

# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |

| Name:         | ANJITHA T V |
|---------------|-------------|
| Register No:  | CCAWMCH017  |
| Admission No: | 28324       |
| Entry Year:   | 2022        |
| Exit Year:    | 2024        |
|               |             |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

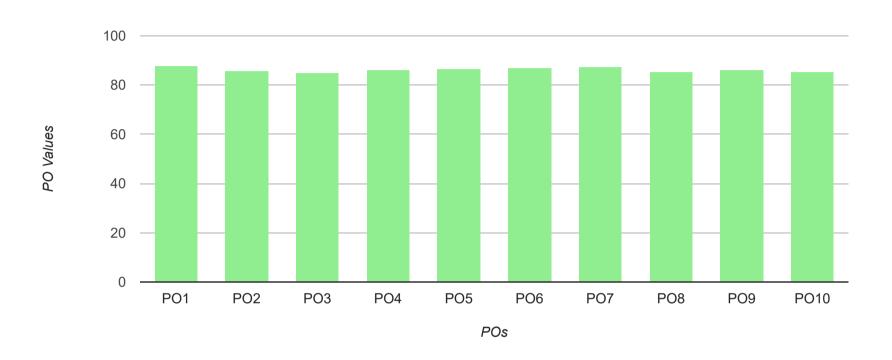
#### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

#### **Program Outcome Attainment**

| PROGRAM OUTCOME PERCENTAGE OF ANJITHA T V |     |     |     |     |     |     |     |     |     |      |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE                                   | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

|  | 87.83 | 85.57 | 84.88 | 86.21 | 86.73 | 86.89 | 87.34 | 85.39 | 86.13 | 85.19 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|  |       |       |       |       |       |       |       |       | 1 '   | 4     |

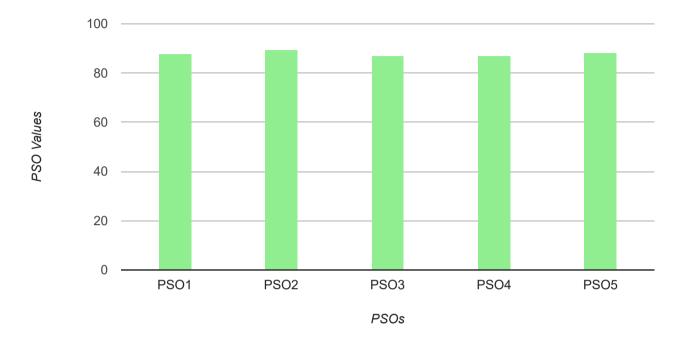


#### **Program Specific Outcome LIST**

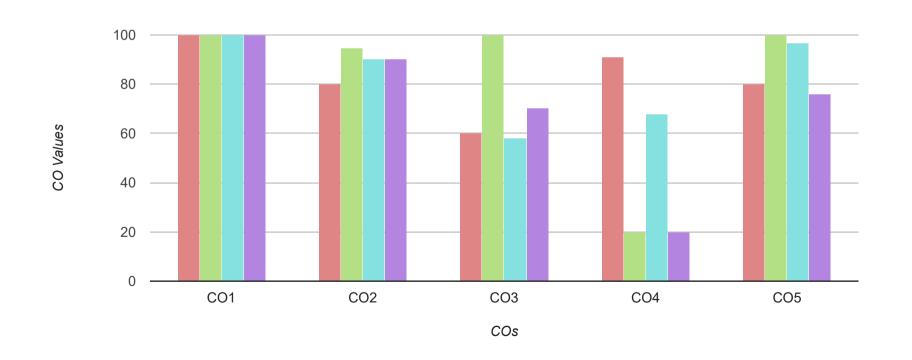
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

#### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF ANJITHA T V |       |       |       |       |       |  |  |
|--|-------|-------|-------|-------|-------|--|--|
| PSO CODE   | PSO2  | PSO3  | PSO4  | PSO5  |       |  |  |
|  | 87.64 | 89.56 | 86.79 | 86.93 | 88.27 |  |  |



| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |       |        |     |
|--|--------------|--------|-------|--------|-------|--------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4   | CO5    | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 100.00 | 80.00 | 60.00  | 90.86 | 80.00  |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 100.00 | 94.67 | 100.00 | 20.00 | 100.00 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 100.00 | 90.40 | 58.00  | 68.00 | 96.80  |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 100.00 | 90.15 | 70.29  | 20.00 | 76.00  |     |



| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

#### SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE CO2 **Course Name** Course Code CO1 CO<sub>3</sub> CO4 CO5 CO<sub>6</sub> CC19PCHE1L01 & **Inorganic Chemistry Practical** 100.00 100.00 100.00 CC19PCHE2L04 CC19PCHE1L02 & **Organic Chemistry Practical** 98.29 98.29 98.29 98.29 CC19PCHE2L05 **CC19PCHE1L03 & Physical Chemistry Practical** 97.87 97.87 97.87 97.87 CC19PCHE2L06 **Group Theory and Chemical Bonding** CC19PCHE2C05 100.00 100.00 100.00 100.00 96.80 48.80 **Coordination Chemistry** CC19PCHE2C06 87.52 65.87 87.20 86.93 90.13 **Reaction Mechanism in Organic Chemistry** CC19PCHE2C07 97.16 90.86 36.00 74.40 29.33 **Electrochemistry, Solid-state Chemistry and Statistical**

CC19PCHE2C08

Thermodynamics

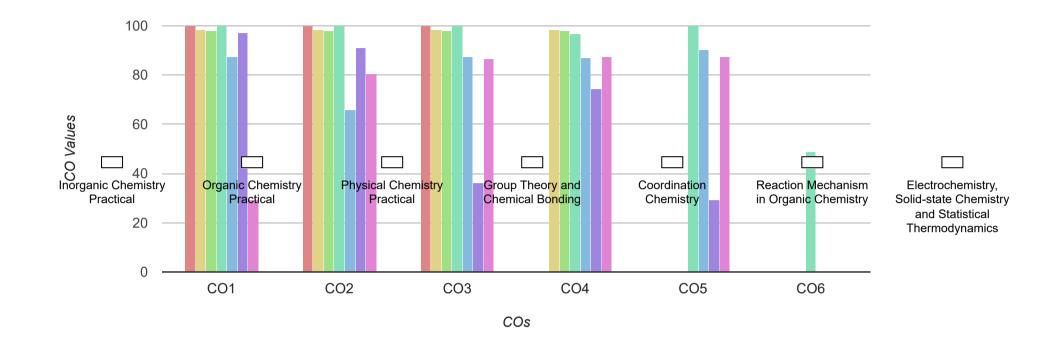
29.33

80.53

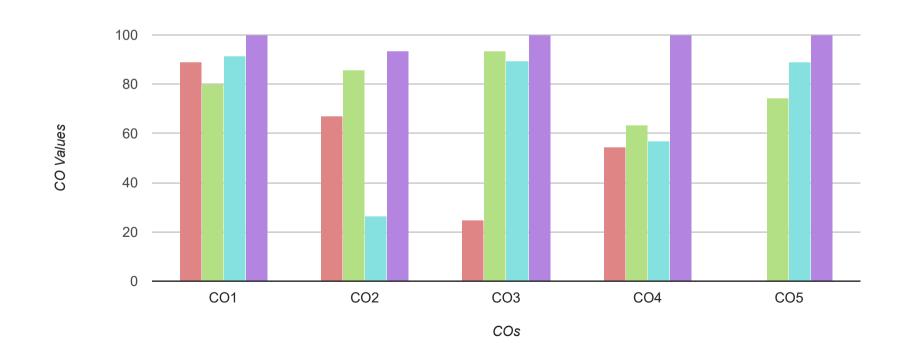
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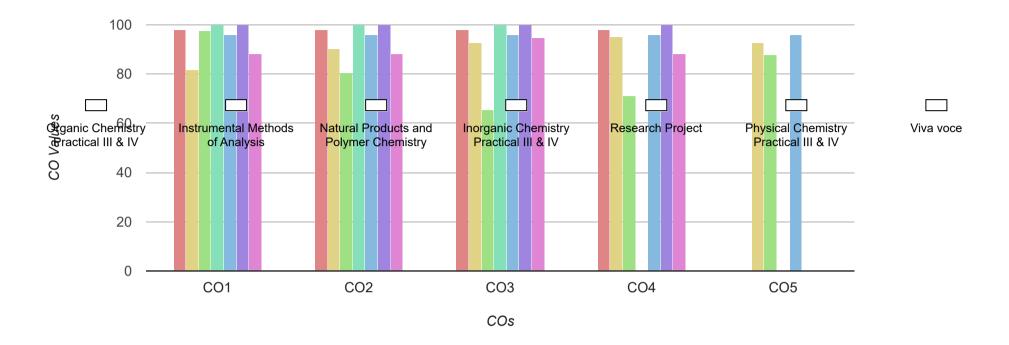


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |        |        |     |
|--|--------------|--------|-------|--------|--------|--------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4    | CO5    | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 89.10  | 67.27 | 24.76  | 54.36  |        |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 79.98  | 85.77 | 93.67  | 63.58  | 74.25  |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 91.42  | 26.22 | 89.53  | 57.10  | 88.94  |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 100.00 | 100.00 | 100.00 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 97.87  | 97.87  | 97.87  | 97.87  |       |     |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 81.63  | 90.37  | 92.51  | 94.96  | 92.83 |     |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 97.58  | 80.36  | 65.52  | 71.22  | 87.92 |     |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |
| Research Project                                   | CC19PCHE4P01                | 95.90  | 95.90  | 95.90  | 95.90  | 95.90 |     |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce  | CC19PCHE4V01                | 88.05  | 88.05  | 94.72  | 88.05  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | AKSHAYA RAMACHANDRAN |
|---------------|----------------------|
| Register No:  | CCAWMCH015           |
| Admission No: | 28322                |
| Entry Year:   | 2022                 |
| Exit Year:    | 2024                 |
|               |                      |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

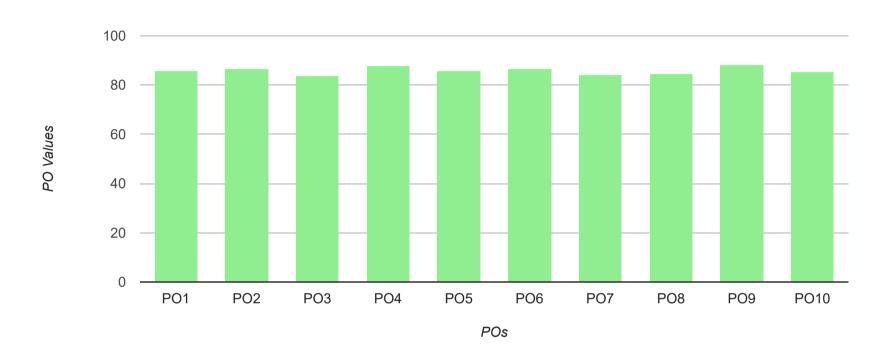
# Program: M.Sc. Chemistry

#### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

#### **Program Outcome Attainment**

| PROGRAM OUTCOME PERCENTAGE OF AKSHAYA RAMACHANDRAN |     |     |     |     |     |     |     |     |     |      |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

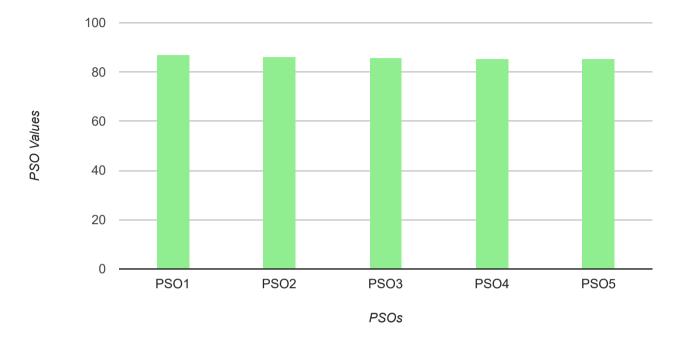


### **Program Specific Outcome LIST**

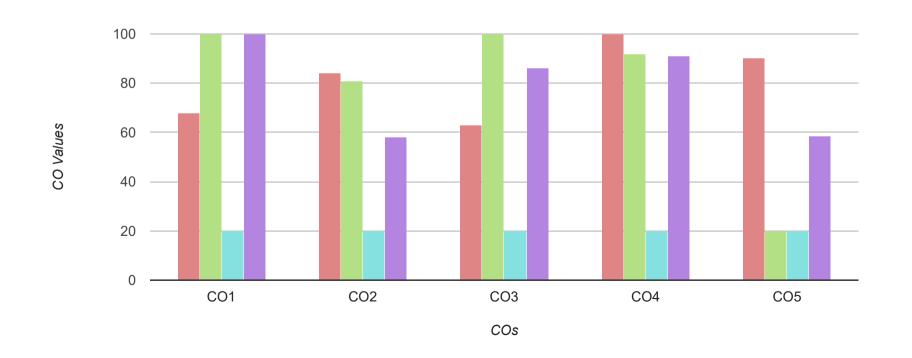
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

#### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF AKSHAYA RAMACHANDRAN |   |  |  |  |  |  |  |  |
|---|---|--|--|--|--|--|--|--|
| PSO CODE  | PSO CODE         PSO1         PSO2         PSO3         PSO4         PSO5 |  |  |  |  |  |  |  |
| 87.06 86.00 85.76 85.42 85.43                               |   |  |  |  |  |  |  |  |

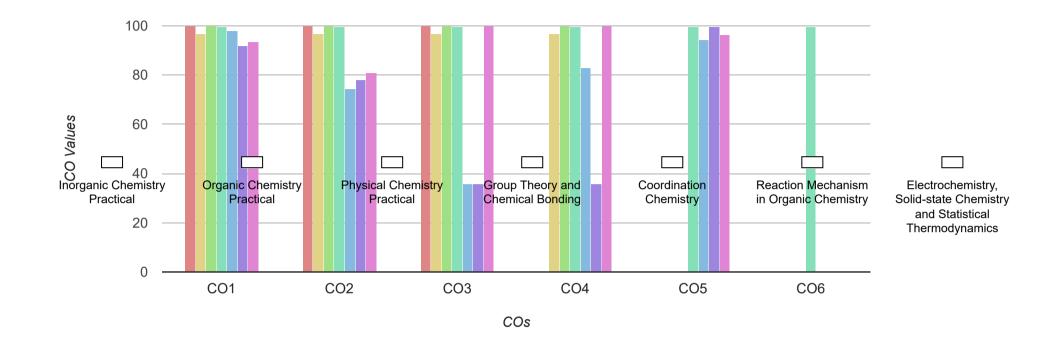


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |        |       |     |
|--|--------------|--------|-------|-------|--------|-------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4    | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 68.00  | 84.00 | 63.08 | 100.00 | 90.40 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 99.80  | 80.89 | 99.80 | 91.80  | 19.80 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 20.00  | 20.00 | 20.00 | 20.00  | 20.00 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 100.00 | 58.00 | 86.29 | 91.11  | 58.40 |     |

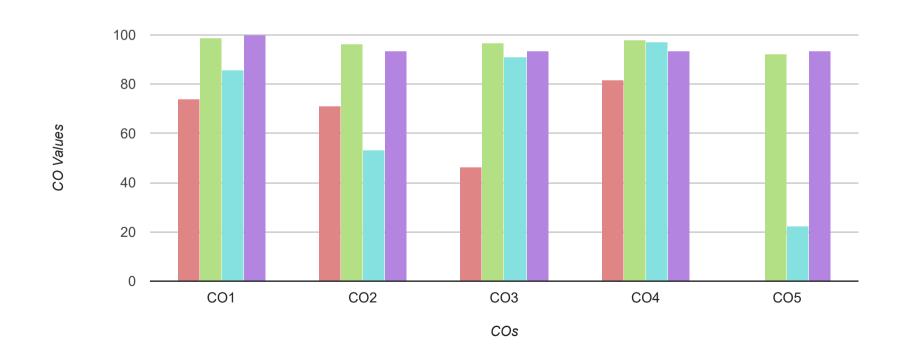


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |       |       |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 96.59  | 96.59  | 96.59  | 96.59  |       |       |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 99.58  | 99.58  | 99.58  | 99.58  | 99.58 | 99.58 |
| Coordination Chemistry   | CC19PCHE2C06                   | 98.11  | 74.34  | 35.94  | 82.87  | 94.25 |       |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 91.79  | 77.86  | 35.62  | 35.62  | 99.62 |       |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 93.60  | 80.80  | 100.00 | 100.00 | 96.51 |       |

