

**WHEELING JESUIT UNIVERSITY
PHYSICAL THERAPY DEPARTMENT
COURSE SYLLABUS
CLASS of 2020 - SPRING 2019**

COURSE NUMBER:	DPT 621- 01 & 02
COURSE TITLE:	BASIC SCIENCES III
CONTACT HOURS:	5 hours per week for 16 weeks
CREDITS:	5 credits
DESCRIPTION:	This course is a guided self-study of the structures and functions of the body's systems in healthy and impaired states, the impact of health care evaluations and interventions on structures and functions of the body while incorporating Evidence-Based Practice. Topics are integrated closely with client case scenarios in Clinical Science III.
SCHEDULE:	Section 01: Mondays: 8:30-11:00, and Thursdays: 8:00 – 10:30 Section 02: Mondays: 11:30 – 2:00, and Thursdays: 11:00 – 1:30
LOCATION:	LRC (Learning Resource Center), Room No. 403 Stone Center
FACULTY:	Dr Mohammad H. Hadadzadeh, PhD, MPT, BPT, PDCR
PHONE:	Office: 304-243-7201-ext. 113
EMAIL:	mhadad@wju.edu
OFFICE HOURS:	Mondays 2:30- 4:00 PM Thursdays: 2:00- 4:30 PM Please use the link: https://hadadzadeh.youcanbook.me/ to book an appointment. For any other time, send an email.
LAST DATE OF ADD/DROP:	Please refer to the Registrar's office for this information.
RESOURCES:	Please refer to the textbook list at the end of the syllabus (page 9). Students are expected to complete the assigned readings/topics (textbook chapters, articles, review papers, etc.) as listed on the syllabus and study contents for each session in advance. Additional readings may be assigned from current literature.
ACADEMIC DISHONESTY POLICY:	Please refer to <u>PT Student Handbook</u> .

STATEMENT OF ACADEMIC INTEGRITY:

Students are advised that WJU's Academic Integrity Policy will strictly be enforced in this course (see www.wju.edu/studenthandbook). Questions regarding the policy may be directed to the Office of the Academic Vice-President.

Official E-mail: An official WJU e-mail is established for each registered student, each faculty member, and each staff member. All university communications sent via e-mail will be sent to this WJU e-mail address.

ATTENDANCE POLICY:

Please refer to PT Student Handbook.

Absenteeism (more than once) and/or tardiness (more than twice) will be reported to the Academic Progress Committee of the Program. This is a graduate class and will start and end promptly. Penalty for missing a lecture or excessive tardiness (more than twice) during this course: 1% will be deducted from your final grade for each unjustified absences or episode of tardiness up to 10% of your total grade.

PROFESSIONAL BEHAVIOR EXPECTATIONS:

At the instructor's discretion, a maximum of 10% of total grade points may be deducted for failure to present with professional comportment under all circumstances during this course. Lack of the student's ability to present and behave in a professional manner will be referred to the Academic Progress Committee for appropriate intervention. Please refer to the Student Handbook section 2.28 – Noncompliance with Rules of Conduct.

ELECTRONIC DEVICES:

As a courtesy to everyone involved in the course electronic devices such as beepers and cell phones are to be turned off (no sound or vibrating) during class. If, for some extenuating circumstance, you must be in communication with people outside of class please alert the instructor prior to the start of class. **Texting while in the classroom or doing your information gathering is against departmental policy.** Videotaping of class material on personal devices is only permitted with authorization from the course instructors.

LECTURES:

The teaching format will consist **primarily of a self-study of the topics** that are listed under “Student Learning Objectives (SLO)” of the course in the syllabus. There will be additional guidance on study topics for each class session, which will be posted on the Blackboard on every week bases. Some sessions may have a brief/full lecture with interactive discussions. Students are expected to study listed topics **prior to the start of the class and actively participate in class by presenting the topics in an open guided group discussion or assigned Seminars format** (Refer to the Seminar rubric & schedule). Audio-visual or other media may be used to enhance their learning experience.

