

TEACHING GUIDE

Course Information	
Full name	Data Analytics Applied to People
Code	0000012199
Degree	Master's Degree in Talent Management / Master in Talent Management from Comillas Pontifical University
Taught in	Master's Degree in Talent Management / Master in Talent Management
Level	Postgraduate Official Master's Degree
Term	Quarterly
Credits	7,0 ECTS
Type	Mandatory
Person in charge	Victor Nalda Castellet
Office hours	Continuous availability via email

Professor Information	
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SPECIFIC COURSE INFORMATION

Course contextualization

Contribution to the professional profile of the degree

The main problem that has been detected in companies is that the information they have available is not being used to hire someone to fill a position. nor to understand how the company can optimize the contributions that employees are providing to improve its efficiency and identify problems, so that managers can act to solve those problems using the information as a key driver. The different departments within the organization can benefit from the information collected by the HR department to make better business decisions based on the skills and patterns of the employees using a discipline called: *People Analytics*, that is, **data analytics applied to people**.

People Analytics is the discipline that uses employee data, and through statistical techniques and the scientific method, manages to extract valuable knowledge for the businesses, allowing data-based decisions to be made.

But how can *People Analytics* help in the day-to-day running of a company? It really can contribute in many areas but we could group it into three main ones: **insights and KPIs** (better decision making) **efficiencies** (automation and digitization of processes) and **customization** (creation of unique employee experiences)

More than 70% of companies consider **People Analytics as one of their top priorities**, but the truth is that *People Analytics* has only made little progress in the last decade. A survey by Tata Consultancy Services found that only 5% of Big Data investments go to HR and another recent Deloitte study showed that although *People Analytics* has become mainstream, only 9% of companies believe they have a good understanding of the dimensions of talent that drive performance in their organizations. Why is this happening? If HR teams have dashboards to back them up, why haven't they achieved the expected results? The reason is that the vast majority rely on a narrow approach to data analytics: they only use individual data from each employee, while **data on the interaction between people** is equally or more important

The future is clear. **The best organizations will use data analytics**, especially network analytics, to complement their decision-making standards and build better, happier, and more creative businesses. **By applying HR metrics professionally**, companies can obtain a competitive advantage over other companies that have not yet begun to participate in this area. This will increase the view of the organization in the long term, but the staff will feel more engaged in the short term. According to *Research and Markets*, the global *People Analytics* industry is increasing annually by 13.6% CAGR (compound annual growth rate). By 2025, the *People Analytics* market is expected to be worth \$3.9 billion.



Competences - Objectives

Competences

GENERAL

CG9	Employ, take advantage of and use in an efficient and safe way the technological and digital resources that are applied in talent management in organizations.		
	<table border="1"> <tr> <td>RA9</td> <td>Be able to use information and communication technologies critically, creatively and safely in talent management within organizations, using applications and taking advantage of internet resources</td> </tr> </table>	RA9	Be able to use information and communication technologies critically, creatively and safely in talent management within organizations, using applications and taking advantage of internet resources
RA9	Be able to use information and communication technologies critically, creatively and safely in talent management within organizations, using applications and taking advantage of internet resources		

SPECIFIC

CE11	Recognize the role of information and communication technologies in current organizations and how they influence people.								
	<table border="1"> <tr> <td>RA1</td> <td>Determine the most beneficial digital environments for effective people management in compliance with current legal regulations.</td> </tr> <tr> <td>RA2</td> <td>Correlate progress in the use of technology with the assumption of ethical principles.</td> </tr> <tr> <td>RA3</td> <td>Know how to adopt a decision-making process supported by data analytic tools</td> </tr> <tr> <td>RA4</td> <td>Bring together the incorporation of company technology with integration and adaptation measures for people and organisations.</td> </tr> </table>	RA1	Determine the most beneficial digital environments for effective people management in compliance with current legal regulations.	RA2	Correlate progress in the use of technology with the assumption of ethical principles.	RA3	Know how to adopt a decision-making process supported by data analytic tools	RA4	Bring together the incorporation of company technology with integration and adaptation measures for people and organisations.
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RA2	Correlate progress in the use of technology with the assumption of ethical principles.								
RA3	Know how to adopt a decision-making process supported by data analytic tools								
RA4	Bring together the incorporation of company technology with integration and adaptation measures for people and organisations.								

