

# PSY721 – TESTS & MEASUREMENTS

Syllabus – Fall 2021

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<b>Instructor:</b>	Dr. Nils Myszkowski	<b>Time:</b>	M 9:00–12:00
<b>Email:</b>	nmyszkowski@pace.edu	<b>Place:</b>	52 Broadway B446
<b>Office Location:</b>	52 Broadway, Rm. 431	<b>Office Hours:</b>	M 12–4 (1–4 by appt.) T 9-9:30 & 3:50–4:20

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## 1 Description

The general goal of this course is to provide a theoretically and statistically coherent introduction to basic theory in the measurement of individual differences. This knowledge base will help students develop competencies in (1) constructing tests (2) critically reviewing the psychometric properties of existing tests and (3) using psychological test data to aid in diagnosing, counseling, selecting, and understanding individuals.

## 2 Approach

Each class meeting will be structured around two main components (reflected in the grading process):

- **Lecture/Tutorial:** We will cover the course content (see Course Outline) under the form of lecture, discussions, and hands-on in-class applications (e.g., hand or computer calculations, evaluations of computer-generated statistical output, etc.) illustrating various psychometric concepts. Lecture and Class project will be articulated as much as possible.
- **Class Project:** Throughout the semester, we will develop a psychological test (self-rated, norm-referenced inventory format), from the items development step to the development of norms and the interpretation of test-scores using a real case study. This project serves as an illustration of the key concepts and methods presented in the Lecture component. It also provides an overview of the process of test construction.

Although this course is an introduction to test and measurement theory, it also reviews the statistical skills that are necessary to evaluate the psychometric properties of psychological tests.

## 3 Objectives

At the end of this course, students should be able to:

- To understand the importance of accurate measurement in practice and research
- To know how tests are developed
- To evaluate the psychometric qualities of existing tests
- To interpret psychological test scores

- To understand and report psychometric qualities

In this course, students will also have the opportunity to enhance their skills at critically evaluating tests and designing psychometric research.

As reflected in the required textbook, most introductory courses in this domain focus on test construction and analysis using a framework called Classical Test Theory (or True Score Theory). This course does not seek to promote any specific framework, but it aims to be as “future-proof” as possible, so it is developed in order for students to gain a broader understanding of modern approaches (e.g., Modern Test Theory, Network Psychometrics, etc.) as well.

## 4 Evaluation

The grading is based on the following elements:

Homework Exercise 1 .....	15 %
Homework Exercise 2 .....	15 %
Homework Exercise 3 .....	15 %
Class Project Participation .....	10 %
Attendance and participation .....	10 %
Final Exam .....	35 %

### 4.1 Homework Assignments

Homework is due on time, even when a student is absent. Students who cannot attend class are expected to upload homework assignments prior to the start of class.

Exams or papers that are submitted late will be penalized unless you have contacted the instructor prior to the deadline. In either case, you will need to submit proof of why you were unable to meet the deadline.

### 4.2 Attendance and participation

Students are required to attend all sessions. In case students cannot attend a session, they have to provide documented justification. Otherwise, they will lose part of the attendance and participation points.

To enrich the learning experience, students are required to participate in class, notably in the group discussions and exercises. The students are also expected to participate actively in the creation and in the investigation of the psychometric properties of the instrument developed in class.

### 4.3 Final exam

The final exam will be composed of short answer exercises and a single choice questionnaire about the entire content of the course. The exercises and the review session will serve as a preparation for the exam. In other terms, the attention of students during the class exercises is critical to their success at the exam.

## 5 Late assignments

Please note that any exams or papers that are submitted late will be penalized unless you have contacted Dr. Myszkowski prior to the deadline. In either case, you will need to submit proof of why you were unable to meet the deadline; otherwise your exam/paper will be marked down (up to 5 points) for every day late.

## 6 References

### 6.1 Required

- Urbina, S. (2014). *Essentials of Psychological Testing*. Hoboken, N.J: Wiley.

**Note:** The previous edition (2004) is very similar to the new edition, and is also suitable for the course. However, the readings will be based on the pages and section numbering of the 2014 edition.

### 6.2 Recommended

- Kline, T. (2005). *Psychological Testing: A Practical Approach to Design and Evaluation*. SAGE.
- Privitera, G. J. (2014). *Statistics for the Behavioral Sciences*. SAGE Publications.
- Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics (4<sup>th</sup> Revised Edition)*. London: SAGE Publications Ltd.

**Note:** The last book (Field, 2013) is focused on the use of SPSS for statistics, and will also be used in later classes.

## 7 Software

### 7.1 SPSS

SPSS can be used on the computers of Pace University, and using a remote desktop connection (instructions on [ITS website](#)).

