Weeks 1-2: **Vectors**  
- Dot product, Cross product.  
- Lines and planes.

Week 3: **Quadric surfaces**

Weeks 3-4: **Vector-valued functions of one variable**  
- Arclength, curvature.  
- Velocity, acceleration

Weeks 5-8: **Scalar valued functions of several variables**  
- Limits  
- Partial derivatives, Chain rule  
- Tangent lines, linear approximations  
- Directional derivative, gradient  
- Finding maxima and minima, without and with constraints

Weeks 9-11: **Double and triple integrals**  
- Cartesian, polar and spherical coordinates

Weeks 12-14: **Vector fields**  
- Examples. Curl, Divergence.  
- Line integrals of type I, $\int f(x, y, z) \, ds$. Arclength.  
- Line integrals of type II, $\int F(x, y, z) \cdot ds$. Work, circulation.  
- Fundamental Theorem for line integrals  
- Green’s Theorem.

_Last updated: Jun 8, 2010_