

HARCOURT BULTER TECHNICAL UNIVERSITY KANPUR
SCHOOL OF CHEMICAL TECHNOLOGY
DEPARTMENT OF CHEMICAL TECHNOLOGY - PLASTIC TECHNOLOGY

Semester wise Course Structure

B. Tech. Chemical Technology - Plastic Technology
(Applicable from Session 2017-2018 for new entrants)

Semester-I

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ESE | Total Marks |
|-------------------------|-----------------|---|--------------|---------|---------|---|---|-----------------|----|------|-------|-----|-------------|
| | | | | | L | T | P | CT | TA | Lab. | Total | | |
| 1 | BSC | Engineering Chemistry | BCY 101 | 4 | 3 | 0 | 2 | 15 | 20 | 15 | 50 | 50 | 100 |
| 2 | BSC | Mathematics I | BMA 101 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | ESC | Electronics & Instrumentation Engineering | EET 101 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 4 | ESC | Engineering Graphics | ECE 101 | 3 | 0 | 0 | 6 | 30 | 20 | - | 50 | 50 | 100 |
| 5 | ESC | Computer Concepts & Programming | ECS 101 | 4 | 3 | 0 | 2 | 15 | 20 | 15 | 50 | 50 | 100 |
| 6 | ESC | Workshop Practice | EWS 101 | 2 | 0 | 0 | 4 | -- | 20 | 30 | 50 | 50 | 100 |
| 7 | MC (Non Credit) | Environment & Ecology | ECE 103 | 2 | 2 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| Total Credits 20 | | | | | | | | | | | | | |

Semester-II

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks ESE | | | | | Total Marks |
|---------|-------------|--------------------------------|--------------|---------|---------|---|---|---------------------|----|-----|-------|----|-------------|
| | | | | | L | T | P | CT | TA | Lab | Total | | |
| 1 | BSC | Physics | BPH 102 | 4 | 3 | 0 | 2 | 15 | 20 | 15 | 50 | 50 | 100 |
| 2 | BSC | Mathematics II | BMA 102 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | ESC | Electrical Engineering | EEE 102 | 4 | 3 | 0 | 2 | 15 | 20 | 15 | 50 | 50 | 100 |
| 4 | ESC | Engineering Mechanics | EME 102 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 5 | HSMC | English Language & Composition | HHS 102 | 2 | 2 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 6 | HSMC | Professional Communication | HHS 104 | 3 | 3 | 0 | 2 | 15 | 20 | 15 | 50 | 50 | 100 |
| | | Total Credits 20 | | | | | | | | | | | |

Semester-III

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ESE | Total Marks |
|-------------------------|-----------------|--|--------------|---------|---------|---|---|-----------------|----|-----|-------|-----|-------------|
| | | | | | L | T | P | CT | TA | Lab | Total | | |
| 1 | BSC | Mathematics III | BMA 201 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 2 | ESC | Materials & Energy Balance | TCH 201 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | PCC | Fluid Mechanics and Mechanical operation | TCH 211 | 5 | 3 | 1 | 3 | 15 | 20 | 15 | 50 | 50 | 100 |
| 4 | PCC | Polymer Chemistry | TPL 201 | 6 | 3 | 1 | 6 | 15 | 20 | 15 | 50 | 50 | 100 |
| 5 | HSMC | Organisational Behaviour | HHS 203 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 6 | MC (Non Credit) | Cyber Security | ECS 205 | 2 | 2 | 0 | 0 | 30 | 20 | | 50 | 50 | 100 |
| Total Credits 22 | | | | | | | | | | | | | |

Semester-IV

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ESE | Total Marks |
|-------------------------|-----------------|-------------------------------------|--------------|---------|---------|---|---|-----------------|----|-----|-------|-----|-------------|
| | | | | | L | T | P | CT | TA | Lab | Total | | |
| 1 | BSC | Modern Analytical Techniques | BCY 202 | 4 | 3 | 0 | 2 | 15 | 20 | 15 | 50 | 50 | 100 |
| 2 | BSC | Computer Oriented Numerical Methods | BMA 202 | 4 | 3 | 0 | 3 | 15 | 20 | 15 | 50 | 50 | 100 |
| 3 | ESC | Heat Transfer Operations | TCH 212 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 4 | PCC | Chemical Engineering Thermodynamics | TCH 214 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 5 | PCC | Polymerization Engineering I | TPL 202 | 5 | 3 | 1 | 3 | 15 | 20 | 15 | 50 | 50 | 100 |
| 6 | HSMC | Engg Economics & Management | HHS 202 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 7 | MC (Non Credit) | Indian Constitution | HHS 206 | 2 | 2 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| Total Credits 22 | | | | | | | | | | | | | |

Semester-V

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ESE | Total Marks |
|--|------------------|--------------------------------|--------------|---------|---------|---|---|-----------------|----|-----|-------|-----|-------------|
| | | | | | L | T | P | CT | TA | Lab | Total | | |
| 1 | PCC | Mass Transfer Operations | TCH 315 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 2 | PCC | Chemical Reaction Engineering | TCH 317 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | PCC | Polymer Processing I | TPL 301 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 4 | PCC | Rheology & Testing of Polymers | TPL 303 | 5 | 3 | 0 | 6 | 15 | 20 | 15 | 50 | 50 | 100 |
| 5 | OEC (Mechanical) | Open Elective Course-I | EME 325 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 6 | OEC (Humanities) | Open Elective Course - II | HHS 341 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| Total Credits 22 | | | | | | | | | | | | | |