EXAMINATIONS & ASSIGNMENTS:

Written examinations will include material covered in lectures, class discussions, and assigned readings. The exam questions may consist of, but are not limited to multiple choice, short answer, true/false, matching, and fill in the blank. Exams are cumulative relative to the conceptual information that has relevance to the material presented in the course sequence.

During quizzes and examinations, no books or papers will be allowed in your seating area; you are to leave them in the front of the room. You will not be permitted to leave the exam and return, therefore you have a one- time entry to the room in which the exam is given. You must bring your own #2 pencils.

If a student has prior knowledge that she/he will miss an exam, that student should meet with the instructor at least one (1) week prior to the exam and make arrangements to complete the necessary work. An absence from an exam without an acceptable excuse will result in the assignment of a score of zero (Ø). An excuse for absence during an exam must satisfy university guidelines. Absence from a scheduled exam for medical reasons must be verified by documentation from the health care professional that provided services to the student. In cases of emergencies, sudden illness or unexpected absence the student should contact the instructor as soon as possible. In any case, the format (essay, objective, or oral) and time of make-up examinations will be at the discretion of the instructor. Tardiness in arriving for an exam will not have additional time.

Final Written Exam: Department policy states that you may retake only two tests that have been failed (as an individual) during the entire program. In this course you must pass the final exam with at least a 74% and to pass the course you will be required to repeat the exam if you receive a grade on the written final exam of less than 74%. Your replacement grade may not be above the lowest passing grade, which is 74% (as per department policy).

OSCE: The OSCE will be a detailed flow chart presentation. On the flow chart your group will select a PT diagnosis and a co-morbidity. Student must demonstrate how the treatment plan and interventions are affected by the co-morbidity and how every system (studied in this semester) is affected by the co-morbidity. More explanation will be given in class. The final chart will be presented to your classmates and the faculty and questions will need to be answered. A grading rubric will be available in a separated document in Blackboard.

Seminars: Each group will be required to present the assigned topics in the form of a seminar presentation. Groups are allowed to enter a professionally behaved discussion, question and answer session in a seminar format. Presentations will be evaluated based on the accuracy and relevant depth of information, presentation style and using A-V media, participation in the discussions, professional behavior, and recent advances & paper appraisal. Assigned topics for each group and the rubrics for evaluation will be released and explained in the first class.

GRADING POLICY:

A minimum passing grade of 74% is required on the Final Written Exam.

A minimum passing grade of 80% is required on the OSCE.

Final Written Exam & OSCE are mandatory pass items.

In accordance with department policy, the re-take or remediation can result in a grade of no higher than 74% for the final written exam and 80% for OSCE, which is the lowest "passing" score. Recall that you are permitted to retake ONLY 2 major exams (i.e., mid-term/final/OSCE) for the entire duration of the DPT program.

TEST	% of Final grade
Final Written	30%
Midterm	20%
OSCE	15%
Quizzes (x2)	20% (each 10%)
Seminars	10% (each 5%)
Participation in class discussion	5%

Grading Scale	
Letter Grade	Grade
A	94 - 100
A-	90 - 93
B+	87 - 89
B	84 - 86
B-	80 - 83
C+	77 - 79
C	74 - 76
F	<74

Note: Instructor may deduct up to 10% of the final grade for the course for reasons of lack of professionalism, non-participation, or poor group performance.

COURSE REQUIREMENTS:

You are required to download study topics prior to each class session, self-study by referring to the suggested textbooks in advance, and come to class prepared to discuss the study topics with your fellow classmates and perform required activities and presentations. You must regularly check your Blackboard for updates. Due to the nature of the curriculum design, it is imperative that you keep up with your study and the class assignments. You must have an email account and be able to access Blackboard to access the required materials.

Note: Please use your WJU “cardinal” account so that you can identify course related information.

