe.

**IAEA and WHO** give guidelines for radiation protection.

Each country , handles licensing and inspections.

# Applications



- Routine dental exams
- Orthodontic planning
- surgical guidance
- Endodontic (root canal) evaluation

# Conclusion

- ▶ Understanding system components and regulations ensures optimal performance , Continuous training and calibration are essential