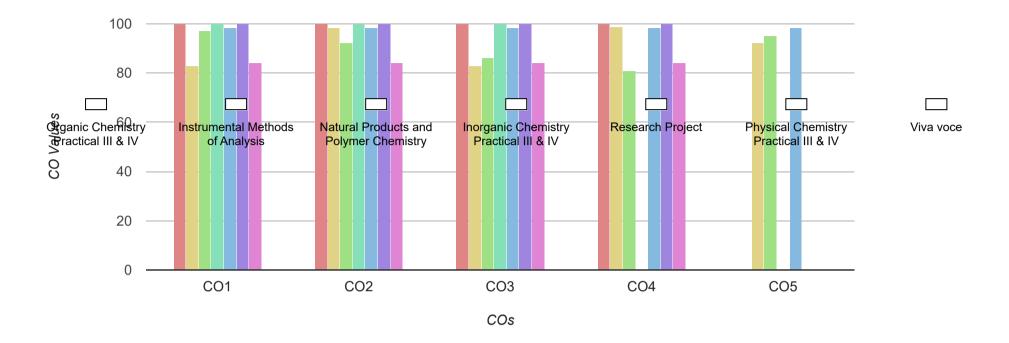


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |       |       |     |
|--|--------------|--------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4   | CO5   | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 73.79  | 70.95 | 46.15 | 81.75 |       |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 98.70  | 96.51 | 96.63 | 98.10 | 92.41 |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 85.70  | 53.41 | 90.95 | 97.27 | 22.29 |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 93.33 | 93.33 | 93.33 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |  |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|--|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 82.81  | 98.52  | 82.81  | 98.81  | 92.41 |     |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 97.27  | 92.11  | 86.09  | 81.09  | 94.96 |     |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |  |
| Research Project                                   | CC19PCHE4P01                | 98.21  | 98.21  | 98.21  | 98.21  | 98.21 |     |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |
| Viva voce  | CC19PCHE4V01                | 84.00  | 84.00  | 84.00  | 84.00  |       |     |  |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | AMRUTHA P.N    |
|---------------|----------------|
| Name.         | AIVINOTTIAT.IV |
| Register No:  | CCAWMCH016     |
| Admission No: | 28323          |
| Entry Year:   | 2022           |
| Exit Year:    | 2024           |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

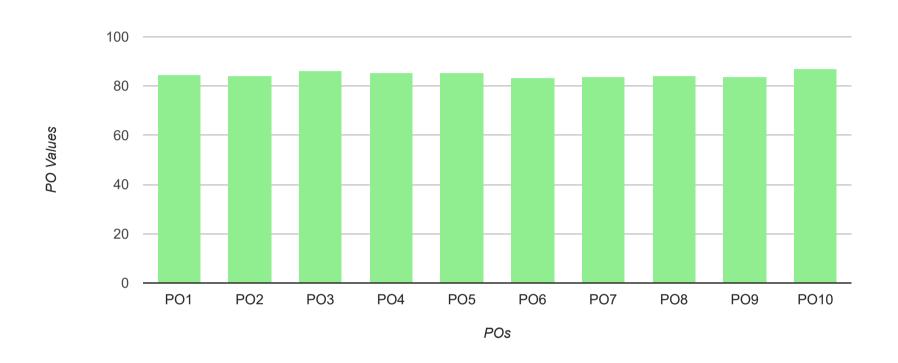
#### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
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| PO1     | Through knowledge in the chosen discipline   |
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| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

#### **Program Outcome Attainment**

| PROGRAM OUTCOME PERCENTAGE OF AMRUTHA P.N. |     |     |     |     |     |     |     |     |     |      |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE                                    | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

|  |  | 84.74 | 84.27 | 86.31 | 85.49 | 85.49 | 83.42 | 83.82 | 84.18 | 83.55 | 87.14 |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

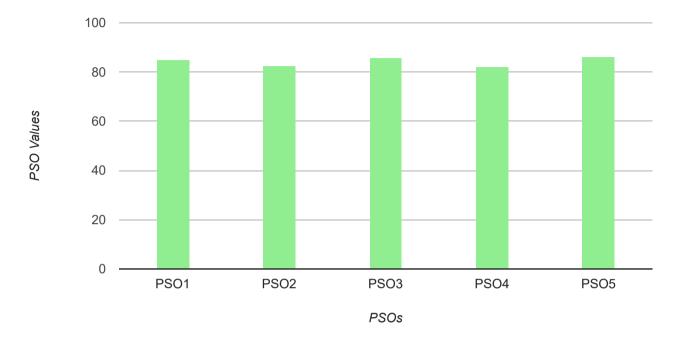


### **Program Specific Outcome LIST**

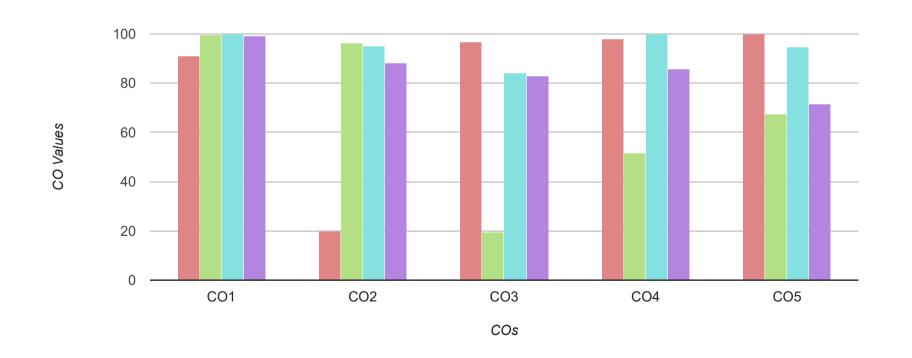
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF AMRUTHA P.N. |       |       |       |       |       |  |  |
|---|-------|-------|-------|-------|-------|--|--|
| PSO CODE  | PSO1  | PSO2  | PSO3  | PSO4  | PSO5  |  |  |
|   | 84.83 | 82.71 | 85.61 | 82.17 | 86.11 |  |  |

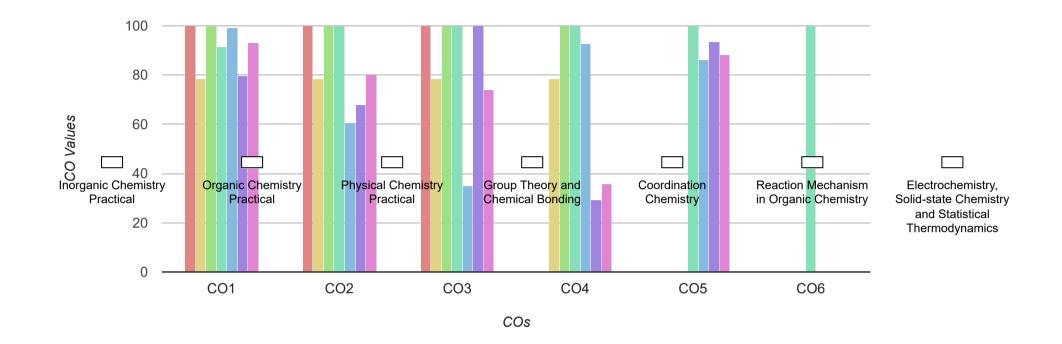


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |        |       |     |
|--|--------------|--------|-------|-------|--------|-------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4    | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 91.03  | 19.92 | 96.72 | 98.14  | 99.92 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 99.68  | 96.20 | 19.68 | 51.68  | 67.68 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 100.00 | 95.08 | 84.00 | 100.00 | 94.67 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 99.12  | 88.04 | 83.12 | 85.79  | 71.69 |     |

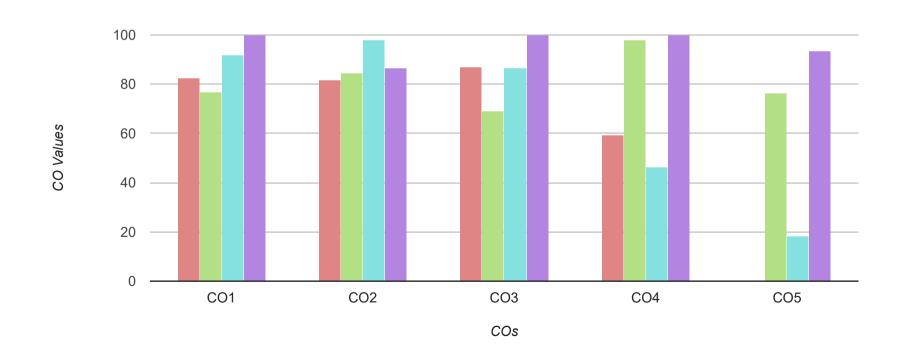


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |        |        |  |  |  |
|--|--------------------------------|--------|--------|--------|--------|--------|--------|--|--|--|
| Course Name  | Course Code                    | CO1    | CO2    | СОЗ    | CO4    | CO5    | CO6    |  |  |  |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |        |        |  |  |  |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 78.29  | 78.29  | 78.29  | 78.29  |        |        |  |  |  |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |        |        |  |  |  |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 91.47  | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |  |  |  |
| Coordination Chemistry   | CC19PCHE2C06                   | 99.14  | 60.74  | 35.14  | 92.74  | 86.34  |        |  |  |  |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 79.78  | 67.73  | 100.00 | 29.33  | 93.33  |        |  |  |  |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 92.95  | 80.15  | 74.02  | 35.62  | 88.10  |        |  |  |  |

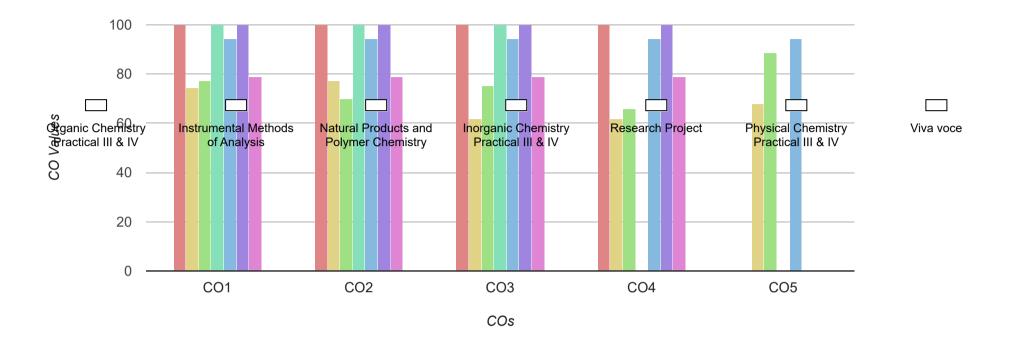


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |        |       |     |  |
|--|--------------|--------|-------|--------|--------|-------|-----|--|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4    | CO5   | CO6 |  |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 82.48  | 81.79 | 87.04  | 59.30  |       |     |  |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 76.85  | 84.42 | 69.27  | 97.92  | 76.29 |     |  |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 91.81  | 98.13 | 86.39  | 46.50  | 18.19 |     |  |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 86.67 | 100.00 | 100.00 | 93.33 |     |  |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |  |  |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|--|--|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |  |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 74.43  | 77.04  | 61.63  | 61.63  | 68.03 |     |  |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 77.41  | 70.09  | 75.21  | 65.96  | 88.82 |     |  |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |  |  |
| Research Project                                   | CC19PCHE4P01                | 94.11  | 94.11  | 94.11  | 94.11  | 94.11 |     |  |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Viva voce  | CC19PCHE4V01                | 78.72  | 78.72  | 78.72  | 78.72  |       |     |  |  |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| CCAWMCH028     |
|----------------|
| 00/11111011020 |
| 28336          |
| 2022           |
| 2024           |
|                |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

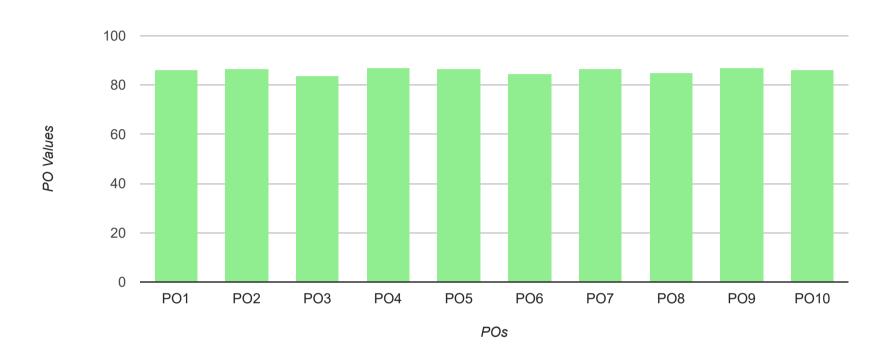
## Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

## **Program Outcome Attainment**

| PROGRAM OUTCOME PERCENTAGE OF SUMAYYA M S |     |     |     |     |     |     |     |     |     |      |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE                                   | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

| 86.29 | 86.47 | 83.69 | 86.83 | 86.66 | 84.54 | 86.63 | 85.08 | 86.86 | 86.05 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |       |       |       |       |       |       |       |       |       |

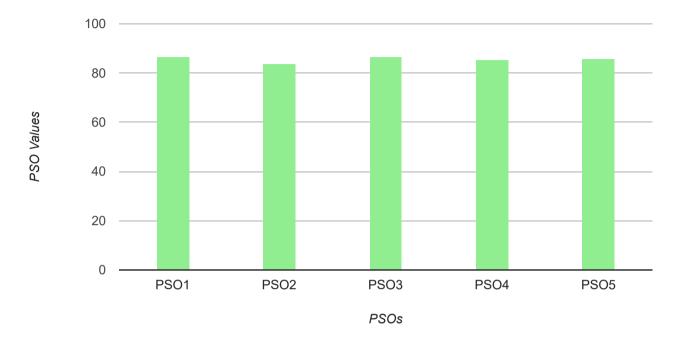


# **Program Specific Outcome LIST**

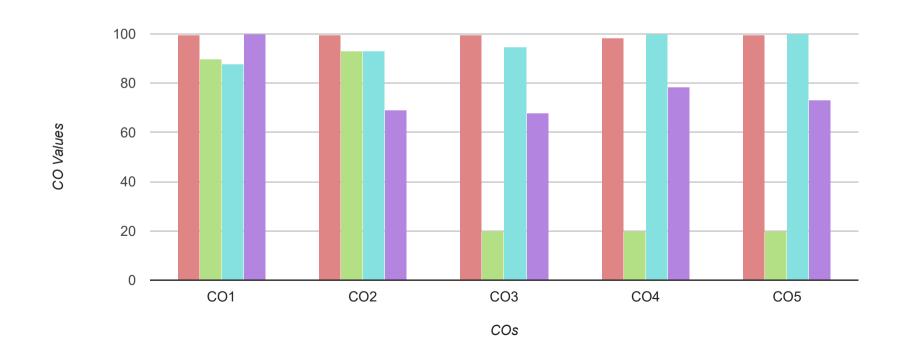
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

## **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF SUMAYYA M S |       |       |       |       |       |  |  |  |  |
|--|-------|-------|-------|-------|-------|--|--|--|--|
| PSO CODE PSO1                                      |       | PSO2  | PSO3  | PSO4  | PSO5  |  |  |  |  |
|  | 86.56 | 83.67 | 86.55 | 85.40 | 85.71 |  |  |  |  |

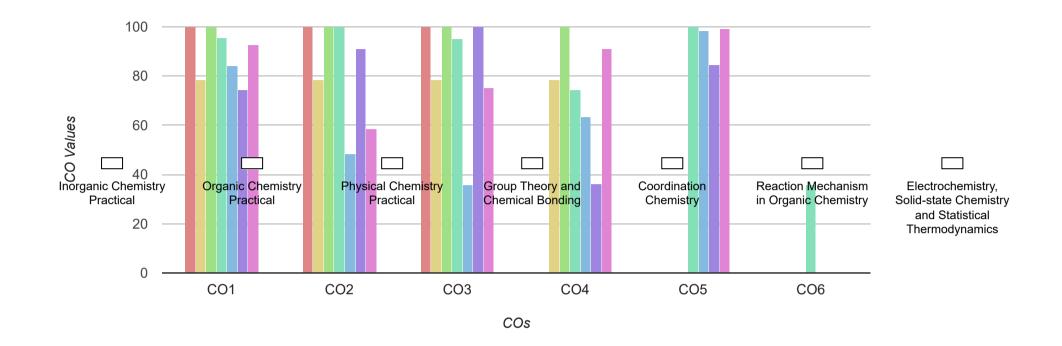


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |        |        |     |  |  |
|--|--------------|-------|-------|-------|--------|--------|-----|--|--|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4    | CO5    | CO6 |  |  |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 99.68 | 99.68 | 99.68 | 98.35  | 99.68  |     |  |  |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 90.00 | 92.89 | 20.00 | 20.00  | 20.00  |     |  |  |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 88.00 | 93.14 | 94.67 | 100.00 | 100.00 |     |  |  |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 99.96 | 69.29 | 67.96 | 78.63  | 73.29  |     |  |  |

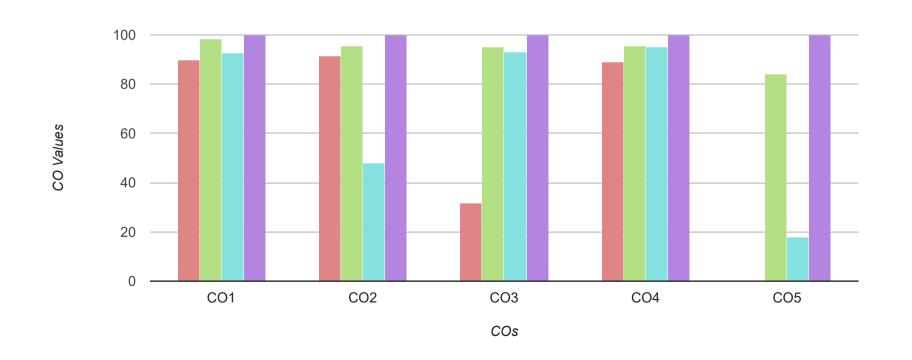


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |  |  |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|--|--|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |  |  |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |       |       |  |  |
| Organic Chemistry Practical  | CC19PCHE1L02 & CC19PCHE2L05    | 78.29  | 78.29  | 78.29  | 78.29  |       |       |  |  |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |  |  |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 95.61  | 99.87  | 95.30  | 74.27  | 99.87 | 35.87 |  |  |
| Coordination Chemistry   | CC19PCHE2C06                   | 84.14  | 48.48  | 35.68  | 63.41  | 98.26 |       |  |  |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 74.40  | 90.86  | 100.00 | 36.00  | 84.64 |       |  |  |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 92.50  | 58.37  | 75.17  | 91.17  | 99.17 |       |  |  |

