

# Fundamentals of Biomedical AI Research

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## Syllabus

**The AI Passport for Biomedical and Clinical Research is a scalable digital learning platform designed for rapid AI upskilling.**

**This module focuses on exploring the fundamentals of biomedical AI research and demystify artificial intelligence, while learning about AI's lifecycle, designing biomedical AI experiments, and how to train, validate, and generalize AI.**



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# What's Included in this Module



**7 Microskills**



**7 Videos**



**7 Interactive Video Questions**



**2 Notebooks Assignments**



**2 Reflection Journals**



**2 Peer Reviews**



**2 Community Calls**



Upon course completion, participants receive a **Credly badge.**



**Notebook activities providing hands-on practice with AI tools using real world medical data sets and case studies**



**NO CODING experience required**



**Weekly 1-hour coach-led conversations with peers**



# Meet Your Instructors

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## Azra Bihorac

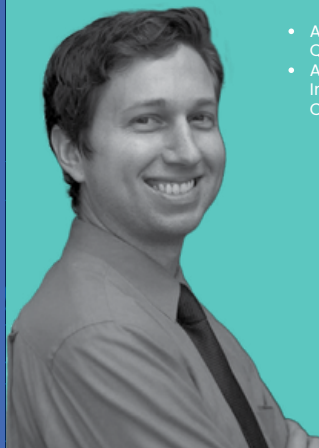
M.D., M.S.



- Senior Associate Dean for Research Affairs
- R. Glenn Davis Professor of Medicine, Surgery and Anesthesiology
- Director, Intelligent Clinical Care Center

## Benjamin Shickel

Ph.D.



- Assistant Professor of Quantitative Health
- Associate Director, Intelligent Clinical Care Center

## Yulia A. Levites

Ph.D.



- Assistant Professor of Health Services Research, Management & Policy
- Director of Evaluation and Educational Development of UF Clinical Transnational Science Institute

## Ashish Aggarwal

Ph.D.



- Instructional Associate Professor, Department of Engineering Education

# Meet Your Instructors

.....

## Elizabeth Palmer

Ph.D.

- Assistant Director,  
Department of Medicine,  
UF College of Medicine



## Tezcan Ozrazgat-Baslanti

Ph.D.

- Associate Professor,  
Department of  
Medicine, UF College of  
Medicine

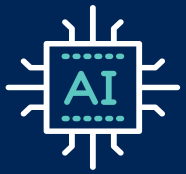


## Rhonda Bacher

Ph.D.

- Assistant Professor,  
Department of  
Biostatistics, College of  
Public Health and Health  
Professions & College of  
Medicine





# Learning Experience



## See

Didactic  
Videos



## Practice

Case Study  
Notebooks Code-  
Free AI/ML Tools



## Reflect

Reflection  
Journal



## Share

Peer Feedback  
Community Calls

# Community



## Expert Facilitators

Coaches guide discussions, foster peer connections, and provide feedback on assignments.

## Peer Community

Health professional cohorts, enabling learners to make valuable connections and expand their network.



“Very pertinent for today's clinicians”

“The program will allow me to utilize AI to assist in healthcare management tasks”

“With the program, patient outcomes will be improved”

“The program will help me with better utilization of LLM”



# **Outcomes & Lesson Plan**

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**2 Weeks**

**5.5 Hours per Week**



# Why University of Florida's AI Passport?



**Digital community-based learning**



**Asynchronous hands-on learning**



**Real world medical data and case studies**



**World-renowned AI instructors and coaches**



**Suitable for adult learners with a wide range of coding experience, including no experience**

# Fundamentals of Biomedical AI Research

## What to expect from this module

AI Passport for Biomedical Research is an accessible training program designed for healthcare professionals and biomedical researchers to integrate AI into their research and practice. With minimal coding to no coding, it caters to all technical levels using real-world medical data and case studies. The community-based learning program offers flexible asynchronous learning, live community sessions, and mentorship from AI faculty, coaches, and your fellow peers.

Explore the fundamentals of biomedical AI research and demystify artificial intelligence, while learning about AI's lifecycle, designing biomedical AI experiments, and how to train, validate, and generalize AI.





