Program :-

```
import scipy.stats as stats
import numpy as np

observed = np.array([[60, 54, 46, 41], [40, 44, 53, 57]])

row_totals = observed.sum(axis=1)
col_totals = observed.sum(axis=0)
total = observed.sum()

expected = np.outer(row_totals, col_totals) / total

chi_squared = np.sum((observed - expected)**2 / expected)

degrees_of_freedom = (observed.shape[0] - 1) * (observed.shape[1] - 1)

alpha = 0.05
critical_value = stats.chi2.ppf(1 - alpha, degrees_of_freedom)

print("Observed Frequencies:")
print(observed)
print("Expected Frequencies:")
print(expected)
print("Chi-squared value:", chi_squared)
print("Critical value:", critical_value)
print("Degrees of freedom:", degrees_of_freedom)
```

Output :-

```
Observed Frequencies:
[[60 54 46 41]
 [40 44 53 57]]
Expected Frequencies:
[[50.88607595 49.86835443 50.37721519 49.86835443]
 [49.11392405 48.13164557 48.62278481 48.13164557]]
Chi-squared value: 8.006066246262538
Critical value: 7.814727903251179
Degrees of freedom: 3
```