1146-60-400   **Joshua K Patterson*** (`joshua.patterson@uta.edu`). *The M/M/1 Queue with 'unreliable service' and a working vacation.*

We define a new term 'unreliable service' where the service itself is unreliable (i.e. may fail). We will define this phenomena, discuss how it differs from the current literature, and discover how common this phenomena is in many real-world scenarios. We first consider the classic M/M/1 queue with unreliable service and find some similarities with an M/PH/1 queue but with some noteworthy differences as well. Next, we consider the M/M/1 queue with unreliable service and a working vacation. In both cases, surprising explicit results can be found including positive recurrence conditions, the stationary distribution, and in some cases a decomposition of both the queue length and waiting time random variables. (Received January 27, 2019)