

POINT LOMA NAZARENE UNIVERSITY  
Department of Kinesiology

# KIN 325 Structural Kinesiology

## Spring, 2017 Course Syllabus

Course Designer and Mentor: Dr. Leon M. Kugler  
Office: Kinesiology # 7  
Office Hours: MW 8-9:30 and by appointment  
Final Exam: February 27 during the last class

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### PLNU Mission-To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

### You are built for SAFETY, EFFECTIVENESS AND EFFICIENCY

#### The Front Door: This is your course, welcome to it; perform it.

Structural Kinesiology is a course that offers you the opportunity to promote your mastery of anatomical structure and function and from which you can make useful applications. The knowledge and skills that you will apply to movement analysis in Structural Kinesiology serve as a framework for advanced study of human movement for work, fitness and play, now and later. You arrive at this course having completed Anatomy in a Biology Department. Structural Kinesiology is an applied anatomy course and is pre-requisite to KPE 327 Applied Biomechanics. You will grow in knowledge of structural knowledge in order to advance to functional and clinical anatomy applications. This growth is necessary in order to perform high ordered movement analysis in Applied Biomechanics and beyond in your graduate studies and professional pursuits in rehabilitative, sport and fitness applications.

#### The Back Door: At the Conclusion of This Course

You will confidently perform anatomical and kinesiological analyses and report on human movement based upon your mastery of the following:

- A. Synovial joints-degrees of freedom; physiological and accessory movements by cardinal and triplanar motion around axes
- B. Skeletal muscles by Regional Groups and Action; active or quiescent at the synovial joints; proximal and distal attachments
- C. Promotion of Safety, Effectiveness and Efficiency of movement through the application of the S.A.I.D. Principle
- D. Open and Closed Chain Movement analysis
- E. Working as a member of a team of movement learners
- F. Teaching functional anatomy (structure and function) to your audiences

#### Course Design\*

- A. **Out-of- class preparation-** You will prepare for our valuable Team Study and Lab times by reviewing or discovering the anatomy, kinematic/cinematic functions and tools necessary for lab analysis of movement. Resources available for your personal/group study out of class include the text book; Canvas resources including Videos, Power Points, Study Guides, "Muscles by Region and Action"; assigned journal readings, all of the items listed under course tools below and your own discoveries through reputable sources.

- B. **IRAT and TRAT**- Some class seasons will begin with an Individual Readiness Assessment Test (IRAT) to determine if you are equipped to move into the analysis phase of the session. After the IRAT you will collaborate with your Team and take the same test by reaching consensus on the answer of each item. Your team will report your answers on a Scratch Off form.
- C. **Prosection Fridays**- Collateral learning opportunity utilizing our cadavers in Rohr Science #119 on selected Fridays. Students who are members of the PLNU Kinesiology Human Anatomy Project (H.A.P.) serve as your Lab Techs. Several of the Lab Techs are doing original research as partial completion of the requirements for University Honors in their Senior year. This cadaveric 3D anatomical learning opportunity is provided to those students who apply and are demonstrating keen interest in Structure and Function of the body. Professor approval is required.
- D. **Movement Lab**-Class will look like a movement laboratory in which we all will be engaged in utilizing internal (Your walking around knowledge) and external resources (info search in class) to analyze movement. As a member of a team you will engage in topographical anatomy and kinesiology study of simple (Single planar) and complex (Multiplanar) movements. Your team will design your method of inquiry for the video capture and narrative analysis portions of Lab and then file video and analysis reports.
- E. **Lab Report**-You will complete your group Lab report including your video analysis and your succinct analysis and submit via Canvas prior to the end of class. NO Team activities are required outside of class.

### Examples of Lab Activity

1. Example #1 Through the use of topographical palpation and video analysis stipulate the actions of the wrist muscle motors in the following finger/hand/wrist movements: a) Opposition of the pollucis and digiti minimi; b) Radial deviation of the wrist

To be successful in this lab your MAT team will need to be equipped with the following knowledge and resources acquired prior to class:

- Familiarity with in-class assignment posted 2 days prior to lab on Canvas
- Device(s) available for information search, video capture and analysis of the movements
- Knowledge of the movements at the wrist joints; the muscles that act on these joints and what those actions or inhibitions of those muscles are; the optimized (movements resisted) palpations of those muscles
- The means to report your findings by the end of class via Canvas

2. Example #2: Through the use of topographical palpation and video analysis stipulate the actions of the wrist muscle motors in the following hand functions: a) Tennis forehand ground stroke; b) cradling the lacrosse ball

To be successful in this lab your MAT team will need to be equipped with the following knowledge and resources acquired prior to class:

- Familiarity with in-class assignment posted 2 days prior to lab on Canvas
- Device(s) available for information search, video capture and analysis of the sport skills
- Knowledge of the movements at the joints; the muscles that act on these joints and the multifarious sequential actions of those muscles; the optimized (movements resisted) palpations of those muscles
- The means to report your discoveries by the end of class via Canvas

### Successful students will:

- A. Demonstrate mastery of bone, joint, nerve and muscle anatomy through palpation, resistance and stretching of muscle groups in Class and Lab
- B. Successfully identify anatomical structures (Topographical, illustrations and cadaver) and explain functional and clinical implications of genetic anomalies, injury or illness.
- C. Promote the success of your team in movement analysis and critical thinking through pre-class preparation and in class problem solving and reporting of movement analysis.
- D. Score better than 75% on the Grand Functional Anatomy Lab Practical (Final Examination)

### Course Designer and Mentor

- A. Anatomy studies at the Medical College of Ohio during doctoral studies at The University of Toledo launched Dr. Leon M. Kugler on the path that leads to being a guide to your functional anatomy studies this semester. His Ph.D. degree was in Exercise Science with specific expertise in the biomechanics of walking and jogging forward and backward. Subsequent research in electromyography, acute pain and anatomical anomalies position him to guide your studies in Structural Kinesiology.

- B. For students of movement and allied health care, anatomy is foundational and thus Kug is striving to guide this course in such a way that you deepen your mastery of anatomy. As a student of movement, former football and baseball coach and Certified Athletic Trainer (R) Kug finds the study of Structural Kinesiology his contribution to your undergraduate studies and professional preparation.
- C. You can expect that Kug will design daily learning opportunities that call upon your anatomy knowledge, human movement analysis techniques and Kinesiology critical thinking skills. These learning opportunities will promote creativity in design and autonomy in expression within the context of fulfilling the spirit of your assignments.

### You and Your Professor

- A. You need to KNOW that your success and faith challenges in this class, this university, this life matter to Kug. What matters to you matters to me. Need contact? Need to posit a question? Need a cup of coffee/firm hand shake/prayer? Stop by the office or text or email.
- B. This is what I know:
  1. You are capable to know and apply Structural Kinesiology
  2. You will go to great effort to learn what matters
  3. We are in this class together, now, to accomplish what we could not do as effectively or efficiently alone.

### Catalog Description

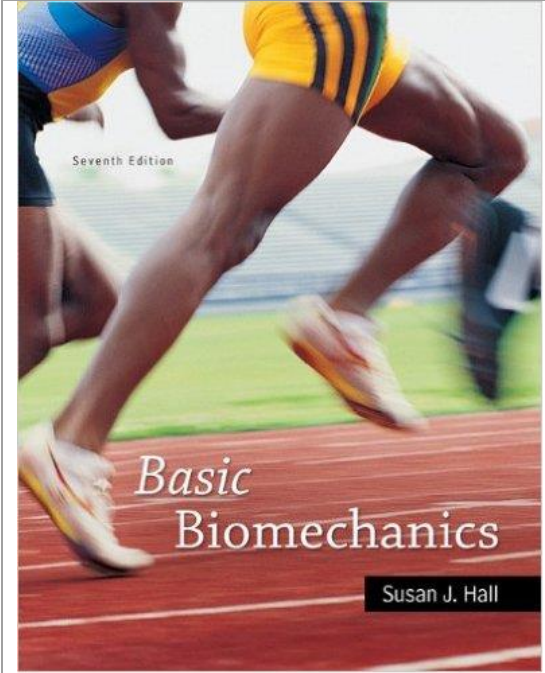
In-depth study of the structure and function of the neuromusculoskeletal components of the human body in motion.

### Aim

Students will master the knowledge and use of applied anatomical forms influencing and creating human movement and by so doing become adept at the analysis of safe and unsafe movement; typical and pathological movement; expert and novice movement.



### Course Tools

- A. Required textbook

	<p><b>Title; Edition; Publication Date</b>  <u>Basic Biomechanics</u>; 6<sup>th</sup> OR 7<sup>th</sup> Edition; June 2015</p> <p><b>Author</b>          Hall, SJ</p> <p><b>ISBN</b>          978-0073522760</p> <p><b>Publisher</b>          McGraw-Hill</p> <p><b>Description</b>          Basic Biomechanics provides balanced coverage of anatomical structure, biomechanics, and applications as recommended by the Biomechanics Academy of AAHPERD. Numerous applications from sport, ergonomics, and daily living—both qualitative and quantitative—help demonstrate the relevance of biomechanical principles beyond elite sports performance and into everyday life. The quantitative aspects of biomechanics are presented in a manageable, progressive fashion, and a mathematics appendix helps make the material accessible to all students, regardless of mathematical skill level.</p>
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- B. Select **one** required E device application-You will teach from lower division students using 1 of these applications. (\*Muscle System Pro III used in class
  1. \*Muscle System Pro III

