# SRI KRISHNA ARTS AND SCIENCE COLLEGE

An Autonomous College Affiliated to Bharathiar University
Re-Accredited by NAAC with A Grade
Coimbatore -641 008, Tamil Nadu, India.

Scheme of Instruction and Syllabus for
## M.Sc. Software Systems (2020 BATCH)
## (VIII to X Semester)

## DEPARTMENT OF SOFTWARE SYSTEMS

# SRI KRISHNA ARTS AND SCIENCE COLLEGE

An Autonomous College affiliated to Bharathiar University
Coimbatore - 641 008, Tamil Nadu, India.

## DEPARTMENT OF COMPUTER SCIENCE
SCHEME OF EXAMINATION – CBCS PATTERN

Programme: M.Sc. SS
(Effective from the Academic Year 2022-2023)

## Curriculum Structure, Credits & Marks Distribution

| Course Type | Number of Courses | Credits per Course | Total Credits | Marks | Semester |
|---|---|---|---|---|---|
| Discipline Specific Courses (DSC) | 47 | 1-5 | 165 | 4400 | I to X |
| Discipline Specific Elective Courses (DSE) | 4/8 | 2-5 | 15 | 400 | I to X |
| Generic Electives Courses (GEC) | 07 | 2-4 | 19 | 700 | I to X |
| Mini Project / Project | 3 | 8-15 | 35 | 500 | I to X |
| Additional Credit Course (ACC) - Courses offered in SWAYAM/NPTEL National MOOC Portal | Additional 4 Credits per Course will be given on submission of Certificate | | | | I to X |
| Total | 65 | | 234 | 6000 | |

| Course Code | Course Title | Ins. Hrs/ week | Examination | | | | MAP Code | Credits |
|---|---|---|---|---|---|---|---|---|
| | | | Dur. Hrs | CIA | ES | Total Marks | | |
| Semester – I | | | | | | | | |
| 20SSI01 | DSC 1: English | 4 | 3 | 40 | 60 | 100 | A | 3 |
| 20SSI02 | DSC 2: C Programming | 5 | 3 | 40 | 60 | 100 | F | 4 |
| 20SSI03 | DSC 3: Algebra for Software Systems | 4 | 3 | 40 | 60 | 100 | I | 3 |
| 20SSI04 | DSC 4: Computer System Architecture | 5 | 3 | 40 | 60 | 100 | H | 4 |
| 20SSI05 | DSC 5: Practical -Programming Lab- C | 4 | 3 | 40 | 60 | 100 | K | 3 |
| 20SSI06 | DSC 6: Self Study Paper -PC Software Lab | 1 | 3 | - | 50 | 50 | M | 1 |
| 20GEP17 | GEC 1: Digital Electronics | 4 | 3 | 40 | 60 | 100 | H | 3 |
| 20GEP18 | GEC 2: Digital Electronics Lab | 3 | 3 | 40 | 60 | 100 | L | 2 |
| | | 30 | | | | 750 | | 23 |
| Semester – II | | | | | | | | |
| 20SSI07 | DSC 7: Calculus and Applications | 4 | 3 | 40 | 60 | 100 | I | 3 |
| 20SSI08 | DSC 8: C++ Programming | 5 | 3 | 40 | 60 | 100 | F | 4 |
| 20SSI09 | DSC 9: Data Structures | 5 | 3 | 40 | 60 | 100 | C | 4 |
| 20SSI10 | DSC 10: Practical- C++ with Data Structures Lab | 4 | 3 | 40 | 60 | 100 | K | 3 |
| 20GEP19 | GEC 3: Embedded Systems | 4 | 3 | 40 | 60 | 100 | F | 3 |
| 20GEP20 | GEC 4: Embedded Systems Lab | 3 | 3 | 40 | 60 | 100 | M | 2 |
| 20GEP27 | GEC 5: Fundamentals of Accounting | 5 | 3 | 40 | 60 | 100 | I | 4 |
| | | 30 | | | | 700 | | 23 |

| Course Code | Course Title | Ins. Hrs/ week | Examination | | | MAP Code | Credits |
|---|---|---|---|---|---|---|---|
| | | | Dur. Hrs | CIA | ES | Total Marks | | |

