

University of Puerto Rico  
Medical Sciences Campus  
School of Health Professions  
Department of Undergraduate Programs  
Health Sciences Program

## **Course Syllabus**

**Title:** Clinical and Translational Research I: Introduction and Principles

**Codification:** INTD: 5998

**Number of Credits/Hours:** 2 credits

1 credit face-to-face = 18 hours

1 credit online = 36 hours

Total: 54 contact hours

**Pre-requisites:** None

**Co-requisites:** None

### **Course Description:**

This is a multidisciplinary course created for undergraduate and graduate students. Through hybrid modality (face-to-face and distance learning sessions), this course exposes students to the main concepts underlying the performance of clinical and translational research, through lectures, workshops and presentations. The course will discuss topics such as history and definition of clinical and translational research, identification of attributes of a clinical researcher, and the intersection of the health professions, and research questions. Additional topics include: individual development plan, human subject's protection, responsible conduct of research, mentor-mentee relationship and clinical and translational environment. The students conclude the course with an electronic portfolio as a basic for their development as researcher.

### **Learning Objectives:**

At the end of the course, the student will be able to:

1. Explain the concept and historical development of Clinical and Translational Research.
2. Describe the characteristics and attributes of a clinical and translational researcher.
3. Discuss the structure of a scientific presentation, oral or poster.
4. Manage bibliographical databases and library resources.
5. Sketch an approach to identify a research question within the scope of the clinical practice of health professions.
6. Perform an oral presentation based on the career of a researcher.
7. Create an individual development plan.

8. Apply the fundamentals of the protection of human subjects in research.
9. Explain the essential concepts of responsible conduct of an investigation.
10. Value the mentor-mentee relationship.
11. Analyze the necessary conditions for a productive clinical research and translation environment.
12. Design an electronic portfolio as a basis for their development as researcher.

**Course Content and Time Distribution:**

<b>Outline of Course Content</b>	<b>Time Distribution</b>
Introduction to the course <ul style="list-style-type: none"> <li>• Course Syllabus</li> <li>• Purpose and preparation of an electronic portfolio</li> </ul>	2 hours Face-to-Face
Introduction of clinical and translational research <ul style="list-style-type: none"> <li>• Definition and history</li> <li>• Examples of clinical and translational research</li> </ul>	6 hours Online
Bibliographical databases and library resources <ul style="list-style-type: none"> <li>• Information search process</li> <li>• Available databases and resources</li> </ul>	2 hours Face-to-Face
Fundamentals of a good scientific presentation <ul style="list-style-type: none"> <li>• Objective of a scientific presentation</li> <li>• Format and frequent errors</li> </ul>	3 hours Online
Formulating a research question within clinical practice of health professions <ul style="list-style-type: none"> <li>• Importance of the clinical and translational research question</li> <li>• Characteristics of a good research question (FINER)</li> <li>• Frame of the research question (PICO)</li> </ul>	2 hours Face-to-Face
Exploring career of a clinical and translational researcher <ul style="list-style-type: none"> <li>• Characteristics and responsibilities of a clinical and translational researcher</li> <li>• Knowing and interacting with an investigator</li> </ul>	3 hours Online 2 hours Face-to-Face
Individual Development plan (IDP) <ul style="list-style-type: none"> <li>• Components of an IDP</li> <li>• Importance of IDP for the investigators</li> </ul>	3 hours Online 2 hours Face-to-Face
Human subjects protection in research <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Rights, welfare, and wellbeing of human subjects</li> </ul>	4 hours Online
Responsible conduct of research <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Research misconduct</li> </ul>	4 hours Online
Designing a clinical and translational research project <ul style="list-style-type: none"> <li>• Theory of research designs</li> <li>• Study designs/approaches</li> </ul>	3 hours Face-to-Face 8 Online
Mentor-mentee relationship for a successful research <ul style="list-style-type: none"> <li>• Characteristics and responsibilities of mentor</li> </ul>	2 hours Face-to-Face