## 2. Apps you can choose from

	<p><b>Title</b> Muscle System Pro III-\$4.50</p> <p><b>Vendor</b> AppStore</p> <p><b>Publisher</b> 3D4Medical.com</p>
	<p><b>Title</b> Visible Body 3D Human Anatomy Atlas-Free</p> <p><b>Vendor</b> AppStore</p> <p><b>Publisher</b> Visible Body <a href="http://www.visiblebody.com/atlas_multiplatform">http://www.visiblebody.com/atlas_multiplatform</a></p>

### Course Learning Outcomes

Through your commitment to the study of movement you will:

- A. Apply the language, concepts and procedures of Structural Kinesiology to the evaluation of human movement
- B. Identify diarthroidial joints and demonstrate the physiological motions of those joints by cardinal and diagonal planes and axes.
- C. Demonstrate mastery of the structure and function of the skeletal muscle motors and their summary, synergistic effects on kinetic chain dynamics.
- D. Articulate the design of the central nervous and peripheral nervous systems, sensory organelles' structures and functions, and the structure and physiology of the myoneural junction.
- E. Illustrate the feedback loops associated with proprioceptive mechanisms and explain their significance to the efficiency and safety of human movement.
- F. Demonstrate typical and dysfunctional gait, sport and rehabilitation skills.
- G. Design movement analysis techniques and report simple and complex motion in anatomically and kinesiology specific contexts and draw conclusions about the effectiveness, efficiency and safety of those motions.
- H. Contribute to and benefit from our Team Based Learning which simulates the graduate and professional settings of your future.

## Evidence of Mastery

A. Individual Readiness Assessment Test	7@10pts each	70
B. Team Readiness Assessment Test	7@20pts each	140
C. In-Class Projects & Lab Reports	5@30pts each	150
D. Exam Study Guides	3@10pts each	30
E. Exams	2@100pts each	200
F. Grand Functional Anatomy Exam	140	140
	<b>TOTAL</b>	810

## Course Requirements

### A. Individual Readiness Assessment Test (IRAT)

1. Assessments are taken at the beginning of each class. Assessments are designed to provide you, your Movement Analysis Team (MAT) and the professor with feedback on your readiness for the lab topic of the day.
2. The assessment is timed to be available for the first 10 minutes of class. Preparation for class will make you successful on this IRA.
3. Next you will take the same assessment with your Movement Analysis Team. See below
4. No provision is made for make-up or late arrival assessments.

### B. Team Readiness Assessment Test (TRAT)

1. After the IRAT is completed your team takes the same test by reaching a consensus on each answer.
2. Your team's 1 answer for each test item is scratched off the answer sheet.
3. The correct answer will result in a ☆ on the team "Scratcher" form.
4. The score for each item is based upon the number of attempts the team takes to get the correct answer
  - a. 1<sup>st</sup> attempt = 4pts
  - b. 2<sup>nd</sup> attempt = 2 pts
  - c. 3<sup>rd</sup> attempt = 1 pt
  - d. 4<sup>th</sup> attempt = 0 pt

### C. Movement Analysis Team Lab Report

Team Lab activities and reporting:

1. Topographical anatomy assessment is completed in which you locate anatomical structures with team members functioning as a) model, b) positional resister, and c) palpate(s) of neuromusculoskeletal structures.
2. Your team will perform video analysis of joint movement fueled by muscle actions as determined by your standard to effectively demonstrate the Kinematics/Cinematics of the joint motion.
3. The Lab Guide will stipulate the suggested elements to be included in movement analysis. Your Study Group Team will outline the means by which the elements will be acted out, captured via video and critically analyzed.
4. Lab report is completed with attached video and submitted via Canvas by the end of class.

### D. Examination Study Guide

Study Guides are designed to bring focus to key concepts during examination preparation.

Each completed Study Guide is due twice:

1. On the class session prior to the exam so it can be our examination review template during class
2. On the day of the exam for credit in the course

## E. Examinations

The examinations are designed to measure competency in the cognitive components of the course and to exercise your analytical and synthetic skills. Exams are intended to be learning experiences and as such great care must be taken by us all to communicate carefully and openly about each test component. Exams are to be taken at the announced day and time. No routine provision is made for missed exams.