THEMES AND CONTENT

Contents-Themes
Data Analytics Applied to People – People Analytics
Part I – Introduction to People Analytics
<ul style="list-style-type: none"> • Big Data and Human Resources. • Origin of People Analytics and Benefits. • Methodology: Data, Technology, Skills and Use Cases. • Current Challenges in People Analytics. • Ethics and Data Protection.
Part II – Data Science in HR
<ul style="list-style-type: none"> • Data Science Methodology: import, order, transform, understand (visualize and/or model), communicate and program. • Data Exploration: <ul style="list-style-type: none"> ○ Data visualization. ○ Data transformation. ○ Exploratory data analysis. • Data handling: <ul style="list-style-type: none"> ○ Data import. ○ Ordered data. ○ Related data. ○ Data types (text strings, categories, dates, etc.) • Data Modeling (Machine Learning). • Communication of results through Dashboards. <p>Data Science programming language, such as R or Python, will be used with students. Dashboards will be made using Business Intelligence tools such as Tableau or PowerBI</p>
Part III – Real Case Studies of People Analytics
<p>During this part of the course, students will work on various real case studies of People Analytics. Subsequently, the student individually or jointly will solve other case studies of People Analytics. The objective of this part is to put into practice the two previous parts of the course, carrying out case studies of the different stages of the employee's life cycle.</p> <p>Some possible real case studies of People Analytics that we will be able to see in the classroom are:</p> <ul style="list-style-type: none"> • Talent attraction: identify the best qualities associated with a certain vacancy. • Recruitment: select the best talent, analyze which candidates are most likely to be successful in the company for a specific position. • Development: improve performance, knowing which training programs work best for employee performance. • Absenteeism: know the future vacancies due to work absenteeism that are going to occur in the company. • Engagement: identify which employees could leave the company and try to take action to retain them. • Compensation: find out to what extent compensation is important to employees and how it can be improved. • Organization: know the formal and informal relationships between the members of the company, analyzing what the employees are like beyond their hierarchical position, how they relate to each other and what value this may have for the company.

TEACHING METHODOLOGY

General methodological course aspects

Presential Methodology: Activities

Students work cooperatively in pairs or small groups, receive a task, case or course that requires sharing information and resources among members with the purpose of achieving a common goal. Based on the case study method, learned by each student, and discussed by each group before the individual interventions of each general session.

The project-based learning method encourages inductive learning. From the analysis of specific examples, the different analysis tools are built and general rules applicable to all types of companies and sectors are induced. For this reason, it is essential to study the methodologies to be used and to actively participate in the discussions of the general sessions.

Exhibitions about their skills and abilities to get a job

The presentations must be evaluated and critiqued by the rest of the classmates or by the professor with the purpose of going deeper into the course. Expository lessons.

Non-presential Methodology: Activities

Individual study.

Individual reading of different types of texts (cases, books, magazines, articles, press, Internet publications, reports on practical experiences, etc.) related to the courses being studied.

Cooperative work of students who, in pairs or small groups, receive a task which requires sharing information and resources among members with the aim of achieving a common goal.

SUMMARY OF STUDENT WORK HOURS

PRESENTIAL HOURS					
Professor Exposition	Student exhibition. Debates and group dynamics	Exercises and problem solving. Elaboration of applied work	Analysis and documentation	Tutorial sessions	Development of real projects for organizations
18	37	20.5	0	1.25	1.25
NON-PRESENTIAL HOURS					
Professor Exposition	Student exhibition. Debates and group dynamics	Exercises and problem solving. Elaboration of applied work	Analysis and documentation	Tutorial sessions	Development of real projects for organizations
0	0	61.5	63	3.75	3.75

ECTS CREDITS: 7.0 (210.00 hours)