### 7.2 JASP

The freeware JASP is an excellent alternative to SPSS that can be used for most analyses, and which often allows for more advanced analyses when it comes to psychometrics. JASP is free and can be downloaded at <https://jasp-stats.org/>.

### 7.3 Microsoft Excel

Excel is available for free for all the students personal computers from Pace ADAM platform at <https://adam.pace.edu/Default.aspx>.

### 7.4 R (optional)

Although R is a popular statistical programming language. It is available for free at <https://www.r-project.org/>.

It is highly recommended that students operate R using the Integrated Development Environment (IDE) R Studio, which is available for free at <https://rstudio.com/products/rstudio/download/> (select the Desktop Open Source version).

## 8 Videos

As much as possible, data management and analysis procedures will be screen-recorded by your instructor and will be available for watching online, through a link provided on Classes.

Please note however that 1) the content covered in the videos is *neither* the exhaustive content of the course *nor* the exhaustive content of the statistics part of the course, and that 2) even though reasonable efforts will be made to avoid availability issues, the availability of the videos is not totally guaranteed (in case of technical problems, for example).

## 9 Schedule

Module	Target Date	Topic	Readings (req. book)
1	9/13	Syllabus / Preparing for the course	Chapter II (pp. 233-258)
2	9/20	Psychological attributes and substantive domains	Chapter I (pp. 1-36)
3	9/27	The test development process	Chapter VI (pp. 233-258)
4	10/4	Building items and evaluating their content	Chapter VI (pp. 233-258)
5	10/11	Test theories	
6	10/18	Item and test score distributions	
7	10/25	Reliability (I) : Definitions	Chapter IV (pp. 127-164)
8	11/1	Reliability (II) : Estimating and predicting reliability	Chapter IV (pp. 127-164)
9	11/8	Validity (I) : Structural validity	Chapter V (pp. 165-231)
10	11/15	Validity (II) : Criterion and diagnostic validity	Chapter V (pp. 165-231)
11	11/22	Workshop : Test evaluation	
12	11/29	Using tests in the real-world, Ethics	Chapter III (pp. 81-126), Chapter VII (pp. 279-322)
13	12/6	Review and exam preparation	
14	12/13	Final exam	
15	12/20	Advanced topics overview	

## 10 Course Policies

### 10.1 Attendance and participation

Students are required to attend all lectures (unless those that are presented as optional).

## 11 Professional behavior

Maintaining attention is crucial in every course, but it is all the more important in topics that can get technical like psychological measurements. Therefore, students are encouraged to watch each lecture in one sitting.

Although this class will require the use of computers (or a tablet), when watching a lecture, students are expected to not use their devices (smartphones, tablets, laptops) for non-course activity (browsing, messaging, consulting social media, etc.) when watching them.

### 11.1 Classroom climate

Our Pace community benefits from the richly unique experiences and individual diversity each of us bring. Intellectual growth and development happen when we engage in free and open discourse that challenges our own assumptions and beliefs. Together we all have the responsibility to create and maintain an environment where differences are respected and valued. To that end, we will challenge all manifestations of bias and discrimination to maintain a climate of mutual respect and civility.

Whether you are learning in an online or on campus environment, the same expectations of courtesy and conduct apply. All classroom interactions should remain civil, respectful, and supportive. If you disagree with someone, aim to acknowledge your disagreement in a respectful way. Try responding with a question to open up further discussion (e.g., I'm not sure that I understand your point of view. Can you say more?). When working online, choose your words carefully. It's easy for someone to misinterpret your meaning when they can't see your expressions or hear the tone of your voice. Be careful when using sarcasm and humor. Without face-to-face communication, your comments may be misinterpreted.

## 12 Diversity

This course may cover some sensitive topics, making it especially important that we all treat each other with respect. Disagreement and debate are good, as long as we make sure to be respectful of each other. Comments that are discriminatory based on identities or group memberships, such as ability, age, class, ethnicity, gender, immigration status, race, religion, sex, sexual orientation, or weight, among others, are not welcome. If you are ever upset with any aspect of the course, please let me know, or send anonymous feedback through the survey link posted on Classes.

Throughout this class, students are encouraged to question claims of neutrality or objectivity in research and psychological measurement, harms caused by some research procedures, and, in general, how research often affects and treats people differently. Topics such as bias in measurement, measurement invariance, differential item functioning and sampling issues will notably be discussed.

## 13 University Policies and Resources

### 13.1 Academic Integrity

Students in this course are required to adhere to Pace University's Academic Integrity Code. The Academic Integrity Code supports honesty and ethical conduct in the educational process. It educates students about what constitutes academic misconduct, helps to deter cheating and plagiarism, and provides a procedure for handling cases of academic misconduct. Students are expected to be familiar with the Code, which can be found under "University Policies" in the [Student Handbook](#). Individual schools and programs may have

additional standards of academic integrity. Students are responsible for familiarizing themselves with the policies of the schools, programs, and courses in which they are enrolled.

