Definition  An $m$-dimensional Wiener (or Brownian Motion) process with mean $\mu$ and variance $\sigma^2$ is a stochastic process $(W_t)_{t \geq 0}$ with state space $\mathbb{R}^m$ satisfying:

1. $\forall \omega \in \Omega, W_0(\omega) = 0$;
2. $\forall 0 \leq t_1 < t_2 < t_3 < \ldots < t_n$:
   $W_{t_2} - W_{t_1}, W_{t_3} - W_{t_2}, \ldots, W_{t_n} - W_{t_{n-1}}$ are independent
3. $\forall 0 \leq s < t, W_t - W_s \sim \mathcal{N}(\mu(t - s), \sigma^2(t - s))$;
4. $\forall \omega \in \Omega, W^\omega : [0, \infty) \to \mathbb{R}^m$ is continuous

Remark  Let $(W_t)_{t \geq 0}$ be an $m$-dimensional Wiener process with mean $\mu$, variance $\sigma^2$, and let $T > 0$. Define $(B_t)_{t \in [0, T]}$ by

$$B_t \equiv W_t - \frac{t}{T} W_T.$$

$(B_t)_{t \in [0, T]}$ is called a Brownian bridge on $[0, T]$ with parameters $\mu, \sigma^2$. 
Brownian Motion

Brownian Bridge Example

displacement

Time
1D Randomized End Points

Randomized Bb with end points of 1 or -1
1D End Points From Random Normal

Randomized Bb with end points from N(0,1)
1D Distribution of Maximum Values

Maximums of Brownian Bridges with end points of 0
2D Brownian Bridges Fixed Start End Point

end at (0, 0)

end at (10, 10)
2D Brownian Bridges different End Point AND Probability of exist
2D Brownian Bridges Example
2D Brownian Bridges Exit Probabilities from the Open Unit Disk

Brownian bridge (on [0,1]) exit probability of exiting the open disk of radius: 1
mu-start: -1, mu-end: 1, mu-incr: 0.1
sig2-start: 0.01, sig2-end: 0.2, sig2-incr: 0.005
2D Brownian Bridges First Exit Times Distributions Evolution

link

https://goo.gl/XV5kMq
Sources

https://www.math.ucdavis.edu/hunter/m280_09/ch5.pdf
https://en.wikipedia.org/wiki/Wiener_process
https://en.wikipedia.org/wiki/Brownian_bridge
http://www.columbia.edu/ks20/FE-Notes/4700-07-Notes-B