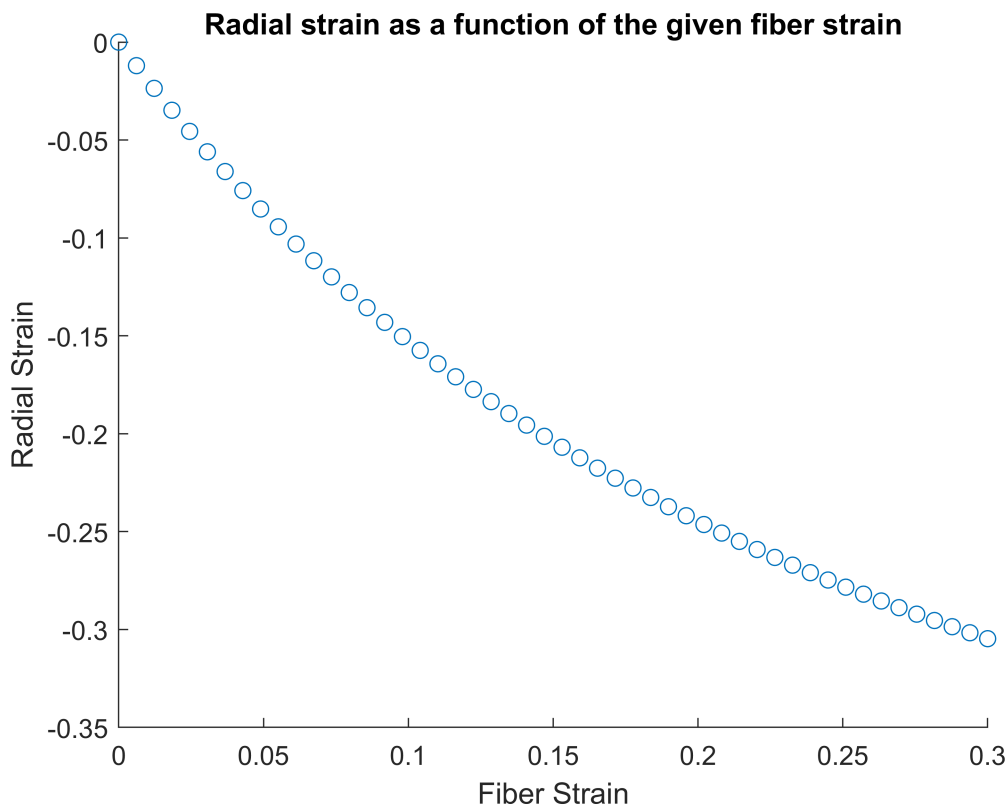# Q4a

```
data = readmatrix('HW9_FungData');
EFF=data(:,1);
ECC = data(:,2);
TFF=data(:,3);
TCC = data(:,4);


ERR = (1 ./ (2.* (2.*EFF+1).^2) ) - 0.5;

figure
scatter(EFF, ERR)
xlabel('Fiber Strain')
ylabel( 'Radial Strain')
title( 'Radial strain as a function of the given fiber strain')
```