# Module Breakdown

## Fundamentals of Biomedical AI Research

WEEK	MICROSKILL	LEARNING OBJECTIVE
1	Demystifying artificial intelligence	Capabilities, limitations, real-world biomedical AI implementations, common misconceptions, current challenges, open questions
	Artificial intelligence lifecycle	Problem definition, data collection, data preprocessing, modeling, validation, deployment, continuous feedback loops (MLOps)
	Designing biomedical artificial intelligence experiments	Knowledge gaps and research questions, data management
	Training, validation, and generalizability	Internal and external validation, calibration and robustness, accounting for demographic and geographic distributions
2	Leveraging multidisciplinary team strengths	Identifying roles, communication strategies, team-based decision-making, training opportunities, collaboration tools
	Basics of scientific rigor and reproducibility	Sound study planning and design, statistical power, sample size, outliers, exclusion criteria, data interpretation
	Mentorship and peer review in biomedical AI	Mentor/mentee roles and obligations, ethics of biomedical AI peer review (confidentiality, fairness, objectivity)



# Week 1: Microskills 1-4



6  
Hours



## 4 VIDEOS

1 hour |

1. Demystifying artificial intelligence
2. Artificial intelligence lifecycle
3. Designing biomedical artificial intelligence experiments
4. Training, validation, and generalizability



## 1 REFLECT AND REMEMBER

**30 minutes** | participants consolidate their learning by revisiting key concepts, discussing insights, and connecting course material to real-world applications. Through guided prompts, discussions, or brief written reflections, participants will reinforce their understanding and identify lingering questions.



## 4 INTERACTIVE VIDEO QUESTIONS

**30 minutes** | Through guided demonstrations, embedded quizzes, and real-time decision-making prompts, participants will apply concepts in a dynamic way.



## 1 PEER TO PEER FEEDBACK

**30 minutes** | Provide feedback on the work of at least two of peer assignments for each lesson.



## 1 NOTEBOOK

**2 hours** | Identify the problem and frame a strategic question. Outline the current strategy choice for your organization, describe the problem you're facing, and craft a "How might we approach this?" question to articulate the problem.



## 1 COMMUNITY CALL VIRTUAL LOUNGE

**1 hour 30 minutes** | live, interactive session provides an opportunity for participants to connect, discuss course material, and share insights in a supportive environment. Participants can ask questions, exchange ideas, and collaborate on real-world applications of the content.

# Week 2: Microskills 5-7



5

Hours



## 3 VIDEOS

45 minutes |

1. Leveraging multidisciplinary team strengths
2. Basics of scientific rigor and reproducibility
3. Mentorship and peer review in biomedical AI



## 4 REFLECT AND REMEMBER

**30 minutes** | Participates consolidate their learning by revisiting key concepts, discussing insights, and connecting course material to real-world applications. Through guided prompts, discussions, or brief written reflections, participates will reinforce their understanding and identify lingering questions.



## 3 INTERACTIVE VIDEO QUESTIONS

**20 minutes** | Through guided demonstrations, embedded quizzes, and real-time decision-making prompts, participates will apply concepts in a dynamic way.



## 1 PEER TO PEER FEEDBACK

**30 minutes** | Provide feedback on the work of at least two of peer assignments for each lesson.



## 1 NOTEBOOKS

**1 hour 30 minutes** | Identify the problem and frame a strategic question. Outline the current strategy choice for your organization, describe the problem you're facing, and craft a "How might we approach this?" question to articulate the problem.



## 1 COMMUNITY CALL VIRTUAL LOUNGE

**1 hour 30 minutes** | This live, interactive session provides an opportunity for participates to connect, discuss course material, and share insights in a supportive environment. Participants can ask questions, exchange ideas, and collaborate on real-world applications of the content.

**“ THE UNIVERSITY OF FLORIDA  
PRESIDENT’S STRATEGIC INITIATIVE  
AI PASSPORT  
ADDRESSES THE CRITICAL NEED FOR  
AN AI-READY HEALTHCARE  
WORKFORCE. THIS INITIATIVE WILL  
ENABLE LEARNERS AT ANY STAGE OF  
TECHNICAL PROFICIENCY TO ACHIEVE  
MASTERY IN A WIDE RANGE OF AI  
SKILLS TO BRING SAFE AND RELIABLE  
AI APPLICATIONS TO HEALTHCARE. ”**



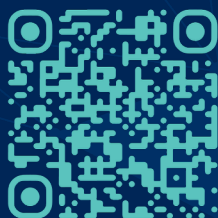
**AZRA BIHORAC, MD, MS**

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R. Glenn Davis Professor of Medicine,  
Surgery, Anesthesiology and Physiology  
& Functional Genomics  
Director of the Intelligent Clinical Care  
Center  
University of Florida

The logo features a stylized 'AI' in teal. Above the 'A' are five lines of varying lengths, with the central one being white and the others teal, resembling a signal or a stylized 'V'.

# AI Passport

FOR BIOMEDICAL AND CLINICAL RESEARCH



**Sign up:**

<https://aipassport.org/courses/>