Outline of Course Content	Time Distribution
<ul style="list-style-type: none"> <li>Characteristics and responsibilities of mentee</li> </ul>	
Organizing a research team <ul style="list-style-type: none"> <li>Definition of research team</li> <li>Research team formation</li> </ul>	3 hours Online
Research environments <ul style="list-style-type: none"> <li>Elements of research environments</li> <li>Importance of collaborations and networking</li> </ul>	8 hours Online 2 Face-to-Face
	54 contact hours

**Instructional Strategies:**

- Lectures
- Independent Study
- Discussion
- Workshop

**Learning Resources and minimum facilities available or required:**

- Computer with Internet Access, speaker and microphone

**Evaluation Strategies:**

Strategy	Weight (%)
2 Discussion Boards (5% each)	10%
1 Literature Review	10%
1 Interview	5%
1 Oral Presentation	5%
1 Individual Development Plan	10%
1 CITI Program Certificate	10%
1 Research Concept Paper	20%
1 Electronic Portfolio	20%
Participation/Attendance	10%
	<b>100%</b>

**Reasonable Accommodation:**

Students with a health condition or situation that, according to the law, makes them eligible for reasonable accommodation have the right to submit a written application to the Office of Students with Disabilities, according to the procedure established in the document “**Services for Reasonable Accommodation**”. This document may be obtained at the Office of Students with Disabilities, located at the 5<sup>th</sup> floor of the School of Health Professions, office 526 and at the RCM web page at the portal of the Dean of Students. The application does not exempt students from complying with the academic requirements pertaining to the programs (07-02-2018).

**Academic Integrity:**

The University of Puerto Rico promotes the highest standards of academic and scientific integrity. Article 6.2 of the University of Puerto Rico General Student Regulations (Board of Trustees Certification 154 2010-2011) in section 6.2.1 defines **Academic Dishonesty** as: “Any form of dishonesty or lack of academic integrity, including, but not limited to, fraudulent actions, obtaining grades or

*degrees using false or fraudulent simulations, copying in whole or in part the academic work of another person, plagiarizing in whole or in part the work of another person, to copy in whole or in part the answers to the questions of an examination from another person, making or getting another person to take any oral or written test or examination on their behalf, as well as help or facilitate that another person incurs in said behavior".* Section 6.2.2. defines **Fraudulent Conduct** as: *"Conduct with intent to defraud, including, but not limited to, malicious alteration or falsification of grades, records, identification cards or other official documents of the University or any other institution. Any act or action of passing or circulating as genuine and true any of the documents specified above will also be subject to disciplinary sanction, knowing that they are false or altered".* Any of these actions will be subject to disciplinary sanctions in accordance with the procedure established in the current University of Puerto Rico General Student Regulations.

**DISCLAIMER:** The above statement is an English Translation of certain parts Article 6.2 of the General Student Regulations of the University of Puerto Rico (Reglamento General de Estudiantes de la Universidad de Puerto Rico – Cert. JS 154 2010-2011). It was originally prepared by the Deanship of Academic Affairs of the Medical Sciences Campus, and revised and approved by the Academic Senate on March 2, 2017. In case of a discrepancy or disagreement with the original text in Spanish, the Spanish version will always prevail and be given priority (2017).

### **Grading System:**

The grading system is as follows:

90 -100:	A
89 - 80:	B
79 - 70:	C
69 – 60:	D
59 or less:	F

### **Bibliography:**

#### **Books**

Bailey, J. S, & Burch, M. R. (2018). *Research methods in applied behavior analysis*

(2<sup>nd</sup>ed.). New York: Routledge. ISBN: 9781138685253

Forister, J. G., & Blessing, J. D. (Eds.). (2015). *Introduction to research and medical*

*literature for health professionals* (4<sup>th</sup> ed.). Burlington, MA: Jones & Bartlett

Learning. ISBN:9781284034646

- Galín, J. I., Ognibene, F. p., & Lee, L. (Eds.). (2018). *Principles and practice of clinical research* (4<sup>th</sup>.ed.). London, UK: Elsevier/Academic Press. ISBN: 9780128499054
- Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B., (Eds.). (2014). *Diseño de investigaciones clínicas* (4ta ed.). Philadelphia, PA: Lippincott & Williams. ISBN: 9788415840862
- Jalali, M., Saldanha, F. Y. L., & Jalali, M. (Eds.). (2017). *Basic science methods for clinical researchers*. London: Elsevier/Academic Press. ISBN: 9780128030776
- Kazdin, A. E. (Ed.). (2016). *Methodological issues & strategies in clinical research* (4<sup>th</sup> ed.). Washington, DC: American Psychological Association. ISBN: 9781433820915
- Robertson, D., & Williams, G. H. (Eds.). (2017). *Clinical and translational science: Principles of human research* (2<sup>nd</sup> ed.). Amsterdam: Elsevier/Academic Press. ISBN: 9780128021019

