# Course Syllabus Form

| | | | | | | |
|---|---|---|---|---|---|---|
| **1. College:** Science | | | | | | |
| **2. Department:** Mathematics | | | | | | |
| **3. Program:** B.Sc. (Engineering and IT students only) | | | | | | |
| **4. Course code:** Maths 102 | | | | | | |
| **5. Course title:** Calculus II | | | | | | |
| **6. Course credits:** Credit Hours 3 Lab Hours 0 Lecture Hours 3 | | | | | | |
| **7. Pre-requisites:** Maths 101 | | | | | | |
| **8. Course web-page:** www.abdullaeid.net/MATHS102 | | | | | | |
| **9. Course coordinators:** Dr. Kifah Al-hami | | | | | | |
| **10. Academic year:** 2016 – 2017 | | | | | | |
| **11. Semester:** | | **First** | √ | **Second** | | **Summer** |
| **12. Textbook(s):** **Thomas Calculus ( Early Transcendentals ), 12th edition ( Pearson )** | | | | | | |
| **13. References:** 1) Calculus, by Smith and Minton. 4th edition (McGraw-Hill). 2) Thomas Calculus, 12th edition ( Global Edition ) , Pearson **3)** Paul's Online Math. Notes : http://tutorial.math.lamar.edu | | | | | | |
| **14. Other resources used (e.g. e-Learning, field visits, periodicals, software, etc.):** | | | | | | |
| **15. Course description (from the catalog):** *Applications of definite integrals, including areas, volumes and surface areas of solids of revolution, arc length and centroids. Transcendental functions, indeterminate form and L'Hopital's Rule. Techniques of integration and improper integrals. Infinite series, power series. Maclaurin and Taylor Theorem.* | | | | | | |
| **16. Course Intended Learning Outcomes (CILOs):** | | | | | | |
| 1. *Use integrals to evaluate areas between curves and volumes of solids of revolution.* | | | | | | |
| 2. *Apply L' Hopital's rule to evaluate limits of indeterminate forms.* | | | | | | |
| 3. *Evaluate integrals using various techniques of integration including integration by parts, trigonometric substitutions, and partial fractions.* | | | | | | |
| 4. *Recognize and evaluate improper integrals.* | | | | | | |
| 5. *Determine the convergence or divergence of a sequence of real numbers.* | | | | | | |
| 6. *Use various tests (divergence nth term test, integral test, comparison tests, alternating series tests, ratio test, and root test) to study the convergence of series of real numbers.* | | | | | | |
| 7. *Determine the radius and interval of convergence of a power series.* | | | | | | |
| 8. *Determine Taylor and Maclaurin polynomial and series of functions.* | | | | | | |
| 9. *Apply Taylor and Maclaurin series to approximate definite integrals and to evaluate limits.* | | | | | | |

**17. Course assessment:**

| *Assessment Type* | *Assessment details* | | *Number* | *Weight* |
|---|---|---|---|---|
| ***Quizzes*** | | | *-* | |
| *Tests* | *Test #* | *CILOs covered* | ***2*** | *50 %* |
| | *1* | *1,2,3.* | | |
| | *2* | *3,4,5,6.* | | |
| *Laboratory/Practical* | | | *-* | |
| *Assignments/Home works* | *H.W. #* | *CILOs covered* | ***9*** | *10 %* |
| | *1* | *LO1* | | |
| | *2* | *LO2* | | |
| | *3* | *LO3* | | |
| | *4* | *LO3* | | |
| | *5* | *LO3* | | |
| | *6* | *LO5* | | |
| | *7* | *LO6* | | |
| | *8* | *LO6* | | |
| | *9* | *LO7 , 8 , 9* | | |
| *Projects/Case Studies* | | | *-* | |
| *Final* | *CILOs 1,2,3,4,5,6,7,8,9* | | ***1*** | *40%* |
| ***Total*** | | | *12* | *100%* |