EVALUATION AND GRADING CRITERIA

Graded Activities	Evaluation Criteria	% of total grade
Proof of individual knowledge	Work adequacy to the objectives set On time delivery Goal adequacy and focus Reached goals Deadline achievement	40
Collective applied assignments that may or may not be presented publicly	Presentations and defence of projects applied to companies, subject projects, resolution of practical cases	40
Active in-class participation by the student.	Quality and timeliness of interventions, predisposition and commitment, initiative, assistance.	20

Grades

The evaluation criteria of the course are governed by the following regulations:

1. All students must comply with 100% attendance on the days set for this course. Any absence must be justified.
2. The final grade corresponds to the sum of the graded activities, evaluation criteria and % of total grade described in the Evaluation and Grading Criteria section.
3. Individual and group work must be delivered on time and in the manner planned by the course professor.
4. A final mark below 5 implies the completion of an extraordinary test. The final grade in this exam may not be higher than the median of those passed at the time of set exams.

The Evaluation Criteria to enroll for a second year

The student enrolled in the course for the second year must comply with the individual and group tasks set by the course professor. The same evaluation criteria described in the Evaluation and Grading Criteria section will be maintained.

For those circumstances not foreseen in this Teaching Guide, the Advantere School of Management Regulations and the Comillas General Regulations will apply.

BIBLIOGRAPHIES AND RESOURCES

Basic Bibliographies

PEOPLE ANALYTICS:

Diez, F., Bussin, M., & Lee, V. (2019). *Fundamentals of HR Analytics: A Manual on Becoming HR Analytical*. Emerald Publishing.

Edwards, M. R. & Edwards K. (2019). *Predictive HR Analytics: Mastering the HR Metric*. Kogan Page Publishers.

Ferrar, J. & Green D. (2021). *Excellence in People Analytics: How to Use Workforce Data to Create Business Value*. Kogan Page Publishers.

Fitz-Enz, J., & John Mattox, I. I. (2014). *Predictive analytics for human resources*. John Wiley & Sons.

García, A. D. (2018). *HR Analytics. Teoría y práctica para una analítica de recursos humanos con impacto*. ESIC.

Guenole, N., Ferrar, J., & Feinzig, S. (2017). *The Power of People: Learn How Successful Organizations Use Workforce Analytics to Improve Business Performance* (Illustrated ed.). Pearson FT Press.

Isson, J. P., Harriott, J. S., & Fitz-Enz, J. (2016). *People Analytics in the Era of Big Data: Changing the Way You Attract, Acquire, Develop, and Retain Talent*. Wiley.

Khan, N., Millner, D., & Marr, B. (2020). *Introduction to People Analytics: A Practical Guide to Data-Driven HR*. Kogan Page Publishers.

Pease, G., Beresford, B., & Walker, L. (2014). *Developing human capital: Using analytics to plan and optimize your learning and development investments*. John Wiley & Sons.

Sesil, J. C. (2013). *Applying Advanced Analytics to HR Management Decision: Methods for selection, developing incentives and improving collaboration*. Pearson, New Jersey.

Siegel, E. (2013). *Analítica predictiva: predecir el futuro utilizando Big Data*. Anaya Multimedia.

Waber, B. (2013). *People Analytics: How Social Sensing Technology Will Transform Business and What It Tells Us about the Future of Work*. FT Press.

Waters, S., Streets, V., McFarlane, L., & Johnson-Murray, R. (2018). *The Practical Guide to HR Analytics: Using Data to Inform, Transform, and Empower HR Decisions*. Society For Human Resource Management.

DATA ANALYTICS:

Grolemund, G., & Wickham, H. (2017). *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data (1st ed.)*. O'Reilly Media.

Ismay, C., & Kim, A. Y. (2019). *Statistical Inference via Data Science: A ModernDive into R and the Tidyverse: A ModernDive into R and the Tidyverse*. Chapman and Hall / CRC.

Klosterman, S. (2019). *Data Science Projects with Python: A case study approach to successful data science projects using Python, pandas, and scikit-learn*. Packt Publishing.

Larose, C. D., & Larose, D. T. (2019). *Data Science Using Python and R (1st ed.)*. Wiley.

VanderPlas, J. (2017). *Python Data Science Handbook: Essential Tools for Working with Data (1st ed.)*. O'Reilly Media.