Semester-VI

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ESE | Total Marks |
|--|-------------|-----------------------------------|--------------|---------|---------|---|---|-----------------|----|------|-------|-----|-------------|
| | | | | | L | T | P | MSE | TA | Lab. | Total | | |
| 1 | PCC | Instrumentation & Process Control | TCH 316 | 5 | 3 | 1 | 3 | 15 | 20 | 15 | 50 | 50 | 100 |
| 2 | PCC | Structure & Property of Polymer | TPL 302 | 4 | 3 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | PCC | Polymer Processing II | TPL 304 | 5 | 3 | 0 | 6 | 15 | 20 | 15 | 50 | 50 | 100 |
| 4 | PCC | Polymerization Engineering II | TPL 306 | 5 | 3 | 0 | 6 | 15 | 20 | 15 | 50 | 50 | 100 |
| 5 | OEC (Maths) | Open Elective Course - III | BMA 342 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| Total Credits 22 | | | | | | | | | | | | | |

Semester-VII

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ESE | Total Marks |
|---------|------------------------|-------------------------------|--------------------------|----------------------|-----------|---|---|-----------------|----|-----|-------|-----|-------------|
| | | | | | L | T | P | CT | TA | Lab | Total | | |
| 1 | PCC | Advanced Polymer Materials | TPL 401 | 4 | 3 | 0 | 3 | 15 | 20 | 15 | 50 | 50 | 100 |
| 2 | PEC | Programme Elective Course I | TPL 403 OR TPL 405 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | PEC | Programme Elective Course II | TPL 407 OR TPL 409 | 2 | 2 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 4 | PEC | Programme Elective Course III | TPL 411 OR TPL 413 | 2 | 2 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 5 | OEC (Plastic Tech.) | Open Elective Course -IV | TPL 415 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 6 | | Industrial Training | TPL 461 | 2 | 0 | 0 | 4 | - | 50 | - | 50 | 50 | 100 |
| 7 | | Seminar | TPL 471 | 2 | 0 | 0 | 4 | - | 50 | - | 50 | 50 | 100 |
| 8 | | Project | TPL 497 | 4 | 0 | 0 | 8 | - | 50 | - | 50 | 50 | 100 |
| | | | | Total Credits | 22 | | | | | | | | |

Semester-VIII

| Sl. No. | Course Type | Course Title | Subject Code | Credits | Periods | | | Sessional Marks | | | | ES E | Total Marks |
|---------|-------------------------|-------------------------------|--------------------------|----------------------|-----------|---|----|-----------------|----|-----|-------|------|-------------|
| | | | | | L | T | P | CT | TA | Lab | Total | | |
| 1 | PEC | *Programme Elective Course IV | TCH 422 OR TCH 424 | 3 | 2 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 2 | PEC | *Programme Elective Course V | TPL 402 OR TPL 404 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 3 | PEC | *Programme Elective Course VI | TPL 406 OR TPL 408 | 3 | 3 | 0 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 4 | OEC (Chemical Engg.) | *Open Elective Course -V | TCH 420 | 3 | 2 | 1 | 0 | 30 | 20 | - | 50 | 50 | 100 |
| 5 | | Project | TPL 498 | 10 | 0 | 0 | 20 | - | 50 | - | 50 | 50 | 100 |
| | | | | Total Credits | 22 | | | | | | | | |

* Online Courses

List of Programme Elective Courses

| S. No. | PEC Names | Subject Name | Subject Code | C (L-T-P) |
|--------|--------------------------------------|--------------------------------------|--------------|------------|
| 1. | Programme Elective Course I | Plastic Product & Mould Design | TPL 403 | 3 (3-0-0) |
| | | Polymer Product Technology | TPL 405 | |
| 2. | Programme Elective Course II | Technology of Elastomers | TPL 407 | 2 (2-0-0) |
| | | Technology of Fibers | TPL 409 | |
| 3. | Programme Elective Course III | Polymer Composite | TPL 411 | 2 (2-0-0) |
| | | Polymer Blends & Alloys | TPL 413 | |
| 4. | Programme Elective Course IV | Process Modeling & Simulation | TCH 422 | 3 (2-1-0) |
| | | Process Equipment Design | TCH 424 | |
| 5. | Programme Elective Course V | Plastic Packaging & waste Management | TPL 402 | 3 (3-0-0) |
| | | Polymer Coating Technology | TPL 404 | |
| 6. | Programme Elective Course VI | Polymeric Adhesives & Foams | TPL 406 | 3 (3-0-0) |
| | | Polymer Nanocomposites | TPL 408 | |

List of Open Elective Courses

| S. No. | OEC Names | Subject Name | Subject Code | C (L-T-P) |
|--------|---|---------------------------------------|--------------|------------|
| 1. | Open Elective Course I (Mechanical) | Energy Conversion Systems and Devices | EME 325 | 3 (3-0-0) |
| 2. | Open Elective Course II (Humanities) | Entrepreneurship Development | HHS 341 | 3 (3-0-0) |
| 3. | Open Elective Course III (Maths) | Operations Research | BMA 342 | 3 (3-0-0) |
| 4. | Open Elective Course IV (Plastic Technology) | Introduction to Polymer Technology | TPL 415 | 3 (3-0-0) |
| 6. | Open Elective Course V (Chemical Engg) | Transport Phenomenon | TCH 420 | 3 (3-0-0) |

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