

MATHEMATICS–4H

Project code:	CDC2010:3
Project title:	Origins and evolution of universities.
Supervisor:	Dr. C. D. Coman.
Subject area:	History of Science.
Prerequisites:	An interest in history and the ability to write essays.
Summary:	The project will follow the main landmarks in the development of universities in Europe and/or the United States, and the role played in fostering natural sciences (mathematics and mechanics, in particular).

PROJECT DETAILS

The early development of natural philosophy has benefited greatly from the Greeks and Arabs. The university as an institution, however, has its roots in the special conditions that took place in the West in the twelfth century. Between the ninth and thirteenth centuries, Europe was transformed through an unparalleled development of commerce and manufacturing, which eventually resulted in the birth of a strong money economy. The increasing urban population struggled to free themselves from the taxes imposed by hereditary nobles; this was partly achieved by siding with popes, religious leaders, or kings in order to protect their rights. Those who practiced the same trade or craft usually organised themselves into guilds. The Latin name *universitas* refers to such professional associations, and means ‘totality’ or ‘whole’.



Teaching masters and students of the twelfth century established important schools in various cathedrals throughout Western Europe (e.g., Paris, Orleans, etc), and since the official language of instruction was Latin, both masters and students found it convenient to travel widely across Europe. The latter searching for the perfect masters, the former trying to attract large number of students so that they could improve their remuneration. This meant that they were often foreigners in the cities in which they taught and studied, so they had no rights and privileges. Thus, they used the model of *universitas* of a trade or craft on which to base their own organisation. By the end of the twelfth century the ancestor of our current university format had already emerged: *universitas magistrorum* (i.e., university of masters) and *universitas scholarium* (i.e., university of students). These merged and later on became *universitas magistrorum et scholarium*. It must be emphasised that the totality of all disparate *universitas* was known as *studium generale* (nowadays there is no distinction between the two terms).

From their original inception, European universities based their teachings on the Aristotelian philosophy, by explicating and amplifying it. Most of the masters were in religious orders and the students were preparing for ecclesiastical careers. This state of affairs kept going on and by the year 1600 very little change had occurred. In fact, in the seventeenth century not only did natural science have to develop its own centres of activity independent of the universities, but the universities were the principal centres of opposition for the Scientific Revolution that was taking place throughout Europe.

By using (some of) the references included below – and any other materials that you may find relevant, you are asked to elaborate on the above information, by focusing on how the early universities were organised, the form in which the instruction was taking place, and their position within the socio-cultural background of the time. A special attention should be paid to the role played by the universities in the early modern development of mechanics and mathematics.

Optional references:

- [1] C.H. Haskins *The Rise of Universities*. Cornell University Press, Ithaca and London 1965 (7th reprinting).
- [2] W. Rugg, H. De Ridder-Symoens *A History of the University in Europe (vol. 2)*. Cambridge University Press, Cambridge 2003.
- [3] O. Pedersen *The First Universities: Studium Generale and the Origins of University Education in Europe*. Cambridge University Press, Cambridge 1997.
- [4] D. Bok *Universities in the Marketplace: the Commercialization of Higher Education*. Princeton University Press, Princeton NJ 2004.
- [5] E.T. Bell *Men of Mathematics*. Simon & Schuster, New York 1937 (republished several times, still in print).