DISABILITY SERVICES (ADA ACCOMMODATIONS):

Wheeling Jesuit University offers students with documented disabilities individual accommodations on a case-by case basis with confidentiality in compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973.

In order to receive academic or physical accommodations, students with disabilities must provide current (within three years) and comprehensive documentation concerning the nature and extent of the disability and communicate their needs to the Disability Services Director, located in Ignatius Hall Room G 24 or call 304-243-4484. Students are required to meet with the director to develop accommodation plans that they will present to their course instructors at the beginning of each semester. Students with disabilities that require specific housing accommodations must contact both the Director of Residence Life and the Disability Services Director.

Ultimately, all students with disabilities are responsible for their own academic achievement. They must attend classes, complete course assignments, and fulfill all university requirements for their chosen field of study. It is up to students with disabilities to seek out available assistance on campus and to utilize individualized accommodations that promote academic success.

TITLE IX:

Wheeling Jesuit University seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment, misconduct, or assault we encourage you to report this. If you report this to a faculty member, she or he must notify our college's Title IX coordinator about the basic facts of the incident (you may choose whether you or anyone involved is identified by name). For more information about your options at WJU, please go to <http://wju.edu/titleix/>.

ACADEMIC RESOURCE CENTER (ARC):

The Academic Resource Center (ARC) is a totally free academic-support service available to all enrolled Wheeling Jesuit University students and staffed almost exclusively by WJU students recommended for employment by WJU faculty. The ARC is located in Bishop Hodges Library and is open five days a week:
Sundays 6:00-8:00 p.m.

Mondays-Thursdays 1:00-9:00 p.m.

Please visit the ARC's website (readily accessible on the Cardinal homepage under "Quick Links" or as the first listing under "Student Services") to learn about the ARC's services (emphasizing writing, math, and the sciences) and to schedule appointments.

Disclaimer: This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However, the professor reserves the right to modify, supplement and make changes as the course needs arise.

TENTATIVE COURSE OUTLINE & IMPORTANT DATES:

Week	Session	Date	Topic	CS III (Case #)	Class Format [†]
1	1	01/07/19	Lumbosacral Spine-I: Anatomy & Biomechanics	10 (Johnson)	L/D
	2	01/10/19	Spinal Cord	10	L/D
2	3	01/14/19	Lumbosacral Spine-II: Pathologies & Interventions	10	L/D
	4	01/17/19	Cervical Spine	11 (Gannon)	S/IL
3	5	01/21/19	Skull & TMJ	12 (North)	S/IL
	*	01/24/19	No Class- Off for CSM	-	
4	6	01/28/19	Head, Neck & Face	12	S/IL
	7	01/31/19	Pulmonary System-I: Anatomy & Physiology	13 (Dequense)	S/IL
5	8	02/04/19	Pulmonary System-II: Pulmonary Disease: Pathophysiology & Rx Quiz 1 (Testing block)	13	L/D
	9	02/07/19	Pulmonary System-III: Evaluation & Investigations: CXR, ABG & PFT	13	L/D
6	10	02/11/19	Cardiovascular System-I: Anatomy & Physiology	14 (Hadun)	S/IL
	11	02/14/19	Cardiovascular System-II: Heart Diseases: Pathophysiology & Rx	14	S/IL
7	12	02/18/19	Cardiovascular System-III: Investigations: EKG	14	L/D
	13	02/21/19	DM	15 (Whitehawk)	D/S/IL
8	14	02/25/19	DM (Continue), EKG (Continue)	15	Review
	15	02/28/19	Brain: Anatomy & Function	16 (Yuan)	S/IL
**	-	03/04/19	Spring Break- No Class	-	
	-	03/08/19	Spring Break- No Class	-	
9	16	03/11/19	CVA-I: Pathophysiology	16	D/S/IL
			Midterm (Testing block)		
	17	03/14/19	CVA-II: Investigative tools & Rx	16	L/D
10	18	03/18/19	Cranial Nerves & Brain stem	17 (Pitt)	S/IL
	19	03/21/19	Vestibular System	17	S/IL
11	20	03/25/19	Basal Ganglia disorders-I: Parkinson Dx: Pathophysiology	18 (Trimmer)	S/IL
	21	03/28/19	Basal Ganglia disorders II: Parkinson: Medical & PT interventions	18	D/S/IL
12	22	04/01/19	PVD	19 (Kosum)	D/S/IL
	23	04/04/19	Amputation	19	D/S/IL
13	24	04/08/19	RA-I	20 (Creighton)	D/S/IL
	25	04/11/19	RA-II Quiz 2 (Testing block)	20	D/S/IL
14	26	04/15/19	Kidney	14,15,19,20	D/S/IL
	***	04/18/19	Easter Break- No Class	-	
15	***	04/22/19	Easter Break- No Class	-	
	27	04/25/19	OSCE Review	-	Review
16	04/29-05/03		Final week: Schedule to be determined		

