

## Codes du TP 15

```
#Comparaison fréquence et loi pour chaque v.a. usuelle
```

```
def frequencebern(p,nb):
```

```
    S=np.zeros(2)
```

```
    for k in range(nb):
```

```
        i=rd.binomial(1,p)
```

```
        S[i]=S[i]+1
```

```
    return S/nb
```

```
x=np.arange(0,2)
```

```
y=frequencebern(1/3,1000)
```

```
plt.bar(x,y)
```

```
def frequencebin(n,p,nb):
```

```
    S=np.zeros(n+1)
```

```
    for k in range(nb):
```

```
        i=rd.binomial(n,p)
```

```
        S[i]=S[i]+1
```

```
    return S/nb
```

```
x=np.arange(11)
```

```
y=frequencebin(10,1/3,100000)
```

```
plt.bar(x,y)
```

```
def frequencegeo(p,nb):
```

```
    S=np.zeros(30)
```

```
    for k in range(nb):
```

```
        i=rd.geometric(p)
```

```
        S[i-1]=S[i-1]+1
```

```
    return S/nb
```

```
x=np.arange(0,30)
```

```
y=frequencegeo(1/4,1000)
```

```
plt.bar(x,y)
```

```
def frequencepoi(l,nb):
```

```
    S=np.zeros(10)
```

```
    for k in range(nb):
```

```
        i=rd.poisson(l)
```

```
S[i]=S[i]+1  
return S/nb
```

```
x=np.arange(0,10)  
y=frequencepoi(0.8,1000)  
plt.bar(x,y)
```

```
def frequenceuni(n,m,nb):  
    S=np.zeros(m-n+1)  
    for k in range(nb):  
        i=rd.randint(n,m+1)  
        S[i-n]=S[i-n]+1  
    return S/nb
```

```
x=np.arange(10,21,1)  
y=frequenceuni(10,20,1000)  
plt.bar(x,y)
```

#Comparaison loi binomiale et Poisson

```
U1=np.arange(0,10)  
Upoi=frequencepoi(1,10000)  
plt.bar(U1,Upoi)
```

```
U2=np.arange(21)  
Ubin=frequencebin(20,1/20,100000)  
plt.bar(U2,Ubin)
```