

Emerging Technologies in Health Professions Education

From Pixels to Precision:
Transforming Healthcare Education
with 3D Imaging, Printing, and
Workforce Development



OBJECTIVES

- Describe how 3D Printing and Virtual Renderings are impacting healthcare education
- Outline opportunities to incorporate 3D printing into healthcare curriculum.
- Describe methods for workforce development in medical 3D printing



3D PRINTING
& Training Center



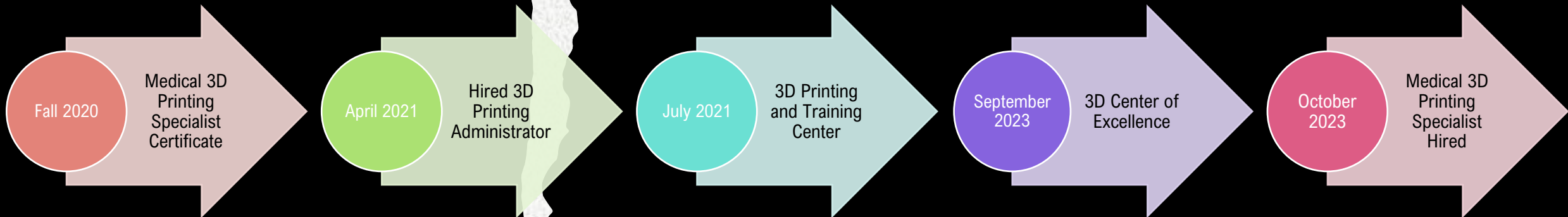


3D PRINTING
& Training Center



Who are we?

The 3D Printing and Training Center at Clarkson College supports a commitment to excellence in learning by creating pathways to utilize 3D print and visualization as a language in personalized health care.



3D Services

3D Center of Excellence

The 3D Center of Excellence offers design to delivery service for FDA 510(k)-cleared Presurgical Anatomic Models, CCSP Orthopedics Models, and Cutting Guides, as well as CCSP Radiation Bolus models.

Research, Education, & Simulation

Our models replicate human anatomy with exceptional accuracy, allowing educators to enhance the learning process. Healthcare students and healthcare professionals can gain a deep understanding of the human body's complexity, aiding in their academic and clinical success.

3D Virtual Rendering

The 3D Printing and Training Center at Clarkson College provides virtual 3D reconstructions developed from a CT or MRI imaging. The client will be provided a link that can be shared multiple times. This interactive link will provide 3D visualization of requested anatomic structures.

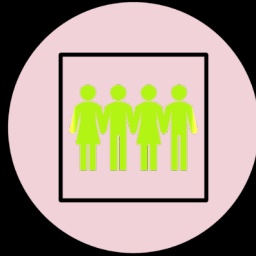
Certificates and Workshops

The 3D Printing and Training Center offers workshops that are customizable to for the institution and/or obtain a certification to become a Medical 3D Printing and Visualization Specialist certificate.

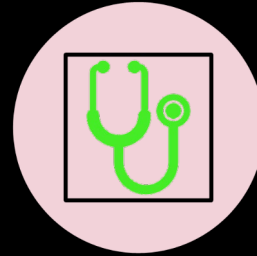
Harnessing the Power of 3D Printing Across Campus