* CSM: Jan. 23-26, 2019: No class

** Spring break: March 04-08, 2019: No class

*** Easter break: April 18-22, 2019: No class

Exams Dates: Quiz #1: Feb. 04, 2019 (cases# 10, 11 & 12)

Midterm: March 11, 2019-Testing block time (cases 10-14)

Quiz #2: March, 25, 2019- (cases# 15, 16, 17)

Note: Quizzes will take place during testing block, times as scheduled by the term coordinator.

† Formats:

L: Lecture
IL: Interactive lecture
D: Discussion
S: Seminar

STUDENT LEARNING OBJECTIVES (SLO) FOR THE COURSE:

The student will be able to:

1. Explain the anatomy & biomechanics of the lumbo-sacral region including the bones, joints, ligaments, muscles, blood supply and lymphatic drainage. (4*)
2. Describe the etiology, pathophysiology, clinical manifestations of common pathologies of the lumbo-sacral region including: joint inflammation, sprains & strains, degenerative disease, radicular pain, zygapophyseal joint dysfunction, compression fractures, ankylosing spondylitis, spondylitis, spondylolisthesis, spinal stenosis, and recognize the role of leg length inequality. (2*)
3. Describe common surgical procedures of the lumbo-sacral region including: decompression, laminectomy, spinal fusion, discectomy & arthrodesis, and physical therapy protocols following them. (2*)
4. Discuss the McKenzie, Cyriax, and Maitland approaches, manual therapy & traction in treatment of LBP, their indications, contraindications and precautions. (2*)
5. Explain the overall organization of the central nervous system, spinal cord anatomy, spinal cord pathways, sensory and motor tracts, and spinal cord level reflexes. (4*)
6. Explain the anatomy and biomechanics of the cervical region. (4*)
7. Illustrate dermatomes and myotomes related to the cervical and lumbosacral nerve roots. (3*)
8. Describe common pathologies of the cervical spine including spinal stenosis, facet joint syndrome, OA, osteophytes, whiplash injury. (2*)
9. Discuss the evaluation methods and investigative tools for examination of the cervical region. (2*)
10. Discuss pathologies, which may compress the spinal cord or nerve roots and related diagnostic testing. (2*)
11. Discuss medical, surgical, and physical therapy treatments for the cervical region pathologies. (2*)
12. Describe the anatomy of the skull, head, neck and face including bones, joints, ligaments, muscles, arteries, nerves, veins, and lymphatic drainage. (2*)
13. Discuss the biomechanics of the TMJ, pathologies of TMJ and principles of their treatment approaches. (2*)
14. Describe trigger points including active & latent. (2*)
15. Discuss trigger points in terms of signs, symptoms, causes, examination, perpetuating factors, and treatment approaches. (2*)
16. Relate depression and anxiety to cervical region pathologies and trigger points. (3*)
17. Employ methods of examination of the muscles of facial expression, tongue and eye. (3*)
18. Explain the anatomy of the respiratory system, anatomy and biomechanics of thorax and trunk in respiration. (4*)
19. Discuss smooth muscle anatomy and physiology, and pharmacological agents that act on the smooth muscles of the bronchi. (2*)
20. Explain the physiology of respiration, gas exchange, lung volumes and capacities. (4*)
21. Explain the etiology, epidemiology, risk factors, pathophysiology, clinical manifestations of obstructive lung diseases including Cystic Fibrosis, Chronic Bronchitis, Emphysema, Asthma, and their effects on the respiratory system and blood gases. (4*)
22. Summarize general pathogenesis of chronic restrictive lung disease, respiratory failure, pneumonia, plural effusion, pneumothorax, and pulmonary edema. (2*)
23. Explain the principles of physical examination of the respiratory system, and analyze the results of investigative tools including ABG, PFT, CXR, lab values, medical and physical therapy treatments and components of comprehensive pulmonary rehabilitation. (5*)
24. Discuss medical, surgical and physical therapy treatments for pulmonary conditions, and components of comprehensive pulmonary rehabilitation. (2*)
25. Explain the anatomy of the heart (chambers, valves, arteries, structure of cardiac muscle and conduction system) and function of the heart and cardiovascular system. (4*)
26. Formulate the determinants of $\dot{V}O_2$, $\dot{V}O_{2max}$, myocardial oxygen demand ($M\dot{V}O_2$), rate pressure product (RPP) and relate them to changes during physical activity. (5*)
27. Calculate the $\dot{V}O_2$, MET level and energy cost equations for walking/running with a given values for speed and grade of walk on treadmill. (4*)
28. Relate the exercise workload to heart rate, blood pressure, and RPP. (5*)
29. Explain the etiology, epidemiology, risk factors, pathophysiology, and clinical manifestations of coronary artery disease, myocardial infarction, and congestive heart failure. (4*)