### 13.2 Procedure for Students Who Wish to Obtain Accommodations for a Course

The University's commitment to equal educational opportunities for students with disabilities includes providing reasonable accommodations for the needs of students with disabilities. To request a reasonable accommodation for a qualified disability a student with a disability must self-identify and register with Student Accessibility Services for his or her campus. No one, including faculty, is authorized to evaluate the need for or grant a request for an accommodation except Student Accessibility Services. Moreover, no one, including faculty, is authorized to contact Student Accessibility Services on behalf of a student. For further information, please see [Resources for Students with Disabilities page](#).

### 13.3 Technological Resources

- List of all [Pace Information Technology Services](#)
- For assistance with a technological concern (Classes, Internet, Computer, etc.), contact the Pace Helpdesk at 914-773-3648 or create a [help desk ticket](#).
- Visit the [Learning Remotely website](#)

### 13.4 Appropriate Use Policy for Information Technology

Pace endorses the following statement on software and intellectual rights distributed by EDUCAUSE, the non-profit consortium of colleges and universities, committed to the use and management of information technology in higher education. The statement reads:

*Respect for intellectual labor and creativity is vital to academic discourse and enterprise. This principle applies to work of all authors and publishers in all media. It encompasses respect for the right to acknowledgment, right to privacy and right to determine the form, manner and terms of publication and distribution.*

*Because electronic information is volatile and easily reproduced, respect for the work and personal expression of others is especially critical in computer environments. Violations of authorial integrity, including plagiarism, invasion of privacy, unauthorized access and trade secret and copyright violations, may be grounds for sanctions against members of the academic community.*

[Pace's appropriate use policy](#) applies to recordings of classroom instruction and digital artifacts created by faculty and students.

### 13.5 Sex-Based Misconduct Policy and Procedure

Pace University is committed to providing a safe environment for every member of its community and to ensuring that no student, faculty or staff member is excluded from participation in or denied the benefits of any University program or activity on the basis of sex. Accordingly, the University prohibits the following forms of Sex-Based Misconduct: sexual assault, sexual harassment, gender-based harassment, dating violence, domestic violence, sexual exploitation and stalking.

Instructors are a **non-confidential** resource and have an obligation to report any information about sexual assault with the Executive Director of Institutional Equity and Title IX Coordinator (Bernard Dufresne,

[bdufresne@pace.edu](mailto:bdufresne@pace.edu), 163 Williams Street, Room 1017, 212-346-1310). The Title IX/Affirmative Action Office is responsible for investigating violations of the sexual misconduct policy. For more information about the Pace University sexual misconduct policy, see the [Sex-Based Misconduct Policy and Procedure \(PDF\)](#).

Members of the University community who believe that they have been subjected to Sex-Based Misconduct are encouraged to report such incidents to the University and, where applicable, to local law enforcement. **Confidential** resources include the **University Counseling Centers**, **Offices of Sexual and Interpersonal Wellness** and **University Healthcare**. Contact information for those offices may be found in the self-care section below.

### 13.6 Self-Care

Your academic success in this course and throughout your college career depends heavily on your personal health and well-being. Stress is a common part of the college experience, and it often can be compounded by unexpected life changes outside the classroom. The Pace Community strongly encourages you to take care of yourself throughout the term, before the demands of midterms and finals reach their peak. Please feel free to talk with me about any difficulty you may be having that may impact your performance in this course as soon as it occurs and before it becomes unmanageable. Please know there are a number of other support services on campus that stand ready to assist you. I strongly encourage you to contact them when needed.

### 13.7 *Just In Case* App

The Counseling Center's Just In Case App supplies potentially life-saving mental health information to Pace University students, staff, and faculty. This smart phone App puts vital information and support options at your fingertips. Scan and open the App today, just in case you or a friend needs help. Download the Counseling Center [Just In Case App](#) or go to "Counseling Center: Just In Case" on the MyPace Mobile App.

### 13.8 University resources

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<b>Department</b>	<b>New York City</b>
Counseling Center	212-346-1526
Dean for Students Office	212-346-1306
Health Care Unit	212-346-1600
Residential Life	212-346-1295
Student Development and Campus Activities	212-346-1590
Office of Multicultural Affairs & Diversity Programs	212-346-1563
Sexual Assault Prevention & Education	212-346-1931

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<b>Academic Advisement</b>	
Advising Center for Exploring Majors	212-346-1798
College of Health Professions	914-773-3552
Dyson College	212-346-1518
International Student / Scholars	212-346-1368
Lubin School of Business	212-618-6550
Pforzheimer Honors College	212-346-1697
Seidenberg School	212-346-1864
Study Abroad	212-346-1368

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