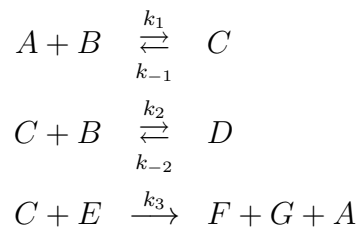


# MATH 4780/6780: MATHEMATICAL BIOLOGY

## Online Assignment 3

The assignment is due **Wednesday 4/8 by 9pm**. Please e-mail your solution to [ocaner@uga.edu](mailto:ocaner@uga.edu) with Subject line "online assignment".

1. Enzymes are required for most, if not all, of the processes required for life. However, enzymes need to be tightly regulated to ensure that levels of the product do not rise to undesired levels. This is accomplished by enzyme inhibition. Inhibitors are specific molecules that suppress the activity of an enzyme. There are different types of inhibitors.



This system is called a **substrate inhibited reaction**.

- (a) Identify each letter in the reaction above as a substrate, enzyme, product, active complex (capable to produce product) and passive complex (not capable to produce product). Note that you can have more than one substrate and/or product.
- (b) In your own words, explain why this system is called the substrate inhibited reaction. In other words, how can a substrate prevent itself turning into a product?
- (c) Write down the complete ODE system.
- (d) Write all conservation rules.