30. Describe principles of physical examination and identify diagnostic tests used for coronary artery disease, myocardial infarction, and CHF. (2*)
31. Relate the effects of acute exercise versus long-term exercise training on angina threshold. (4*)
32. Discover the risk factors for hypertension, and its correlation with cardiac pathologies. (3*)
33. Identify the modifiable and un-modifiable risk factors of CAD. (4*)
34. Describe the surgical treatment of CAD, MI, CHF and pharmacological agents used in the treatment of cardiovascular disorders. (3*)
35. Explain the physical therapy treatment for CAD, MI, CHF, post-surgical heart conditions, phases and components of cardiac rehabilitation. (4*)
36. Describe cardiac pace-makers including classification, function, indications, and precaution (Shoulder ROM, E-stim., Ultrasound, exercise, etc.) (2*)
37. Locate the placement of EKG electrodes, and discuss their relationship to the components of the heart. (2*)
38. Analyze principles of EKG interpretation and methods of recording electrical activity of the normal resting heart, and indicate what cardiac function is associated with each of its components. (5*)
39. Distinguish normal & abnormal electrocardiograms, and identify NSR, sinus bradycardia and tachycardia, PVC, PAC, atrial & ventricular tachycardia, atrial & ventricular fibrillation, atrial flutter, AV blocks, Asystole, S-T segment elevation, depression & T-wave inversion. (4*)
40. Discover the effects of exercise on EKG in normal and heart diseases, and effects of medications on EKG. (3*)
41. Describe cardiac testing procedures such as Swan Ganz catheters and other laboratory studies that apply to the heart. (2*)
42. Use the anatomy and function of the pancreas, and relate to blood glucose regulation in the body. (3*)
43. Discuss diabetes mellitus; types, pathogenesis, epidemiology, clinical manifestations, complications, diagnosis and monitoring systems, medical treatment, and PT assessment & management. (2*)
44. Analyze the effects of exercise & sedentary life style on DM, exercise guidelines for DM, contraindications & precautions, life style changes in DM. (4*)
45. Examine the pathological impact of DM on other body systems. (4*)
46. Discuss autonomic neuropathy in DM and erectile dysfunction. (2*)
47. Identify the components & functions of CNS including spinal cord, thalamus, pons, medulla, midbrain, cerebral hemispheres, ventricles, meninges & CSF. (2*)
48. Explain the anatomy & function of the brain, its blood supply and circulatory system. (4*)
49. Describe the effects of aging on the brain & CNS. (2*)
50. Discuss normal development of the brain, and abnormal developmental disorders of CNS. (2*)
51. Explain evolving stroke, TIA, CVA; their etiology, risk factors, clinical manifestations, recovery stages, prognosis, impairments from a CVA, and related PT interventions. (4*)
52. Discuss diagnostic tools (imaging, lab values) physical examination, functional assessments tools, medical and surgical treatments for CVA. (2*)
53. Discuss abnormal synergy patterns and available PT approaches including Bobath, Brunnstrom, PNF, Rood, Sensorimotor and motor control. (2*)
54. Define Traumatic brain injury (TBI), meningitis, encephalitis, and brain abscess, their causes, clinical manifestation, impairments, overall diagnosis & treatment. (1*)
55. Interpret levels of consciousness, Glasgow Coma Scale, Intracranial pressure (ICP). (3*)
56. Discuss the conceptual framework for different physical therapy treatment approaches in neurorehabilitation following CVA & brain injury. (2*)
57. Explain the anatomy and physiology of the vestibular system. (4*)
58. Discuss peripheral & central components of postural control, and components of static and dynamic balance. (2*)
59. Discuss the pathologies of the vestibular system including cervical vertigo, Benign paroxysmal positional vertigo (BPPV), Meniere's disease, nystagmus, acoustic vestibular hypofunction, perilymph fistula, superior semicircular canal dehiscence syndrome, Mal de débarquement (disembarkment) syndrome, autoimmune ear disease, congenital vestibular loss, meningitis, brain tumors. (2*)
60. Discover types of balance tests, tests for semicircular canals and provocative tests, and investigative tools useful in vestibular diagnosis. (3*)
61. Discuss the interventions for vestibular pathologies and basics of vestibular rehabilitation. (2*)
62. Discuss balance problems associated with pathologies of the brain, eyes and ears. (2*)
63. Describe the cranial nerves in terms of location, function, and pathology. (2*)
64. Discuss the brainstem lesions & dysfunction. (2*)

