Products of two Eisenstein series and spaces of cusp forms of prime level

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Using the Rankin-Selberg method and Eichler-Shimura cohomology we give a set of generators for the space of cusp forms of odd prime level and even weight ? 4 whose elements are the cuspidal parts of products of two specific Eisenstein series.We also give an explicit description of the orthogonal projection onto the subspace of newforms and in this way obtain a "simple" set of generators for the latter space.