Zumel, N., & Mount, J. (2019). *Practical Data Science with R (2nd ed.)*. Manning.

Web Resources:

- RStudio Cheatsheets - <https://rstudio.com/resources/cheatsheets/>
- RStudio IDE Cheatsheet - <https://github.com/rstudio/cheatsheets/raw/master/rstudio-ide.pdf>
- Base R - <http://github.com/rstudio/cheatsheets/raw/master/base-r.pdf>
- RStudio Books - <https://rstudio.com/resources/books/>
- RStudio Interactive Tutorials - <https://rstudio.cloud/learn/primers>
- Learning statistics with R - <https://learningstatisticswithr.com/book/>
- The Hitchhiker's Guide to Python! - <https://docs.python-guide.org>
- Python for Everybody - <https://www.py4e.com/book.php>
- Python Data Science Handbook - <https://jakevdp.github.io/PythonDataScienceHandbook/>

BUSINESS INTELLIGENCE:

Aspin, A. (2020). *Pro Power BI Desktop: Self-Service Analytics and Data Visualization for the Power User (3rd ed.)*. Apress.

Clark, D. (2020). *Beginning Microsoft Power BI: A Practical Guide to Self-Service Data Analytics (3rd ed.)*. Apress.

Deckler, G., & Powell, B. (2021). *Microsoft Power BI Cookbook: Gain expertise in Power BI with over 90 hands-on recipes, tips, and use cases, 2nd Edition (2nd ed.)*. Packt Publishing.

Jackson, A., & Stanke, L. (2021). *Tableau Strategies: Solving Real, Practical Problems with Data Analytics (1st ed.)*. O'Reilly Media.

Knight, D., Pearson, M., Schacht, B., & Ostrowsky, E. (2020). *Microsoft Power BI Quick Start Guide: Bring your data to life through data modeling, visualization, digital storytelling, and more, 2nd Edition (2nd ed.)*. Packt Publishing.

Meier, M., Baldwin, D., & Strachnyi, K. (2021). *Mastering Tableau 2021: Implement advanced business intelligence techniques and analytics with Tableau, 3rd Edition*. Packt Publishing.

Milligan, J. N. (2020). *Learning Tableau 2020: Create effective data visualizations, build interactive visual analytics, and transform your organization, 4th Edition (4th ed.)*. Packt Publishing.

Sleeper, R. (2020). *Innovative Tableau: 100 More Tips, Tutorials, and Strategies (1st ed.)*. O'Reilly Media.

DATA ANALYTICS ETHICS & DATA PROTECTION:

Coeckelbergh, M. (2020). *AI Ethics*. The MIT Press.

Davis, K. (2012). *Ethics of Big Data: Balancing Risk and Innovation (1st ed.)*. O'Reilly Media.

Franks, B. (2020). *97 Things About Ethics Everyone in Data Science Should Know: Collective Wisdom from the Experts (1st ed.)*. O'Reilly Media.

Loukides, M., Mason, H., & Patil, D. J. (2018). *Ethics and Data Science (1st ed.)*. O'Reilly Media.

Martens, D. (2022). *Data Science Ethics: Concepts, Techniques, and Cautionary Tales*. Oxford University Press.

Ministry of Labor and Social Economy (2022). *Algorithmic information in the workplace: Practical guide and tool on the business obligation to provide information on the use of algorithms in the workplace*. Government of Spain.

Web Resources:

- https://ec.europa.eu/info/law/law-topic/data-protection_en
- <https://www.cipd.co.uk/podcasts/evidence-based-hr>
- <https://www.cipd.co.uk/knowledge/strategy/analytics/people-data-international>

Additional Bibliographies

In compliance with current regulations regarding the **protection of personal data**, we inform you and remind you that you can consult the aspects related to privacy and data protection that you have accepted in your registration by entering this website and pressing "download".

[https://servicios.upcomillas.es/sedelectronica/inicio.aspx?csv=02E4557CAA6F4A81663AD10CED66792](https://servicios.upcomillas.es/sedeelectronica/inicio.aspx?csv=02E4557CAA6F4A81663AD10CED66792)