اللائحة الداخلية

لمرحلة البكالوريوس

كلية الحاسبات والمعلومات - جامعة المنصورة

الباب الأول

الأهداف والأقسام والدرجات العلمية

مادة (1):

تهدف الكلية إلى تحقيق الأغراض الآتية:-

1) إعداد المتخصصين في الحاسبات والمعلومات المؤهلين بالأسس النظرية ومنهجيات التطبيق بما يؤهلهم للمنافسة العالمية في تطوير تكنولوجيا الحاسبات والمعلومات.

2) إجراء الدراسات والبحوث العلمية والتطبيقية في مجال الحاسبات والمعلومات وفي مقدمتها التي لها أثر على التنمية المتكاملة في المجتمع.

3) تقديم الاستشارات والمساعدات العلمية والفنية للهيئات والجهات التي تستخدم تكنولوجيا الحاسبات والمعلومات وتهتم بصناعة واتخاذ القرار ودعمه.

4) تدريب الكوادر الفنية في قطاعات الدولة المختلفة على تكنولوجيا الحاسبات والمعلومات.

5) إعادة تأهيل خريجي الكليات المختلفة طبقاً لحاجة سوق العمل في المجالات الحديثة لعلوم الحاسب والمعلومات وذلك عن طريق الدراسة النظامية في الدبلومات المتخصصة.

6) نشر الوعي وتعميقه في المجتمع بهدف إدخال استخدام تكنولوجيا الحاسب والمعلومات في قطاعات ومؤسسات الدولة المختلفة ورفع كفاءة استخدامها.

7) الاشتراك مع الجهات المتخصصة لتطوير برمجيات النظم والتطبيقات وخاصة العربية منها.

8) تنظيم المؤتمرات وعقد الاجتماعات العلمية بهدف الارتقاء بالمستوى التعليمي وتعميق المفهوم العلمي بين الكوادر المتخصصة.

9) عقد الاتفاقيات مع الهيئات والمؤسسات المناظرة على المستوى المحلي والإقليمي والعالمي بهدف تبادل الآراء وإجراء البحوث المتعلقة بتخصصات الحاسبات والمعلومات.

10) إنشاء وحدات أبحاث متخصصة متقدمة في الفروع المختلفة لعلوم الحاسبات والمعلومات.

11) توفير وتدعيم وسائل النشر والبحث العلمي في شتى مجالات التخصص.

مادة (2):

تتكون الكلية من الأقسـام العلميـة التالية:-

1) قسم علوم الحاسب
2) قسم نظم المعلومات
3) قسم تكنولوجيا المعلومات

ويجوز أن تنشـأ بالكلية أقسام أخرى وفقاً لأحكام قانون تنظيم الجامعات.

مادة (3):

تمنح جامعة المنصورة بناء على طلب مجلس الكلية درجة البكالوريوس وذلك في أحد التخصصات العلمية الآتية:-

أ) علوم الحاسب
ب) نظم المعلومات
ج) تكنولوجيا المعلومات

ويجوز أن تمنح الجامعـ ـ ـة بناء على طلب مجلس الكلية هذه الدرجة العلمية في تخصصات أخرى وفقاً لأحكام قانون تنظيم الجامعات.

الباب الثـاني
الدراسة والامتحانات

مادة (4):

تقبل الكلية خريجي الثانوية العامة الذين أتموا بنجاح دراسة مواد الرياضيات كاملة في مرحلة الثانوية العامة ومادة الفيزياء.

مادة (5):

مدة الدراسة لنيل درجة البكالوريوس أربع سنوات جامعية مقسـمة علـى ثمانيـة فصول دراسية بالإضافة إلى تدريب عملي.
ويشترط لحصول الطالب على الدرجة الجامعية الأولي أن يجتاز بنجاح الرخصـة الدولية لقيادة الحاسب الآلي ICDL أو ما يقابلها من الشهادات الأخرى واعتبارها متطلب جامعي للتخرج.

