# DIGITAL ECONOMICS

| Course title – Intitulé du cours | Digital Economics |
|---|---|
| Level / Semester – Niveau /semestre | M2 / S1 |
| School – Composante | Ecole d'Economie de Toulouse |
| Teacher – Enseignant responsable | BRUNO JULLIEN – LEONARDO MADIO |
| Lecture Hours – Volume Horaire CM | 30 |
| TA Hours – Volume horaire TD | |
| TP Hours – Volume horaire TP | |
| Course Language – Langue du cours | Anglais |
| TA and/or TP Language – Langue des TD et/ou TP | Anglais |

## Teaching staff contacts – Coordonnées de l'équipe pédagogique :

E-mail: bruno.jullien@tse-fr.eu – leonardo.madio@unipd.it

Office number:  T. 689 TSE Building.

Office hours: TBD/Online. Please e-mail us ahead of coming to set up a 15-minute appointment.

## Course's Objectives – Objectifs du cours :

This course will present theoretical and empirical evidence of how digitization affected markets and economic activity: what is changing, what remains unchanged, and what are the main unresolved challenges for business actors, consumers and policymakers. At the end of the lectures, students should understand the economic models underpinning competition, market power and regulation in digital markets.

Students will also be aware of the main streams and important papers in the large literature examining online markets and digital technology. Students will be exposed to theoretical models as well as reduced form (i.e., difference-in-differences) and structural (i.e., discrete choice logit) empirical methods of data analysis.

 At the end of the lectures, students should be able to apply both sets of tools to real-world data.

## Prerequisites – Pré requis :

M1-level micro, IO and econometrics courses.

## Practical information about the sessions – Modalités pratiques de gestion du cours :

Students are expected to read assigned papers and actively participate in classroom discussions. Their involvement will be part of the final evaluation.

**Grading system – Modalités d'évaluation :**

Information on the examination will be provided in due course and at the latest during the first lesson

**Topics**

1. **Introduction, Network effect and two-sided platform**

Rochet, J. C., & Tirole, J. (2003). Platform competition in two-sided markets. *Journal of the European Economic Association*, *1*(4), 990-1029.

Caillaud, B., & Jullien, B. (2003). Chicken & egg: Competition among intermediation service providers. *RAND Journal of Economics*, 309-328.

Armstrong, M. (2006). Competition in two-sided markets. *The RAND Journal of Economics*, *37*(3), 668-691.

Rysman, M. (2004). Competition between networks: A study of the market for yellow pages. *The Review of Economic Studies*, *71*(2), 483-512.

2. **Hybrid Platforsm**

Hagiu, A., Jullien, B., & Wright, J. (2020). Creating platforms by hosting rivals. *Management Science*, *66*(7), 3234-3248.

Hagiu, A., Teh, T. H., & Wright, J. (2022). Should platforms be allowed to sell on their own marketplaces? *The RAND Journal of Economics*, *53*(2), 297-327.

Anderson, S. P., & Bedre-Defolie, Ö. (2021). Hybrid platform model. Mimeo

Etro, F. (2022). The Economics of Amazon. *Available at SSRN 4307213*.

3. **Recommendations**

Hagiu, A., & Jullien, B. (2011). Why do intermediaries divert search?. *The RAND Journal of Economics*, *42*(2), 337-362.

Teh, T. H., & Wright, J. (2022). Intermediation and steering: Competition in prices and commissions. *American Economic Journal: Microeconomics*, *14*(2), 281-321.

De Corniere, A., & Taylor, G. (2014). Integration and search engine bias. *The RAND Journal of Economics*, *45*(3), 576-597.

Cure, M., Hunold, M., Kesler, R., Laitenberger, U., & Larrieu, T. (2022). Vertical integration of platforms and product prominence. *Quantitative Marketing and Economics*, *20*(4), 353-395.

Chen, N., & Tsai, H. T. (2019). Steering via algorithmic recommendations. *Available at SSRN 3500407*.

### 4. Mergers in Tech Markets

Correia-da-Silva, J., Jullien, B., Lefouili, Y., & Pinho, J. (2019). Horizontal mergers between multisided platforms: Insights from Cournot competition. *Journal of Economics & Management Strategy*, *28*(1), 109-124.

Farronato, C., Fong, J., & Fradkin, A. (2020). *Dog eat dog: Measuring network effects using a digital platform merger* (No. w28047). National Bureau of Economic Research.

Fumagalli, C., Motta, M., & Tarantino, E. (2022). Shelving or developing? Optimal policy for mergers with potential competitors. CSEF Working Paper N. 637

Motta, M., & Peitz, M. (2021). Big tech mergers. *Information Economics and Policy*, *54*, 100868.

Eisfeld, L. (2022). Entry and Acquisitions in Software Markets. Mimeo

Jin, G. Z., Leccese, M., & Wagman, L. (2022). *How Do Top Acquirers Compare in Technology Mergers? New Evidence from an S&P Taxonomy* (No. w29642). National Bureau of Economic Research.

### 5. Behavioral economics

Ellison, G., & Ellison, S. F. (2009). Search, obfuscation, and price elasticities on the internet. *Econometrica*, *77*(2), 427-452.

Decarolis, D., Li., M. & Paternollo F. (2022), Competition and Defaults in Online Search, CEPR DP 17779.

