

GEORGE MASON UNIVERSITY  
College of Health and Human Services

Course Number: GCH 550 (3:3:0)

Course Title: Introduction to Rehabilitation Science

Faculty: Lynn Gerber, MD  
Ali Weinstein, PhD

**Course Description:**

Introduces the field of rehabilitation science. In addition, the roles of various specialties (including psychiatry, occupational therapy, physical therapy, speech pathology, psychology, vocational counseling, engineering, etc) in rehabilitation science will be examined.

**Course Objectives:** Upon completion of this course the student will be able to:

1. Describe the major theories of rehabilitation science.
2. Synthesize theoretical principles to develop a conceptual framework for the interdisciplinary nature of rehabilitation science.
3. Demonstrate the ability to critically analyze rehabilitation literature.
4. Analyze rehabilitation as a scientific discipline.

**Required Textbook:**

Hammell, K.W. (2006). *Perspectives on Disability and Rehabilitation: Contesting Assumptions; Challenging Practice*. Philadelphia: Elsevier Limited.

**Recommended Textbooks:**

Brandt, E.N. & Pope, A.M. (1997). *Enabling America: Assessing the Role of Rehabilitation Science and Engineering*. Washington, DC: National Academy Press.

Delisa, J. (2005). *Physical Medicine and Rehabilitation*, 4<sup>th</sup> ed. Baltimore: Lippincott Williams & Wilkins.

Field, M.J. & Jette, A. (2007). *The Future of Disability in America*. Washington, DC: National Academy Press

**Academic Honesty:**

George Mason University operates under an honor system, which is published in the University Catalog and deals specifically with cheating, attempted cheating, plagiarism, lying, and stealing. Please familiarize yourself with the honor code, especially the statement on plagiarism (<http://www.gmu.edu/facstaff/handbook/aD.html>). If you have

questions about when the contributions of others to your work must be acknowledged and appropriate ways to cite those contributions, please talk with the professor.

### Students with Disabilities

Any student with a documented disability or other condition that may affect academic performance should: 1) make sure this documentation is on file with the Office of Disability Services (SUB I, Rm. 211; 993-2474; [www.gmu.edu/student/ods](http://www.gmu.edu/student/ods)) to determine the accommodations you might need; and 2) talk with the instructor to discuss reasonable accommodations (preferably during the first two weeks of the semester).

### Assessment:

- **Two Papers:** You will use published literature to write two papers – an article summary and an article critique – as detailed on the schedule below.
- **One Presentation:** You will present an article to the class providing both a summary of the information, as well as a critique.
- **Final Exam:** The final exam will be a comprehensive review of rehabilitation science.

Component	Due Date	% of Final Grade
Article Summary	Week 4	20
Article Critique	Week 8	20
Article Presentation	Week 13	30
Final Exam	Week 15	30

### Proposed Schedule:

Week	Topic	Assignment
1	<ul style="list-style-type: none"> <li>• Introduction: History &amp; Background</li> <li>• Development of Rehabilitation</li> </ul>	Due Week 4: ARTICLE SUMMARY. Summary of a published, peer-reviewed article.
2	<ul style="list-style-type: none"> <li>• Principles of Rehabilitation</li> </ul>	
3	<ul style="list-style-type: none"> <li>• Disablement &amp; Rehabilitation in America</li> <li>• Classification</li> <li>• Legislative/Authorities for Rehabilitation</li> </ul>	
4	<ul style="list-style-type: none"> <li>• Theoretical Models/Cultural Perspective on Disability</li> </ul>	
5	<ul style="list-style-type: none"> <li>• Anatomy and Physiology for Rehabilitation Scientists I: Cardiopulmonary including fatigue</li> </ul>	Due Week 8: ARTICLE CRITIQUE. Summary and critique of a published, peer-reviewed article.
6	<ul style="list-style-type: none"> <li>• Anatomy and Physiology for Rehabilitation Scientists II: Neuromusculoskeletal including pain</li> </ul>	
7	<ul style="list-style-type: none"> <li>• Anatomy and Physiology for Rehabilitation Scientists III: Cognitive/Behavioral</li> </ul>	
8	<ul style="list-style-type: none"> <li>• What is Rehabilitation Science?</li> <li>• Bio-psycho-social-environmental Perspective</li> </ul>	
9	<ul style="list-style-type: none"> <li>• Development through the Life Span</li> <li>• Challenges of Aging with a Disability</li> </ul>	Due Week 13: ARTICLE PRESENTATION. Oral

