

# BScHons in Computer Science

## *Programme Code*

18139 – 797 (128)

## *Programme Description*

This honours programme has two streams, namely Computer Science and Data Science. The minimum credits required per stream are 128.

## *Specific Admission Requirements*

- A Bachelor's degree with Computer Science as major, or an equivalent qualification.
- An average final mark of at least 60% for Computer Science 3.
- For the Stream Data Science, a satisfactory mark in Mathematical Statistics at second year level, at least, is also required.

## *Closing Date for Applications*

Apply online at <http://www0.sun.ac.za/pgstudies/> by 31 October of the previous year and submit all supporting documents where applicable. Late applications can be submitted until 30 November. In exceptional cases, if there are any places available, applications will be considered until the beginning of the academic year.

If you are not an SU student, please note that your application may take longer to process due to the verification of qualifications. Therefore, apply early.

## *Programme Structure*

### **Stream Computer Science**

This stream consists of 6 modules of 16 credits each, as well as a compulsory programming project of 32 credits. At most two modules may be taken from related departments with the permission of the Department of Mathematical Sciences (Division Computer Science). Not all modules are necessarily offered each year.

### **Stream Data Science**

This stream consists of 5–8 compulsory modules which includes a compulsory programming project. The remaining credits to reach the required credit total are modules in Computer Science or selected modules in Mathematical Statistics. Not all modules are necessarily offered each year.

## *Duration of Programme*

The normal duration of the programme is one year, but under exceptional circumstances and at the discretion of the department, it is possible to repeat a module. The programme begins with the start of the academic year.

## Programme Content

### Stream Computer Science (credits = 128)

#### Compulsory Modules

(credits = minimum 32, maximum 48)

Subject Number	Module Code	Credits	Module Name	Semester
63444	771	32	Honours Project in Computer Science	Both

Unless you have completed Computer Science 314 or an equivalent, the following Computer Science module is also compulsory.

Subject Number	Module Code	Credits	Module Name	Semester
64963	714	16	Concurrent Programming I	Both

**plus**

#### Elective Modules

(credits = minimum 80, maximum 96)

Choose modules to a minimum value of 80 credits and a maximum value of 96 credits from the list below to reach the required credit total of 128 credits. However, you can also choose modules presented by other departments with the permission of the Computer Science Division in the Department of Mathematical Sciences.

Subject Number	Module Code	Credits	Module Name	Semester
63452	711	16	Automata Theory and Applications	1
64947	712	16	Advanced Algorithms	1
64955	713	16	Theoretical Computer Science	1
63401	715	16	Databases	1
64971	716	16	Advanced Topics in Computer Science 1	2
11788	741	16	Machine Learning	Both
14195	742	16	Machine Learning A	Both
64998	742	16	Computer Graphics	2
65005	743	16	Simulation of Networks	1
65013	744	16	Concurrent Programming 2	2
65021	745	16	Software Construction	1
65048	746	16	Advanced Topics in Computer Science 2	2
12264	747	16	Biological Sequence Analysis	2
11261	748	16	Software Development for Mobile Devices	Both
14232	791	16	Artificial Intelligence	Both
62847	792	16	Computer Vision	2
64572	793	16	Digital Image Processing	2
13945	794	16	Search and Planning	Both
13944	795	16	Functional Programming	Both
14065	796	16	Software Verification and Analysis	Both
14066	791	16	Space Science Algorithms	Both

## Stream Data Science (credits = 128)

### Compulsory Modules

(credits = minimum 78, maximum 122)

#### Computer Science

Subject Number	Module Code	Credits	Module Name	Semester
11788	741	16	Machine Learning	2
63444	771	32	Honours Project in Computer Science	Both

#### Mathematical Statistics

Subject Number	Module Code	Credits	Module Name	Semester
13074	723	6	Introduction to R Programming	1
58777	741	12	Data Mining	1
13360	771	12	Statistical Learning Theory	Both

Unless you have completed Computer Science 314 or an equivalent, the following Computer Science module is also compulsory.

Subject Number	Module Code	Credits	Module Name	Semester
64963	714	16	Concurrent Programming I	Both

Unless you have completed Computer Science 315 or an equivalent, the following Computer Science module is also compulsory.

Subject Number	Module Code	Credits	Module Name	Semester
14195	742	16	Machine Learning A	Both

Unless you have completed Mathematical Statistics 3 or an equivalent qualification, the following Mathematical Statistics module is also compulsory.

Subject Number	Module Code	Credits	Module Name	Semester
13361	771	12	Mathematical Statistics for Data Scientists	Both

**plus**

### Elective Modules

(credits = minimum 6, maximum 50)

Choose modules from the Honours in Computer Science stream to a minimum value of 6 credits and a maximum value of 50 credits to reach the required credit total of at least 128 credits. However, you can also choose modules presented by other departments with permission from the Computer Science Division in the Department of Mathematical Sciences.

### ***Assessment and Examination***

All modules make use of flexible assessment and you must achieve a final mark of at least 50% for each module, as well as for the programming project. If you do not pass all modules required for the degree in the first year, you may apply to repeat these modules in the following year.