Marietjie Havenga was born in Pretoria on 19 October 1961. She is the second oldest of five children of the late Prof Paul and the late Lina de Bruyn. She matriculated at the Afrikaanse Hoër Meisieskool in Pretoria and received the following qualifications from the former PU for CHE: BSc degree (cum laude) and Higher Education Diploma (cum laude). She married Kobus in 1986 and three children were born from the marriage: Roelien, Johan and Ané.

She started her teaching career at the Lichtenburg High School and then at the Technical High School Pietersburg, the Potchefstroom Gymnasium and Brits High School. She wrote programming text books in Delphi and Java for schools and was also an internal moderator and examiner of examination papers in Computer Studies for Grade 12. She completed the degrees BSc Honours (cum laude) in 1989 and MSc (Physiology) in 1992. In 2004 she was appointed as lecturer in the Faculty of Education (Computer Science Education) and completed her PhD (Technology Education) at UNISA in 2008. She was promoted to senior lecturer (2010), associate professor (2016) and professor (2022).

She is responsible for the training of prospective teachers in Information Technology at undergraduate level. In 2009 she was the co-writer of a Computer Science textbook for prospective teachers in collaboration with colleagues from the NWU and other universities. In 2009 she also received funding from the faculty to visit Prof Sajaniemi at the University of Joensuu (East Finland) as postdoctoral fellow. In 2010, 2012 and 2020 she received the Teaching Excellence Award (TEA) and a Scholarship of Teaching & Learning (SoTL) Award for research (2013–2015).

At postgraduate level she teaches modules in the Honours programme, acts as supervisor and co-supervisor to master's-degree students, and also as promoter and co-promoter to doctoral students. She has published various articles in accredited national and international journals; presented papers at national and international conferences; and has published chapters in academic research books. In 2021 she was the keynote speaker at a Scholarship of Teaching & Learning (SoTL) conference of the Central University of Technology, Free State.

In 2012 she developed a software system together with a colleague for the faculty to automatise work-integrated learning. In 2012 she was externally selected as professional natural scientist (PrSciNat). In 2012 she was also involved with a SANPAD project of Prof Mentz, together with national and international colleagues, and in 2016 she participated in the National Research Foundation (NRF) project of Prof De Beer. In 2018 she received a research award of around R450 000 from the NRF for the project in engineering education. She visited Prof Dahms (UNESCO Chair: problem-based learning) in Denmark (2018) and they also collaborated in the abovementioned project. In 2019 she received a C2-rating from the NRF. She was then appointed as member of the International Steering Committee for Project Approaches in Engineering Education (2019).

During her research career she acted as external moderator for undergraduate and postgraduate qualifications of various universities and as external selector of various articles for accredited academic journals. Over the years she served on various committees, for example the Masters and Doctoral Degree Committee, the Committee for Work-Integrated Learning, the Ethics Committee, the Executive Committee of the Unit for Self-Directed Learning, as well as the Science Committee of the Unit for Self-Directed Learning, and she also acted as subject chair on various occasions.