**18. Assessment Details:**

| ***Exam*** | ***Weight*** | ***Time*** | ***Date*** | ***Place*** | ***Material*** |
|---|---|---|---|---|---|
| *Test 1* | *25%* | *T.B.A.* | *T.B.A.* | *T.B.A.* | *5.6 – 8.1* |
| *Test 2* | *25%* | *T.B.A.* | *T.B.A.* | *T.B.A.* | *8.2 – 10.3* |
| *Final exam* | *40%* | *8:30 – 10:30* | *7 - 6 – 2017* | *-* | *Comprehensive* |

**19. Course Instructors:**

| **Sections** | **Name** | **Office** |
|---|---|---|
| 1 , 2 , 4 | Dr. Kifah Al-hami | S41-2086 |
| 5 , 6 | Dr. Moh'd Labbi | S41-2037 |
| 3 , 7 , 8 , 9 | Dr. A. Abu Safiya | S41-2051 |
| 10 , 11 , 12 | Dr. A. Hadi Belkhairat | S41-2088 |
| 13 | Dr. Abdulla Eid | S41-2098 |
| 14 , 15 | Dr. Ahmed Matar | S41-2135 |
| 16 | Dr. Khalid Amin | S41-2100 |
| | | |

**20. Attendance Policy:**

*Extracts from the University Bulletin regarding withdrawal and enforced withdrawal:*
*A student's absence from lectures or classes in excess of 25% of the total assigned session will result in an automatics withdrawal of the student from the course, regardless of the causes for his/her absence.*

*a) A grade of (W) is given to a student who misses 25% or more of the total sessions assigned to the course if he/she presents a valid excuse for his/her absence.*

*b) A grade of (WF) is given to a student who misses 25% or more, but with no valid excuse.*

***21.*** **Academic Honesty and Plagiarism***:*

*All students are expected to follow the specific rules of academic honesty and plagiarism as per The Regulation of Professional conduct Violations for University of Bahrain Students, decision # 4/2006. Please refer the UoB website-Deanship of Students Affairs-Guidance Office.*

## 22. Course Weekly Breakdown

| Week | Date | Topics covered | CILOs | Teaching Method | Assessment | Examples | Suggested Problems |
|---|---|---|---|---|---|---|---|
| 1 | 19 / 2 / 2017 | 5.6 Area<br>6.1 Volume | 1 | Lecture & Problem solving | Test 1, HW1 & final exam | 5-7<br>4-10 | 47-62 , 63-68 , 73-76<br>15-22 , 39-42 , 51-53 |
| 2 | 26 / 2 / 2017 | 6.1 Volume<br>6.2 Volumes using cylindrical shells | 1 | Lecture & Problem solving | Test 1, HW1 & final exam | 4-10<br>2 , 3 | 15-22 , 39-42 , 51-53<br>1-6 , 15-26 |
| 3 | 5 / 3 / 2017 | 4.5 L'hopitals rule<br>7.3 Hyperbolic Functions | 2<br>3 | Lecture & Problem solving | Test 1, HW2 & final exam | 1-8<br>1(a) | 1-74<br>1-10 , 13-24 |
| 4 | 12 / 3 / 2017 | 8.1 Integration by parts | 3 | Lecture & Problem solving | Test 1, HW3 & final exam | 1-4 , 6- 8 | 1-50 |
| 5 | 19 / 3 / 2017 | 8.2 Trigonometric Integrals<br>8.3 Trigonometric Substitutions | 3<br>3 | Lecture & Problem solving | Test 2, HW4 & final exam | 1-7<br>1-3 | 1-22 , 23-26 , 33-56<br>1-46 |
| 6 | 26 / 3 / 2017 | 8.4 Integral of Rational functions<br>8.6 Numerical Integration | 3<br>3 | Lecture & Problem solving | Test 2, HW5 & final exam | 1- 9<br>1 , 2 | 1-42<br>1-10 (a) |
| 7 | 2 / 4 / 2017 | 8.7 Improper integrals | 4 | Lecture & Problem solving | Test 2 & final exam | 2-7 | 1-27 , 40 , 50 , 55 , 56 , 60 |
| 8 | 9 / 4 / 2017 | 10.1 Sequences<br>10.2 Infinite Series | 5<br>6 | Lecture & Problem solving | Test 2, HW6 & final exam | 3 , 4 , 7-9<br>1 , 2 , 5 , 7 , 9 | 1-6 , 27-62<br>7-60 , 63-68 |
| 9 | 16 / 4 / 2017 | **Mid-term Break** | - | - | - | - | - |
| 10 | 23 / 4 / 2017 | 10.2 Infinite Series<br>10.3 The Integral Test | 6<br>6 | Lecture & Problem solving | Test 2, HW7 & final exam | 1, 2, 4, 5, 7, 9<br>3 , 4 , 5 | 7-60 , 63-68<br>1-10 , 11-38 , 49-52 |
| 11 | 30 / 4 / 2017 | 10.4 Comparison Tests<br>10.5 The Ratio and Root Tests | 6<br>6 | Lecture & Problem solving | HW7 & final exam | 1(a,b) , 2(a,b) , 3<br>1-3 | 1-8 , 9-16 , 17-49<br>1-43 , 47 , 49 , 54 |
| 12 | 7 / 5 / 2017 | 10.6 Alternating Series , Absolute and conditional convergence | 6 | Lecture & Problem solving | HW8 & Final exam | 1 , 4 , 5 | 1-36 , 49-54 |
| 13 | 14 / 5 / 2017 | 10.6 Alternating Series , Absolute and conditional convergence<br>10.7 Power Series | 6<br>7 | Lecture & Problem solving | HW8 & Final exam | 1 , 4 , 5<br>1-6 | 1-36 , 49-54<br>1-32 , 41-48 |
| 14 | 21 / 5 / 2017 | 10.7 Power Series<br>10.8 Taylor and Maclaurin Series | 7<br>8 | Lecture & Problem solving | HW9 & Final exam | 1-6<br>1-3 | 1-32 , 41-48<br>1-26 |
| 15 | 28 / 5 / 2017 | 10.9 Convergence of Taylor Series<br>10.10 Applications of Taylor Series | 8<br>9 | Lecture & Problem solving | HW9 & Final exam | 4 , 5<br>1, 2, 3 ,5 ,6 ,7 | 1-10, 11-23 , 35 , 36<br>15-22, 29-34 |
| 16 | 4 / 6 / 2017 | Revision.<br>Last day of classes ( **June 5 , 2017** )<br>Final Exam **(June 7, 2017).** | - | - | - | - | - |