GENERAL EDUCATION



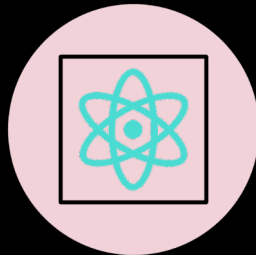
INTERPROFESSIONAL
LEARNING CENTER



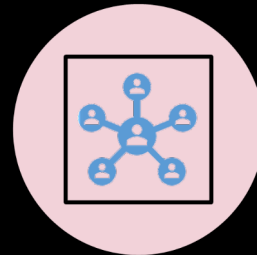
NURSING



PHYSICAL THERAPIST
ASSISTANT



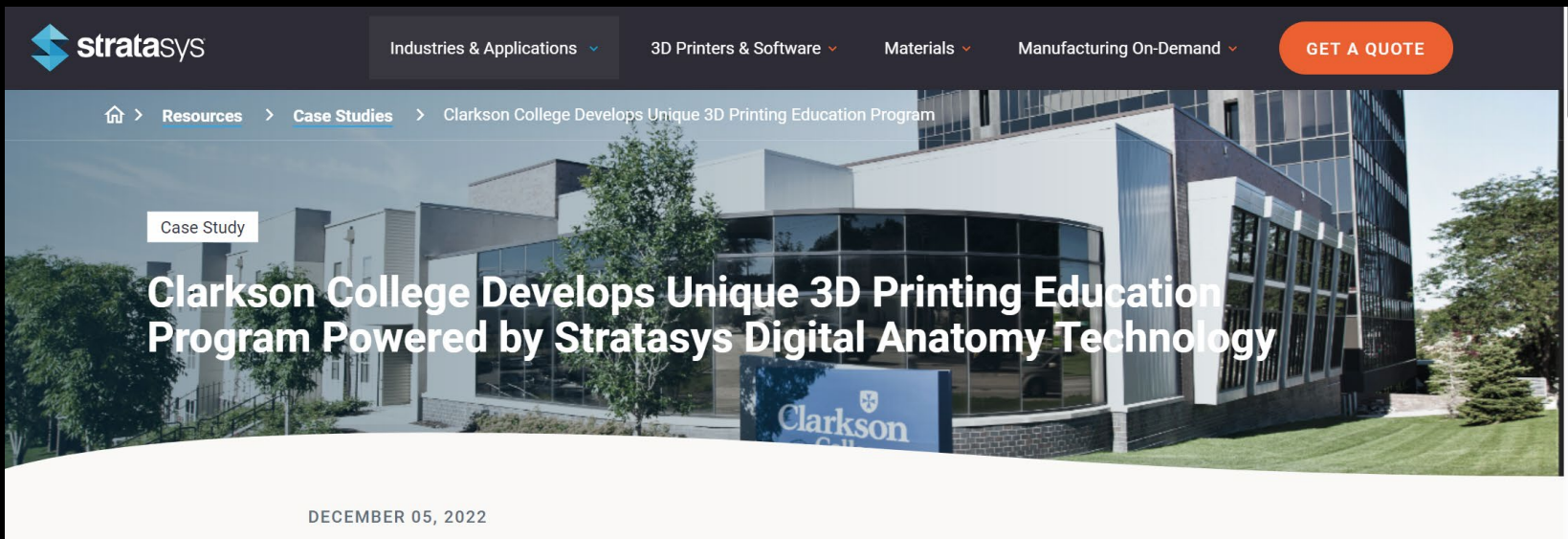
RADIOGRAPHY/
MEDICAL IMAGING



COMMUNITY



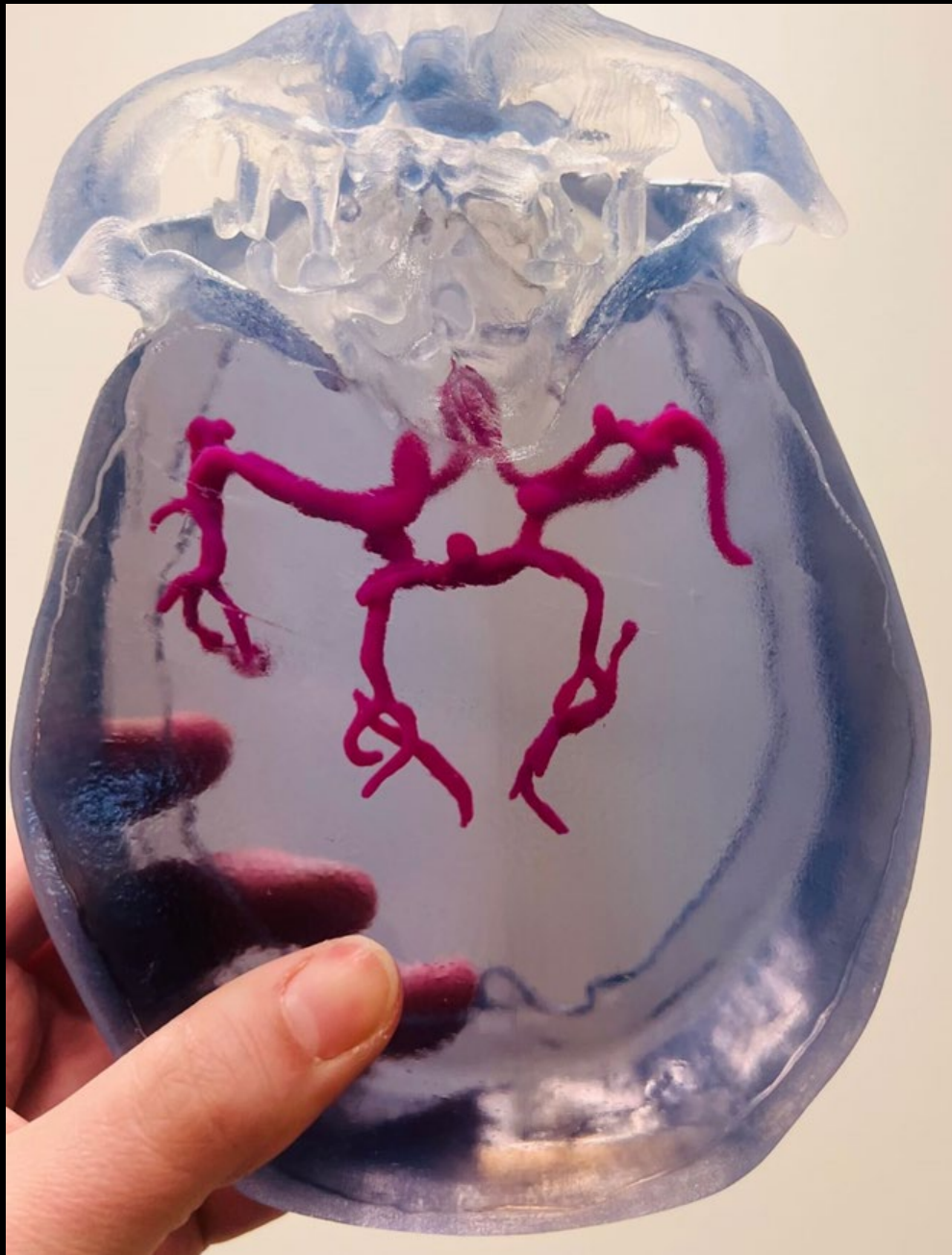
3D Printing's Impact on Healthcare Education



“3D printing makes it easier for instructors to demonstrate complex concepts and scientific contributions with tangible objects, which helps bring theories and research to life for their students.”

Stratasys, 2022





I am very happy with the overall design of the model. This will work great for my students to visualize the location of the circle of Willis, especially seeing how convoluted vessels can be. The textbooks and even my anatomical model make everything look so "smooth and uniform" if that makes sense.

I particularly like how it shows the middle and posterior cerebral arteries fully. My anatomical model only shows one side and cuts the other side. I also appreciate having the virtual model as well and plan to pull that up tomorrow in class, while I show the students the physical model.