## F. Grand Functional Anatomy Exam

The third exam is a comprehensive summative exam measuring your mastery of neuromusculoskeletal anatomy. This is the Final Exam and we all need to be there on 2/27/17.

## Grading

Grade	Range
A	≥ 93%
A-	90-92%
B+	87-89%
B	84-86%
B-	80-83%
C+	77-79%
C	74-76%
C-	70-73%
D+	67-69%
D	64-66%
D-	60-63%
F	≤ 59%

## INCOMPLETES AND LATE ASSIGNMENTS

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All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

## FINAL EXAMINATION POLICY

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Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted on the [Class Schedules](#) site. No requests for early examinations or alternative days will be approved.

## PLNU COPYRIGHT POLICY

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Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

## PLNU ACADEMIC HONESTY POLICY

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Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students



may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

## PLNU ACADEMIC ACCOMMODATIONS POLICY

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at [DRC@pointloma.edu](mailto:DRC@pointloma.edu). See [Disability Resource Center](#) for additional information.

## PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [Academic Policies](#) in the Undergraduate Academic Catalog.

### Tentative Class Outline

The class outline is administered by the professor and will be altered when it is in your best interest.

Dress in activity clothes for class

Week	Topic	Exercises		
1	Know each other	Ice Breaker- Form Team		
	Syllabus	Read CLO's		
	Premises of Kinesiological Analysis	Safety, Effectiveness, Efficiency		
	Diarthroidial Jt & Analysis	Navigate the body; Dance the cardinal; the Diagonal		
	Case History #1	Critically think about the Case		

Week	Topic	Exercises		
2	Spine & Pelvis	Out of Class Study		
		Individual Readiness Assessment (IRAT)		
		(TRAT)		
		Critical Thinking Q		
		Spinal Movement Analysis		

Week	Topic	Exercises		
3	Shoulder Girdle (Case #2)	Individual Readiness Assessment (IRAT)		
		(TRAT)		
		Critical Thinking Q		
		Shoulder Girdle Movement Analysis		
		Critical Thinking Q		

Week	Topic	Exercises		
4	Elbow, Wrist, Hand	Individual Readiness		

	(Case #'s 3 & 4)	Assessment (IRAT)		
		(TRAT)		
		Critical Thinking Q		
		Elbow, Wrist, Hand Movement Analysis		
		Critical Thinking Q		

<b>Week</b>	<b>Topic</b>	<b>Exercises</b>		
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5	Thigh, Hip & Pelvis (Case # 5)	Individual Readiness Assessment (IRAT)		
		(TRAT)		
		Critical Thinking Q		
		Thigh, Hip & Pelvis, Movement Analysis		
		Critical Thinking Q		

<b>Week</b>	<b>Topic</b>	<b>Exercises</b>		
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6	Lower Leg, Ankle (Case #'s 6 & 7)	Individual Readiness Assessment (IRAT)		
		(TRAT)		
		Critical Thinking Q		
		Lower Leg, Ankle Movement Analysis		
		Critical Thinking Q		

<b>Week</b>	<b>Topic</b>	<b>Exercises</b>		
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7	Subtalar, Foot, Toes & Gait Case# 8	Individual Readiness Assessment (IRAT)		
		(TRAT)		
		Critical Thinking Q		
		Subtalar, Foot, Toes Movement Analysis/ Gait Analysis		
		Critical Thinking Q		

<b>Week</b>	<b>Topic</b>	<b>Exercises</b>		
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8	Grand Functional Anatomy Exam	Final Exam & Lab		
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Course \_\_\_\_\_

Date \_\_\_\_\_

## Learning Audit & Critical Incidents (L.A.C.I.)

You will assess your learning (Learning Audit) and reflect on the course environment (Critical Incidents) via this “L.A.C.I.” Form at the end of class on the last class of the week. Complete the items that are germane to your week of course involvement. The L.A.C.I. is completed anonymously in duplicate with the original (white form) provided to the professor; you retain the duplicate (Yellow form). Three times in the semester you summarize your L.A.C.I. reports and submit via Canvas for assessment by the professor. Each summary is worth 10 points and is NOT anonymous.

### **Learning Audit**

What do I know now that I did not know this time last week?

What can I do now that I could not do this time last week?

What could I teach others to know or do that I could not teach them last week?

### **Critical Incidents**

The moment in class this week that I felt most engaged with what was happening was...

The moment in class this week that I felt most distanced from what was happening was...

What action that anyone (prof or student) took this week that you found affirming or helpful?

What action that anyone (prof or student) took this week that you found most puzzling or confusing?

What about the class this week surprised you the most? (This could be about your own performance/reactions/attitudes or those of the prof or your peers.)