**ONLINE HOMEWORK'S** [www.mathxl.com](http://www.mathxl.com)

| H.W # | Assignment coverage | Date "Start" (D/M/Y)<br><br>1:00 am | Date "Due" (D/M/Y)<br><br>11:55 pm |
|---|---|---|---|
| 1 | Sections 6.1 , 6.2 | 2/3/2017 | 11/3/2017 |
| 2 | Section 4.5 | 12/3/2017 | 22/3/2017 |
| 3 | Section 8.1 | 23/3/2017 | 3/4/2017 |
| 4 | Sections 8.2 , 8.3 | 4/4/2017 | 14/4/2017 |
| 5 | Section 8.4 , 8.6 | 15/4/2017 | 25/4/2017 |
| 6 | Sections 10.1 , 10.2 | 26/4/2017 | 6/5/2017 |
| 7 | Sections 10.3 , 10.4 | 7/5/2017 | 17/5/2017 |
| 8 | Sections 10.5 , 10.6 | 17/5/2017 | 23/5/2017 |
| 9 | Sections 10.7, 10.8, 10.9 , 10.10 | 23/5/2017 | 30/5/2017 |

| Section(s) | Instructor | Course ID |
|---|---|---|
| 1, 2, 4 | Dr. Kifah Alhami | XL2M-B1RO-801Y-3UI2 |
| 5 , 6 | Dr. Mohamed Al-arabi | XL2M-D1QE-201Y-9UI2 |
| 3, 7, 8, 9 | Dr. A.Sameea AbuSafiya | XL2M-D1QB-201Y-6UI2 |
| 10, 11 , 12 | Dr. ABDELHADI BELKHIRT | XL2M-D1QF-301Y-0UI2 |
| 13 | Dr. Abdulla Eid | XL2M-D1QJ-301Y-4UI2 |
| 14, 15 | Dr. Ahmed Matar | XL2M-D1QD-201Y-8UI2 |
| 16 | Dr. Khalid Amin | XL2M-D1QI-301Y-3UI2 |