Innovative Applications of 3D Printing Technology at Clarkson College

Anatomy



SCAN ME





Printed on the Stratasys J850

These models made from real scans are far more accurate than stock anatomy models

Love the 3 different colors and different material for the canals. Very helpful visually to help educate

Innovative Applications of 3D Printing Technology at Clarkson College

Physical Therapist Assistant





Walking the Path of Recovery:

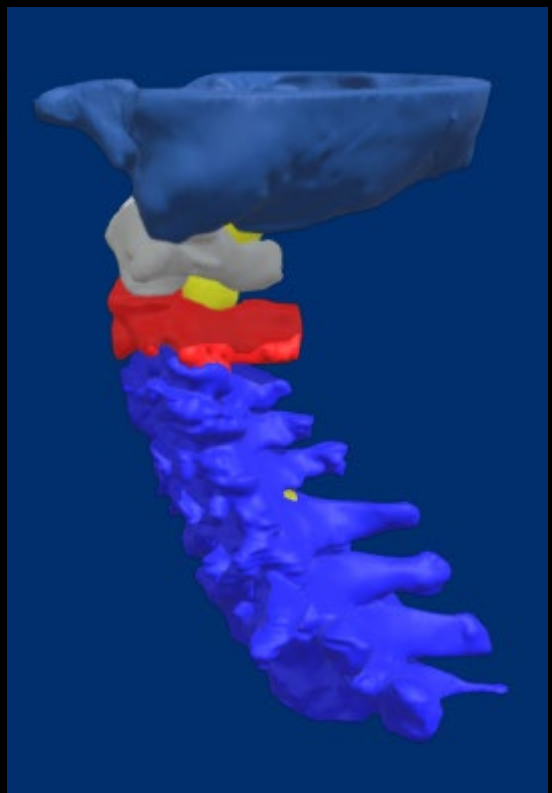
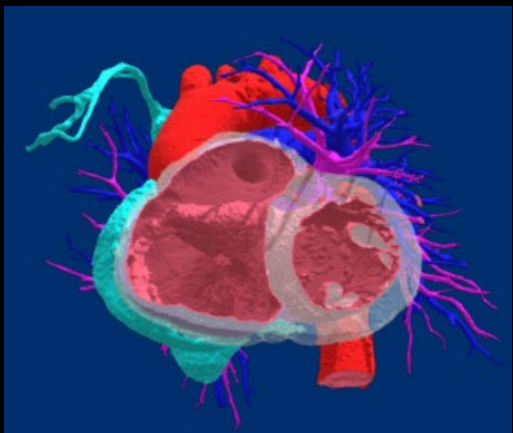
Learning First-hand from
Brain Tumor Survivor

 **Clarkson College**

Prepare to be the best.

Innovative Applications of 3D Printing Technology at Clarkson College





Innovative Applications of 3D Printing Technology at Clarkson College

Cross-Sectional Anatomy



SCAN ME

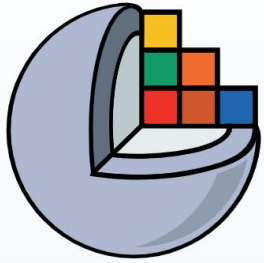


SCAN ME



SCAN ME





3D Slicer image computing platform

Download

Documentation

Developers

Training

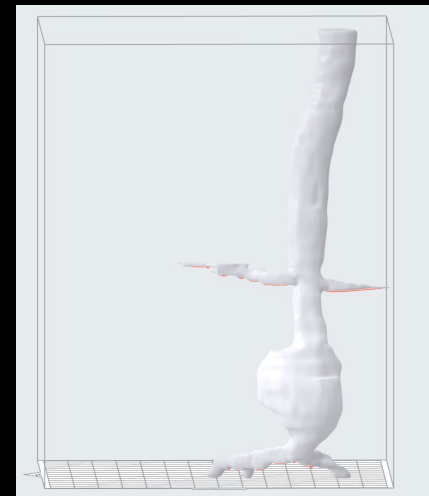
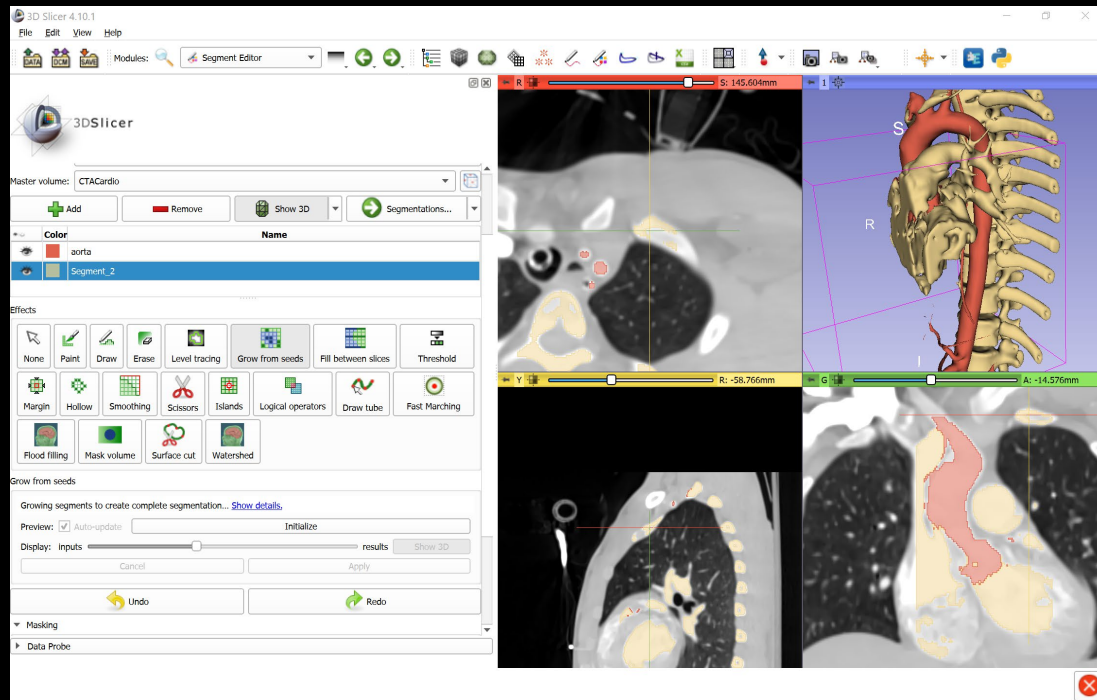
Forum

Twitter

3D Slicer is a **free, open source** software for visualization, processing, segmentation, registration, and analysis of medical, biomedical, and other 3D images and meshes; and planning and navigating image-guided procedures.