65. Explain the anatomy & function of the eye, oculomotor movements, ear, and relate them to the vestibular system. (4*)
66. Summarize degenerative diseases of CNS (including Parkinson & Huntington diseases, amyotrophic lateral sclerosis, myasthenia gravis, multiple sclerosis); their etiology, pathophysiology, clinical manifestations. (2*)
67. Explain the anatomy and function of the basal ganglia, limbic system, brainstem, reticular activating system, and extrapyramidal system. (4*)
68. Describe the etiology, epidemiology, risk factors, pathophysiology, clinical manifestations, diagnosis, and medical and PT management of Parkinson & Huntington diseases. (2*)
69. Describe motor impairments/disorders and tone variations. (2*)
70. Explain the etiology, epidemiology, risk factors, pathophysiology, and clinical manifestations of peripheral vascular disease, vascular ulcers, and pressure ulcers, and their PT management. (4*)
71. Describe diagnostic and assessment tools, examination, medical and surgical management of PVD. (2*)
72. Discover skin breakdown, pressure ulcers, grading and PT interventions for each associated pathology. (3*)
73. Relate DM to PVD and risk of amputation. (3*)
74. Describe different types of lower extremity amputations, indications & causes, physical and psychological complications of amputation, phantom pain and sensation. (2*)
75. Describe types of lower extremity prosthetics and their components. (2*)
76. Identify Gait deviations & balance disturbances following LL prosthetics and LL amputation. (2*)
77. Discuss methods of evaluation and assessment of lower extremity prosthetics, and rehabilitation following prosthetics use. (2*)
78. Outline the components and function of the immune system, organs involved in immune system, and immune response. (4*)
79. Examine the effects of aging and exercise on immune system. (4*)
80. Describe the pathophysiology of autoimmune diseases including Rheumatoid Arthritis, Juvenile Idiopathic Arthritis, Ankylosing Spondylitis, Psoriatic Arthritis, Gout Arthritis, Reiter syndrome, Sjogrens syndrome. (2*).
81. Explain the etiology, epidemiology, risk factors, pathogenesis, clinical manifestations, and treatment approaches of RA including medical, surgical and PT. (2*)
82. Contrast osteoarthritis, RA, and septic arthritis. (4*)
83. Discuss the effects of RA on other body systems. (2*)
84. Discuss diagnosis of RA including physical examination, lab reports, and diagnostic imaging. (2*)
85. Explain the anatomy and physiology of the kidney. (4*)
86. Discuss the role of kidney in regulating body pH, fluids, electrolytes & waste products. (2*)
87. Examine the effects of aging and exercise on renal function. (4*)
88. Summarize pathologies of renal system including infections, cancer, cystic disease, calculi, glomerular disease, chronic kidney disease & renal failure (include pre-, intra-, post-renal failure), renal osteodystrophy, and types of incontinences. (2*)
89. Discuss renal dialysis, transplantation, and impact of diabetes mellitus on kidney function. (2*)
90. Discover the role of PT, and PT interventions, & exercise recommendations in renal disease. (3*)
91. Evaluate the impact of arteriosclerosis on the function of the cardiovascular & pulmonary system, central nervous system, and kidneys. (6*)
92. Assess the effects of body systems pathologies on physical therapy interventions. (6*)