مادة (6):

يدرس الطالب في الفرقة الأولى والثانية دراسة عامة، ثم دراسة لمدة سنتين فـي أحد التخصصات التالية:-

أ- علوم الحاسب ب- نظم المعلومات جـ- تكنولوجيا المعلومات

وتبين الجداول الملحقة بهذه اللائحة المقررات الدراسـية موزعـة علـى فصـلين دراسيين لكل عام من سنوات الدراسة وعدد الساعات المخصصة أسـبوعياً لكـل مقرر من محاضرات ودروس عملية وتمارين. ويقر مجلس الكلية بعـد أخـذ رأي مجالس الأقسام المحتوى العلمي لكل مقرر دراسي.

مادة (7):

النهاية العظمى لدرجات امتحان أي مقرر مائة درجـة (عـدا مقـرر المشـروع فمائتان)،وتخصص نسبة 60% من النهاية العظمى لمجمـوع درجـات الامتحـان التحريري فـى المقـررات العمليـة ونسـبة 10% لامتحانـات أعمـال السـنة التحريريةونسبة 20% للامتحانات العملية ونسبة 10% لامتحانات الشـفهية. أمـا

بالنسبة للمقررات النظرية تخصص نسبة 75% من النهايـة العظمـى لمجمـوع درجات الامتحان التحريرى ونسبة 25% للامتحانات الشفهية.

مادة (8):

يحرم الطالب من أداء الامتحان التحريري لأي مقرر أن لم يكن مسـتوفياً نسـبة حضور لاتقل عن 75% من المحاضرات والتطبيقات العملية.

مادة (9):

ينقل الطالب من الفرقة المقيد بها إلى الفرقة التى تليها إذا نجح فى جميع المقررات أو كان راسبا فيما لا يزيد عن مقررين من المقررات الأساسية لجميـع السـنوات الدراسية السابقة للفرقة المنقول إليها بالإضافة إلي رسوبه في مقـرر ثالـث مـن المقررات الإضافية (اختياري جامعة أو الجوانب الأخلاقية) وتعتبر المادة المتصلة مقررا واحدا ويؤدي الطالب الامتحانات فيما رسب فيه من مقـررات فـي موعـد يحدده مجلس الكلية ويقدر نجاح الطالب في هذه المقررات بعد اجتيازهـا بتقـدير مقبول أما إذا كانت درجاته الحاصل عليها أعلي من تقدير مقبول فيحصل على الحد الأقصى لهذا التقدير، وفي حالة تقدم الطالب بعذر مقبول فيحصلا على الـدرجات والتقدير الفعلي الحاصل عليه.

مادة (10):

يكلف الطلاب المنقولون إلى الفرقة النهائية بحضور فترة تدريب عملي لمدة لا تقل عن شهر ولا تزيد عن 45 يوما في إحدى الجهات المتصـلة بتخصصـهم خـلال العطلة الصيفية.

ويحدد مجلس الكلية أماكن التدريب ونظام توزيع الطلاب ونظام المتابعة والتقييم.

ولا تمنح شهـادة التخرج إلا للطلاب الذين أتموا التدريب العملـي بنجاح.

مادة (11):

يكلف طلاب الفرقة النهائية بإعداد مشروع تخرج ممتد على الفصلين الدراسيين في موضوع يحدده مجلس القسم المختص، على أن يتم تقييم المشروع عملياً وشفهيا بمعرفة لجنة تشكل بناء على إقتراح مجلس القسم المختص وموافقة مجلس الكلية، ويجوز لمجلس الكلية إضافة مدة لا تزيد عن أربعة أسابيع بعد انتهاء الامتحان التحريري للفصل الدراسي الثاني لاستكمال المشروع قبل المناقشة النهائية، وعلى الطالب أن يجتاز بنجاح مشروع البكالوريوس، وفي حالة رسوبه أو غيابه يعد باقياً للإعادة ويؤدي الطالب امتحانه في الموعد الذي يحدده مجلس الكلية حسبما ورد بالمادة(9).

