

“Managing Education and Training in Firms/for Firms”

Spring term 2026

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Module Number: MO0122

ECTS-Points: 3.0

Lectures:

Monday, 09.03.2026	12:15 - 18:00	tba
Thursday, 12.03.2026	12:15 - 18:00	tba
Monday, 23.03.2026	12:15 - 18:00	tba
Thursday, 26.03.2026	12:15 - 18:00	tba

Written exam: Thursday, 23.04.2026 (13:30 – 15:30), tba

Course website:

<https://www.business.uzh.ch/de/research/professorships/emap/teaching/courses/Spring-Term-2026.html>

General description:

This course views education and training in firms from an economic perspective. The engagement of firms is important for well-functional vocational education and training systems, as it ensures an adequate supply of relevant skills in the labor market. However, institutions and framework conditions are necessary to ensure an adequate training quality as well as the certification and transferability of skills, so that individuals find it attractive to acquire (part of) their skills in the workplace.

Learning objectives:

Students develop an understanding of how competitive and frictional labor and training markets work, which includes the training behavior of firms and educational choices of individuals, as well as the returns to education and training for firms, individuals, and the state. Moreover, students learn about the importance of institutions and framework conditions in successful national education and training systems. Finally, students learn how careful empirical evaluation strategies be used to support continuous improvement of learning processes in firms as well as effective and efficient policy decisions at the macro level.

Part 1: Labor markets and human capital theory

1. Labor supply
2. Labor demand
3. Labor market equilibrium
4. Frictional labor markets
5. Human capital theory
6. Signaling theory
7. Training investments of firms in frictional labor markets

Key literature:

- Acemoglu, D. & J.S. Pischke (1999). Beyond Becker: Training in imperfect labour markets. *Economic Journal* 108, F112–F142.
- Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: how technology displaces and reinstates labor. *Journal of Economic Perspectives*, 33(2), 3-30.
- Aryal, G., Bhuller, M., & Lange, F. (2022). Signaling and employer learning with instruments. *American Economic Review*, 112(5), 1669-1702.
- Becker, G. (1964), *Human Capital*. Chicago: University of Chicago Press.
- Dauth, W., Findeisen, S., Suedekum, J., & Woessner, N. (2021). The adjustment of labor markets to robots. *Journal of the European Economic Association*, 19(6), 3104-3153.
- Dustmann, C., Lindner, A., Schönberg, U., Umkehrer, M., & Vom Berge, P. (2022). Reallocation effects of the minimum wage. *The Quarterly Journal of Economics*, 137(1), 267-328.
- Ehrenberg, R. & Smith, R. S. (2014). *Modern Labor Economics, Theory and Public Policy*, 12/e. Pearson.

Part 2: The functioning of markets for vocational education and training

1. The market for apprentices - why do firms (not) train?
2. Supply and demand
 - a) Effects of a demand shock
 - b) Effects of a supply shock
3. Post-training benefits
 - a) The role of savings on hiring costs for skilled workers
 - b) The role of labor market institutions
4. Regulating apprenticeship markets

Key literature:

- Aeppli, M., & Kuhn, A. (2021). Open labor markets and firms' substitution between training apprentices and hiring workers. *Labour Economics*, 70, 101979.
- Aeppli, M., A. Kuhn & J. Schweri (2021). Culture, norms, and the provision of training by employers: Evidence from the Swiss language border. *Labour Economics*. Available at: <https://www.sciencedirect.com/science/article/pii/S0927537121000920>

