ME 3001 Lecture, Systems of Linear Equations
The Gaussian Elimination Algorithm

- **The Forward Eimination Algorithm:**

for k *from* 1 *to* n-1

  for i *from* k+1 *to* n

   fact= $a_{i,k}/a_{k,k}$

   for j *from* k *to* n

    $a_{i,j} = a_{i,j} - \text{fact} \times a_{k,j}$

   end

   $b_i = b_i - \text{fact} \times b_k$

  end

end

- **The Backwards Substitution Algorithm:**

$x_n = b_n/a_{n,n}$

for i *from* n-1 *to* 1

$$x_i = (b_i - \sum_{j=i+1}^{n} (a_{i,j} x_j))/a_{i,i}$$

end