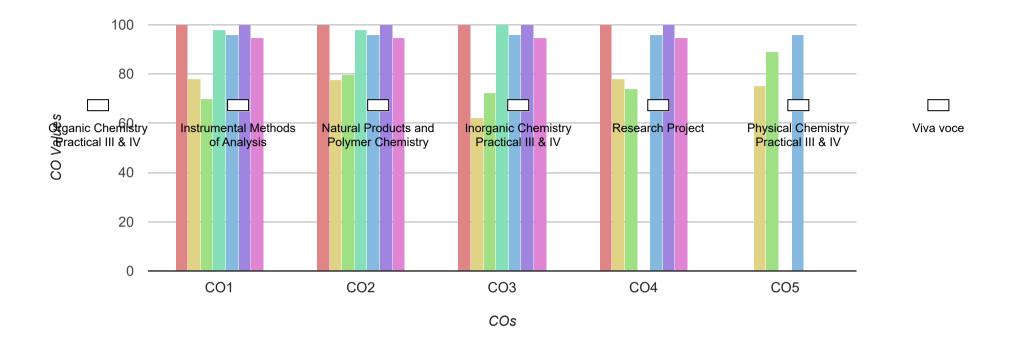


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |        |        |        |        |     |  |
|--|--------------|--------|--------|--------|--------|--------|-----|--|
| Course Name  | Course Code  | CO1    | CO2    | CO3    | CO4    | CO5    | CO6 |  |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 89.81  | 91.54  | 31.51  | 89.11  |        |     |  |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 98.20  | 95.45  | 95.27  | 95.55  | 84.17  |     |  |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 92.52  | 47.85  | 92.91  | 95.29  | 17.81  |     |  |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |     |  |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |  |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|--|
| Course Name  | Course Code                 | CO1    | CO2    | СОЗ    | CO4    | CO5   | CO6 |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 78.22  | 77.78  | 62.22  | 78.22  | 75.02 |     |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 70.09  | 79.54  | 72.49  | 73.99  | 89.00 |     |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 97.87  | 97.87  | 100.00 |        |       |     |  |
| Research Project                                   | CC19PCHE4P01                | 95.90  | 95.90  | 95.90  | 95.90  | 95.90 |     |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |
| Viva voce  | CC19PCHE4V01                | 94.72  | 94.72  | 94.72  | 94.72  |       |     |  |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | SREELAKSHMI K P |
|---------------|-----------------|
| Register No:  | CCAWMCH027      |
| Admission No: | 28335           |
| Entry Year:   | 2022            |
| Exit Year:    | 2024            |
|               |                 |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

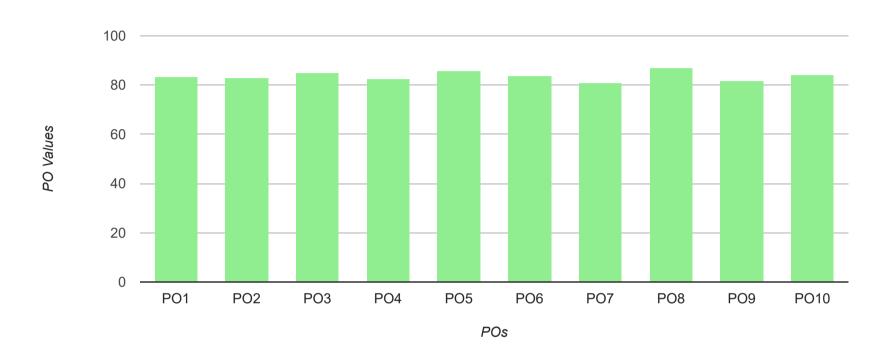
## Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

## **Program Outcome Attainment**

| F | PROGRAM OUTCOME PERCENTAGE OF SREELAKSHMI K P |     |     |     |     |     |     |     |     |     |      |
|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|   | PO CODE                                       | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 |

|--|

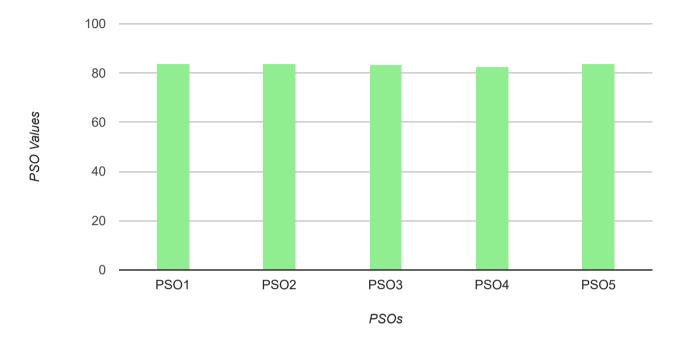


## **Program Specific Outcome LIST**

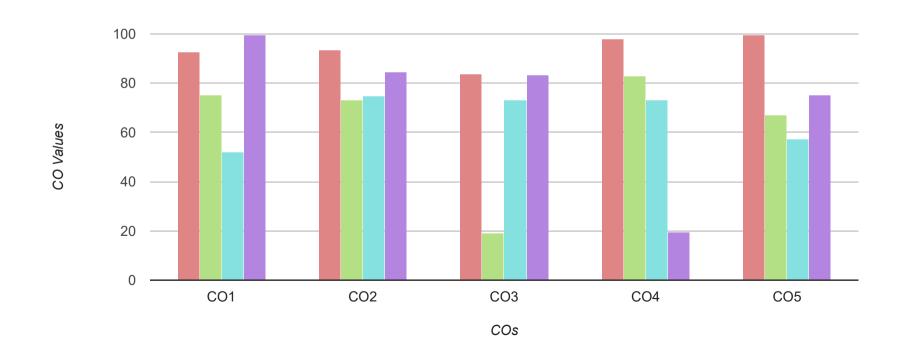
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

# **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF SREELAKSHMI K P |       |       |       |       |       |  |  |
|--|-------|-------|-------|-------|-------|--|--|
| PSO CODE   | PSO1  | PSO2  | PSO3  | PSO4  | PSO5  |  |  |
|  | 83.70 | 83.54 | 83.47 | 82.35 | 83.85 |  |  |

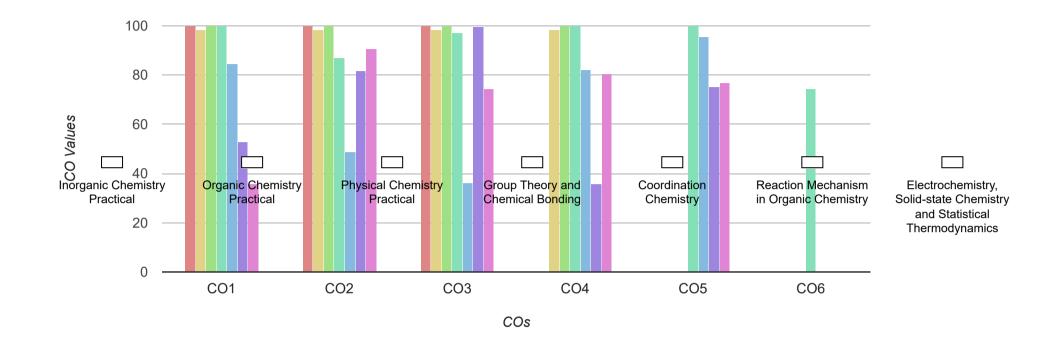


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 92.61 | 93.32 | 83.72 | 98.12 | 99.72 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 75.04 | 73.30 | 19.04 | 83.04 | 67.04 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 52.00 | 74.86 | 73.33 | 73.33 | 57.33 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 99.40 | 84.63 | 83.40 | 19.40 | 75.40 |     |

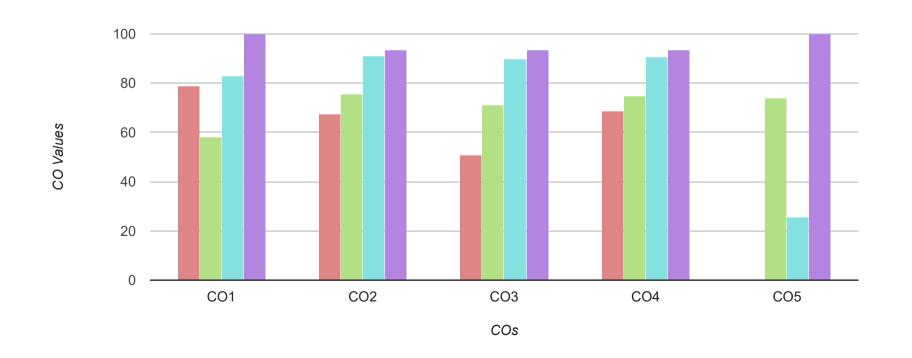


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |       |       |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 98.29  | 98.29  | 98.29  | 98.29  |       |       |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 99.84  | 87.04  | 97.00  | 99.84  | 99.84 | 74.24 |
| Coordination Chemistry   | CC19PCHE2C06                   | 84.64  | 48.80  | 36.00  | 82.08  | 95.73 |       |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 52.71  | 81.73  | 99.65  | 35.65  | 75.33 | _     |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 35.84  | 90.70  | 74.24  | 80.64  | 76.98 |       |

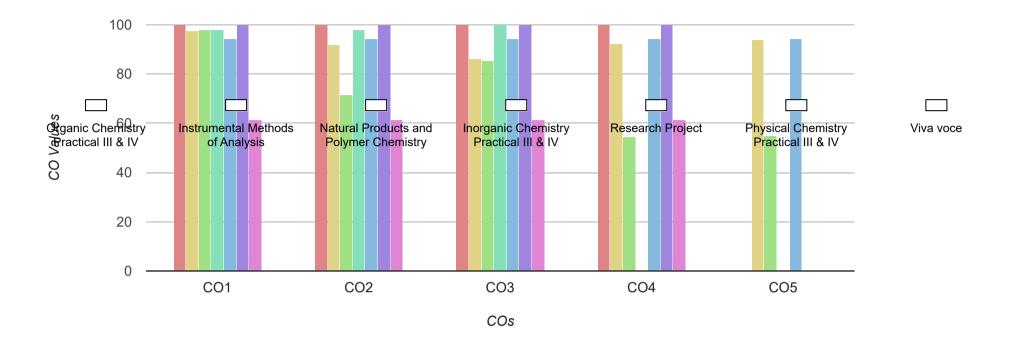


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |       |        |     |
|--|--------------|--------|-------|-------|-------|--------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4   | CO5    | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 78.74  | 67.57 | 50.77 | 68.64 |        |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 58.00  | 75.74 | 70.96 | 74.86 | 74.08  |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 82.92  | 91.11 | 89.83 | 90.50 | 25.75  |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 93.33 | 93.33 | 100.00 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME F | PERCENTAGE                  |        |        |        |        |       |     |
|---|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name                               | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV      | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Instrumental Methods of Analysis          | CC19PCHE4C12                | 97.39  | 91.85  | 86.01  | 92.15  | 94.01 |     |
| Natural Products and Polymer Chemistry    | CC19PCHE4E06                | 98.09  | 71.46  | 85.28  | 54.35  | 54.71 |     |
| Inorganic Chemistry Practical III & IV    | CC19PCHE3L07 & CC19PCHE4L10 | 97.87  | 97.87  | 100.00 |        |       |     |
| Research Project                          | CC19PCHE4P01                | 94.11  | 94.11  | 94.11  | 94.11  | 94.11 |     |
| Physical Chemistry Practical III & IV     | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce                                 | CC19PCHE4V01                | 61.33  | 61.33  | 61.33  | 61.33  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| CCAWMCH024 |
|------------|
| 28331      |
| 2022       |
| 2024       |
|            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

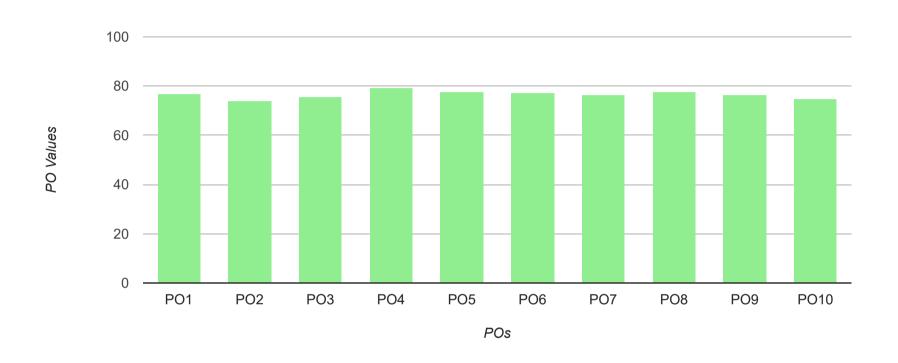
# Program Outcome LIST

| PO CODE | PO DESCRIPTION   |  |  |  |
|---------|--|--|--|--|
| PO1     | Through knowledge in the chosen discipline   |  |  |  |
| PO2     | An aptitude for research   |  |  |  |
| PO3     | An independent and individual way of thinking and communicating ideas  |  |  |  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |  |  |  |
| PO5     | The discretion to engage in academic work with academic integrity  |  |  |  |
| PO6     | To know how to function in multidisciplinary domains   |  |  |  |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |  |  |  |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |  |  |  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |  |  |  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |  |  |  |

# **Program Outcome Attainment**

| PROGRAM OUTCOM | PROGRAM OUTCOME PERCENTAGE OF NAMITHA HYDROSE |     |     |     |     |     |     |     |     |      |
|----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1   | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

| 76.69 74.17 75.65 79.11 77.64 77.43 76.28 77.46 76.36 74.99 |
|---|
|---|

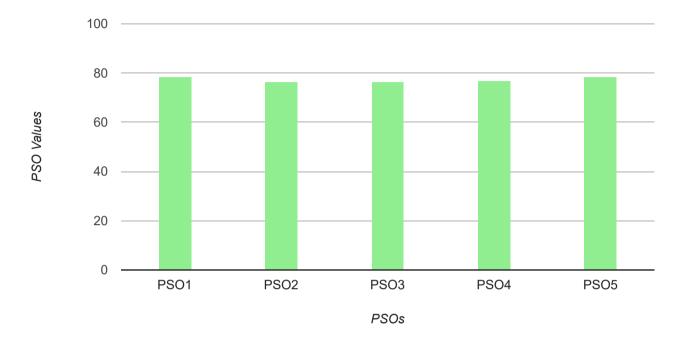


# **Program Specific Outcome LIST**

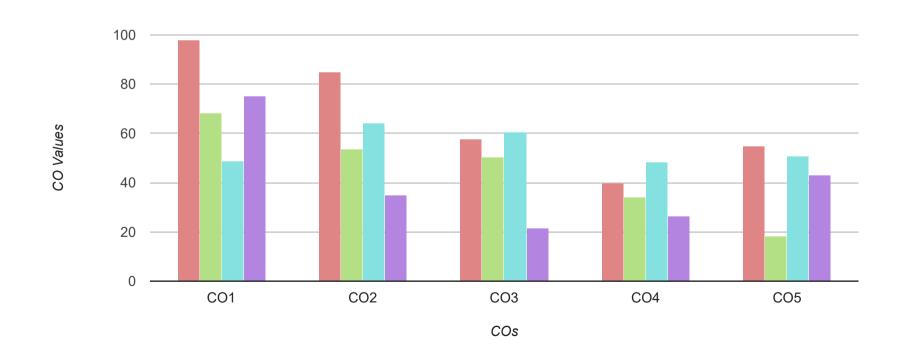
| PSO<br>CODE | PSO DESCRIPTION   |  |  |  |  |  |  |
|-------------|---|--|--|--|--|--|--|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |  |  |  |  |  |  |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |  |  |  |  |  |  |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |  |  |  |  |  |  |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |  |  |  |  |  |  |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |  |  |  |  |  |  |

# **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF NAMITHA HYDROSE |       |       |       |       |       |  |
|--|-------|-------|-------|-------|-------|--|
| PSO CODE   | PSO1  | PSO2  | PSO3  | PSO4  | PSO5  |  |
|  | 78.58 | 76.45 | 76.38 | 76.79 | 78.50 |  |