- Caicedo, S., Espinosa, M., & Seibold, A. (2022). Unwilling to Train?—Firm Responses to the Colombian Apprenticeship Regulation. *Econometrica*, 90(2), 507-550.
- Jansen, A., Leiser, M. S., Wenzelmann, F., & Wolter, S. C. (2015). Labour market deregulation and apprenticeship training: A comparison of German and Swiss employers. *European Journal of Industrial Relations* 21(4), 353-368.
- Lüthi, S., & Wolter, S. C. (2020). Are apprenticeships business cycle proof?. *Swiss Journal of Economics and Statistics*, 156(1), 3.
- Muehleemann, S., Dietrich, H., Pfann, G., & Pfeifer, H. (2022). Supply shocks in the market for apprenticeship training. *Economics of Education Review*, 86, 102197.
- Muehleemann, S. (2025). Artificial intelligence adoption and workplace training. *Journal of Economic Behavior & Organization*, 238, 107206.
- Muehleemann, S. (2025). Supply and demand shocks in apprenticeship markets and the role of institutions. In *Handbook on Education and the Labour Market* (pp. 377-389). Edward Elgar Publishing.
- Muehleemann, S., Pfeifer, H., & Wittek, B. H. (2020). The effect of business cycle expectations on the German apprenticeship market: Estimating the impact of Covid-19. *Empirical Research in Vocational Education and Training*, 12(1), 1-30.
- Muehleemann, S., & Leiser, M. S. (2018). Hiring costs and labor market tightness. *Labour Economics*, 52, 122-131.
- Muehleemann, S., Ryan, P., & Wolter, S. C. (2013). Monopsony power, pay structure, and training. *ILR Review*, 66(5), 1097-1114.
- Papps, K. L. (2020). How the minimum wage affects training among apprentices. IZA Discussion Paper No. 13499.
- Schweri, J., Aepli, M., & Kuhn, A. (2021). The costs of standardized apprenticeship curricula for training firms. *Empirical Research in Vocational Education and Training*, 13(1), 1-28.
- Wolter, S.C. & P. Ryan (2011). *Apprenticeship*. Handbook of Economics of Education, Vol. 3, ed. by R. Hanushek, S. Machin, L. Wössmann. Amsterdam: Elsevier North-Holland, 521-576.

Part 3: The returns to vocational education and training for firms and individuals

1. Identifying the returns to VET for individuals over the life cycle
2. The rate of return on investment for training firms

Key literature:

- Brunello, G., & Rocco, L. (2017). The labor market effects of academic and vocational education over the life cycle: Evidence based on a British cohort. *Journal of Human Capital*, 11(1), 106-166.
- Dionisius, R., Muehlemann, S., Pfeifer, H., Walden, G., Wenzelmann, F., & Wolter, S. C. (2009). Costs and Benefits of Apprenticeship Training. A Comparison of Germany and Switzerland. *Applied Economics Quarterly*, 55(1).
- Dougherty, S. M., & Ecton, W. G. (2021). The Economic Effect of Vocational Education on Student Outcomes. In: *Oxford Research Encyclopedia of Economics and Finance*.
- Hanushek, E. A., Schwerdt, G., Woessmann, L., & Zhang, L. (2017). General education, vocational education, and labor-market outcomes over the lifecycle. *Journal of Human Resources*, 52(1), 48-87.
- Malamud, O. & C. Pop-Eleches (2010). General Education Versus Vocational Training: Evidence from an Economy in Transition, *Review of Economics and Statistics*, 92(1), 43–60.
- Mohrenweiser, J., Zwick, T., & Backes-Gellner, U. (2019). Poaching and firm-sponsored training. *British Journal of Industrial Relations*, 57(1), 143-181.
- Moretti, L., Mayerl, M., Muehlemann, S., Schlögl, P., & Wolter, S. C. (2019). So similar and yet so different: A firm's net costs and post-training benefits from apprenticeship training in Austria and Switzerland. *Evidence-based HRM: a Global Forum for Empirical Scholarship*, 7(2), 229-246
- Muehlemann, S. & S. C. Wolter (2026). The Economics of Vocational Training. In: Bradley, S., Green, C. (eds.). *Economics of Education*. 3rd Edition. Academic Press, forthcoming.
- Muehlemann, S. & Wolter, S. C. (2017). Can Spanish firms offer dual apprenticeships without making a net investment? Empirical evidence based on ex-ante simulations of different training scenarios. *Evidence-based HRM: a global forum for empirical scholarship*, 5(1) 107-118.
- Muehlemann, S. & S.C. Wolter (2011). Firm-sponsored training and poaching externalities in regional labor markets. *Regional Science and Urban Economics* 41(6), 560-570.
- Mueller, B., & Schweri, J. (2015). How specific is apprenticeship training? Evidence from inter-firm and occupational mobility after graduation. *Oxford Economic Papers*, 67(4), 1057-1077.
- Papps, K. L. (2020). How the Minimum Wage Affects Training among Apprentices. IZA DP No. 13499. <https://ftp.iza.org/dp13499.pdf>
- Von Wachter, T., & Bender, S. (2006). In the right place at the wrong time: The role of firms and luck in young workers' careers. *American Economic Review*, 96(5), 1679-1705.