Heidhues, P., Köster, M., & Kőszegi, B. (2022). Steering fallible consumers. *Mimeo.*

Blake, T., Moshary, S., Sweeney, K., & Tadelis, S. (2021). Price salience and product choice. *Marketing Science*, *40*(4), 619-636.

Rasch, A., Thöne, M., & Wenzel, T. (2020). Drip pricing and its regulation: Experimental evidence. *Journal of Economic Behavior & Organization*, *176*, 353-370.

### 6. Search

Dinerstein, M., Einav, L., Levin, J., & Sundaresan, N. (2018). Consumer price search and platform design in internet commerce. *American Economic Review*, *108*(7), 1820-59.

Hunold, M., Kesler, R., & Laitenberger, U. (2020). Rankings of online travel agents, channel pricing, and consumer protection. *Marketing Science*, *39*(1), 92–116.

Ursu, R.M (2018). The power of rankings: Quantifying the effects of rankings on online consumer search and purchase decision. *Marketing Science*, *37* (4), 530–552.

## 7. Reputation systems

Banerjee, A. V. (1992). A simple model of herd behavior. *The Quarterly Journal of Economics*, *107*(3), 797-817.

Bolton, G., Greiner, B., & Ockenfels, A. (2013). Engineering trust: reciprocity in the production of reputation information. *Management Science*, *59*(2), 265-285.

He, S., Hollenbeck, B., & Proserpio, D. (2022). The market for fake reviews. *Marketing Science*. Forthcoming

Hui, X., Saeedi, M., Spagnolo, G., & Tadelis, S. (2023). Raising the bar: Certification thresholds and market outcomes. *American Economic Journal: Microeconomics*, *15*(2), 599-626.

Luca, M. (2016). Reviews, reputation, and revenue: The case of Yelp. com. *Harvard Business School NOM Unit Working Paper*, (12-016).

Tadelis, S. (2016). Reputation and feedback systems in online platform markets. *Annual Review of Economics*, *8*, 321-340.

## 8. Privacy and Advertising

Goldfarb, A., & Tucker, C. E. (2011). Privacy regulation and online advertising. *Management Science*, *57*(1), 57-71.

Kramer, A. D., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences*, *111*(24), 8788-8790.

Kesler, R. (2022). The Impact of Apple's App Tracking Transparency on App Monetization. *Available at SSRN 4090786*.

Kircher, T., & Foerderer, J. (2023). Ban Targeted Advertising in Apps? An Empirical Investigation of the Consequences for App Development. *Management Science*. Forthcoming.

Lefouili, Y., Madio, L., & Toh, Y. (2023). Privacy regulation and innovation. *The Journal of Industrial Economics.* Forthcoming

## 9. (Social) Media Economics

Angelucci, C., & Cagé, J. (2019). Newspapers in times of low advertising revenues. *American Economic Journal: Microeconomics*, *11*(3), 319-64.

Beknazar-Yuzbashev, G., Jiménez Durán, R., McCrosky, J., & Stalinski, M. (2022). Toxic content and user engagement on social media: Evidence from a field experiment. *Available at SSRN*.

Meta Analysis (2022). Notifications: why less is more — how Facebook has been increasing both user satisfaction and app usage by sending only a few notifications. Medium.

Müller, K., & Schwarz, C. (2021). Fanning the flames of hate: Social media and hate crime. *Journal of the European Economic Association*, *19*(4), 2131-2167.

Müller, K., & Schwarz, C. (2023). From hashtag to hate crime: Twitter and antiminority sentiment. *American Economic Journal: Applied Economics*, *15*(3), 270-312.

## 10. Algorithmic pricing and collusion

Aparicio, D., Metzman, Z., & Rigobon, R. (2021). The pricing strategies of online grocery retailers (No. w28639). National Bureau of Economic Research.

Assad, S., Clark, R., Ershov, D., & Xu, L. (2020). Algorithmic pricing and competition: Empirical evidence from the German retail gasoline market. Mimeo

Brown, Z. Y., & MacKay, A. (2023). Competition in pricing algorithms. *American Economic Journal: Microeconomics*, *15*(2), 109-156.

Calvano, E., Calzolari, G., Denicolo, V., & Pastorello, S. (2020). Artificial intelligence, algorithmic pricing, and collusion. *American Economic Review*, *110*(10), 3267-97.

### General Bibliography

Belleflamme, P., & Peitz, M. (2021). *The Economics of Platforms* : Concepts and strategies. Cambridge University Press.

Jullien, B., & Sand-Zantman, W. (2021). The economics of platforms: A theory guide for competition policy. *Information Economics and Policy*, *54*, 100880.

Jullien, B., Pavan, A., & Rysman, M. (2021). Two-sided Markets, Pricing, and Network Effects. *Handbook of Industrial Organization*, Elsevier, Volume 4, Issue 1, 2021, Pages 485-592.

### Session planning – Planification des séances :

There are ten 3-hour lectures in the course. Each lecture will be divided into two 90 minute parts.

In each part, we will cover some of the papers from the reference list.

We may also touch on other papers, policy discussions and news articles as background.

**Distance learning – Enseignement à distance :**

In case the lectures will move online, they will be held live as an interactive virtual classroom. Students are expected to attend these lectures and actively participate in the discussion.