"Scientists discover the world that exists;
engineers create the world that never was."

Theodore von Karman

Mechanical Engineering at WPI

John M. Sullivan, Jr.

Associate Department Head

Mechanical Engineering

http://www.wpi.edu/~sullivan   http://www.me.wpi.edu/

WPI was established in 1868.
  31 Full-time faculty plus several adjunct faculty in ME
700+ Undergraduate students in Mechanical Engineering (in 4 yrs)
200+ Graduate students (full and part-time)

Undergraduate Degrees awarded in
      Mechanical Engineering
      Aerospace Engineering
      Robotics Engineering

Within Mechanical Engineering Degree can Concentrate in:
      Aerospace, Biomechanical, Design, Manufacturing,
      Material Science, Mechanics, Thermo-fluids

- **Need 45 courses minimum to graduate from WPI. What does this entail?**
    - (6) – Humanities Component   (All majors)
    - (2) – Social Science Courses   (All majors)
    - (3) – Interactive Qualifying Project (IQP)   (All majors)
    - (3) – Major Qualifying Project (MQP)   (All majors)
    - (1) – Physical Education   (All majors)
    - (12) – Math and Science Component   (Required)
    - (9) – Required ME Core Component   (Required)
    - (6) – Your Choice of ME Courses   (Elective)
    - (3) – Free Electives   (Elective)

- **(6) – Humanities Component**   **(All majors)**
  - http://www.wpi.edu/academics/Depts/HUA/Requirements/index.html
  - Breadth = select one course from 2 of the 3 intellectual clusters:
    - art/art history, drama/theatre, and music (AR, MU, TH);
    - languages, literature, and writing/rhetoric (EN, WR, RH, SP, GN);
    - history, philosophy and religion (HI, HU, PY, RE).
  - Depth = three courses in an area of focus that includes an inquiry seminar.
  - Inquiry Seminar = culmination of the H&A Requirement.
    - The Seminar explores a particular topic or theme in the humanities in greater depth. The Seminar has two primary goals: A) Foster independence of student thought, and B) Encourage a cooperative, dialogic approach to inquiry.
    - Setting is a small, intensive classroom setting (12 students or less).
  - http://www.wpi.edu/academics/hua/course-sequence.html

- **(6) – Humanities Component** (All majors)

Term:	A	B	C	D
1st Yr.	HU-1	HU-2	HU-3	HU-4
2nd Yr.		HU-5		HU-6

- **(2) – Social Science Courses** (All majors)

  - Social science is the scientific study of human thought and behavior, interpersonal relationships, and the institutional structure and functioning of human society.

  - System Dynamics, Economics, Sociology, Psychology, and Political Science

  - IQPs abroad requires ID/SS 2050. Social Science Research for the IQP.

- **(6) – Humanities Component**   (All majors)
- **(2) – Social Science Courses**   (All majors)

Term:	A	B	C	D	Notes
1st Yr.	HU-1	HU-2	HU-3	HU-4	
2nd Yr.		HU-5		HU-6 SS-1	Wait SS-2 for IQP
3rd Yr.					
4th Yr.					

- **(3) – Interactive Qualifying Project (IQP)   (All majors)**
  - More than 60% of students do an IQP off campus (term abroad). Excellent opportunity to experience a different culture.   It requires a course to expose you to the culture and/or social norms expected of the site. This also satisfies a SS requirement.

Mechanical Engineering at WPI
Flexible Curriculum

- (6) – Humanities Component   (All majors)
- (2) – Social Science Courses   (All majors)
- (3) – Interactive Qualifying Project (IQP)   (All majors)
- (3) – Major Qualifying Project (MQP)   (All majors)

Term:	A	B	C	D	Notes
1st Yr.	HU-1	HU-2	HU-3	HU-4	
2nd Yr.		HU-5		HU-6 SS-1	Wait SS-2 for IQP
3rd Yr.		SS-2 (ID 2050)		IQP	
4th Yr.	MQP	MQP	MQP		

Mechanical Engineering at WPI

Flexible Curriculum

- (6) – Humanities Component   (All majors)
- (2) – Social Science Courses   (All majors)
- (3) – Interactive Qualifying Project (IQP)   (All majors)
- (3) – Major Qualifying Project (MQP)   (All majors)
- (12) – Math and Science Component   (Required)