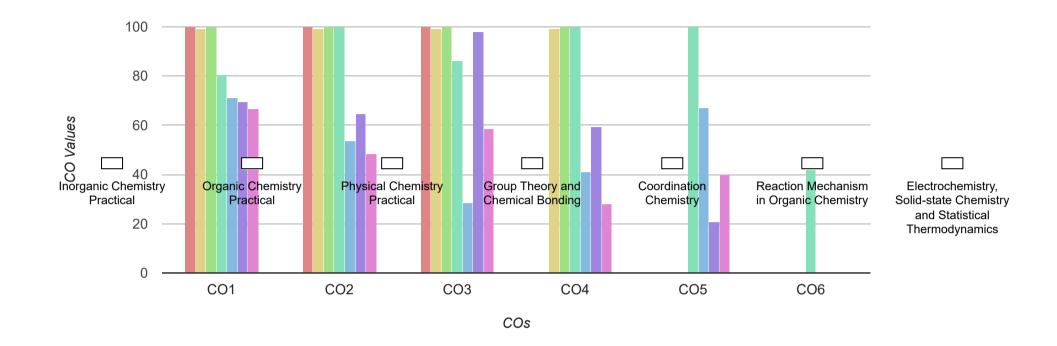


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 97.92 | 85.12 | 57.92 | 39.92 | 54.72 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 68.28 | 53.71 | 50.28 | 34.28 | 18.28 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 48.92 | 64.25 | 60.52 | 48.25 | 50.92 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 75.08 | 35.08 | 21.37 | 26.35 | 43.08 |     |

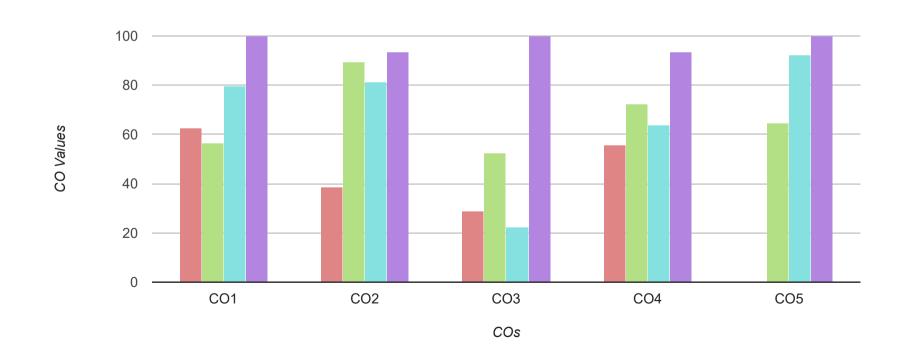


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |       |       |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 99.15  | 99.15  | 99.15  | 99.15  |       |       |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 80.64  | 99.84  | 86.13  | 99.84  | 99.84 | 41.97 |
| Coordination Chemistry   | CC19PCHE2C06                   | 71.11  | 53.71  | 28.37  | 41.17  | 67.22 |       |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 69.51  | 64.67  | 97.95  | 59.55  | 20.62 |       |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 66.72  | 48.27  | 58.72  | 28.05  | 39.88 |       |

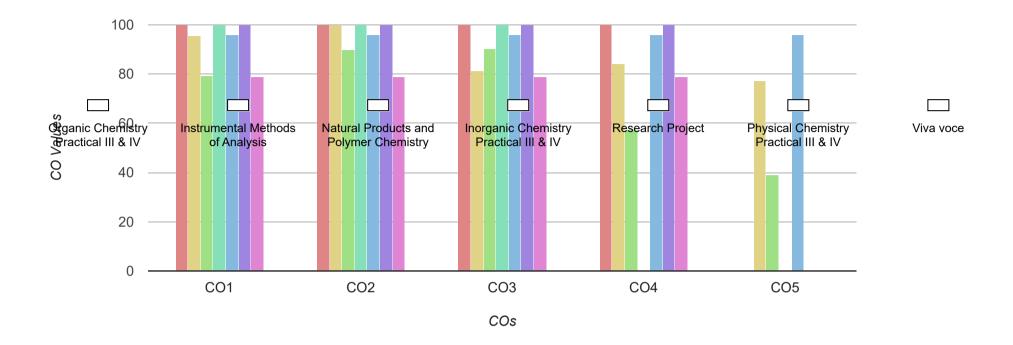


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |       |        |     |
|--|--------------|--------|-------|--------|-------|--------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4   | CO5    | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 62.71  | 38.61 | 29.01  | 55.73 |        |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 56.65  | 89.37 | 52.32  | 72.50 | 64.75  |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 79.78  | 81.11 | 22.55  | 64.01 | 92.24  |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 100.00 | 93.33 | 100.00 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 95.60  | 100.00 | 81.17  | 84.00  | 77.33 |     |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 79.14  | 89.72  | 90.17  | 57.25  | 39.19 |     |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |
| Research Project                                   | CC19PCHE4P01                | 95.90  | 95.90  | 95.90  | 95.90  | 95.90 |     |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce  | CC19PCHE4V01                | 78.72  | 78.72  | 78.72  | 78.72  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| SAHLA.S.S  |
|------------|
|            |
| CCAWMCH026 |
| 28334      |
| 2022       |
| 2024       |
|            |
|            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

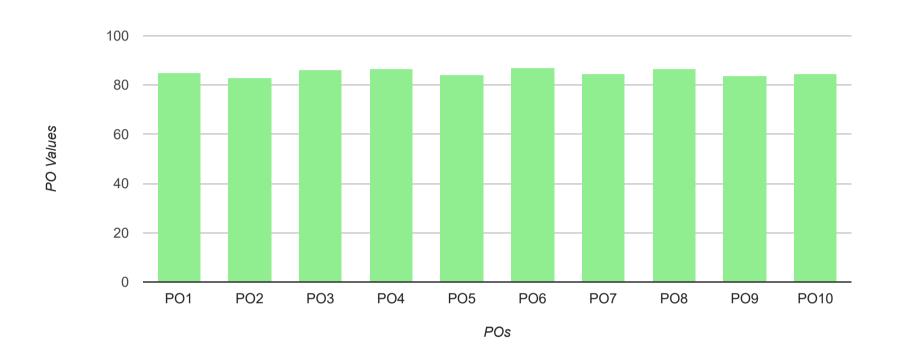
# Program Outcome LIST

| PO CODE | PO DESCRIPTION   |  |  |  |  |
|---------|--|--|--|--|--|
| PO1     | Through knowledge in the chosen discipline   |  |  |  |  |
| PO2     | An aptitude for research   |  |  |  |  |
| PO3     | n independent and individual way of thinking and communicating ideas   |  |  |  |  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |  |  |  |  |
| PO5     | The discretion to engage in academic work with academic integrity  |  |  |  |  |
| PO6     | To know how to function in multidisciplinary domains   |  |  |  |  |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |  |  |  |  |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |  |  |  |  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |  |  |  |  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |  |  |  |  |

# **Program Outcome Attainment**

| PROGRAM OUTCOM | PROGRAM OUTCOME PERCENTAGE OF SAHLA.S.S |     |     |     |     |     |     |     |     |      |
|----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1                                     | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

| 85.15 | 83.12 | 86.35 | 86.49 | 84.08 | 87.09 | 84.49 | 86.56 | 83.86 | 84.35 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |       |       |       |       |       |       |       |       |       |

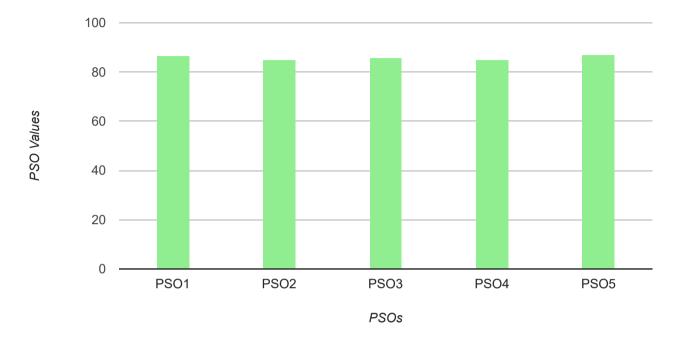


# **Program Specific Outcome LIST**

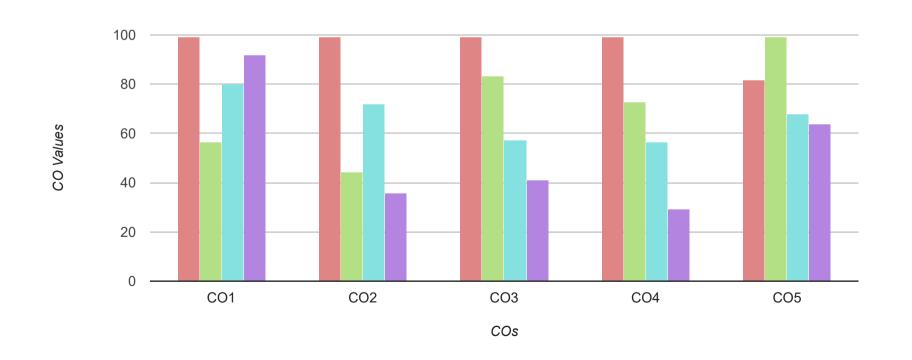
| PSO<br>CODE | PSO DESCRIPTION   |  |  |  |  |  |  |
|-------------|---|--|--|--|--|--|--|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |  |  |  |  |  |  |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |  |  |  |  |  |  |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |  |  |  |  |  |  |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |  |  |  |  |  |  |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |  |  |  |  |  |  |

# **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF SAHLA.S.S |       |       |       |       |       |  |  |
|--|-------|-------|-------|-------|-------|--|--|
| PSO CODE   | PSO1  | PSO2  | PSO3  | PSO4  | PSO5  |  |  |
|  | 86.68 | 84.90 | 85.67 | 85.03 | 86.79 |  |  |



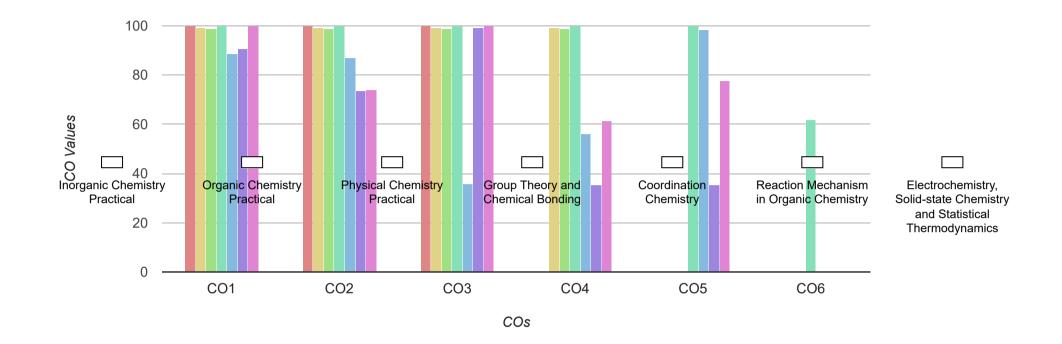
| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 99.28 | 99.28 | 99.28 | 99.28 | 81.68 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 56.69 | 44.50 | 83.36 | 72.69 | 99.36 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 80.00 | 72.00 | 57.33 | 56.57 | 68.00 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 91.72 | 35.72 | 41.05 | 29.32 | 63.72 |     |



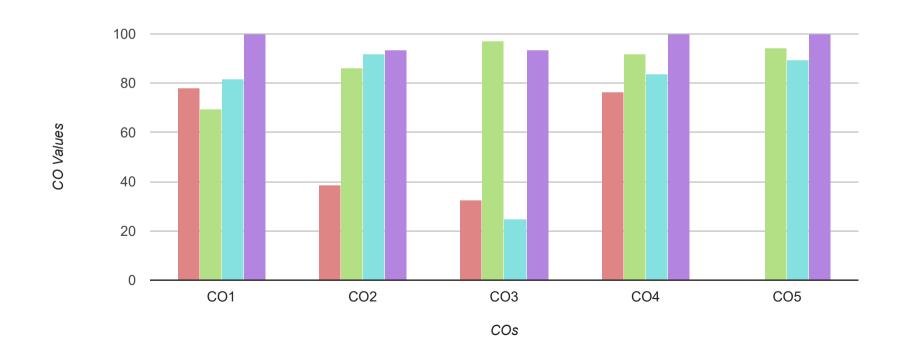
| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

#### SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE **Course Name Course Code** CO1 CO2 CO3 CO4 CO5 CO<sub>6</sub> CC19PCHE1L01 & **Inorganic Chemistry Practical** 100.00 100.00 100.00 CC19PCHE2L04 CC19PCHE1L02 & **Organic Chemistry Practical** 99.15 99.15 99.15 99.15 CC19PCHE2L05 CC19PCHE1L03 & **Physical Chemistry Practical** 98.93 98.93 98.93 98.93 CC19PCHE2L06 **Group Theory and Chemical Bonding** 100.00 100.00 100.00 CC19PCHE2C05 100.00 100.00 61.60 **Coordination Chemistry** CC19PCHE2C06 88.71 87.01 35.81 56.29 98.39 **Reaction Mechanism in Organic Chemistry** CC19PCHE2C07 35.23 90.70 73.63 99.23 35.23 **Electrochemistry, Solid-state Chemistry and Statistical** CC19PCHE2C08 100.00 74.13 100.00 61.33 77.69

Thermodynamics

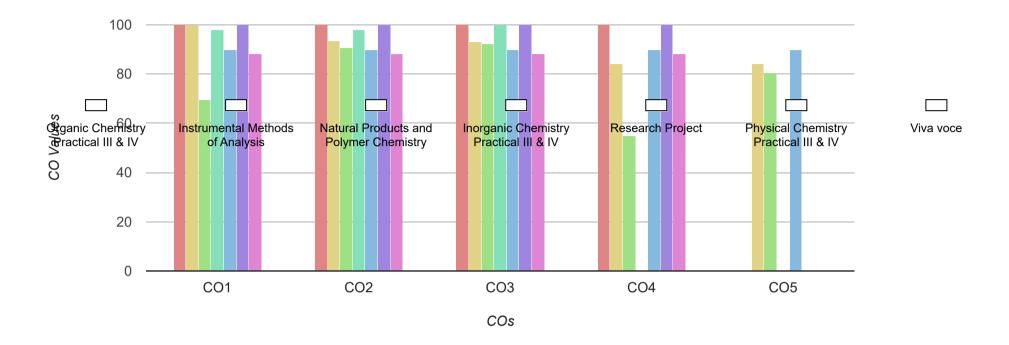


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |        |        |     |
|--|--------------|--------|-------|-------|--------|--------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4    | CO5    | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 78.24  | 38.77 | 32.64 | 76.37  |        |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 69.33  | 86.09 | 97.11 | 92.05  | 94.31  |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 81.72  | 91.85 | 24.78 | 83.71  | 89.24  |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 93.33 | 100.00 | 100.00 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name  | Course Code                 | CO1    | CO2    | СОЗ    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 100.00 | 93.33  | 92.96  | 84.00  | 84.00 |     |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 69.58  | 90.85  | 92.20  | 54.73  | 80.34 |     |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 97.87  | 97.87  | 100.00 |        |       |     |
| Research Project                                   | CC19PCHE4P01                | 90.01  | 90.01  | 90.01  | 90.01  | 90.01 |     |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce  | CC19PCHE4V01                | 88.05  | 88.05  | 88.05  | 88.05  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | NIVEDYA N  |
|---------------|------------|
| Register No:  | CCAWMCH025 |
| Admission No: | 28332      |
| Entry Year:   | 2022       |
| Exit Year:    | 2024       |
|               |            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

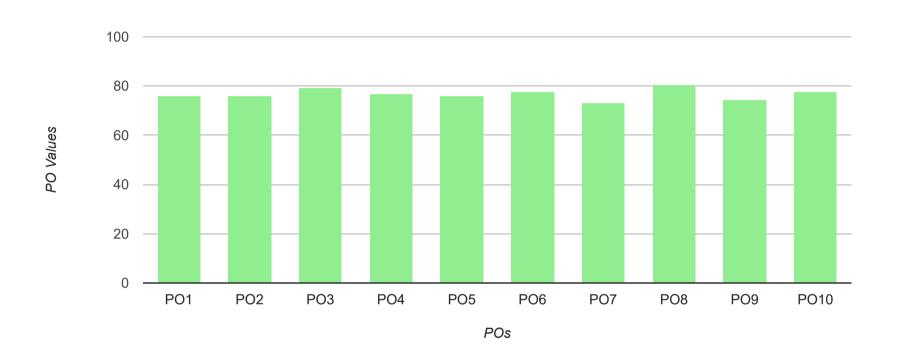
# Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

#### **Program Outcome Attainment**

| PROGRAM OUTCOME PERCENTAGE OF NIVEDYA N |     |     |     |     |     |     |     |     |     |      |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE                                 | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 |

| 76.21 | 76.06 | 79.32 | 76.69 | 76.14 | 77.44 | 73.17 | 80.31 | 74.33 | 77.75 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |       |       |       |       |       |       |       |       |       |