Q4b

```
% Classmate1


c = 0.75;
b1 = 3.8;
b2 = 5.0;
```

```
Q = b1.* (EFF .^2 +ECC.^2 + ERR.^2) + b2.*(EFF.^2);
p = (c*b1.*ERR.*exp(Q) ) ./ ((2.*EFF+1).*(2.*ECC+1));

figure
hold on
scatter(EFF, TFF, 'r')
scatter(ECC, TCC, 'b')
T11 = ((2.*EFF +1).*( (b1+b2)*c.*EFF.*exp(Q) ) -p);
plot(EFF,T11, 'r')

T22 = ((2.*ECC+1).* (c*b1.*ECC.*exp(Q))) -p;
plot(EFF,T22, 'b')
title( 'Classmate 1 ')
xlabel('Fiber Strain')
ylabel( 'Stress [MPa]')
legend ('EFF Data', 'ECC Data','T11', 'T22')




hold off
```
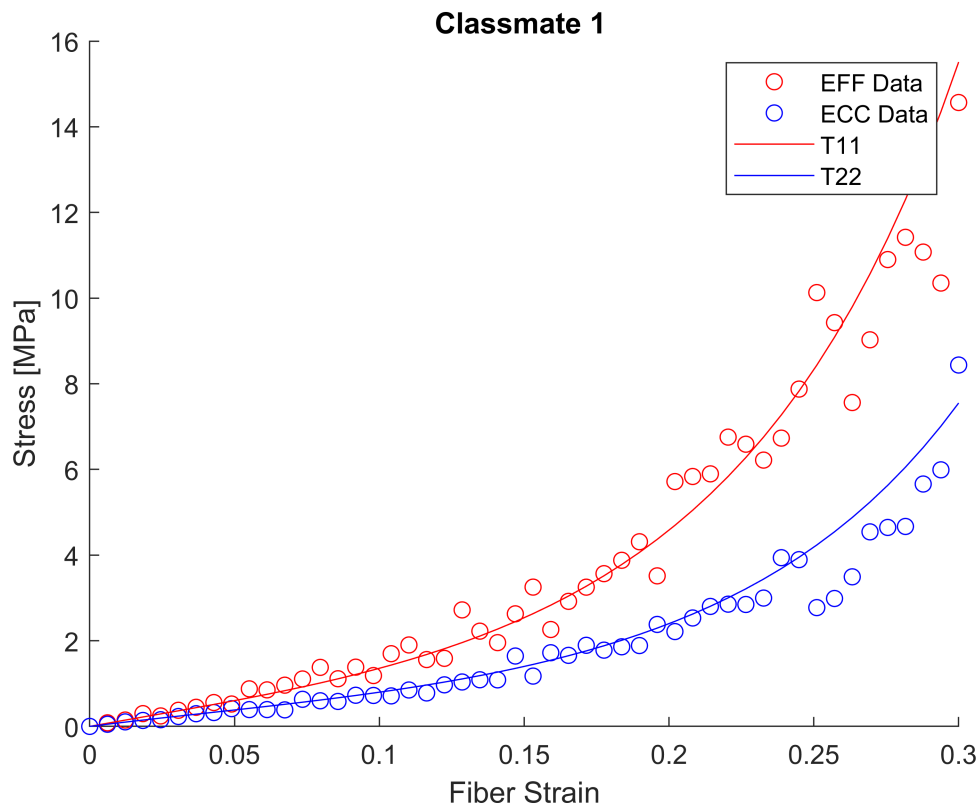
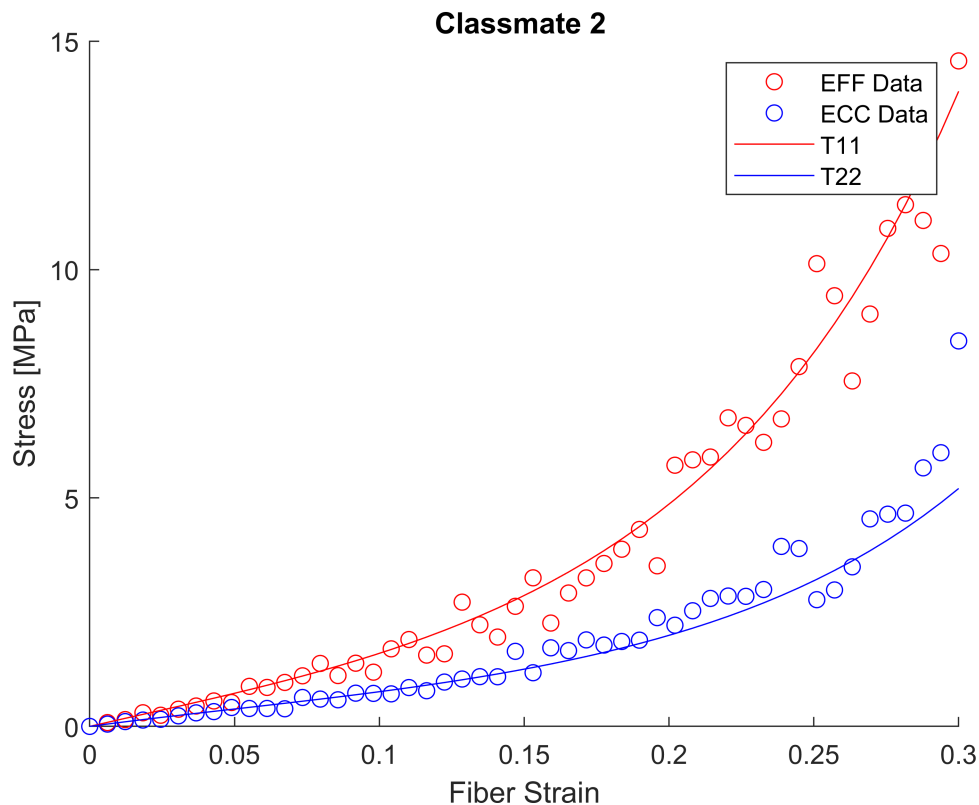

```
%classmate 2
figure
hold on
```

```
c_2 = 1.2;
b1_2 = 2.4;
b2_2 = 5.0;
Q_2 = b1_2.* (EFF .^2 +ECC.^2 + ERR.^2) + b2_2.*(EFF.^2);
p = (c_2*b1_2.*ERR.*exp(Q_2) ) ./ ((2.*EFF+1).*(2.*ECC+1));

scatter(EFF, TFF, 'r')
scatter(ECC, TCC, 'b')
T11_2 = ((2.*EFF +1).*( (b1_2+b2_2)*c_2.*EFF.*exp(Q_2) ) -p);
plot(EFF,T11_2 , 'r')

T22_2 = ((2.*ECC+1).* (c_2*b1_2.*ECC.*exp(Q_2))) -p;
plot(EFF,T22_2, 'b')
title( 'Classmate 2 ')
xlabel('Fiber Strain')
ylabel( 'Stress [MPa]')
legend ('EFF Data', 'ECC Data','T11', 'T22')
```



```
% its not very clear which classmate has a better fit but it looks like
% classmate 1 is better
```

Q4c

```
%classmate 1
T11_sse =  ( (T11-TFF) ./ (TFF) ).^2 ;
T11_sse(isnan(T11_sse))=0;
Sum11 = sum (T11_sse)
```

Sum11 = 1.1557

```
T22_sse = ( (( T22-TCC) ./ (TCC) ).^2  );
T22_sse(isnan(T22_sse))=0;
Sum22 = sum (T22_sse)
```

Sum22 = 1.5249

```
%Classmate 2

T11_sse_2 = ( ( (T11_2-TFF) ./ (TFF) ).^2 );
T11_sse_2(isnan(T11_sse_2))=0;
Sum11_2 = sum (T11_sse_2)
```

Sum11_2 = 1.4829

```
T22_sse_2 = ( ( (T22_2-TCC) ./ (TCC) ).^2 );
T22_sse_2(isnan(T22_sse_2))=0;
Sum11_2 = sum (T22_sse_2)
```

Sum11_2 = 1.0509