Innovative Applications of 3D Printing Technology at Clarkson College

Cross-Sectional Anatomy





Printed on the Stratasys J850

Shaping the Future: Medical 3D Printing and Visualization Certificate Program Empowering Tomorrow's Medical Imaging Specialists

The design is great for our purpose. We wanted to show the difference between ionic and molecular compounds, and this model shows crystal structure in multiple ways.

Innovative Applications of 3D Printing Technology at Clarkson College

Chemistry





3D Center of Excellence



VIEW ALL NEWS →

Revolutionizing Health Care in Omaha

September 5, 2023

Clarkson College and 3D Systems Partner to Establish 3D Printing and Training Center of Excellence

ROCK HILL, S.C. and OMAHA, Neb., Sept. 05, 2023 (GLOBE NEWSWIRE) -- A groundbreaking partnership between **3D Systems** of Rock Hill, SC (NYSE:DDD) and **Clarkson College** will establish the 3D Printing and Training Center of Excellence. This cutting-edge facility, situated on the Clarkson College campus in Omaha, Nebraska, represents a significant leap forward in health care innovation, education, and patient care for the region.

Clarkson College, recognized for its dedication and reputation in health care education, and 3D Systems, renowned for its pioneering role in the 3D printing industry, bring decades of expertise to the partnership. This synergy will enable the creation of pathways that make 3D printing and visualization accessible to health care facilities across the region. Through education, consulting, customized patient care, and research, they aim to reshape the landscape of healthcare in the region.



Personalize Radiotherapy with CCSP Bolus



3D printed Bolus to conform to your patient's anatomy

CCSP Bolus is an FDA 510(k) cleared patient-specific solution to help optimize radiotherapy targeting by overcoming the skin-sparing effect and target appropriate tissues with intended dose. With a complete workflow from design to delivery, CCSP Bolus makes personalization easy. We use 3D printing technology to produce a bolus that conforms to each patient and to the contours of broad range of anatomies.



Presurgical Planning Anatomic Model Solutions

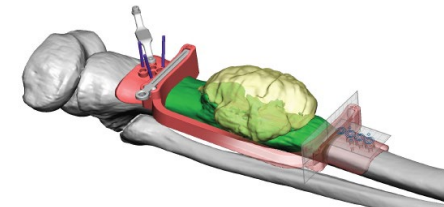


3D Technologies for Healthcare Professionals

The 3D Printing and Training Center at Clarkson College offers design to delivery service for FDA-cleared, diagnostic quality anatomic models. You can select from a broad range of materials and colors to achieve the goal of its intended use. Service begins with the receipt of patient imaging data from CT or MR scans followed by image processing and model design resulting in a 3D printed patient specific model.