*Major Categories in the Taxonomy of Educational Objectives (Bloom 1956)

TEXTBOOK LIST- Term III- CLASS 2020- SPRING 2019

TEXT	AUTHOR	ISBN #	PUBLISHER
Essentials of Cardiopulmonary Physical Therapy, 4 th ed.	Hillegass EA	9780323430548 e-book	Saunders
Neurological Rehabilitation - Pageburst E-book, 6 th ed.	Umphred DA	ISBN: 9780323183482 e-book	Mosby
Pathology: Implications for the Physical Therapist, 4 th ed.	Goodman CC, Fuller KS	9781455745913 e-book	Saunders
Rapid Interpretation of EKGs 6 th ed.	Dubin D	0-912-912065 or 9780912912066	Cover Pub. Co.
Physical Rehabilitation 6 th ed.	O'Sullivan SB, Schmitz TJ	978-0-8036-2579-2 0-8036-1247-8	FA Davis
Tappan's Handbook of Healing Massage Techniques, 5 th ed.	Benjamin PJ, Tappan FM	0135142237/9780135142233	Prentice Hall
Acute Care Handbook for Physical Therapists, 4 th ed.	Paz J, West M	978-1455728961 e-book	Saunders
Improving Functional Outcomes in Physical Therapy, 2 nd ed.	O'Sullivan SB, Schmitz TJ	978-0-8036-4612-4	FA Davis
Radiology 101: The basics & fundamentals of imaging, 4 th ed.	Smith & Erkonen	ISBN-13: 978-1451144574	LWW
Clinical Electrophysiology: Electrotherapy and electrodiagnostic testing, 3 rd ed.	Robinson & Snyder-Mackler	ISBN-13 978-0-7817-4484-3	LWW

NOTE:

- These textbooks will be in use in addition to the textbook list from term II. Refer to list of textbooks suggested for each class session.
- The textbook of “**Clinical Care in Rheumatic Disease**- Association of Rheumatology” will be provided by the department during the related RA case time period.