The VCU Non-Engineering B.S. to M.S. (Bridge Program) in CLSE

A unique program designed to enable you to receive an M.S. degree in Chemical Engineering with a background in a non-engineering field.

May be completed in 4-5 semesters, with an option to continue on for a Ph.D.

Typical relevant undergraduate coursework: Chemistry through Organic chemistry with labs, Basic Biological science with labs, Differential equations, Multivariate calculus, Calculus-based Physics 1 and 2, Computer programming knowledge (desirable), and Physical chemistry/Reaction kinetics (desirable).

Select scholarships available for competitive Virginia residents

Start in SUMMER

Start in FALL

THESIS

NON-THESIS

Find the permutation that best suits you

Questions?

Contact the CLSE Program Director: vcugradinfo@vcu.edu
Suggested Program of study – Non-engineering* B.S. to M.S. in CLSE
(NON-THESIS OPTION)

START IN FALL

| Year 1 Fall (6 credits) | CLSE 201 - Mass Balances  
STAT 641 - Statistics for Engineering  
CLSE 650 - Graduate Mathematics |
|-------------------------|------------------------------------------------------------------|
| Year 1 Spring (6 credits) | CLSE 202 - Energy Balances and Engineering Thermodynamics  
Grad Elective (500/600 level)  
Grad Elective (500/600 level) |
| Year 2 Fall (6 credits) | CLSE 301 - Transport 1  
CLSE 305 - Thermodynamics of Phase Equilibria  
Grad Elective (500/600 level) |
| Year 2 Spring (6 credits) | CLSE 655 - Graduate Non-Equilibrium Analysis  
(Thermodynamics)  
CLSE 656 - Graduate Reaction Engineering |
| Year 3 Fall (6 credits) | CLSE 654 - Graduate Equilibrium Analysis  
(Transport Phenomena)  
Grad Elective (500/600 level)* |

Total Graduate Hours Required 30

Courses in Italic are Undergraduate Level Courses

* Assumes Chemistry through Organic chemistry with labs, Basic Biological science with lab, Differential equations, Multivariate calculus, Calculus-based physics 1 and 2, Computer programming knowledge (desirable), and Physical chemistry/Reaction kinetics (desirable).

At least 15 credits have to be 600 level

| Graduate School Requirements - | Concentration 15  
Track Electives 15  
TOTAL 30 |
Suggested Program of study – Non-engineering* B.S. to M.S. in CLSE

(THESIS OPTION)

START IN FALL

Year 1 Fall (6 credits)
CLSE 201 - Mass Balances
STAT 641 - Statistics for Engineering
CLSE 650 - Graduate Mathematics

Year 1 Spring (3 credits)
CLSE 202 - Energy Balances and Engineering Thermodynamics
Grad Elective (500/600 level)
(Research Topic Selection)

Year 1 Summer
Thesis Work (CLSE 697)

Year 2 Fall (3 credits)
CLSE 301 - Transport 1
CLSE 305 - Thermodynamics of Phase Equilibria
Grad Elective (500/600 level)

Year 2 Spring (9 credits)
CLSE 654 - Graduate Equilibrium Analysis
(Thermodynamics)
CLSE 656 - Graduate Reaction Engineering
Grad Elective (500/600 level)

Year 2 Summer
Thesis Work (CLSE 697)

Year 3 Fall (9 credits)
CLSE 655 - Graduate Non-Equilibrium Analysis
(Transport Phenomena)
Thesis Work (CLSE 697)
Thesis Defense

Total Graduate Hours Required 30

Courses in *Italic* are Undergraduate Level Courses

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<tbody>
<tr>
<td></td>
<td>Track Electives 12</td>
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Suggested Program of study – Non-engineering* B.S. to M.S. in CLSE

(NON-THESIS OPTION)

START IN SUMMER

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Courses in *Italics* are Undergraduate Level Courses:

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Suggested Program of study – Non-engineering* B.S. to M.S. in CLSE

(THESIS OPTION)

START IN SUMMER

Year 1 Summer

CLSE 201 - Mass Balances
CLSE 202 - Energy Balances and Engineering Thermodynamics

Year 1 Fall (3 credits)

CLSE 301 - Transport 1
CLSE 305 - Thermodynamics of Phase Equilibria
STAT 641 - Statistics for Engineering

Year 1 Spring (9 credits)

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CLSE 655 - Graduate Non-Equilibrium Analysis (Transport Phenomena)
Grad Elective (500/600 level)
(Research Topic Selection)

Year 1 Summer (3 credits)

Thesis Work (CLSE 697)

Year 2 Fall (9 credits)

CLSE 650 - Graduate Mathematics
CLSE 654 - Graduate Equilibrium Analysis (Thermodynamics)
Grad Elective (500/600 level)
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Year 2 Spring (6 credits)

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Thesis Defense

Total Graduate Hours Required 30

Courses in *Italics* are Undergraduate Level Courses

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