CCSP Orthopedics

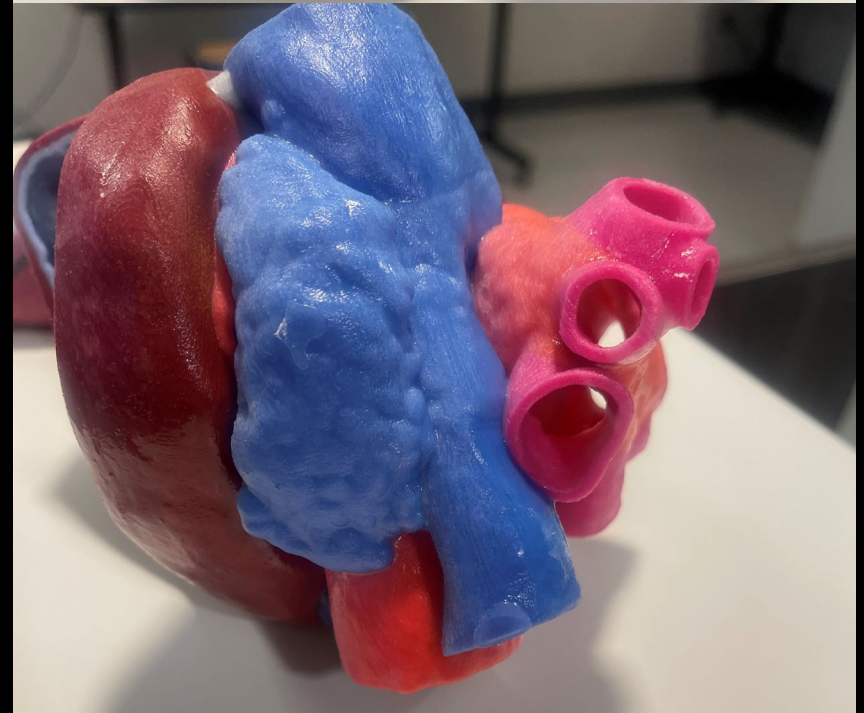
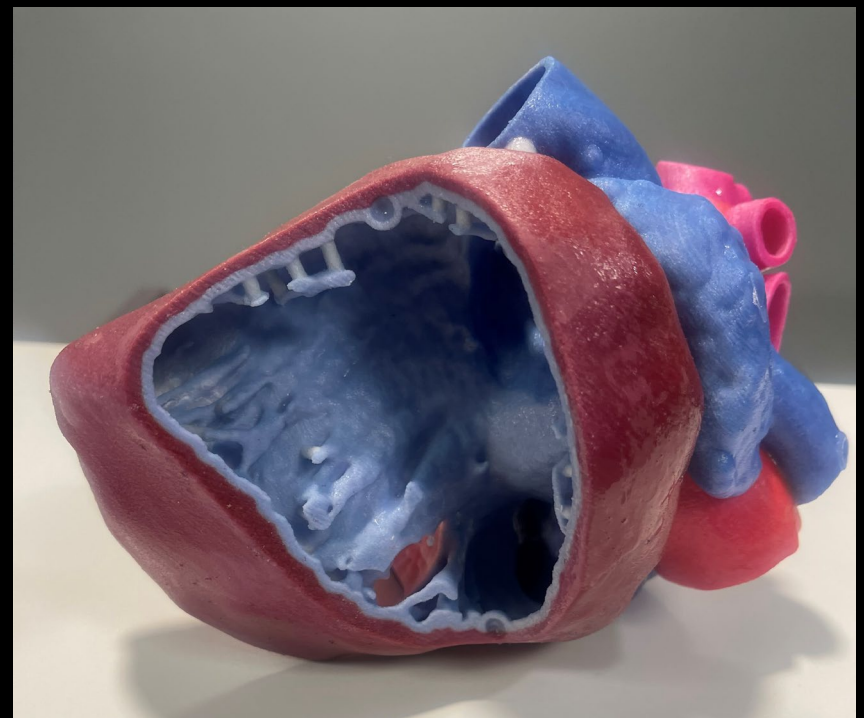
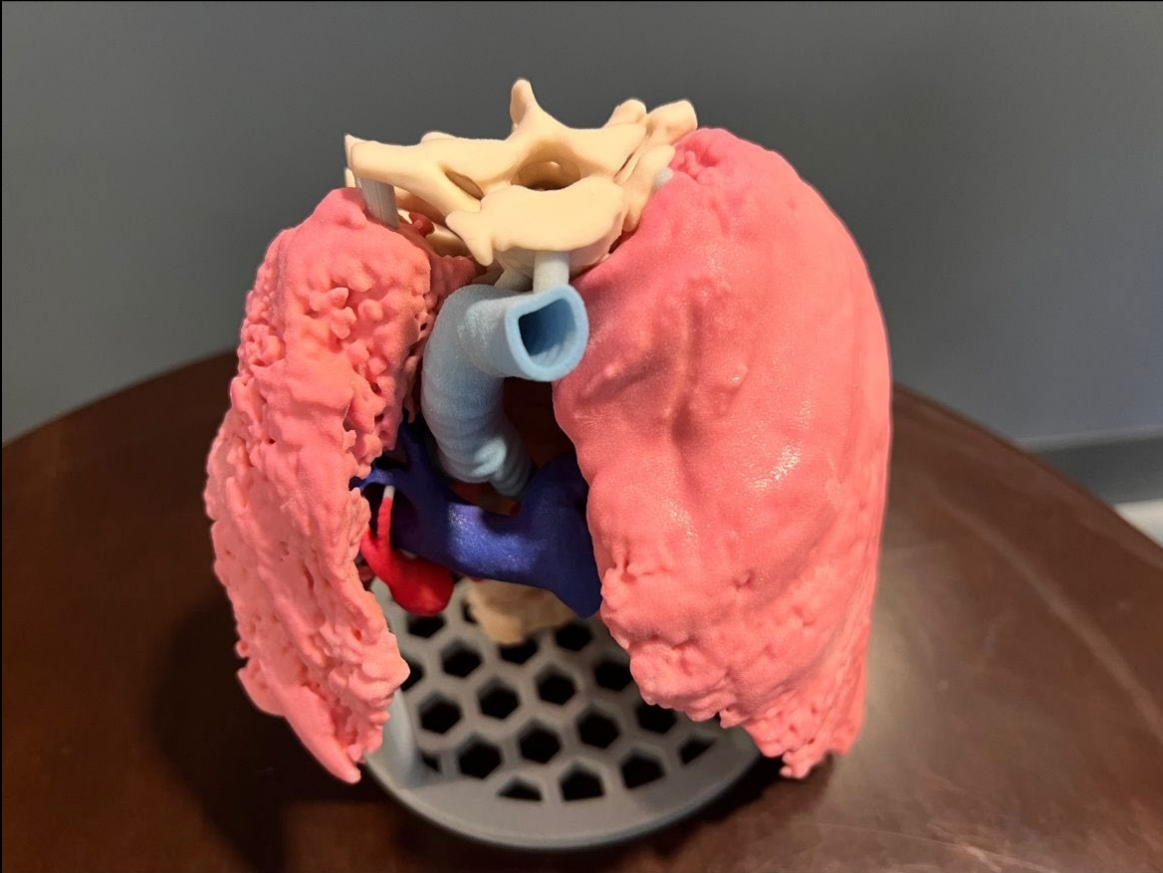