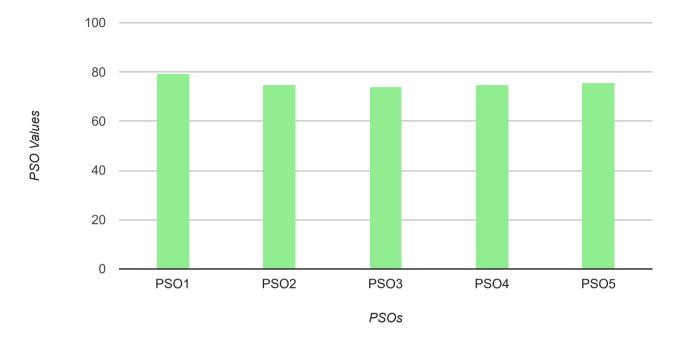


# **Program Specific Outcome LIST**

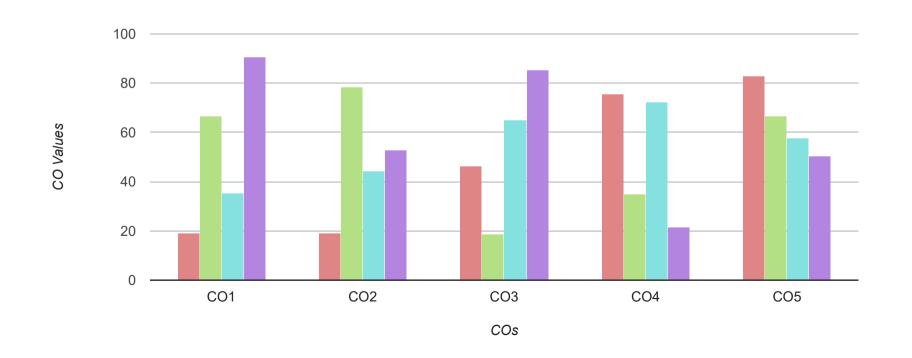
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

# **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF NIVEDYA N |       |       |       |       |       |  |  |  |
|--|-------|-------|-------|-------|-------|--|--|--|
| PSO CODE PSO1 PSO2 PSO3 PSO4 PSO5                |       |       |       |       |       |  |  |  |
|  | 79.35 | 74.89 | 73.87 | 74.94 | 75.45 |  |  |  |

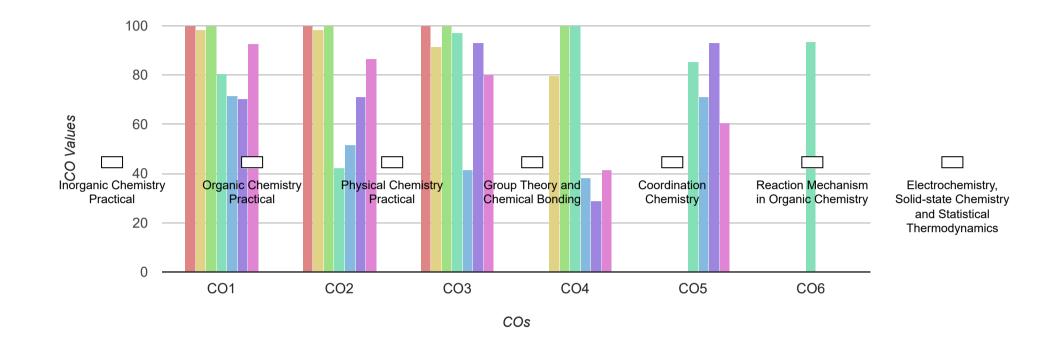


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |  |
|--|--------------|-------|-------|-------|-------|-------|-----|--|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |  |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 19.00 | 19.00 | 46.20 | 75.73 | 83.00 |     |  |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 66.80 | 78.36 | 18.80 | 34.80 | 66.80 |     |  |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 35.20 | 44.34 | 64.91 | 72.53 | 57.60 |     |  |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 90.52 | 52.98 | 85.19 | 21.72 | 50.52 |     |  |

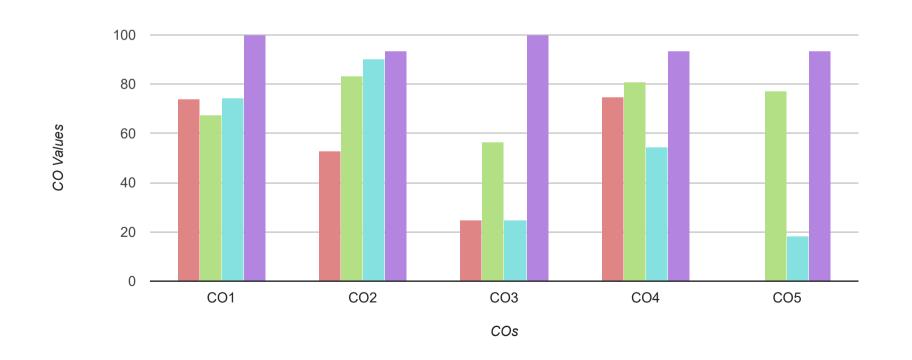


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |  |  |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|--|--|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |  |  |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |       |       |  |  |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 98.29  | 98.29  | 91.63  | 79.63  |       |       |  |  |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |  |  |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 80.53  | 42.13  | 97.26  | 100.00 | 85.33 | 93.33 |  |  |
| Coordination Chemistry   | CC19PCHE2C06                   | 71.52  | 51.51  | 41.27  | 38.07  | 71.14 |       |  |  |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 70.25  | 71.01  | 92.95  | 28.95  | 92.95 |       |  |  |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 92.85  | 86.45  | 80.05  | 41.65  | 60.59 |       |  |  |

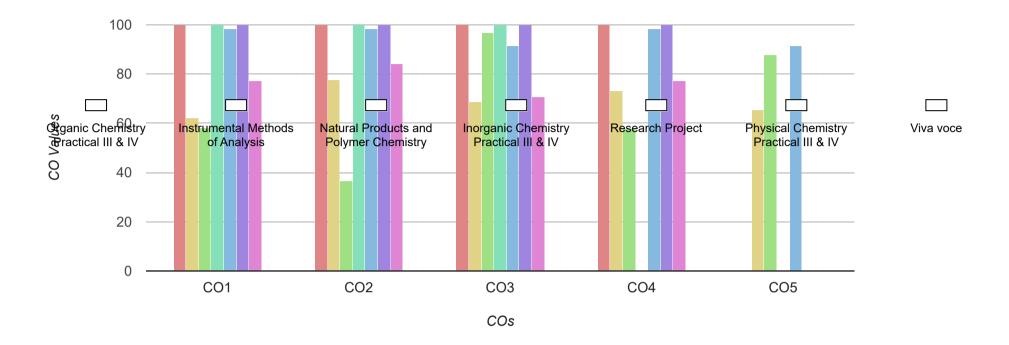


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |       |       |     |
|--|--------------|--------|-------|--------|-------|-------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4   | CO5   | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 73.87  | 52.84 | 24.84  | 74.98 |       |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 67.56  | 83.42 | 56.43  | 80.86 | 77.25 |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 74.27  | 90.35 | 24.78  | 54.64 | 18.19 |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 100.00 | 93.33 | 93.33 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 62.22  | 77.78  | 68.62  | 73.24  | 65.42 |     |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 57.93  | 36.58  | 96.71  | 57.55  | 87.68 |     |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |
| Research Project                                   | CC19PCHE4P01                | 98.21  | 98.21  | 91.54  | 98.21  | 91.54 |     |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce  | CC19PCHE4V01                | 77.33  | 84.00  | 70.67  | 77.33  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | ANN MARIYA K.P. |
|---------------|-----------------|
| Register No:  | CCAWMCH018      |
| Admission No: | 28325           |
| Entry Year:   | 2022            |
| Exit Year:    | 2024            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

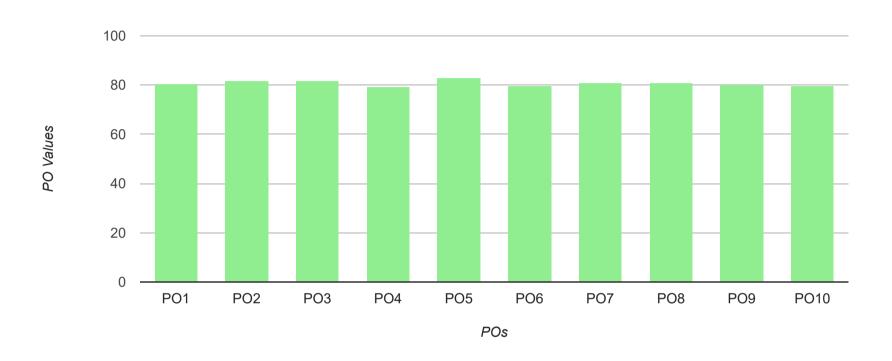
### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

### **Program Outcome Attainment**

| PROGRAM OUTCOME PERCENTAGE OF ANN MARIYA K.P. |     |     |     |     |     |     |     |     |     |      |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE                                       | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

| 80.42 | 81.55 | 81.83 | 79.18 | 82.99 | 79.74 | 80.72 | 80.75 | 80.28 | 79.69 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |       |       |       |       |       |       |       |       |       |

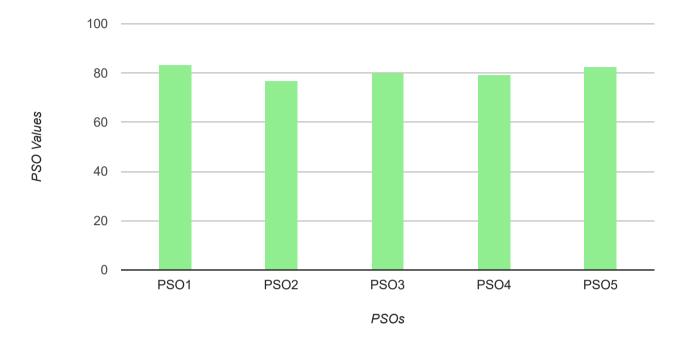


## **Program Specific Outcome LIST**

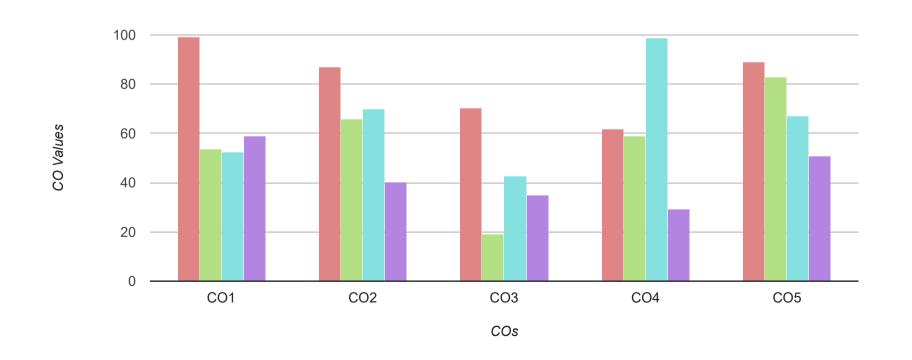
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF ANN MARIYA K.P. |   |       |       |       |       |  |  |  |
|--|---|-------|-------|-------|-------|--|--|--|
| PSO CODE   | CODE         PSO1         PSO2         PSO3         PSO4         PSO5 |       |       |       |       |  |  |  |
|  | 83.14   | 76.83 | 80.12 | 79.42 | 82.33 |  |  |  |

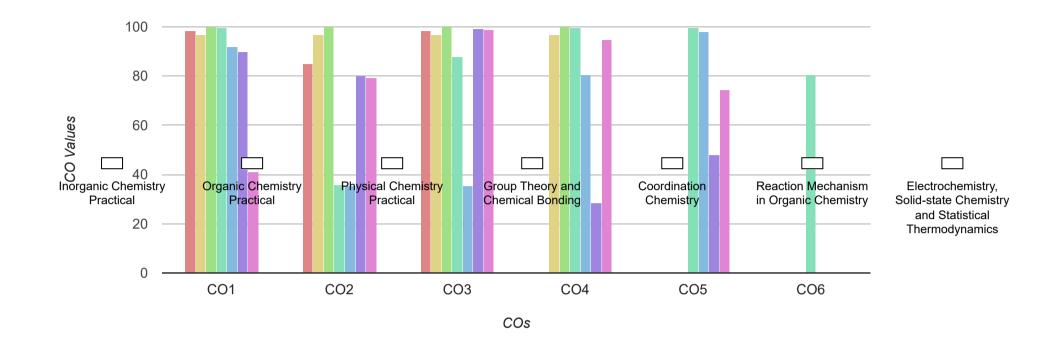


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | соз   | CO4   | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 99.12 | 87.12 | 70.32 | 61.79 | 89.12 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 53.63 | 65.82 | 18.96 | 58.96 | 82.96 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 52.48 | 69.88 | 42.88 | 98.88 | 66.88 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 58.80 | 40.13 | 34.80 | 29.47 | 50.80 |     |

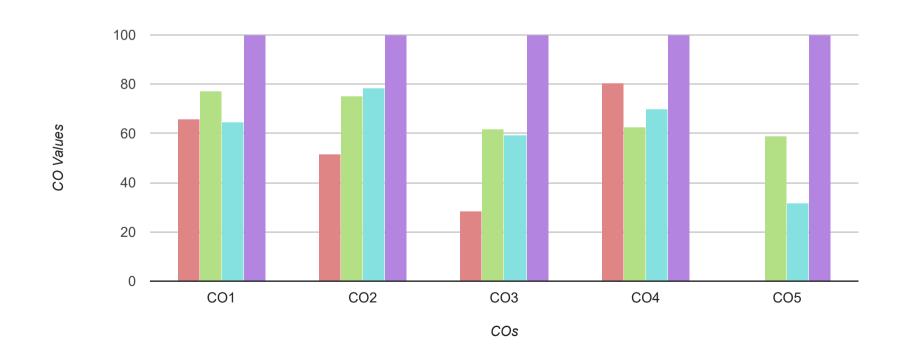


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |  |  |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|--|--|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |  |  |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 98.29  | 84.96  | 98.29  |        |       |       |  |  |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 96.59  | 96.59  | 96.59  | 96.59  |       |       |  |  |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |  |  |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 99.71  | 35.71  | 87.90  | 99.71  | 99.71 | 80.51 |  |  |
| Coordination Chemistry   | CC19PCHE2C06                   | 91.84  | 35.52  | 35.52  | 80.32  | 98.10 |       |  |  |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 89.96  | 80.00  | 99.20  | 28.53  | 48.00 |       |  |  |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 40.92  | 79.32  | 98.78  | 94.52  | 74.20 |       |  |  |

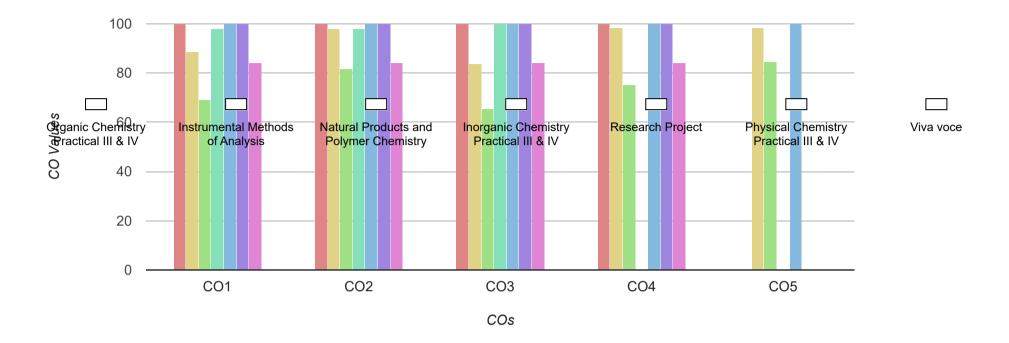


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |        |        |        |        |     |  |  |
|--|--------------|--------|--------|--------|--------|--------|-----|--|--|
| Course Name  | Course Code  | CO1    | CO2    | CO3    | CO4    | CO5    | CO6 |  |  |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 65.71  | 51.57  | 28.37  | 80.48  |        |     |  |  |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 77.33  | 75.27  | 61.63  | 62.48  | 58.82  |     |  |  |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 64.83  | 78.46  | 59.53  | 69.96  | 31.81  |     |  |  |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |     |  |  |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |        |     |  |
|--|-----------------------------|--------|--------|--------|--------|--------|-----|--|
| Course Name  | Course Code                 | CO1    | CO2    | СОЗ    | CO4    | CO5    | CO6 |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |        |     |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 88.62  | 97.78  | 83.82  | 98.22  | 98.22  |     |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 69.03  | 81.62  | 65.61  | 75.15  | 84.72  |     |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 97.87  | 97.87  | 100.00 |        |        |     |  |
| Research Project                                   | CC19PCHE4P01                | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |     |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |        |     |  |
| Viva voce  | CC19PCHE4V01                | 84.00  | 84.00  | 84.00  | 84.00  |        |     |  |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| JIYA K J   |
|------------|
| CCAWMCH021 |
| 28328      |
| 2022       |
| 2024       |
|            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

