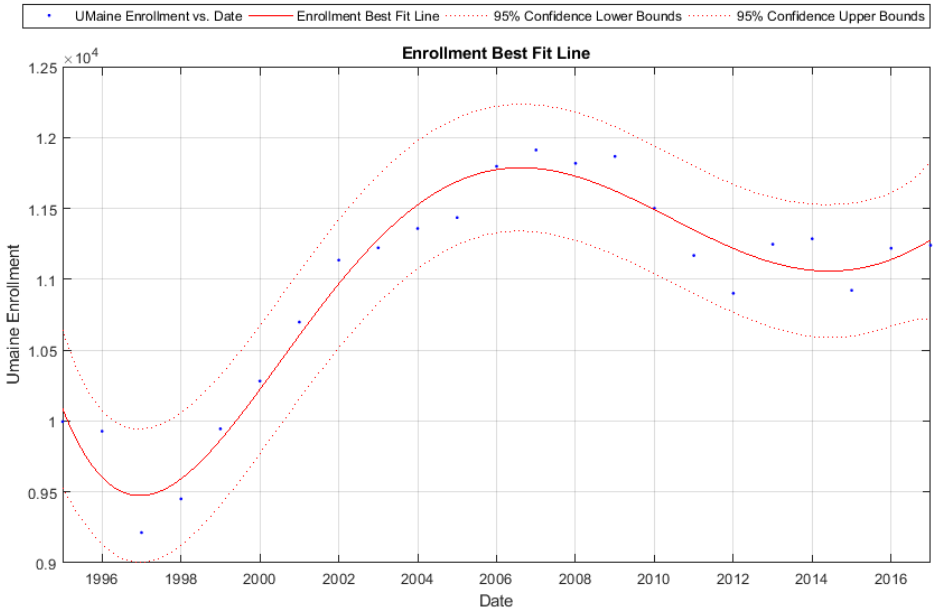
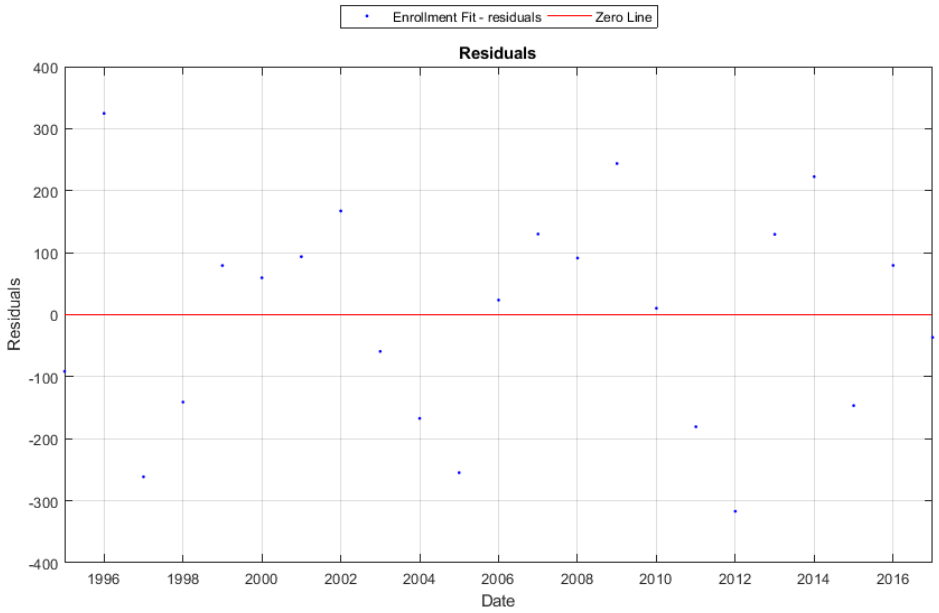
```
% Zachary Linkletter
% ECE 498 HW 06
% 3/19/18

clear
clc

enrollment = [
% Year
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008
 2009 2010 2011 2012 2013 2014 2015    2016    2017
% UM
9996 9928 9213 9451 9945 10282 10698 11135 11222 11358 11435 11797
 11912 11818 11867 11501 11168 10901 11247 11286   10922   11219
 11240
% UMA
6023 5496 5248 5130 5612 5617 5575 5722 5943 5538 5494 5257 5101 4974
 5054 5074 4974 4990 4770 4664    4683    4416    0
% UMF
2510 2512 2446 2507 2479 2413 2435 2395 2420 2349 2452 2424 2265 2227
 2238 2322 2269 2179 2061 1960    2016    2000    0
% UMFK
731     767     690     827     926     886     897     827     924
  1076    1193 1339 1269 1102 1126 1073 1080 1169 1209 1327    1559
 1904    0
% UMM
856     915  884     899     908     927     1017 1068 1313 1191 1149
 1259 1093 1023 964     951     863     925     892     810     786
  745     0
% UMPI
1278 1347 1307 1344 1378 1427 1367 1560 1546 1652 1548 1655 1533 1455
 1436 1434 1453 1463 1263 1138    1289    1326    0
% USM
9721 9966 10230 10462 10645 10820 10966 11382 11007 11089 10974 10478
 10453 10009 9655 9654 9301 9385 8923 8428    7739    7855    0
];

date = enrollment(1,:);
umo = enrollment(2,:);

[xData, yData] = prepareCurveData( date, umo );

[fitresult, gof] = fit( xData, yData, 'poly5', 'Normalize', 'on' );

figure('position', [200, 75, 1000, 600]);
h = plot( fitresult, xData, yData, 'predobs' );
xlim([1995 2017]);
legend( h, 'UMaine Enrollment vs. Date', 'Enrollment Best Fit
 Line', '95% Confidence Lower Bounds', '95% Confidence Upper
 Bounds', 'Location', 'northoutside', 'orientation', 'horizontal');
xlabel Date
ylabel('Umaine Enrollment')
```

```
title('Enrollment Best Fit Line')
grid on

figure('position', [200, 75, 1000, 600]);
h = plot( fitresult, xData, yData, 'residuals' );
xlim([1995 2017]);
legend( h, 'Enrollment Fit - residuals', 'Zero
 Line', 'Location', 'northoutside', 'orientation', 'horizontal' );
xlabel Date
ylabel('Residuals')
title Residuals
grid on

% I chose a fifth order polynomial to represent the data because while
 it
% has a large 95% distribution, it seems the most accurate to predict
 for
% the future.  It isn't too dramatic with the prediction and it
 doesn't overfit.
```





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