Personalized Orthopedic Oncology Solutions

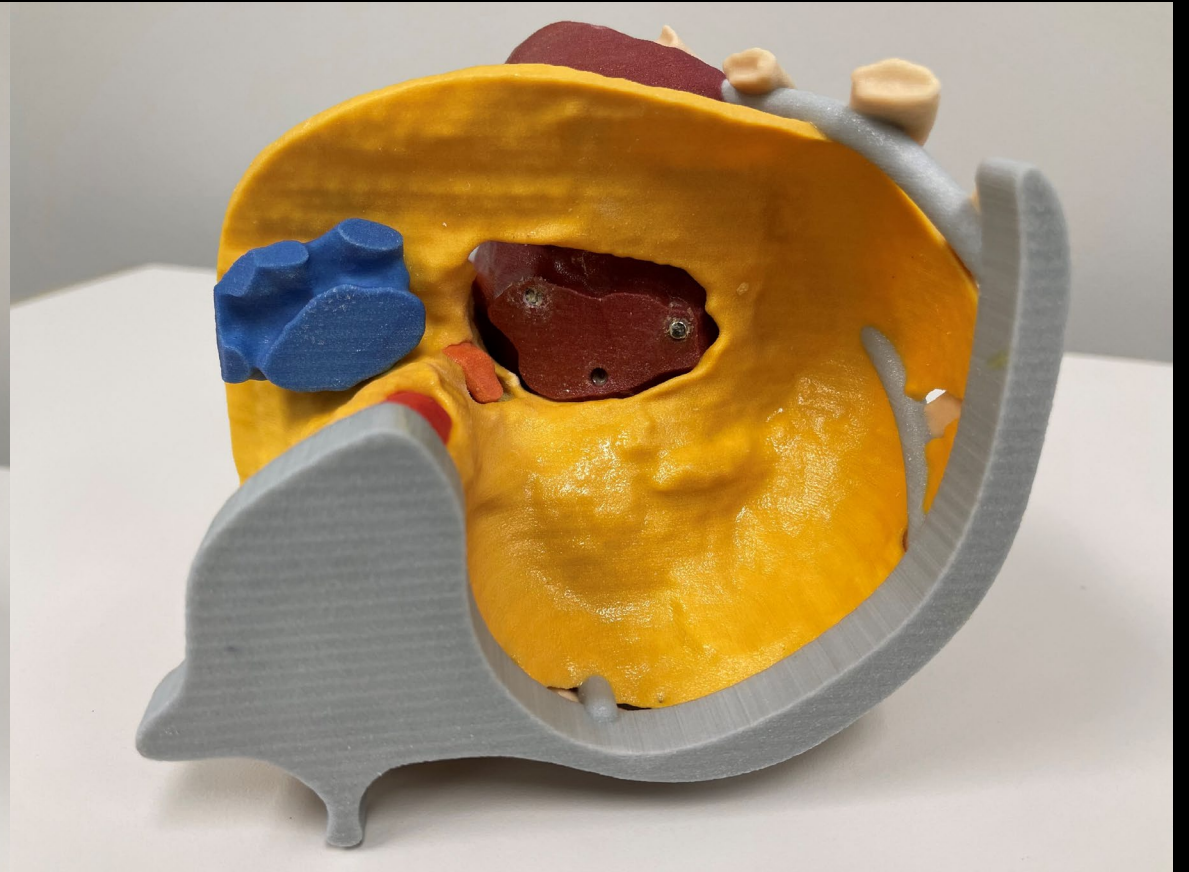
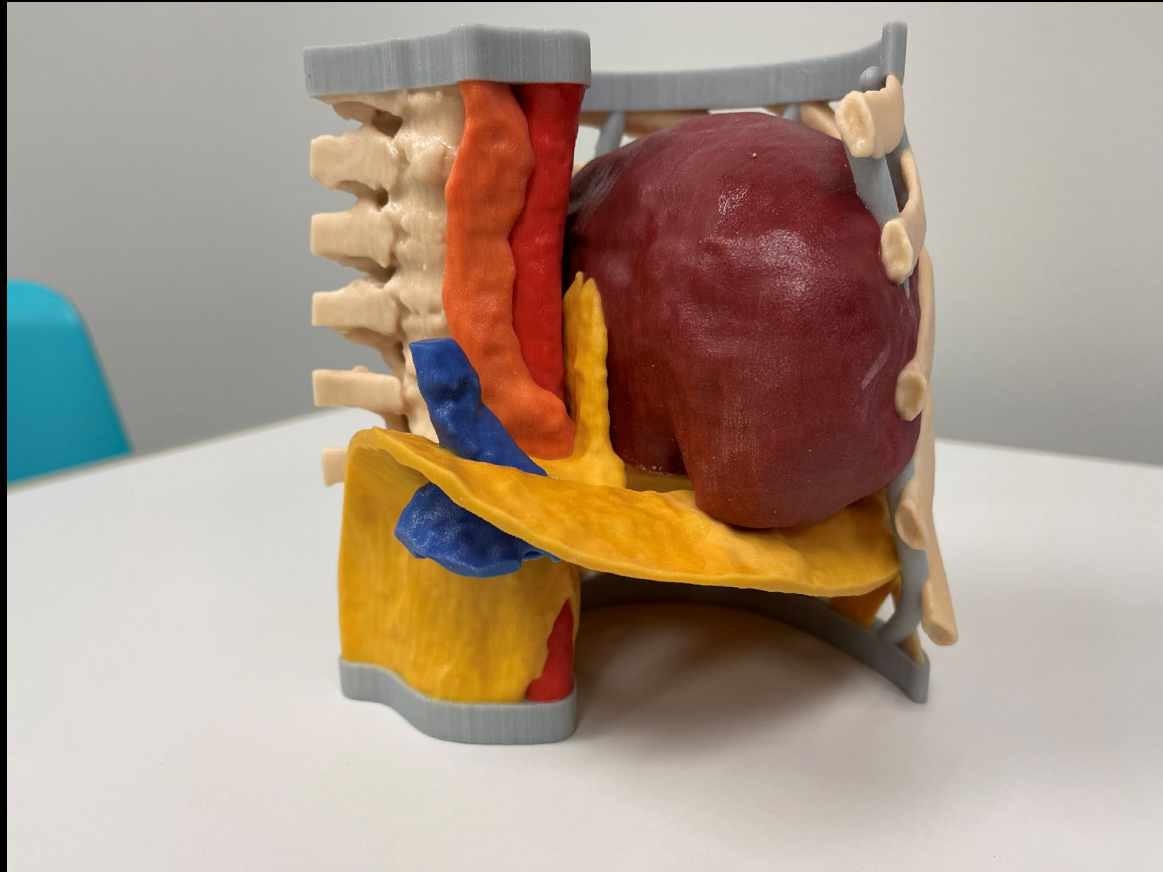
CCSP Orthopedics is an FDA 510(k) cleared personalized healthcare solution for orthopedic oncology surgical cases. It provides surgeons with the opportunity to pre-plan surgeries prior to entering the operating room. Based on the surgical plan, patient-matched surgical instruments are designed and used in surgery.