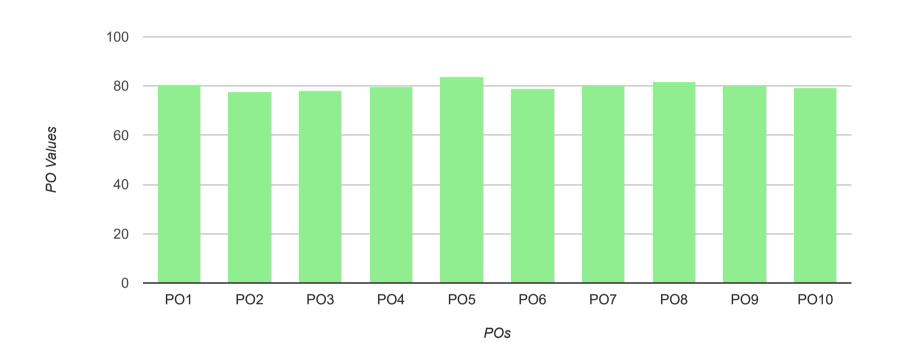
## **Program Outcome LIST**

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

### **Program Outcome Attainment**

| PROGRAM OUTCOM | PROGRAM OUTCOME PERCENTAGE OF JIYA K J |     |     |     |     |     |     |     |     |      |
|----------------|--|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1                                    | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 |

| 80.67 77.57 78.04 79.53 83.64 79.02 79.97 81.78 80.08 79.24 |
|---|
|---|

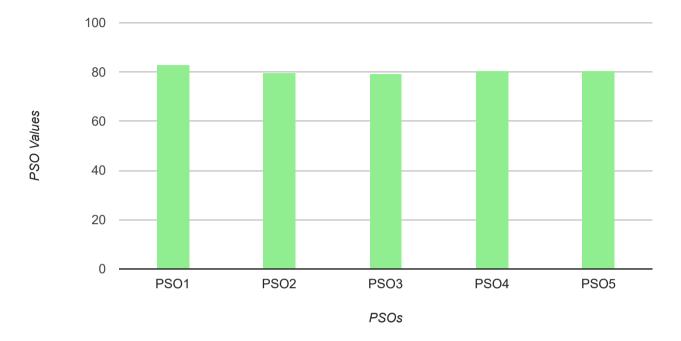


## **Program Specific Outcome LIST**

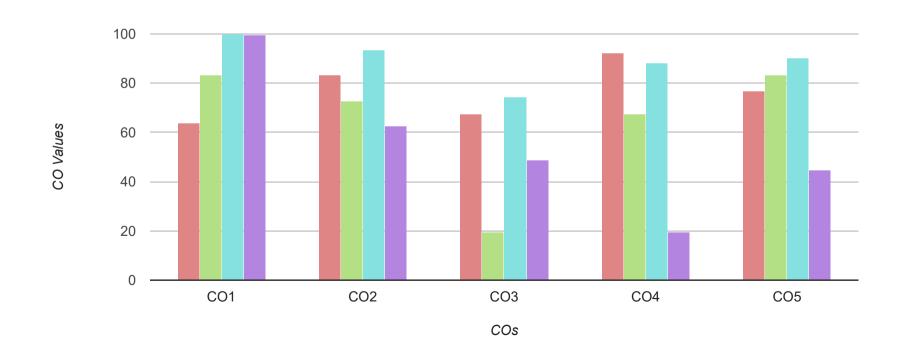
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF JIYA K J |       |       |       |       |       |  |  |  |
|---|-------|-------|-------|-------|-------|--|--|--|
| PSO CODE  | PSO1  | PSO2  | PSO3  | PSO4  | PSO5  |  |  |  |
|   | 82.97 | 79.49 | 79.23 | 80.45 | 80.45 |  |  |  |

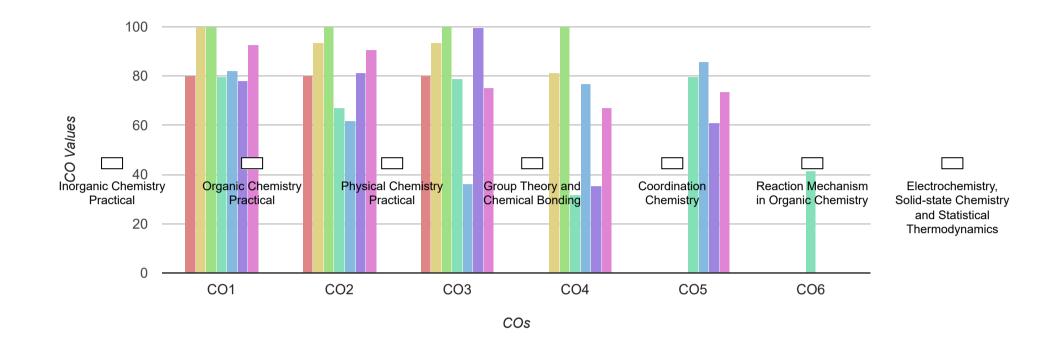


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |       |       |     |  |  |
|--|--------------|--------|-------|-------|-------|-------|-----|--|--|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4   | CO5   | CO6 |  |  |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 63.76  | 83.32 | 67.32 | 92.21 | 76.92 |     |  |  |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 83.52  | 72.85 | 19.52 | 67.52 | 83.52 |     |  |  |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 100.00 | 93.60 | 74.40 | 88.36 | 90.40 |     |  |  |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 99.56  | 62.76 | 48.89 | 19.56 | 44.70 |     |  |  |

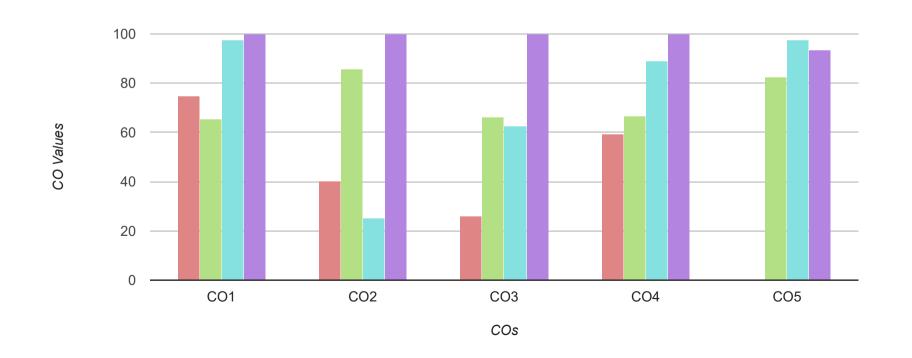


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |  |  |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|--|--|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |  |  |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 80.00  | 80.00  | 80.00  |        |       |       |  |  |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 100.00 | 93.33  | 93.33  | 81.33  |       |       |  |  |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |  |  |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 79.84  | 67.04  | 78.68  | 31.84  | 79.84 | 41.44 |  |  |
| Coordination Chemistry   | CC19PCHE2C06                   | 82.08  | 61.60  | 36.00  | 76.96  | 85.78 |       |  |  |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 77.86  | 81.23  | 99.52  | 35.52  | 61.12 |       |  |  |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 92.60  | 90.73  | 75.26  | 67.00  | 73.66 |       |  |  |

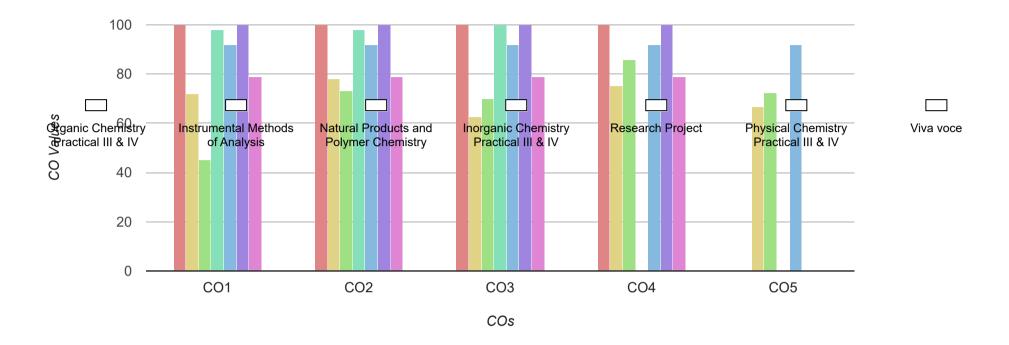


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |        |        |        |       |     |  |  |
|--|--------------|--------|--------|--------|--------|-------|-----|--|--|
| Course Name  | Course Code  | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |  |  |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 74.72  | 40.37  | 25.97  | 59.30  |       |     |  |  |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 65.56  | 85.74  | 66.35  | 66.62  | 82.71 |     |  |  |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 97.41  | 25.07  | 62.66  | 88.83  | 97.50 |     |  |  |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 100.00 | 100.00 | 100.00 | 93.33 |     |  |  |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |  |  |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|--|--|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |  |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 72.12  | 78.15  | 62.52  | 75.32  | 66.52 |     |  |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 44.98  | 73.06  | 69.99  | 85.76  | 72.46 |     |  |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 97.87  | 97.87  | 100.00 |        |       |     |  |  |
| Research Project                                   | CC19PCHE4P01                | 91.81  | 91.81  | 91.81  | 91.81  | 91.81 |     |  |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Viva voce  | CC19PCHE4V01                | 78.72  | 78.72  | 78.72  | 78.72  |       |     |  |  |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | ANUGRAHA C.R |
|---------------|--------------|
| Register No:  | CCAWMCH019   |
| Admission No: | 28326        |
| Entry Year:   | 2022         |
| Exit Year:    | 2024         |
| Exit rour.    | 2024         |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

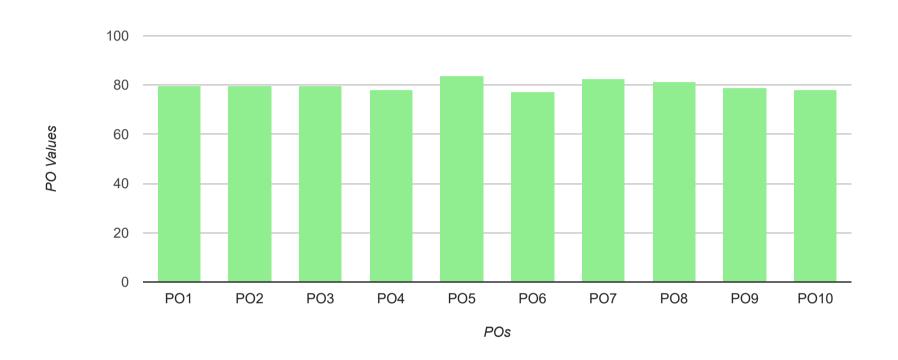
### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

#### **Program Outcome Attainment**

| PROGRAM OUTCOM | PROGRAM OUTCOME PERCENTAGE OF ANUGRAHA C.R |     |     |     |     |     |     |     |     |      |
|----------------|--|-----|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1  | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 |

| 79.69 | 79.52 | 79.74 | 78.14 | 83.63 | 77.18 | 82.33 | 81.11 | 78.66 | 78.22 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |       |       |       |       |       |       |       |       |       |

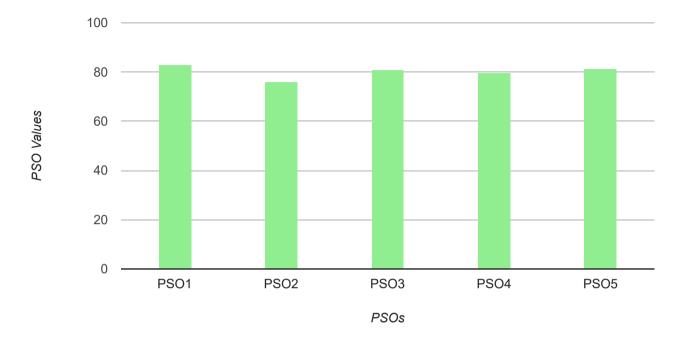


# **Program Specific Outcome LIST**

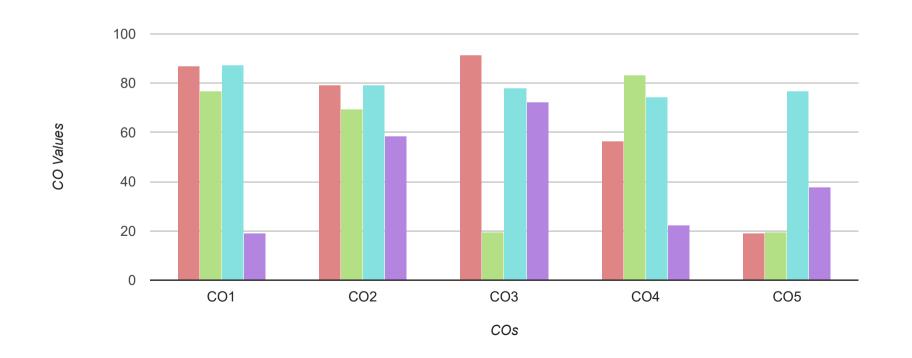
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF ANUGRAHA C.R |       |       |       |       |       |  |  |  |  |
|---|-------|-------|-------|-------|-------|--|--|--|--|
| PSO CODE  | PSO1  | PSO2  | PSO3  | PSO4  | PSO5  |  |  |  |  |
|   | 82.94 | 76.19 | 81.00 | 79.79 | 81.31 |  |  |  |  |



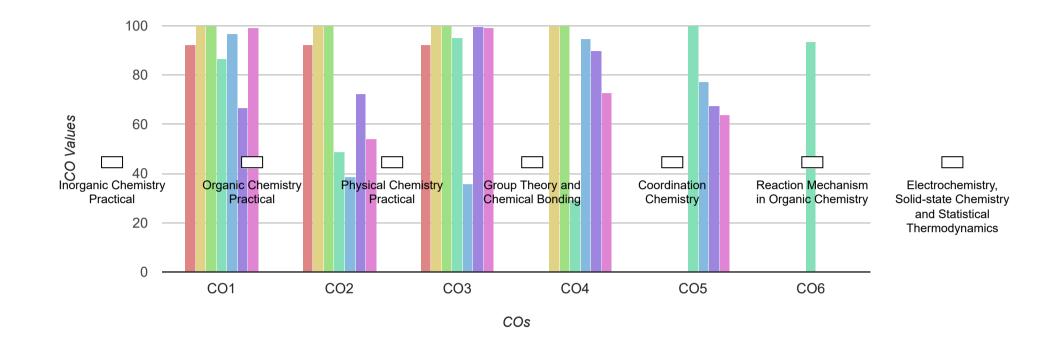
| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |  |  |  |
|--|--------------|-------|-------|-------|-------|-------|-----|--|--|--|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |  |  |  |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 86.84 | 79.28 | 91.28 | 56.61 | 19.28 |     |  |  |  |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 76.73 | 69.53 | 19.40 | 83.40 | 19.40 |     |  |  |  |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 87.40 | 79.40 | 78.07 | 74.26 | 77.00 |     |  |  |  |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 19.16 | 58.54 | 72.49 | 22.36 | 37.83 |     |  |  |  |



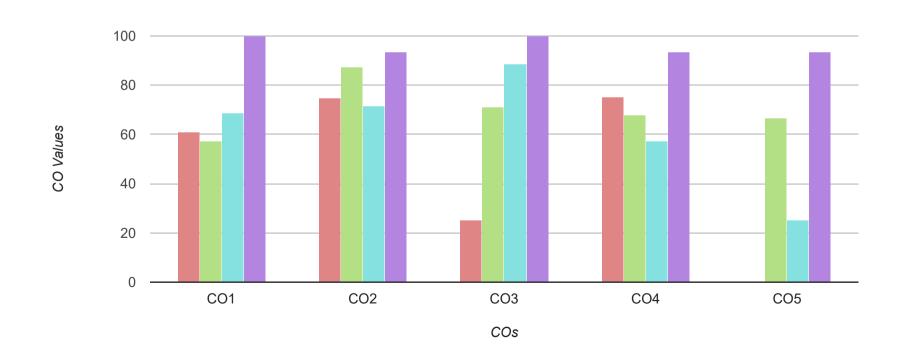
| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

#### **SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE Course Name Course Code** CO1 CO2 CO3 CO4 CO<sub>5</sub> CO<sub>6</sub> CC19PCHE1L01 & **Inorganic Chemistry Practical** 92.32 92.32 92.32 CC19PCHE2L04 CC19PCHE1L02 & **Organic Chemistry Practical** 100.00 100.00 100.00 100.00 CC19PCHE2L05 **CC19PCHE1L03 & Physical Chemistry Practical** 100.00 100.00 100.00 100.00 CC19PCHE2L06 **Group Theory and Chemical Bonding** 86.47 99.81 CC19PCHE2C05 48.61 95.24 29.14 93.41 **Coordination Chemistry** CC19PCHE2C06 96.67 38.81 35.87 94.75 77.12 **Reaction Mechanism in Organic Chemistry** 72.25 CC19PCHE2C07 66.55 99.68 89.81 67.41 **Electrochemistry, Solid-state Chemistry and Statistical** CC19PCHE2C08 99.30 54.23 99.30 72.72 63.83