مادة (12):

يقدر نجاح الطالب في المواد الدراسية والتقدير العام بأحد التقديرات الآتية:-

ممتاز : من 85% فأكثر من مجموع الدرجات.

جيد جدا : من 75% إلي أقل من 85% من مجموع الدرجات.

جيد : من 65% إلي أقل من 75% من مجموع الدرجات.

مقبول : من 50% إلي أقل من 65% من مجموع الدرجات.

أما رسوب الطالب فيقدر بأحد التقديرين الآتيين :-

ضعيف : من 30% إلي أقل من 50% من مجموع الدرجات.

ضعيف جداً : أقل من 30% من مجموع الدرجات.

مادة (13):

يحسب التقدير العام للطالب في درجة البكالوريوس على أساس المجموع الكلي للدرجات التي حصل عليها في كل السنوات الدراسية ويتم ترتيبهم وفقاً لهذا المجموع ،ويمنح الطالب مرتبة الشرف إذا كان تقديره التراكمي العام ممتاز أو جيد جداً وعلى ألا يقل تقديره العام في أي فرقة من الفرق الدراسية عن جيد جداً وألا يكون قد رسب في أي امتحان تقدم له وأية فرقة من الفرق الدراسية بالكلية طبقاً لنص المادة(85) من قانون تنظيم الجامعات.

** مرتبة الشرف اعتبارية حيث يعتد في الترتيب بالمجموع التراكمي.

الباب الثالث

الأحكام الانتقالية

مـادة (14):

تطبق اللائحة بالتتابع ابتداءً من العام الجامعي التالي لإقرارها على جميع الطلاب المقيدين بالفرقة الأولى المستجدين والباقين للإعادة فيها ويستمر العمـل باللائحـة السابقة الصادرة بالقرار الوزاري رقم 332 لعام 1996 وتعـديلاتها علـى بـاقي الطلاب المقيدين بالكلية لحين انتهاء دراستهم بها .

ملحـــــق (أ)

كـــود المقــررات

تبين الجداول التالية المقررات الدراسية موزعة على الفصلين الدراسيين لسنوات الدراسة وعدد الساعات المخصصة أسبوعياً للمحاضرات والتمارين والنهاية العظمة لدرجة كل مقرر للامتحانات التحريرية أو العملية وأعمال الفصل ، كذالك تحتوى الجداول على عدد ساعات امتحان كل مقرر .

كود المقرر:

يتكون كود المقرر من أربعة أجزاء كما يلي:

الجزء الأول: عبارة عن كود حرفي يرجع عادة للمجال العلمي للمقرر علي النحو التالي:

م	القسم العلمي	الكود
1	علوم الحاسب	CS
2	نظم المعلومات	IS
3	تكنولوجيا المعلومات	IT
4	العلوم الأساسية	UNI
5	اختياري جامعة	US
6	مشروع تخرج	GP
7	حقوق الإنسان	H
8	الجوانب الأخلاقية والاجتماعية	HR

الجزء الثاني: يتكون من ثلاثة أرقام كالتالي :

*- الرقم الأول من أقصي اليسار هو كود الفرقة الدراسية وهو الفرقة الأولي (1)، الفرقة الثانية(2)، الفرقة الثالثة (3)، الفرقة الرابعة (4)

*- الرقم الثاني من أقصي اليسار يدل على الفصل الدراسي، وهو (1) للفصل الدراسي الأول أو (2) للفصل الدراسي الثاني

*- الرقم الثالث من أقصي اليسار يدل على ترتيب المادة فى الفصل الدراسي.

الجزء الثالث: وهو حرف يدل على كون المقرر مقرر عملي أو مقرر نظري على النحو التالي:

م	القسم العلمي	الكود
1	المقرر العملي	P
2	المقرر النظري	T

الجزء الرابع: وهو يتكون من ثلاثة أعداد على النحو التالي:

* - الرقم الأول من أقصي اليسار يدل على عدد ساعات المحاضرات فى الأسبوع.
* - الرقم الثاني من أقصي اليسار يدل على عدد ساعات التمارين فى الأسبوع.
* - الرقم الثالث من أقصي اليسار يدل على عدد ساعات الامتحان النهائي.