### **Journal Articles**

- Abramo, G., D'Angelo, C. A. & Di Costa, F. (2017). Do interdisciplinary research teams deliver higher gains to science? *Scientometrics*, 111, 317.  
<https://doi.org/10.1007/s11192-017-2253-x>ACM.0b013e3181ccd618
- Cummings, C. R. (2015). Review of research integrity and responsible conduct of research. *Journal of Social Service Research*, 41(1), 141-142.  
doi:10.1080/01488376.2014.903691

- De Saá-Pérez, P., Díaz-Díaz, N. L., Aguiar-Díaz, I., & Ballesteros-Rodríguez, J. L. (2015). How diversity contributes to academic research team's performance. *R&D Management*, 47(2), 165-179. <https://doi.org/10.1111/radm.12139>
- Dreyer, C. L. (2014). Group cooperation and the mentor-mentee relationship in undergraduate research. *Research Quarterly for Exercise and Sport*, 85, 1. Retrieved from <https://search.proquest.com/docview/1621829142?accountid=44820>
- Giba, J. & Ribes, R. (2011). *Preparing and delivering scientific presentations: A complete guide for international medical scientists*. Berlin, Heidelberg: Springer. Retrieved from <http://dx.doi.org/10.1007/978-3-642-15889-6>
- Guenter, H., Gardner, W. L., McCauley, K. D., Randolph-Seng, B., & Prabhu, V. P. (2017). Shared authentic leadership in research teams: Testing a multiple mediation model. *Small Group Research*, 48(6), 719 – 765. <https://doi.org/10.1177/1046496417732403>
- Institute of Translational Health Sciences. (2007). *Definitions of clinical research*. Retrieved from <https://www.iths.org/investigators/definitions/definitions-of-clinical-and-translational-research/>
- Komić, D., Marušić, S. L., & Marušić, A. (2015). Research integrity and research ethics in professional codes of ethics: Survey of terminology used by professional organizations across research disciplines. *Plos ONE*, 10(7), 1-13. doi:10.1371/journal.pone.0133662

- Lerma González, H. D. (2016). *Metodología de la investigación: Propuesta, anteproyecto y proyecto* (5ta ed.). Bogotá, Colombia: Ecoe Ediciones.  
Recuperado de la base de datos Bibliotechnia.
- Masters, K. S., & Kreeger, P. K. (2017). Ten simple rules for developing a mentor-mentee expectations document. *PLoS Computational Biology*, *13*(9)  
doi:<http://dx.doi.org/10.1371/journal.pcbi.1005709>
- Michigan Institute for Clinical and Health Research. (2017). *What is clinical & translational research?* Retrieved from: <https://www.michr.umich.edu/what-is-clinical-translational-research>
- Pfund, C., House, S., Spencer, K., Asquith, P., Carney, P., Masters, K. S., & ... Fleming, M. (2013). A research mentor training curriculum for clinical and translational researchers. *Clinical and Translational Science*, *6*(1), 26-33.  
doi:[10.1111/cts.12009](https://doi.org/10.1111/cts.12009)
- Rossouw, T. M., van Zyl, C., & Pope, A. (2014). Responsible conduct of research: Global trends, local opportunities. *South African Journal of Science*, *110*(1/2), 30-35. doi:[10.1590/sajs.2014/20130103](https://doi.org/10.1590/sajs.2014/20130103)
- Rubio, D. M., Schoenbaum, E. E., Lee, L. S., Schteingart, D. E., Marantz, P. R., Anderson, K. E., ... Esposito, K. (2010). Defining translational research: Implications for training. *Academic Medicine: Journal of the Association of American Medical Colleges*, *85*(3), 470–475. Retrieved from <http://doi.org/10.1097/>
- Tsai, P. I., & Helsel, B. S. (2016). How to build effective mentor-mentee relationships: Role of the mentee. *The Journal of Thoracic and Cardiovascular Surgery*,