3D Center of Excellence: Patient Education Models



3D Center of Excellence: Patient Education Models



Shaping the Future



I am

Choose an option



Resources

Apply

Request Info

Donate

About

Academics

Enrollment

Tuition & Financial Aid

Student Life

Professional Development

3D Printing Center

Alumni



DEGREE

Medical 3D Printing and Visualization Specialist Certificate



The Clarkson College Medical 3D Printing and Visualization Specialist certificate option is for registered radiologic technologists interested in applying 3D printing technology to the health care field. You'll gain an understanding of the printing process and develop skills to apply the 3D printing process to improving patient care and outcomes.

Program:

Radiography & Medical Imaging

Degree Awarded:

Certificate in Medical 3D Printing and Visualization Specialist

Length of Program:

2-4 semesters

Application Deadlines:

N/A

Apply Now

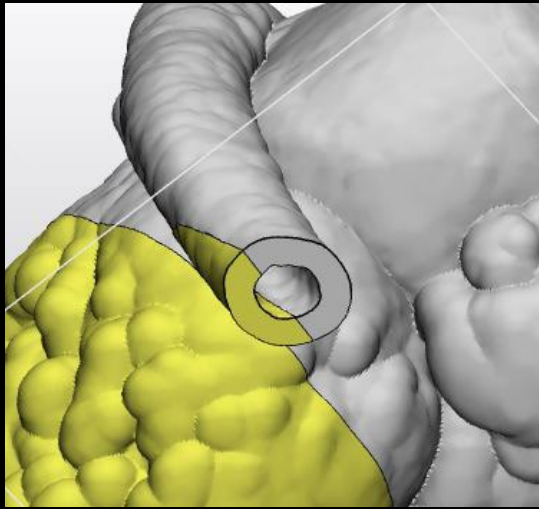
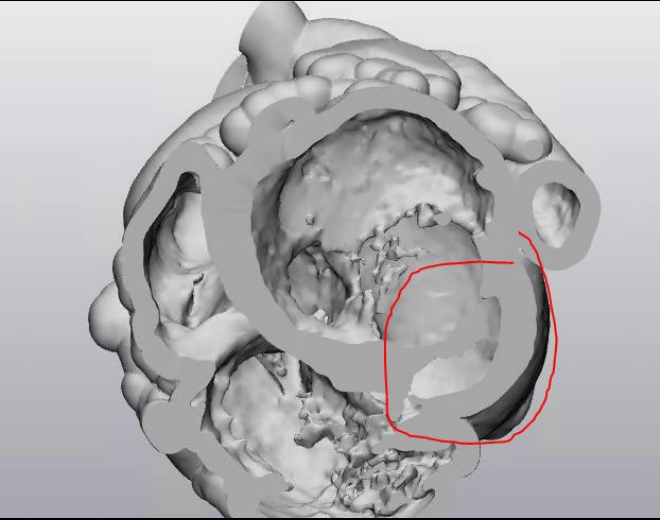
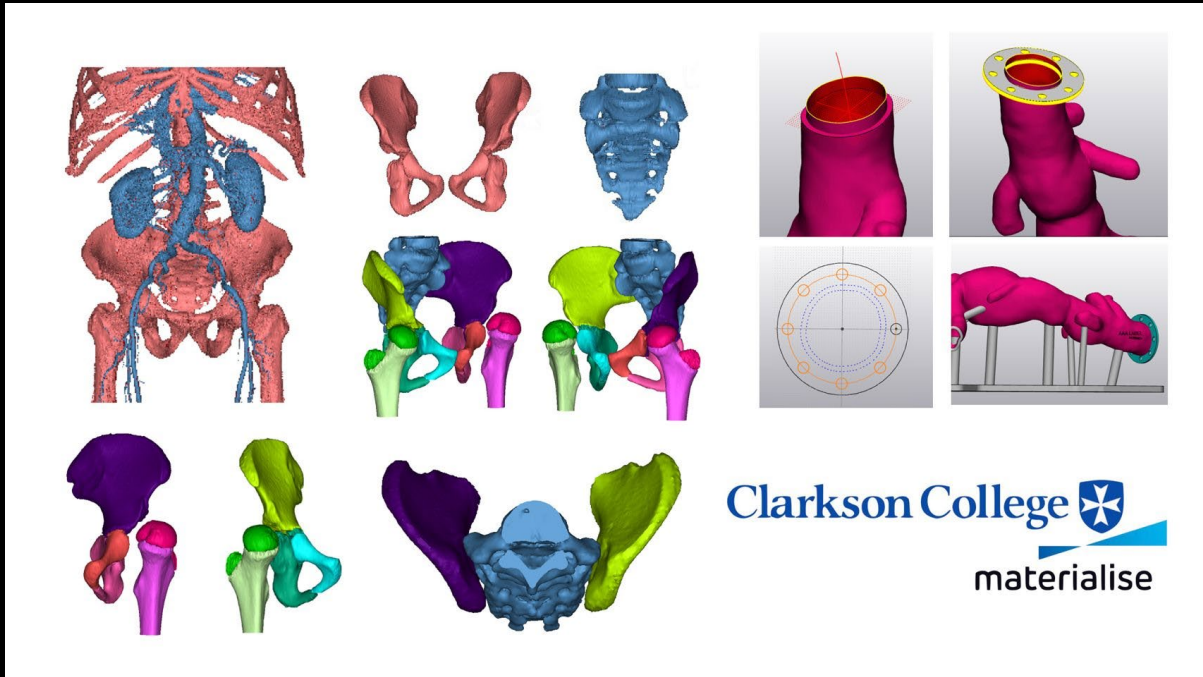
Required Courses for Medical 3D Printing and Visualization Specialist Certificate

Courses	Semester Hours
MI 457 (DMI 457) - Introduction to Medical 3D Imaging Segmentation and Applications	3
MI 458 (DMI 458) - Advanced Medical 3D Imaging Segmentation and Applications	3
MI 461 (DMI 461) - Multimedia Advanced Segmentation	3
MI 462 (DMI 462) - Medical 3D Printing Symposium	3
Total Semester Hours	12

Total Semester Hours in Program 12

The courses will be offered as seven and one half (7.5) weeks for the fall and spring semester and 6 weeks in the summer.