10	<ul style="list-style-type: none"> <li>• Engineering for Rehabilitation Scientists</li> <li>• Assistive Technology</li> </ul>	summary and critique of a published, peer-reviewed article.
11	<ul style="list-style-type: none"> <li>• Rehabilitation Science for Engineers</li> </ul>	
12	<ul style="list-style-type: none"> <li>• Fundamentals of Science: History and Philosophy</li> </ul>	
13	<ul style="list-style-type: none"> <li>• Article Presentations</li> </ul>	
14	<ul style="list-style-type: none"> <li>• Ethical Issues in Clinical and Research Settings</li> </ul>	
15	FINAL EXAM	Week 15: Final Exam

## Readings:

### Week 1 – Introduction: History and Background / Development of Rehabilitation

Hammell – Chapter 1: Exploring the assumptions underpinning rehabilitation

*Enabling America* – Chapter 1: Introduction

*The Making of Rehabilitation: A Political Economy of Medical Specialization, 1890-1980* – Chapter 1: Introduction

### Week 2 – Principles of Rehabilitation

Hammell – Chapter 7: Disability, rehabilitation, and liminality  
Chapter 8: Rehabilitation Fundamentals

*Physical Medicine and Rehabilitation: Principles and Practice, 4<sup>th</sup> Edition* –  
Chapter 11: Therapeutic Physical Agents  
Chapter 17: Therapeutic Exercise

### Week 3 – Disablement & Rehabilitation in America / Classification / Legislative and Authorities for Rehabilitation

Hammell – Chapter 2: Normality and the classification of difference  
Chapter 3: Disability and deviance from the norm

*Enabling America* – Executive Summary

Bruyere, S. M., Van Looy, S. A., & Peterson, D. B. (2005). The International Classification of Functioning, Disability and Health: Contemporary literature overview. *Rehabilitation Psychology, 50*(2), 113-121.

*Physical Medicine and Rehabilitation: Principles and Practice, 4<sup>th</sup> Edition* –  
Chapter 49: The International Classification of Functioning, Disability, and Health: ICF Empowering Rehabilitation through an Operational Bio-Psycho-Social Model

Cottrell, R. P. F. (2005). The Olmstead Decision: Landmark opportunity or platform for rhetoric? Our collective responsibility for full community participation. *American Journal of Occupational Therapy, 59*, 561-568.

*Chronic Illness: Impact and Intervention, 6<sup>th</sup> Edition* – Chapter 26: Politics & Policy

**Week 4 - Theoretical Models of Disability / Cultural Perspective on Disability**

Hammell – Chapter 4: Theoretical models of disability  
Chapter 5: The Cultural Perpetuation of Disability

*Enabling America* – Chapter 3: Models of Disability and Rehabilitation

Ville, I., Croste, M., Ravaud, J., & Tetrafigap Group. (2003). Disability and a sense of community belonging: A study among tetraplegic spinal-cord-injured persons in France. *Social Science and Medicine*, 56, 321-332.

Wang, P. P., Badley, E. M., & Gignac, M. (2006). Exploring the role of contextual factors in disability models. *Disability and Rehabilitation*, 28(2), 135-140.

*Chronic Illness: Impact and Intervention, 6<sup>th</sup> Edition* – Chapter 3: Stigma

**Week 5 - Anatomy and Physiology for Rehabilitation Scientists I:  
Cardiopulmonary including fatigue**

**Week 6 – Anatomy and Physiology for Rehabilitation Scientists II:  
Neuromusculoskeletal including pain**

**Week 7 – Anatomy and Physiology for Rehabilitation Scientists III:  
Cognitive/Behavioral**

**Week 8 – What is Rehabilitation Science? / Bio-psycho-social-environmental  
Perspective**

Stineman, M. G. (2001). Defining the population, treatments, and outcomes of interest. *American Journal of Physical Medicine and Rehabilitation*, 80, 147-159.