| Course Code | Course Title | Ins. Hrs/ week | Dur. Hrs | CIA | ES | Total Marks | MAP Code | Credits |
|---|---|---|---|---|---|---|---|---|
| **Semester – III** | | | | | | | | |
| 20SSI11 | DSC 11: Numerical and Statistical Methods | 4 | 3 | 40 | 60 | 100 | J | 4 |
| 20SSI12 | DSC 12: Computer Networks | 5 | 3 | 40 | 60 | 100 | C | 5 |
| 20SSI13 | DSC 13: Linux Programming | 4 | 3 | 40 | 60 | 100 | F | 4 |
| 20SSI14 | DSC 14: System Software and Operating System | 4 | 3 | 40 | 60 | 100 | D | 4 |
| 20SSI15 | DSC 15: Practical- Linux Programming Lab | 3 | 3 | 40 | 60 | 100 | K | 2 |
| 20SSI16 | DSC 16: Practical-System Software Lab (C & C++) | 3 | 3 | 40 | 60 | 100 | M | 2 |
| 20GEP21 | GEC 6: Internet of Things | 4 | 3 | 40 | 60 | 100 | D | 3 |
| 20GEP22 | GEC 7: Practical - Internet of Things | 3 | 3 | 40 | 60 | 100 | M | 2 |
| | | **30** | | | | **800** | | **26** |
| **Semester – IV** | | | | | | | | |
| 20SSI17 | DSC 17: Discrete Structures | 4 | 3 | 40 | 60 | 100 | J | 4 |
| 20SSI18 | DSC 18: Java Programming | 5 | 3 | 40 | 60 | 100 | F | 5 |
| 20SSI19 | DSC 19: Database Management Systems | 5 | 3 | 40 | 60 | 100 | C | 5 |
| 20SSI20 | DSC 20: Compiler Design | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI21 | DSC 21: Practical - Java Programming Lab | 4 | 3 | 40 | 60 | 100 | K | 3 |
| 20SSI22 | DSC 22: Practical-Database Management Systems Lab | 4 | 3 | 40 | 60 | 100 | M | 2 |
| 20SSI23 | DSC 23: Practical- Compiler Design Lab | 3 | 3 | 40 | 60 | 100 | L | 2 |
| | | **30** | | | | **700** | | **26** |

| Course Code | Course Title | Ins. Hrs/ week | Examination | | | MAP Code | Credits |
| | | | Dur. Hrs | CIA | ES | Total Marks | | |
|---|---|---|---|---|---|---|---|---|
| **Semester – V** | | | | | | | | |
| 20SSI24 | DSC 24: Operations Research | 4 | 3 | 40 | 60 | 100 | J | 4 |
| 20SSI25 | DSC 25: Design and Analysis of Algorithms | 5 | 3 | 40 | 60 | 100 | D | 4 |
| 20SSI26 | DSC 26:  Web Technology | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI27 | DSC 27: Advanced Java Programming | 4 | 3 | 40 | 60 | 100 | F | 4 |
| 20SSI28 | DSC 28: Practical - Algorithm Lab | 4 | 3 | 20 | 30 | 50 | M | 2 |
| 20SSI29 | DSC 29: Practical- J2EE Lab | 4 | 3 | 40 | 60 | 100 | K | 3 |
| 20SSI30 | DSC 30: Practical - Web Technology Lab | 4 | 3 | 20 | 30 | 50 | M | 2 |
| | | **30** | | | | **600** | | **24** |
| **Semester – VI** | | | | | | | | |
| 20SSI31 | DSC 31: Software Engineering | 4 | 3 | 40 | 60 | 100 | D | 4 |
| 20SSI32 | DSC 32: Advanced Web Technology | 5 | 3 | 40 | 60 | 100 | C | 5 |
| 20SSI33 | DSC 33: Android Programming | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI34 | DSC 34: Distributed Operating Systems | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI35 | DSC 35: Practical - Advanced Web Technology Lab | 4 | 3 | 20 | 30 | 50 | M | 2 |
| 20SSI36 | DSC 36: Practical - Application Development Using Android | 4 | 3 | 40 | 60 | 100 | M | 3 |
| 20SSI37 | DSC 37: Self Study Paper: Practical-UML and CASE Tools | 1 | 3 | - | 50 | 50 | M | 1 |
| 20SSI38 | Mini Project Work and Viva Voce | 2 | - | 40 | 60 | 100* | N | 8 |
| | | **30** | | | | **700** | | **33** |
| **Semester – VII** | | | | | | | | |
| 20SSI39 | Project Work (6 months) | - | - | 80 | 120 | 200** | - | 12 |
| | | | | | | **200** | | **12** |
| **Semester – VIII** | | | | | | | | |
| 20SSI40 | DSC 38: Data Mining and Warehousing | 4 | 3 | 40 | 60 | 100 | C | 3 |