Foundational knowledge in Cross Sectional imaging is essential, students may be required to take cross-sectional imaging as a pre-requisite.



Shaping the future



Clarkson College Radiography/Medical Imaging

August 29, 2022 · 🌐

Clarkson College's first 3D Segmentation and Printing Workshop was a success! Thank you to [Materialise](#) and [Stratasys](#) for your support! Participants loved the content and individual training opportunities!

We are looking to host another workshop in October! Stay tuned!

Email 3D@clarksoncollege.edu if you are interested!

#3dprinting

#wearehealthcare

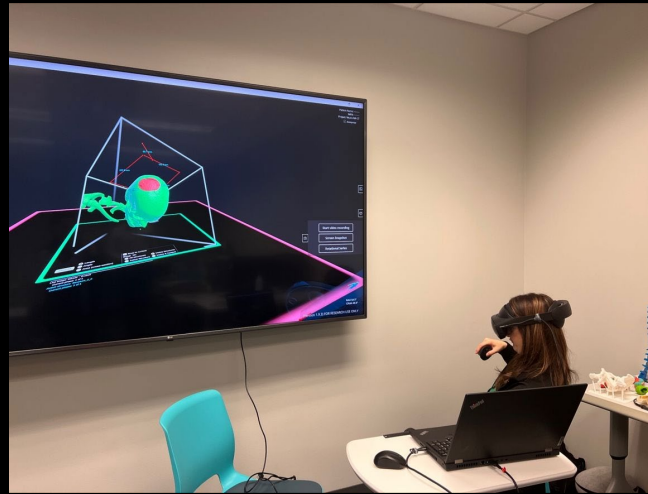
Hong Kong



Thank you to [Clarkson College](#) for hosting some of our students so we could learn about their 3D printing certificate!

#InspiringExcellenceLC #LCTitans

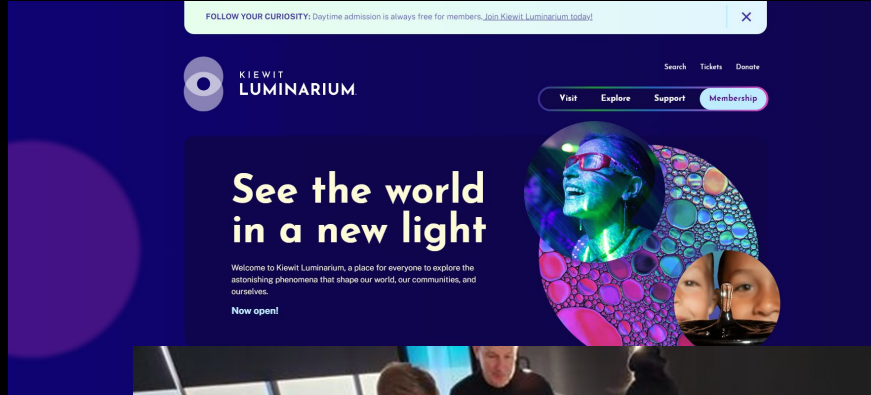
Middle School and High School Groups



VR Segmentation Workshop



Empowering Our Community: Teaching the Value of 3D Printing



Luminarium- Space Week: Bone Density and Love is in the Air Month



Printed on 3DS CJP
660 Pro

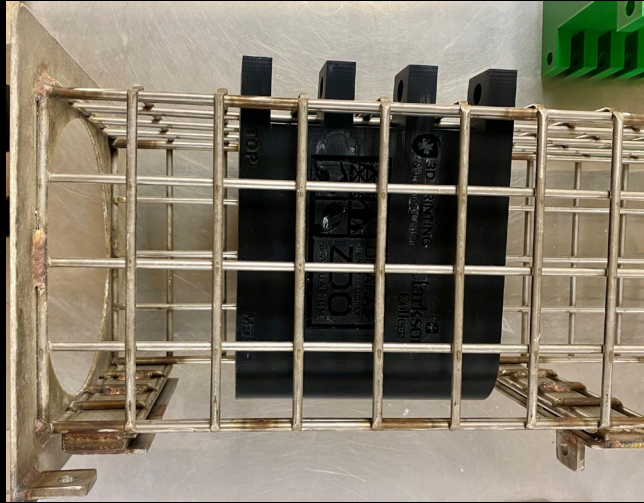
Empowering Our Community: Teaching the Value of 3D Printing



Omaha STEM Ecosystem



Empowering our Community: Taking care of our furry friends.



Henry Doorly Zoo





QUESTIONS

Email us at: 3d@clarksoncollege.edu

Follow us:

Linkedin: **Clarkson College 3D Printing and Training Center**

Thank you!



3D PRINTING
& Training Center


Clarkson
College

References

- [Clarkson College Develops Unique 3D Printing Education Program \(stratasys.com\)](#)
- [Take away body parts! An investigation into the use of 3D-printed anatomica...: Clarkson College Library Super Search \(ebSCOhost.com\)](#)
- [SG_EDU_Additive_Manufacturing_A4_0923a.pdf \(stratasys.com\)](#)