Part 4: Informal and non-formal training in the workplace

1. Informal and non-formal learning and training in the workplace
 - a) Effects of informal and non-formal training on productivity and wages
 - b) Impact of informal and non-formal training on innovation
 - c) Product market competition and training
 - d) On-the-job soft skills training

Key literature:

- Adhvaryu, A., Kala, N., & Nyshadham, A. (2023). Returns to on-the-job soft skills training. *Journal of Political Economy*, 131(8), 2165-2208.
- Bassanini, A. & G. Brunello (2011). Barriers to entry, deregulation and workplace training: A theoretical model with evidence from Europe. *European Economic Review* 55(8), 1152–1176.
- Bilanakos, C., Heywood, J. S., Sessions, J., & Theodoropoulos, N. (2018). Does demand for product quality increase worker training? *Journal of Economic Behavior & Organization*, 155, 159-177.
- Dostie, B. (2018). The impact of training on innovation. *ILR Review*, 71(1), 64-87.
- DeGrip, A. & J. Sauermann (2012). The effects of training on own and co-worker productivity: evidence from a field experiment, *The Economic Journal* 122(560), 376–399
- Konings, J., & Vanormelingen, S. (2015). The impact of training on productivity and wages: firm-level evidence. *Review of Economics and Statistics*, 97(2), 485-497.
- Loewenstein, M., and J. Spletzer (1999). Formal and informal training: Evidence from the NLSY. In: Polachek, S., and K. Tatsiramos (eds). *Research in Labor Economics* Volume 18. Bingley: Emerald Group, 1999.
- Muehlemann, S. (2025). Artificial intelligence adoption and workplace training. *Journal of Economic Behavior & Organization*, 238, 107206.

Part 5: Financial training incentives for firm and individuals

- Alfonsi, L., Bandiera, O., Bassi, V., Burgess, R., Rasul, I., Sulaiman, M., & Vitali, A. (2020). Tackling youth unemployment: Evidence from a labor market experiment in Uganda. *Econometrica*, 88(6), 2369-2414.
- Brunello, G., Comi, S. L., & Sonedda, D. (2012). Training subsidies and the wage returns to continuing vocational training: Evidence from Italian regions. *Labour Economics*, 19(3), 361-372.
- Crépon, B., & Premand, P. (2025). Direct and indirect effects of subsidized dual apprenticeships. *Review of Economic Studies*, 92(5), 2979-3028.
- Dauth, C. (2020). Regional discontinuities and the effectiveness of further training subsidies for low-skilled employees. *ILR Review*, 73(5), 1147-1184.

- Dostie, B. (2015). Do Train-or-Pay Schemes Really Increase Training Levels?. *Industrial Relations: A Journal of Economy and Society*, 54(2), 240-255.
- Martins, P. S. (2021). Employee training and firm performance: Evidence from ESF grant applications. *Labour Economics*, 72, 102056.
- Muehlemann, S., Schweri, J., Winkelmann, R., & Wolter, S. C. (2007). An empirical analysis of the decision to train apprentices. *Labour*, 21(3), 419-441.
- Schwerdt, G., Messer, D., Woessmann, L. & Wolter, S. C. (2012). The impact of an adult education voucher program: Evidence from a randomized field experiment. *Journal of Public Economics* 96(7-8) 569-583.
- Oswald, Y. and Backes-Gellner, U. (2014). Learning for a bonus: How financial incentives interact with preferences. *Journal of Public Economics*, vol. 118: 52-61.
- Strupler Leiser, M. & Wolter S. C. (2017). Empirical evidence on the effectiveness of social public procurement policy: The case of the Swiss apprenticeship training system. *Labour*, 31(2), 204-222.