| Code | Course | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 20SSI41 | DSC 39: Crytography and Network Security | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI42 | DSC 40: Software Testing | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI43 | DSC 41: Practical - Cryptography Lab | 4 | 3 | 40 | 60 | 100 | M | 3 |
| 20SSI44 | DSC 42: Practical - Software Testing Lab using Selenium | 3 | 3 | 40 | 60 | 100 | M | 2 |
| 20SSI45/ 20SSI46 | DSE 1/2: Option I - Computer Graphics / Machine Learning | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI47/ 20SSI48 | DSE 3/4: Option II - Practical - Multimedia Techniques: Computer Graphics Lab/ Machine Learning Using R | 4 | 3 | 40 | 60 | 100 | M | 3 |
| | | **30** | | | | **700** | | **26** |
| | **Semester – IX** | | | | | | | |
| 20SSI49 | DSC 43: Digital Image Processing | 5 | 3 | 40 | 60 | 100 | F | 5 |
| 20SSI50 | DSC 44: Python Programming | 5 | 3 | 40 | 60 | 100 | F | 5 |
| 20SSI51 | DSC 45: Cloud Computing | 5 | 3 | 40 | 60 | 100 | C | 4 |
| 20SSI52 | DSC 46: Practical - Image Processing Lab | 4 | 3 | 40 | 60 | 100 | K | 3 |
| 20SSI53 | DSC 47: Practical - Python Programming | 3 | 3 | 20 | 30 | 50 | K | 2 |
| 20SSI54/ 20SSI55 | DSE 5/6: Option III - Animation Techniques / Deep Learning | 5 | 3 | 40 | 60 | 100 | D | 5 |
| 20SSI56/ 20SSI57 | DSE 7/8: Option IV - Practical - Animation Lab / Deep Learning Lab | 3 | 3 | 40 | 60 | 100 | M | 2 |
| | | **30** | | | | **650** | | **26** |
| | **Semester – X** | | | | | | | |
| 20SSI58 | Project Work (6 months) | - | - | 80 | 120 | 200** | - | 15 |
| | | | | | | **200** | | **15** |

**Semester Wise Distribution:**

| Semester | Total Marks | Total Credits |
|----------|-------------|---------------|
| I | 750 | 23 |
| II | 700 | 23 |
| III | 800 | 26 |
| IV | 700 | 26 |
| V | 600 | 24 |
| VI | 700 | 33 |
| VII | 200 | 12 |
| VIII | 700 | 26 |
| IX | 650 | 26 |
| X | 200 | 15 |
| **Total** | **6000** | **234** |

## Regulations:

### 1. Generic Elective (GE) :

An elective course chosen from an unrelated discipline, with an intention to seek exposure beyond discipline/s of choice is called a Generic Elective Courses. The list provided under this category are suggestive in nature and each department has complete freedom to suggest their own courses under this category based on their expertise, specialization, requirements, scope, and need. A DSCs offered in a discipline may be treated as an elective by other discipline and vice versa.

| SEMESTER | Course Code | Course Name | Programme | T/ P | Ins. hours | Map Code | CIA | ES | Total | Credit |
|----------|-------------|-------------|-----------|------|-----------|----------|-----|-----|-------|--------|
| I | 20GEP17 | GEC 1: Digital Electronics | M.Sc. SS | T | 4 | H | 40 | 60 | 100 | 3 |
| I | 20GEP18 | GEC 2: Digital Electronics Lab | M.Sc. SS | p | 3 | L | 40 | 60 | 100 | 2 |
| II | 20GEP19 | GEC 3: Embedded Systems | M.Sc. SS | T | 4 | F | 40 | 60 | 100 | 3 |
| II | 20GEP20 | GEC 4: Embedded Systems Lab | M.Sc. SS | P | 3 | M | 40 | 60 | 100 | 2 |
| II | 20GEP27 | GEC 5: Fundamentals of Accounting | M.Sc. SS | T | 5 | I | 40 | 60 | 100 | 4 |
| III | 20GEP21 | GEC 6: Internet of Things | M.Sc. SS | T | 4 | D | 40 | 60 | 100 | 3 |
| III | 20GEP22 | GEC 7: Practical - Internet of Things | M.Sc. SS | P | 3 | M | 40 | 60 | 100 | 2 |