Thermodynamics

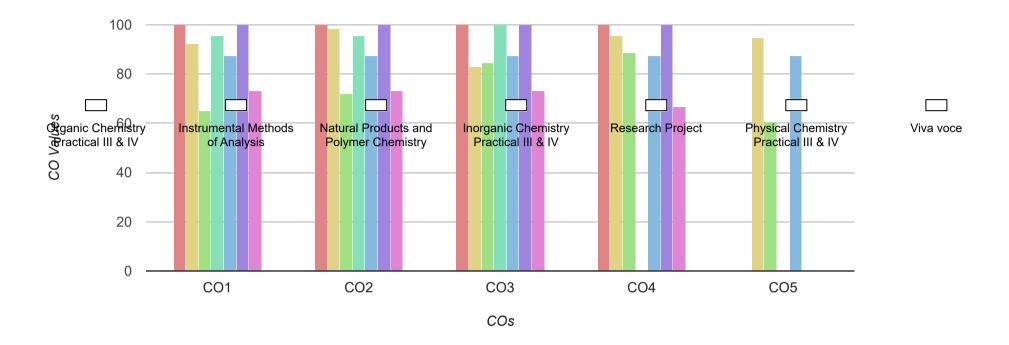


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |       |       |     |  |  |  |
|--|--------------|--------|-------|--------|-------|-------|-----|--|--|--|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4   | CO5   | CO6 |  |  |  |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 61.13  | 74.90 | 25.17  | 75.04 |       |     |  |  |  |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 57.45  | 87.26 | 71.32  | 67.81 | 66.51 |     |  |  |  |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 68.56  | 71.57 | 88.43  | 57.41 | 25.05 |     |  |  |  |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 100.00 | 93.33 | 93.33 |     |  |  |  |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 92.41  | 98.52  | 82.81  | 95.61  | 94.81 |     |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 64.94  | 71.92  | 84.51  | 88.51  | 60.48 |     |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 95.73  | 95.73  | 100.00 |        |       |     |
| Research Project                                   | CC19PCHE4P01                | 87.45  | 87.45  | 87.45  | 87.45  | 87.45 |     |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce  | CC19PCHE4V01                | 73.28  | 73.28  | 73.28  | 66.61  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | JIYA SHAJU |
|---------------|------------|
| Register No:  | CCAWMCH022 |
| Admission No: | 28329      |
| Entry Year:   | 2022       |
| Exit Year:    | 2024       |
|               |            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

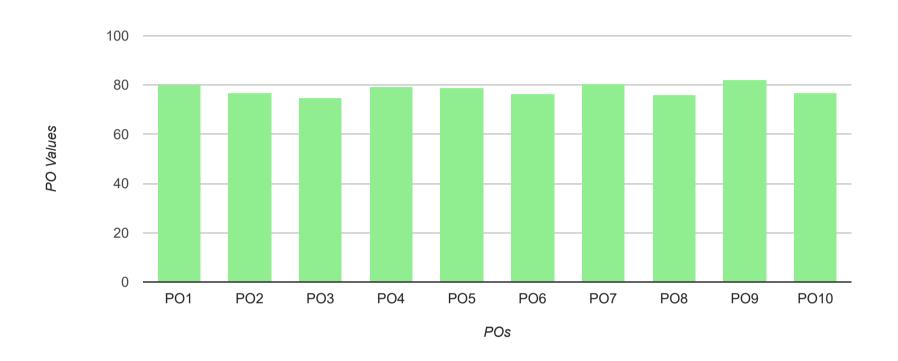
### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

### **Program Outcome Attainment**

| PROGRAM OUTCOM | IE PERCENTAGI | E OF JIYA SHAJI | J   |     |     |     |     |     |     |      |
|----------------|---------------|-----------------|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1           | PO2             | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

|  | 80.28 | 76.86 | 74.77 | 79.27 | 79.05 | 76.38 | 80.40 | 76.18 | 82.26 | 76.98 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|  |       |       |       |       |       |       |       |       |       |       |

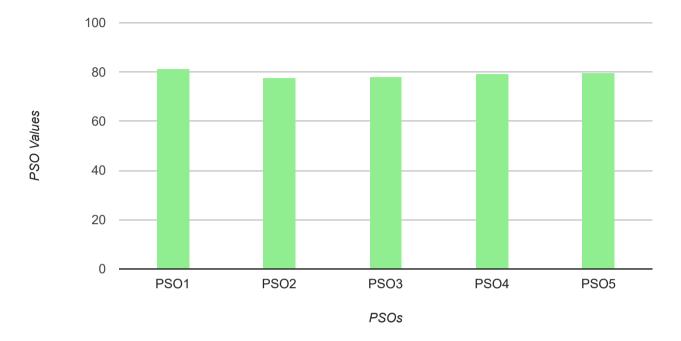


# **Program Specific Outcome LIST**

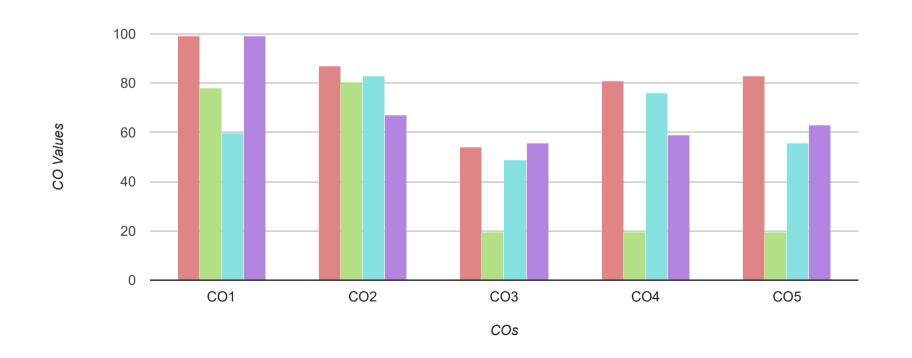
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCE | ENTAGE OF JIYA SHAJU |       |       |       |       |
|--------------------------------|----------------------|-------|-------|-------|-------|
| PSO CODE                       | PSO1                 | PSO2  | PSO3  | PSO4  | PSO5  |
|                                | 81.13                | 77.48 | 78.22 | 79.13 | 79.78 |



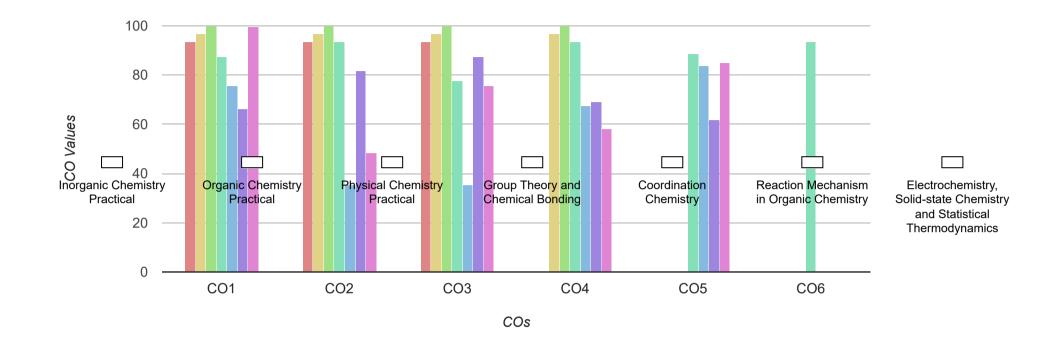
| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 99.00 | 87.00 | 54.20 | 80.71 | 83.00 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 78.07 | 80.58 | 19.40 | 19.40 | 19.40 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 59.88 | 82.88 | 48.68 | 75.88 | 55.88 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 99.12 | 67.12 | 55.69 | 59.12 | 63.12 |     |



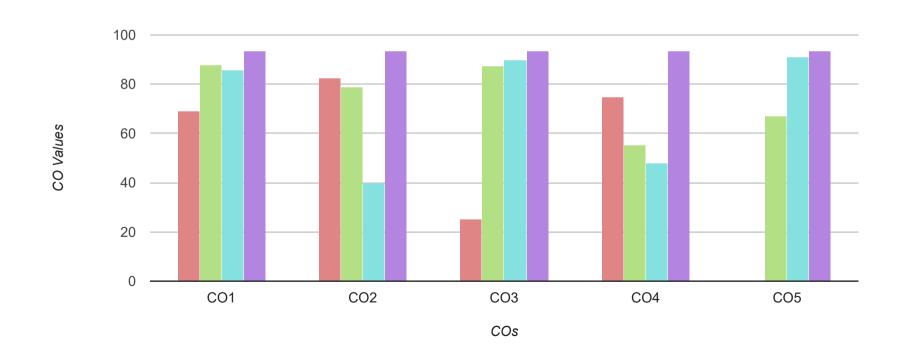
| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

#### **SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE Course Name Course Code** CO1 CO2 CO3 CO4 CO<sub>5</sub> CO<sub>6</sub> CC19PCHE1L01 & **Inorganic Chemistry Practical** 93.33 93.33 93.33 CC19PCHE2L04 CC19PCHE1L02 & **Organic Chemistry Practical** 96.59 96.59 96.59 96.59 CC19PCHE2L05 **CC19PCHE1L03 & Physical Chemistry Practical** 100.00 100.00 100.00 100.00 CC19PCHE2L06 **Group Theory and Chemical Bonding** 87.20 93.33 93.33 88.53 CC19PCHE2C05 77.79 93.33 **Coordination Chemistry** CC19PCHE2C06 75.47 35.36 35.36 67.36 83.72 **Reaction Mechanism in Organic Chemistry** CC19PCHE2C07 66.17 81.71 87.20 68.91 61.60 **Electrochemistry, Solid-state Chemistry and Statistical** CC19PCHE2C08 99.68 48.48 75.68 58.08 85.05

Thermodynamics

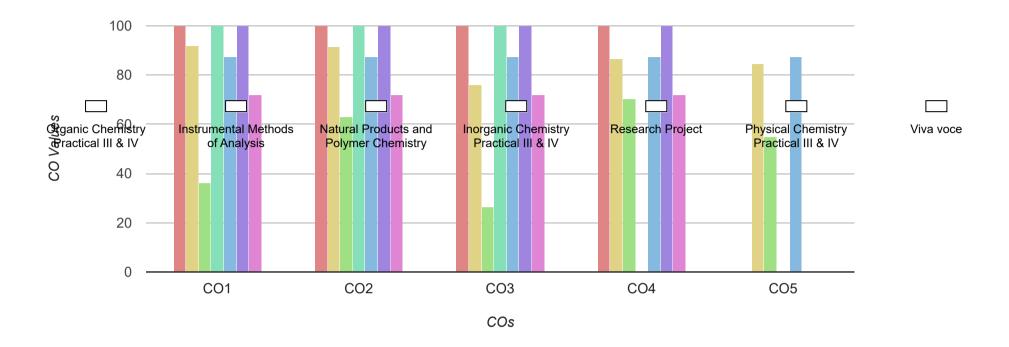


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | соз   | CO4   | CO5   | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 69.19 | 82.69 | 25.09 | 74.69 |       |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 87.94 | 78.94 | 87.51 | 55.48 | 67.13 |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 85.84 | 39.90 | 89.98 | 47.81 | 90.86 |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 93.33 | 93.33 | 93.33 | 93.33 | 93.33 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME F | PERCENTAGE                  |        |        |        |        |       |     |
|---|-----------------------------|--------|--------|--------|--------|-------|-----|
| Course Name                               | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |
| Organic Chemistry Practical III & IV      | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Instrumental Methods of Analysis          | CC19PCHE4C12                | 91.85  | 91.48  | 75.85  | 86.52  | 84.65 |     |
| Natural Products and Polymer Chemistry    | CC19PCHE4E06                | 36.08  | 62.85  | 26.48  | 70.34  | 55.02 |     |
| Inorganic Chemistry Practical III & IV    | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |
| Research Project                          | CC19PCHE4P01                | 87.45  | 87.45  | 87.45  | 87.45  | 87.45 |     |
| Physical Chemistry Practical III & IV     | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |
| Viva voce                                 | CC19PCHE4V01                | 72.05  | 72.05  | 72.05  | 72.05  |       |     |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | APARNA P R |
|---------------|------------|
| Register No:  | CCAWMCH020 |
| Admission No: | 28327      |
| Entry Year:   | 2022       |
| Exit Year:    | 2024       |
|               |            |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

# Program: M.Sc. Chemistry

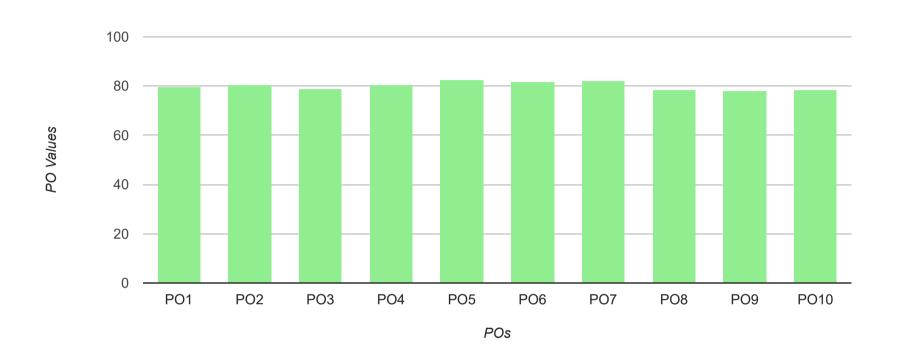
### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

#### **Program Outcome Attainment**

| PROGRAM OUTCOM | IE PERCENTAGI | E OF APARNA P | R   |     |     |     |     |     |     |      |
|----------------|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1           | PO2           | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 |

| 79.53 80.56 78.83 80.49 82.37 81.61 81.97 78.58 77.91 78.32 |
|---|
|---|

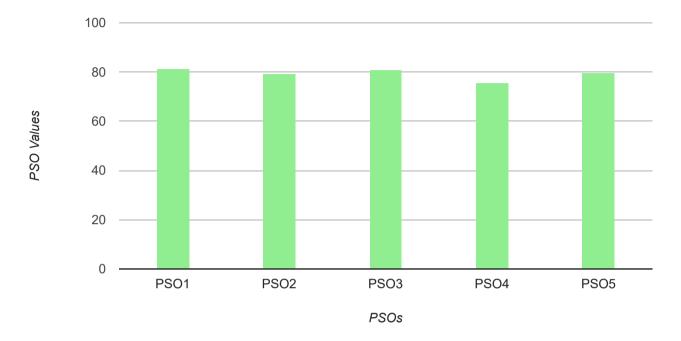


# **Program Specific Outcome LIST**

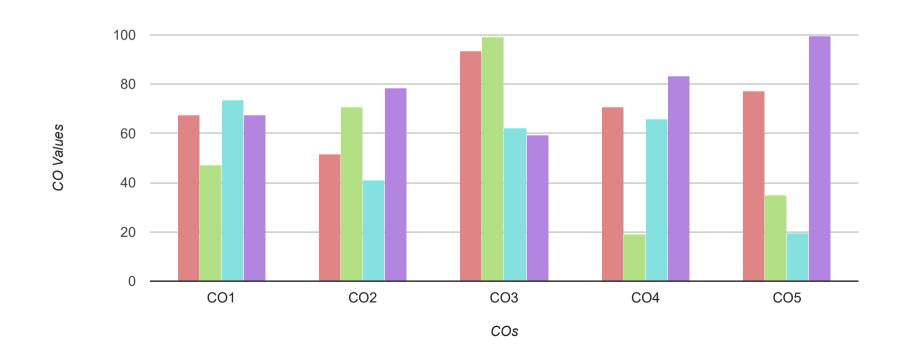
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF APARNA P R                         |       |       |       |       |       |  |  |  |
|---|-------|-------|-------|-------|-------|--|--|--|
| PSO CODE         PSO1         PSO2         PSO3         PSO4         PSO5 |       |       |       |       |       |  |  |  |
|   | 81.35 | 79.47 | 81.02 | 75.60 | 79.57 |  |  |  |

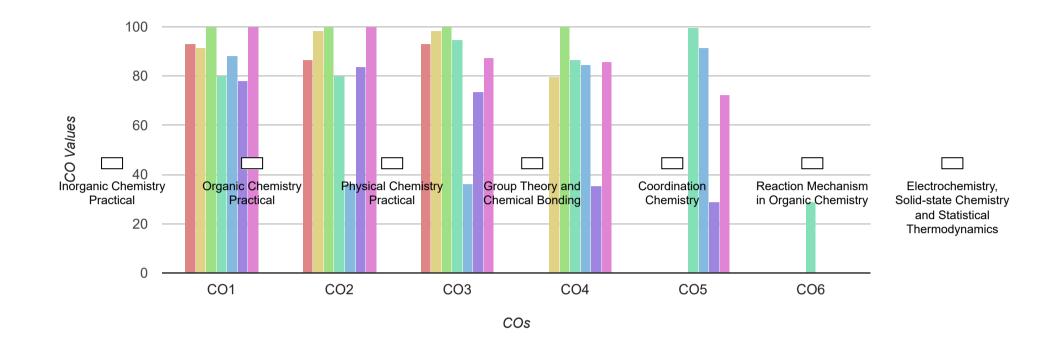


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |       |       |       |       |       |     |
|--|--------------|-------|-------|-------|-------|-------|-----|
| Course Name  | Course Code  | CO1   | CO2   | СОЗ   | CO4   | CO5   | CO6 |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 67.60 | 51.60 | 93.60 | 70.80 | 77.20 |     |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 47.04 | 70.73 | 99.04 | 19.04 | 35.04 |     |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 73.76 | 41.18 | 62.03 | 66.03 | 19.36 |     |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 67.52 | 78.60 | 59.52 | 83.52 | 99.52 |     |

