The period of cultural and political change known as 'The Enlightenment' reshaped Europe between the mid 17th and late 18th centuries. It is associated with the values of critical thinking, tolerance of opposed beliefs, revolutionary politics and the questioning of religious authority. At the close of the 18th century leading European thinkers were beginning to see the Enlightenment as a unique historical moment. Writing in 1794 Immanuel Kant described it as the achievement of humanity's intellectual maturity. In his essay ‘An Answer to the question: What is Enlightenment?’ Kant claims that the enlightened person was someone who had thrown off what he called a 'childish' reliance on the guidance of others, and dared to think independently: 'Sapere Aude! (Dare to know) "Have courage to use your own understanding!" - that is the motto of enlightenment.'

One facet of the intellectual 'childishness' that Kant criticised is what he saw as a lazy dependence on authority and tradition to tell one what to believe. One of the key tenets of the Enlightenment is that tradition and authority are unreliable guides to truth.

In early modern philosophy this sceptical approach is epitomised in the work of French philosopher René Descartes who argued that the seeker after truth should abandon all beliefs about which he or she is uncertain. Descartes' method of doubt leads him to conclude that he can only be sure of existence as a solitary 'doubting' thinker, a conclusion he famously summarised in the Latin maxim 'cogito ergo sum' (I think, therefore I am). Despite his emphasis on the importance of doubt, this conclusion provided what he saw as a secure 'foundation' upon which to build a science of nature.

Descartes' method led him to a claim that was very debatable in the early Seventeenth Century: that the material universe can be understood using mathematics, while the human mind is immaterial and cannot be understood in the same way. This view is known as dualism. The idea that there are two substances - material and immaterial - leaves room for an immortal soul outside the mechanical universe. Because Descartes'
view allowed for an immaterial, immortal soul, it was adopted by Catholic seminaries in the following century, even though it contradicted the Aristotelian philosophy that had previously been central to medieval Christian theology in which faith and reason were seen as unified. It also bequeathed a problem that continues to challenge philosophers and scientists today: if the mind or soul is so distinct from the body that it can live on without it, how do the two interact? How can one perceive anything with the senses (which, Descartes conceded, depend on the material body)? How can one even will the body to move?

Descartes' hope for a purely mathematical science of nature was startlingly realised later in the 17th century with the unprecedented success of Newtonian physics. Isaac Newton's innovation was to explain the motions of earthly and celestial bodies using a small number of simple laws. His discoveries were made possible by the development of powerful mathematical techniques such as Descartes' own work on co-ordinate geometry and Newton and Leibniz's calculus which, for the first time, gave an exact representation of physical rates of change.

By the late 18th century, early hopes that an experimental philosophy could provide men and women with an understanding and eventual mastery of the world were being realised by the new mathematical and experimental sciences. Technologies such as the telescope, the microscope, the air pump and the Leyden jar allowed 'natural philosophers' to see the stars of our Milky Way galaxy, investigate the structure of living tissue, create vacuums and store electrical charges. These new 'tools for seeing' undermined traditional ways of thinking about our place in the world, replacing the medieval world-view where the cosmos was divinely ordered and centered on Man. In contrast, the new Experimental Philosophy revealed an inconceivably ancient, vast and changeable universe governed by impersonal laws.