Probability and Random Processes
ECS 315

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Working with Randomness using MATLAB

Office Hours:

BKD, 4th floor of Sirindhralai building

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Monday	**9:30–10:30**
Monday	**14:00–16:00**
Thursday	**16:00–17:00**

rand function: a preview

- Generate an array of uniformly distributed pseudorandom numbers.
  - The pseudorandom values are drawn from the **standard uniform distribution** on the open **interval (0,1)**.
- `rand` returns a scalar.
- `rand(m,n)` or `rand([m,n])` returns an m-by-n matrix.
  - `rand(n)` returns an n-by-n matrix

```
>> rand
ans =
     0.8147
>> rand(10,2)
ans =
     0.9058     0.9706
     0.1270     0.9572
     0.9134     0.4854
     0.6324     0.8003
     0.0975     0.1419
     0.2785     0.4218
     0.5469     0.9157
     0.9575     0.7922
     0.9649     0.9595
     0.1576     0.6557
```
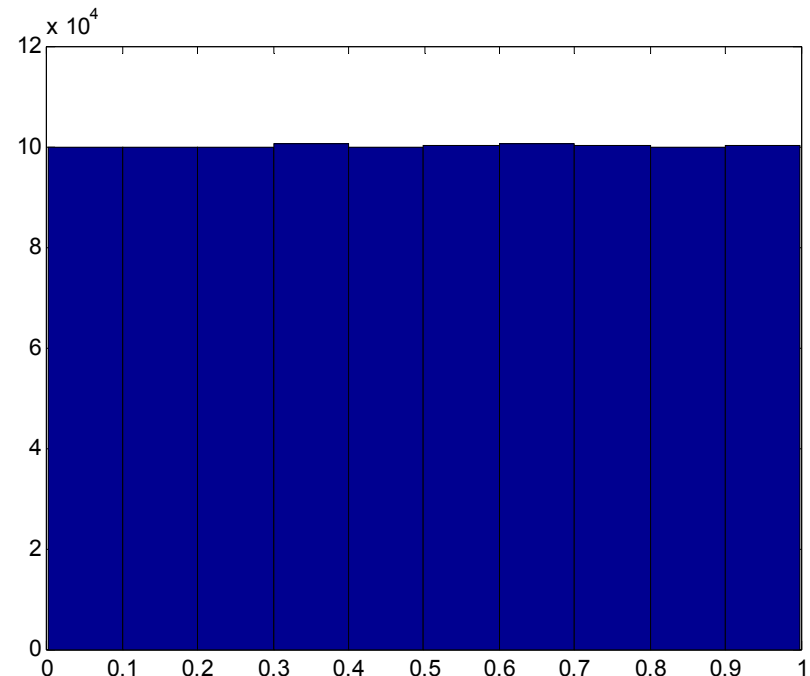
`rand` function: Histogram

- The generation is **unbiased** in the sense that "any number in the range is **as likely to occur** as another number."

- Histogram is flat over the interval (0,1).
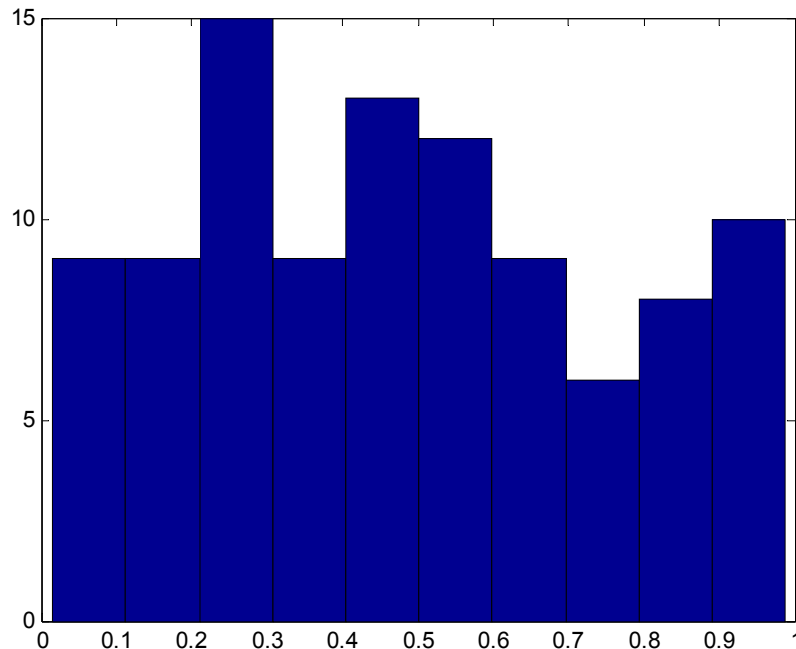
`hist(rand(1,100))`   `hist(rand(1,1e6))`

Roughly the same height

`randn` function: a preview

- Generate an array of normally distributed pseudorandom numbers

`hist(randn(1,1e6),20)`