Alonso, Y. (2004). The biopsychosocial model in medical research: The evolution of the health concept over the last two decades. *Patient Education and Counseling*, 53, 239-244.

Frontera, W. R., Fuhrer, M. J., Jette, A. M., Chan, L., Cooper, R. A., Duncan, P. W., et al. (2006). Rehabilitation medicine summit: Building research capacity. *American Journal of Speech-Language Pathology*, 15(1), 3-14.

Borrell-Carrio, F., Suchman, A. L., & Epstein, R. M. (2004). The biopsychosocial model 25 years later: Principles, practice, and scientific inquiry. *Annals of Family Medicine*, 2(6), 576-582.

Dijkers, M. P. J. M., Whiteneck, G., & El-Jaroudi, R. (2000). Measures of social outcomes in disability research. *Archives of Physical Medicine & Rehabilitation*, 81(12 Supple), S63-80.

*Chronic Illness: Impact and Intervention, 6<sup>th</sup> Edition* – Chapter 25: Rehabilitation

## **Week 9 – Development through the Life Span / Impact of Disabilities on Life Span Development**

*The Future of Disability in America* – Chapter 5: Secondary Conditions and Aging with Disability

Kivnick, H.Q. (1985). Disability and psychosocial development in old age. *Rehabilitation Counseling Bulletin*, 29, 123-134.

Klingbeil, H., Baer, H.R., & Wilson, P.E. (2004). Aging with a disability. *Archives of Physical Medicine and Rehabilitation*, 85, S68-S73.

Putnam, M. (2002). Linking aging theory and disability models: Increasing the potential to explore aging with physical impairment. *Gerontologist*, 42, 799-806.

Putnam, M., Geenen, S., Powers, L., Saxton, M., Finney, S., & Dautel, P. (2003). Health and wellness: People with disabilities discuss barriers and facilitators to well being. *Journal of Rehabilitation*, 69, 37-45.

Zola, I.K. (1989). Aging and disability: Toward a unified agenda. *Journal of Rehabilitation*, 28, 6-11.

## **Week 10 – Engineering for Rehabilitation Scientists / Assistive Technology**

*Physical Medicine and Rehabilitation: Principles and Practice, 4<sup>th</sup> Edition* – Chapter 60: Assistive Technology

*The Future of Disability in America* – Chapter 7: Assistive and Mainstream Technologies for People with Disabilities

*Enabling America* – Chapter 5: Functional Limitations Research in Rehabilitation Science and Engineering

Ding D., Cooper R.A., Kaminski B.A., Kanaly J.R., Allegretti A., Chaves E. & Hubbard S. (2003). Integrated control and related technology of assistive devices. *Assistive Technology*, 15, 89-97.

Lenker .JA. & Paquet V.L. (2003). A review of conceptual models for assistive technology outcomes research and practice. *Assistive Technology*, 15, 1-15.

## **Week 11 – Rehabilitation Science for Engineers**

## **Week 12 – Fundamentals of Science: History and Philosophy**

Ottenbacher, K. J. (1995). Why rehabilitation research does not work (as well as we think it should). *Archives of Physical Medicine & Rehabilitation*, 76, 123-129.

*The Structure of Scientific Revolutions*: Chapter 1: Introduction  
Chapter 2: The Nature of Normal Science  
Chapter 6: Anomaly and Emergence of Scientific Discoveries

## **Week 13 – Article Presentations**

## **Week 14 – Ethical Issues in Clinical and Research Settings**

*Physical Medicine and Rehabilitation: Principles and Practice, 4<sup>th</sup> Edition* –  
Chapter 48: Ethical Issues in Rehabilitation Medicine

*Chronic Illness: Impact and Intervention, 6<sup>th</sup> Edition* – Chapter 18: Ethics in  
Chronic Illness

Lundberg, G. D., & Glass, R. M. (1996). What does authorship mean in a peer-reviewed medical journal? *JAMA*, 276(1), 75-76.

Martinson, B. C., Anderson, J. C., & de Vries, R. (2005). Scientists behaving badly. *Nature*, 435, 737-738.

Des Jarlais, D. C., Lyles, C., Crepaz, N., & the TREND group. (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The trend statement. *American Journal of Public Health*, 94(3), 361-366.

## **Week 15 – FINAL EXAM – TBD**