Mourad E. H. Ismail* (mourad.eh.ismail@gmail.com), Department of Mathematics, University of Central Florida, Orlando, FL 32816, and Ruiming Zhang, College of Science, Northwest A&F University, Yangling, Shaanxi 712100, Peoples Rep of China. Classes of bivariate orthogonal polynomials.

We introduce a class of orthogonal polynomials in two variables which generalizes the disc polynomials and the 2-D Hermite polynomials. We identify certain interesting members of this class including a one variable generalization of the 2-D Hermite polynomials and a two variable extension of the Zernike or disc polynomials. We also give q-analogues of all these extensions.

In each case in addition to generating functions and three term recursions we provide raising and lowering operators and show that the polynomials are eigenfunctions of record order partial differential or q-difference operators. (Received September 09, 2015)