151(3), 642-644

Weber, K., & Myrick, K. (2018). Reflecting on reflecting: Summer undergraduate research students' experiences in developing electronic portfolios, a meta-high impact practice. *International Journal of ePortfolio*, 8(1), 13-25. Retrieved from <http://www.theijep.com/pdf/IJEP287.pdf>

Wehling, M. (Ed.). (2015). *Principles of translational science in medicine: From bench to bedside* (2<sup>nd</sup> ed.). Amsterdam; Boston: Elsevier/Academic Press. ISBN: 9780128006870

Yuni, J. A., & Urbano, C. A. (2014). *Técnicas para investigar: Recursos metodológicos para la preparación de proyectos de investigación* (Vols. 1-2). Córdoba, Argentina: Editorial Brujas. Recuperados de la base de datos Bibliotechnia.

Zerzan, J. T., Hess, R., Schur, E., Phillips, R. S., & Rigotti, N. (2009). *Making the most of mentors: A guide for mentees*. *Academic Medicine*, 84(1), 140-144.

### **Online Resources**

American Psychological Association (APA) Style  
<http://www.apastyle.org/>

American Psychological Association, Five principles for research ethics  
<http://www.apa.org/monitor/jan03/principles.aspx>

Center for Innovation in Research and Teaching  
<https://cirt.gcu.edu/research/developmentresources/tutorials>

CITI Program  
<https://about.citiprogram.org/en/homepage/>

UPR-MSU Library – Data Bases  
<http://www.upr.edu/biblioteca-rcm/uprrcm-bases-de-datos/>



UPR-MSC – Research  
<http://www.rcm.upr.edu/investigacion/>

Center for Health Leadership & Practice, Guía de Mentoría: Guía para Mentores.  
<https://scholarworks.umass.edu/esence/305>

Ética de la investigación en seres humanos y políticas de salud pública  
<http://unesdoc.unesco.org/images/0015/001512/151255s.pdf>

European Commission, Ethics for researchers: Facilitating Research Excellence  
[http://ec.europa.eu/research/participants/data/ref/fp7/89888/ethics-for-researchers\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/fp7/89888/ethics-for-researchers_en.pdf)

National Science Foundation, Human Subjects  
<https://www.nsf.gov/bfa/dias/policy/human.jsp>

National Science Foundation, Mentoring: A guide and workbook for mentors and mentees  
[https://www.opm.gov/wiki/uploads/docs/Wiki/OPM/training/Mentoring/Mentoring%20Workbook\\_2013-2014.pdf](https://www.opm.gov/wiki/uploads/docs/Wiki/OPM/training/Mentoring/Mentoring%20Workbook_2013-2014.pdf)

Organización Panamericana de la Salud, ¿Cuáles son las pautas éticas que deben regir las investigaciones con seres humanos?  
[https://www.paho.org/hq/index.php?option=com\\_content&view=article&id=14071:new-guidelines-on-ethical-treatment-of-humans-in-health-related-research&Itemid=135&lang=es](https://www.paho.org/hq/index.php?option=com_content&view=article&id=14071:new-guidelines-on-ethical-treatment-of-humans-in-health-related-research&Itemid=135&lang=es)

U.S. Department of Health and Human Services, The Office of Research Integrity  
<https://ori.hhs.gov/>

U.S. Department of Health and Human Services, Office for Human Research Protections  
<https://www.hhs.gov/ohrp>

University of Puerto Rico, System-Wide Policy and Procedures for Responding to Allegations of Possible Research Misconduct Certification No. 45 (2006-2007)  
[http://graduados.uprrp.edu/images/pdf/Cert\\_045\\_2006\\_07\\_JS\\_EN.pdf](http://graduados.uprrp.edu/images/pdf/Cert_045_2006_07_JS_EN.pdf)

World Health Organization, Ethical standards and procedures for research with human beings <http://www.who.int/ethics/research/en/>

NOTE: Title V Cooperative Project: MSC-UCC developed this course as elective course and will offered in both partners institutions. Rev. Enero 2020