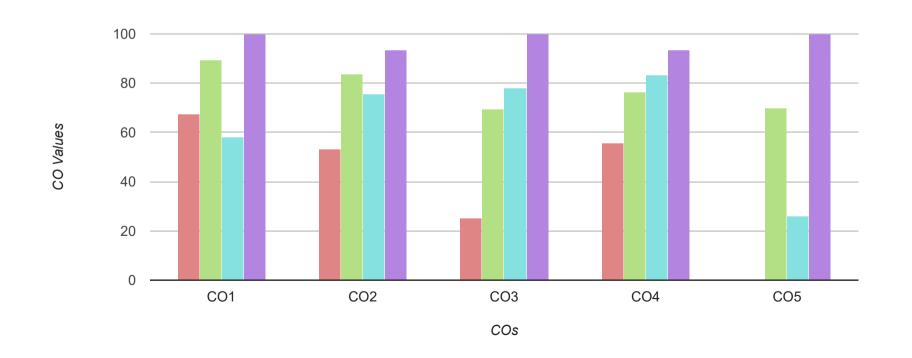


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |       |       |
|--|--------------------------------|--------|--------|--------|--------|-------|-------|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5   | CO6   |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 93.17  | 86.51  | 93.17  |        |       |       |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 91.63  | 98.29  | 98.29  | 79.63  |       |       |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |       |       |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 80.22  | 79.96  | 94.85  | 86.62  | 99.42 | 28.76 |
| Coordination Chemistry   | CC19PCHE2C06                   | 88.21  | 36.00  | 36.00  | 84.64  | 91.47 |       |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 78.03  | 83.55  | 73.76  | 35.36  | 28.69 |       |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 100.00 | 100.00 | 87.20  | 85.78  | 72.30 |       |

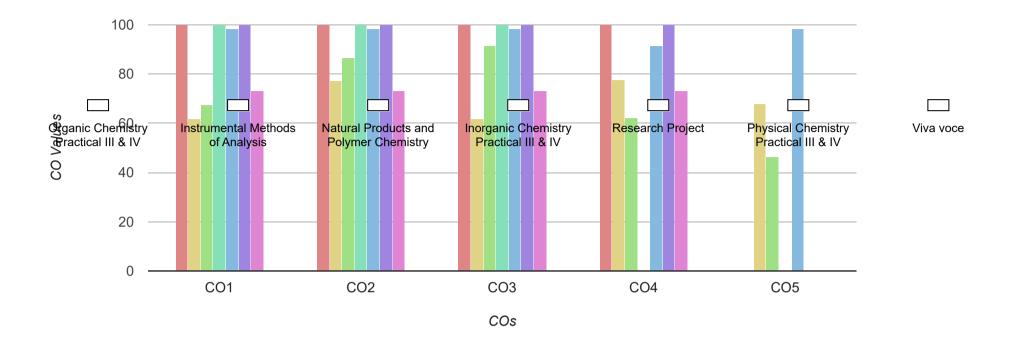


| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |       |        |     |
|--|--------------|--------|-------|--------|-------|--------|-----|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4   | CO5    | CO6 |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 67.67  | 53.44 | 25.17  | 55.89 |        |     |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 89.44  | 83.65 | 69.64  | 76.39 | 69.88  |     |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 58.31  | 75.63 | 77.96  | 83.52 | 25.94  |     |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 100.00 | 93.33 | 100.00 |     |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |  |  |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|--|--|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |  |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 61.63  | 77.04  | 61.63  | 77.63  | 68.03 |     |  |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 67.59  | 86.71  | 91.65  | 62.28  | 46.41 |     |  |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |  |  |
| Research Project                                   | CC19PCHE4P01                | 98.21  | 98.21  | 98.21  | 91.54  | 98.21 |     |  |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Viva voce  | CC19PCHE4V01                | 73.28  | 73.28  | 73.28  | 73.28  |       |     |  |  |





# CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA.Kerala-680125 Reaccredited by NAAC with 'A++' grade



#### **OBE CARD**

| Department: | CHEMISTRY       |
|-------------|-----------------|
| Program:    | M.Sc. Chemistry |
| Batch:      | MSC CHE SF 2022 |
|             |                 |

| Name:         | KEERTHANA SURESH |
|---------------|------------------|
| Register No:  | CCAWMCH023       |
| Admission No: | 28330            |
| Entry Year:   | 2022             |
| Exit Year:    | 2024             |
|               |                  |

This report provides the evidence of OBE implementation in CHRIST COLLEGE (AUTONOMOUS), and the measurement of both direct and indirect assessment of students during the academic year 2022-2024

## Program: M.Sc. Chemistry

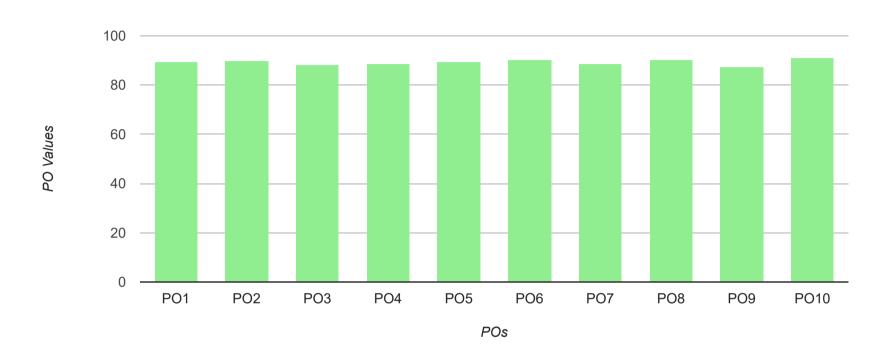
### Program Outcome LIST

| PO CODE | PO DESCRIPTION   |
|---------|--|
| PO1     | Through knowledge in the chosen discipline   |
| PO2     | An aptitude for research   |
| PO3     | An independent and individual way of thinking and communicating ideas  |
| PO4     | The ability to access and utilize knowledge and information for personal and general good  |
| PO5     | The discretion to engage in academic work with academic integrity  |
| PO6     | To know how to function in multidisciplinary domains   |
| PO7     | A global perspective, facilitating appropriate interaction with people from various cultural, linguistic and religious backgrounds |
| PO8     | Decision-making and reasoning ability to find solutions to ethical problems  |
| PO9     | A spirit of selfless service making him willing to serve the needy and the marginalized  |
| PO10    | A heightened awareness of environmental issues and necessity of solving them   |

### **Program Outcome Attainment**

| PROGRAM OUTCOM | IE PERCENTAGI | E OF KEERTHAN | IA SURESH |     |     |     |     |     |     |      |
|----------------|---------------|---------------|-----------|-----|-----|-----|-----|-----|-----|------|
| PO CODE        | PO1           | PO2           | PO3       | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |

| 00.00   00.00   00.00   00.00   00.00 |  | 89.63 | 89.77 | 88.13 | 88.82 | 89.56 | 90.42 | 88.78 | 90.39 | 87.44 | 91.22 |
|---------------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|---------------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

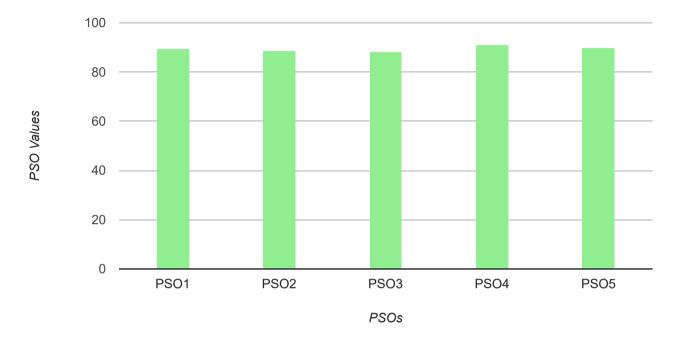


## **Program Specific Outcome LIST**

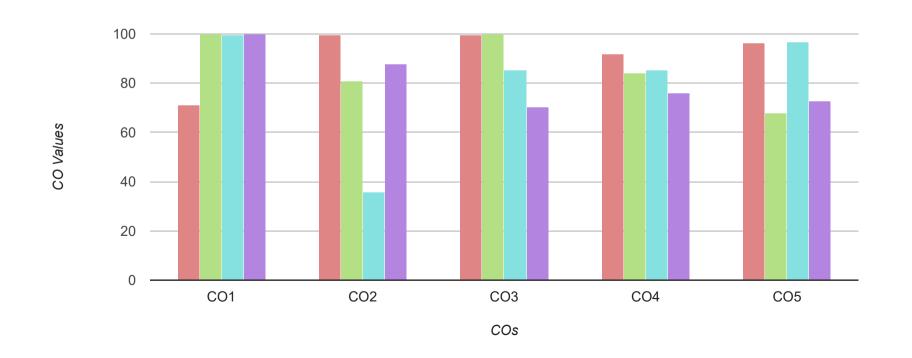
| PSO<br>CODE | PSO DESCRIPTION   |
|-------------|---|
| PSO1        | To lay a strong foundation in the fundamentals and application of current chemical and scientific theories.   |
| PSO2        | Develops analytical skills and problem-solving skills requiring application of chemical principles.   |
| PSO3        | To enable the students to understand the importance of chemistry for addressing social, economic, and environmental problems.   |
| PSO4        | Learns about the potential uses of analytical chemistry, medicinal chemistry, and green chemistry   |
| PSO5        | To apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries for developing green chemistry approach towards planning and execution of research in frontier areas of chemical sciences. |

### **Program Specific Outcome Attainment**

| PROGRAM SPECIFIC OUTCOME PERCENTAGE OF KEERTHANA SURESH |       |       |       |       |       |  |  |  |
|---|-------|-------|-------|-------|-------|--|--|--|
| PSO CODE  | PSO2  | PSO3  | PSO4  | PSO5  |       |  |  |  |
|   | 89.40 | 88.57 | 88.27 | 90.95 | 89.86 |  |  |  |

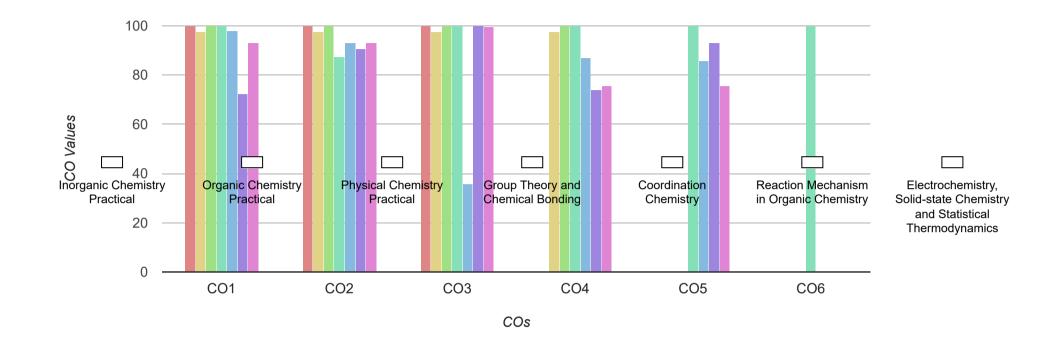


| SEMESTER 1 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |        |       |       |     |  |  |
|--|--------------|--------|-------|--------|-------|-------|-----|--|--|
| Course Name  | Course Code  | CO1    | CO2   | CO3    | CO4   | CO5   | CO6 |  |  |
| Quantum Mechanics and Computational Chemistry      | CC19PCHE1C01 | 71.32  | 99.76 | 99.76  | 91.76 | 96.20 |     |  |  |
| Elementary Inorganic Chemistry                     | CC19PCHE1C02 | 100.00 | 81.00 | 100.00 | 84.00 | 68.00 |     |  |  |
| Structure and reactivity of Organic compounds      | CC19PCHE1C03 | 99.76  | 35.76 | 85.36  | 85.21 | 96.56 |     |  |  |
| Thermodynamics, Kinetics and catalysis             | CC19PCHE1C04 | 100.00 | 88.00 | 70.29  | 76.00 | 72.92 |     |  |  |

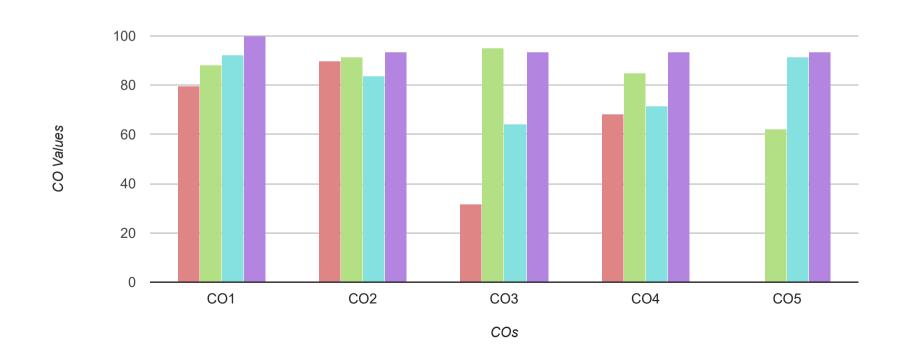


| Quantum Mechanics<br>and Computational<br>Chemistry | Elementary Inorganic<br>Chemistry | Structure and<br>reactivity of Organic<br>compounds | Thermodynamics,<br>Kinetics and catalysis |
|---|-----------------------------------|---|---|

| SEMESTER 2 - COURSE WISE COURSE OUTCOME PERCENTAGE                     |                                |        |        |        |        |        |        |  |  |
|--|--------------------------------|--------|--------|--------|--------|--------|--------|--|--|
| Course Name  | Course Code                    | CO1    | CO2    | CO3    | CO4    | CO5    | CO6    |  |  |
| Inorganic Chemistry Practical  | CC19PCHE1L01 &<br>CC19PCHE2L04 | 100.00 | 100.00 | 100.00 |        |        |        |  |  |
| Organic Chemistry Practical  | CC19PCHE1L02 &<br>CC19PCHE2L05 | 97.44  | 97.44  | 97.44  | 97.44  |        |        |  |  |
| Physical Chemistry Practical   | CC19PCHE1L03 &<br>CC19PCHE2L06 | 100.00 | 100.00 | 100.00 | 100.00 |        |        |  |  |
| Group Theory and Chemical Bonding                                      | CC19PCHE2C05                   | 100.00 | 87.20  | 100.00 | 100.00 | 100.00 | 100.00 |  |  |
| Coordination Chemistry   | CC19PCHE2C06                   | 98.11  | 93.27  | 35.94  | 87.14  | 85.71  |        |  |  |
| Reaction Mechanism in Organic Chemistry                                | CC19PCHE2C07                   | 72.41  | 90.70  | 99.84  | 73.97  | 93.17  |        |  |  |
| Electrochemistry, Solid-state Chemistry and Statistical Thermodynamics | CC19PCHE2C08                   | 93.08  | 93.08  | 99.74  | 75.74  | 75.62  |        |  |  |



| SEMESTER 3 - COURSE WISE COURSE OUTCOME PERCENTAGE |              |        |       |       |       |       |     |  |  |
|--|--------------|--------|-------|-------|-------|-------|-----|--|--|
| Course Name  | Course Code  | CO1    | CO2   | CO3   | CO4   | CO5   | CO6 |  |  |
| Molecular Spectroscopy                             | CC19PCHE3C09 | 79.68  | 89.81 | 31.67 | 68.47 |       |     |  |  |
| Organometallic and Bioinorganic Chemistry          | CC19PCHE3C10 | 88.19  | 91.51 | 95.06 | 85.05 | 62.07 |     |  |  |
| Reagents and Transformations in Organic Chemistry  | CC19PCHE3C11 | 92.40  | 83.57 | 64.23 | 71.73 | 91.35 |     |  |  |
| Synthetic Organic Chemistry                        | CC19PCHE3E01 | 100.00 | 93.33 | 93.33 | 93.33 | 93.33 |     |  |  |



| Molecular<br>Spectroscopy | Organometallic and<br>Bioinorganic<br>Chemistry | Reagents and<br>Transformations in<br>Organic Chemistry | Synthetic Organic<br>Chemistry |
|---------------------------|---|---|--------------------------------|

| SEMESTER 4 - COURSE WISE COURSE OUTCOME PERCENTAGE |                             |        |        |        |        |       |     |  |  |
|--|-----------------------------|--------|--------|--------|--------|-------|-----|--|--|
| Course Name  | Course Code                 | CO1    | CO2    | CO3    | CO4    | CO5   | CO6 |  |  |
| Organic Chemistry Practical III & IV               | CC19PCHE3L08 & CC19PCHE4L11 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Instrumental Methods of Analysis                   | CC19PCHE4C12                | 98.52  | 91.48  | 75.85  | 84.92  | 87.85 |     |  |  |
| Natural Products and Polymer Chemistry             | CC19PCHE4E06                | 91.30  | 79.01  | 92.32  | 78.21  | 83.54 |     |  |  |
| Inorganic Chemistry Practical III & IV             | CC19PCHE3L07 & CC19PCHE4L10 | 100.00 | 100.00 | 100.00 |        |       |     |  |  |
| Research Project                                   | CC19PCHE4P01                | 91.54  | 91.54  | 91.54  | 91.54  | 91.54 |     |  |  |
| Physical Chemistry Practical III & IV              | CC19PCHE3L09 & CC19PCHE4L12 | 100.00 | 100.00 | 100.00 | 100.00 |       |     |  |  |
| Viva voce  | CC19PCHE4V01                | 82.61  | 82.61  | 82.61  | 82.61  |       |     |  |  |

