



STUDYDADDY

**Get Homework Help
From Expert Tutor**

Get Help

SCHOOL OF ENGINEERING, EDITH COWAN UNIVERSITY

Assignment 2 – Description

1. Your Task

Enzymatic reaction is shown in three different elementary steps:

1) Urease (E) reacts with substrates urea (S) to form complex E•S

2) E•S complex decompose back to E and S

3) E•S decompose to form ammonia (P) and E, and to recover the free E.



Please develop substrate rate expression by the function of substrate [S] and enzyme [E] using PSSH. In this case, you are given the initial concentration of the followings $[E_0]=0.2$, $[E \bullet S]_0=0.1$, and $[S_0]=1$. The kinetic constants of each elementary reaction are $k_1=1$, $k_2=0.15$, and $k_3=0.4$, respectively. The kinetic time frame is set from [0,100 min], **write a code in format of txt** by calling @ode15 function for numerical solving the corresponding PDEs (partial differential equations). Please seek assistances from MATLAB help online for PDEs and Lecture 7 for MATLAB programming if needed.

Note: your code will include a **mainprogram**, which contains the assignment of initial values, calling of the functions and graphical output of your rate expression. The **function** is defined for rate expression. In addition, you should compile your code in form of **txt** format and strictly follow rules that addressed in lectures notes.

2. Marking Criteria

Your report should be typed and bounded. It will be assessed based on:

- Originality (your own effort in code compiling)
- Executable (in whatever form the code, it should be with minimum errors in the compiler)

Your report will be *marked and returned within two weeks* from the submission deadline. It will contribute **up to 7.5% of your total mark** of this subject.

3. Due Date

Your code should be submitted, by the deadline, to the unit instructor Dr Yong Sun at y.sun@ecu.edu.au. The due date for is: **4pm, Friday 7 October 2016**. Please stamp on the cover page of your report to verify the date of submission. Late submission, without justifiable reason, will be penalised with loss of 10% of your report mark for each working day after the submission deadline.



STUDYDADDY

**Get Homework Help
From Expert Tutor**

Get Help