Term:	A	B	C	D	Notes
1st Yr.	HU-1 Calc-1 Phys-1	HU-2 Calc-2	HU-3 Calc-3	HU-4 Calc-4 Phys-2	
2nd Yr.	Diff Eqns	HU-5	MS-(Lin Alg) Chem-1	HU-6 SS-1	Wait SS-2 for IQP
3rd Yr.	MS-(Stats.)	SS-2 (ID 2050)	MS	IQP	
4th Yr.	MQP	MQP	MQP	MS	

Mechanical Engineering at WPI
Flexible Curriculum

- **(6)** – Humanities Component (All majors)
- **(2)** – Social Science Courses (All majors)
- **(3)** – Interactive Qualifying Project (IQP) (All majors)
- **(3)** – Major Qualifying Project (MQP) (All majors)
- **(12)** – Math and Science Component (Required)
- **(9)** – Required ME Core Component (Required)

Term:	A	B	C	D	Notes
1st Yr.	HU-1 Calc-1 Phys-1	HU-2 Calc-2	HU-3 Calc-3	HU-4 Calc-4 Phys-2	
2nd Yr.	Diff Eqns ES-2501	HU-5 EE-2010 ES-2502	MS-(Lin Alg) Chem-1 ES-2001	HU-6 SS-1 ES-2503	Wait SS-2 for IQP
3rd Yr.	MS-(Stats.) ES-3001	SS-2 (ID 2050) ES-3004	MS ES-3003	IQP	
4th Yr.	MQP ME-3901	MQP	MQP	MS	

Mechanical Engineering at WPI
Flexible Curriculum

- **(6)** – Humanities Component   (All majors)
- **(2)** – Social Science Courses   (All majors)
- **(3)** – Interactive Qualifying Project (IQP)   (All majors)
- **(3)** – Major Qualifying Project (MQP)   (All majors)
- **(12)** – Math and Science Component   (Required)
- **(9)** – Required ME Core Component   (Required)
- **(6)** – Your Choice of ME Courses   (Elective)

Term:	A	B	C	D	Notes
1st Yr.	HU-1 Calc-1 Phys-1	HU-2 Calc-2	HU-3 Calc-3	HU-4 Calc-4 Phys-2	
2nd Yr.	Diff Eqns ES-2501	HU-5 EE-2010 ES-2502	MS-(Lin Alg) Chem-1 ES-2001	HU-6 SS-1 ES-2503	Wait SS-2 for IQP
3rd Yr.	MS-(Stats.) ES-3001 ME-3XXX	SS-2 (ID 2050) ES-3004 ME-3XXX	MS ES-3003 ME-3XXX	IQP	
4th Yr.	MQP ME-3901 ME-4XXX	MQP ME-4XXX	MQP	MS ME-4XXX	

Mechanical Engineering at WPI
Flexible Curriculum

- (6) – Humanities Component (All majors)
- (2) – Social Science Courses (All majors)
- (3) – Interactive Qualifying Project (IQP) (All majors)
- (3) – Major Qualifying Project (MQP) (All majors)
- (12) – Math and Science Component (Required)
- (9) – Required ME Core Component (Required)
- (6) – Your Choice of ME Courses (Elective)
- (3) – Free Electives (Elective)

Term:	A	B	C	D	Notes
1st Yr.	HU-1 Calc-1 Phys-1	HU-2 Calc-2 ES-1310	HU-3 Calc-3 ME-1800	HU-4 Calc-4 Phys-2	Physical Education Distributed
2nd Yr.	Diff Eqns OPEN ES-2501	HU-5 EE-2010 ES-2502	MS-(Lin Alg) Chem-1 ES-2001	HU-6 SS-1 ES-2503	Wait SS-2 for IQP
3rd Yr.	MS-(Stats.) ES-3001 ME-3XXX	SS-2 (ID 2050) ES-3004 ME-3XXX	MS ES-3003 ME-3XXX	IQP	
4th Yr.	MQP ME-3901 ME-4XXX	MQP ME-4XXX OPEN	MQP Elective OPEN	MS OPEN ME-4XXX	

Five-year BS/MS program

- A MS in Mechanical Engineering requires 30 credits
- The BS/MS allows 12 credits to count in both degrees
- The WPI undergraduate degree requires 45 courses or 135 credits, yet 144 credits are within the 4 years
- Using only the 12 credits double counted, a MS degree can be completed in the 5th year.
- Alternately, using the additional 9 credits within the 4 year UG schedule, a MS can be completed in 1 subsequent semester.