**List of Courses Offered to MSW Department**

| Semester | Course Code | Course Name | Programme | T/ P | Ins. hours | Map Code | CIA | ES | Total | Credit |
|----------|-------------|-------------|-----------|------|------------|----------|-----|-----|-------|--------|
| III | 20GEP16 | Excel Macro | MSW | P | 4 | K | 40 | 60 | 100 | 3 |

### 2. Additional Credit Courses (ACC)

These courses are intended to bring out and promote the self-learning initiative of the students – where their own motivation is what drives them to complete the course and not external compulsions. This fosters the habit of keeping oneself updated always by means of self-study. It gives the students the opportunities to explore new areas of interest and earn additional credits. Students can take any number of courses under this cafeteria system, four credits will be given on completion of each course. The credits will not be taken for CGPA calculation.

**Two ways to earn Additional Credit:**
i.   MOOC: Apart from completing one MOOC, students can take any number of online courses offered in SWAYAM/NPTEL online portal and earn additional credits. When a student take more number of online courses, the first course will be taken for compulsory MOOC and for the subsequent MOOCs additional 4 credits will be given in the same semester upon clearing the exam and submitting certificate at least 15 days before the release of semester examination results.
ii.  The College will release list of additional credit courses of self-study nature during every semester. Upon clearing the exam, additional credits will be given for each Additional Credit Course.

### 3. Project Work

During the sixth semester, every student should undergo a Mini Project. Report of mini project should be submitted. A guide will be allotted to each student in the department. Student can select any topic in discussion with the guide. The project report shall be subjected to internal evaluation followed by a Viva-Voce.

**Mark Distribution: Mini Project***

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First Review      15  Marks
Second  Review   15  Marks
Work Diary        10 Marks
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                  40 Marks
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During the seventh and tenth semester, every student shall prepare a Major Project report. A guide will be allotted to each student by the department. Student can select any topic in

discussion with the guide. The project report  shall be  subjected to internal evaluation followedby a Viva Voce.

**Mark Distribution: Major Project****

First Review 10 Marks
Second Review 20 Marks
Third Review 20 Marks
Fourth Review 20 Marks
Work Diary 10 Marks

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80 Marks

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**4.** Optional Paper: Student can opt any of the following groups**.**

**Optional Group I:**

Option I: 20SSI45 Computer Graphics
Option II: 20SSI47 Practical -
Computer Graphics Lab Option III:
20SSI54 Animation Techniques
Option IV: 20SSI56 Practical - Animation Lab

### Optional Group II:

Option I: 20SSI46 Machine Learning
Option II: 20SSI48 Practical -
Machine Learning using R Option III:
20SSI55 Deep Learning
Option IV: 20SSI57 Practical - Deep Learning Lab

## 5. Amendments:

The Following changes has been done due to the swapping of Courses between Semester VIII and IX

- 20SSI50, DSC: 44 Cryptography and Network Security is shifted from Semester IX to SemesterVIII with new course code 20SSI41.
- 20SSI53, DSC: 47 Practical – Cryptography Lab is shifted from Semester IX to Semester VIII with new course code 20SSI43.
- 20SSI41, DSC: 39 Python Programming is shifted from Semester VIII to Semester IX with new course code 20SSI50.
- 20SSI43, DSC: 41 Practical – Python Programming is shifted from Semester VIII to Semester IXwith new course code 20SSI53.
- In Semester VIII, the Unit I & V content of DSC 38: Data Mining and warehousing has been revised and the instructional hours per week has been changed from 5 to 4 and the credits from4 to 3
- In Semester IX, the Unit I content of DSC 45: Cloud Computing has been revised and the instructional hours per week for has been changed from 4 to 5 the credits from 3 to 4.

In Semester IX, 20SSI55, DSE 6: Option III: Deep Learning Syllabus has been revised.