ملحـــــق (ب)

جداول المقررات الدراسية

الفرقة الأولـــى

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
2 - 3 - 3 CS111P	أساسيات علوم الحاسب	Fundamentals of Computer Science	10	20	10	40	60	100
2 - 3 - 3 CS112P	أساسيات البرمجـــة	Fundamentals of Programming	10	20	10	40	60	100
2 - 3 - 3 UNI111T	رياضيات منفصلة	Discrete Mathematics	25	—	—	25	75	100
1 - 3 - 2 UNI112T	لغة إنجليزية متخصصة	English For Computer Scientists	25	—	—	25	75	100
2 – 3 - 3 UNI113P	فيزياء	Physics	10	20	10	40	60	100
2 – 0 - 2 UNI114T	حقوق الإنسان	Human Rights	—	—	—	—	50	50

الفصل الدراسي الثاني

2-3-3 IT	أساسيات تكنولوجيا المعلومات	Fundamentals of Information Technology	10	20	10	40	60	100
2 – 3 - 3 CS123P	البرمجة الشيئية	Object Oriented Programming	10	20	10	40	60	100
2 – 3 - 3 IS121P	أساسيات نظم المعلومات	Fundamentals of Information Systems	10	20	10	40	60	100
2 – 3 - 3 UNI125T	حساب التفاضل والتكامل	Calculus	25	—	—	25	75	100
2 – 3 - 3 IT124P	دوائر منطقية ورقمية	Digital Logic Circuits	10	20	10	40	60	100
UN112ST	نظرية الاحتمالات والتوزيعات الإحصائية (1)	Probability Theory and Statistical Distributions (1)	25	—	—	25	75	100

الفرقة الثانيـــة

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجـــات					
			أعمال السنة			نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
2 – 3- 3 CS211P	نظم التشغيل (1)	Operating Systems (1)	10	20	10	40	60	100
2 – 3 - 3 IS211P	هياكل البيانات وتحليل الخوارزميات	Data Structures and Algorithms	10	20	10	40	60	100
2 – 3 - 3 UNI211T	الجبر الخطي	Linear Algebra	25	—	—	25	75	100
2 – 3 -3 CS212P	تنظيم و بناء الحاسبات	Computer Organization and Architecture	10	20	10	40	60	100
2 – 3 - 3 IS211P	برمجة الويب	Web Programming	10	20	10	40	60	100

الفصل الدراسي الثاني

2-3-3 UN122IT	نظرية الاحتمالات والتوزيعات الإحصائية (2)	Probability theory and Statistical Distributions (2)	25	—	—	25	75	100
2 – 3 - 3 IS222P	نظم قواعد البيانات	Database Systems	10	20	10	40	60	100
2 – 3 - 3 IT222P	اتصالات البيانات	Data Communications	10	20	10	40	60	100
2 – 3 - 3 IS223P	الرسم بالحاسب	Computer Graphics	10	20	10	40	60	100
2 – 0 - 2 F223T	الجوانب الأخلاقية والاجتماعية والمهنية	Social ،Ethical and Professional Issues	—	—	—	—	50	50
1 – 3 -2 US225T	اختياري جامعة		25	—	—	25	75	100

اختياري جامعة:
يختار الطالب مقرر دراسي واحد من بين المقررات الآتية:

	اختياري جامعـــة
1	علم النفس المعرفي
2	قانـون
3	مبادئ الالكترونيات
4	بحـــوث العمليات
5	مبادئ الإدارة
6	تحليل عددي
7	أى مادة أخرى من خارج الكلية

الفرقة الثالثـــة-شعبة علوم الحاسب

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجات				
			أعمال السنة			نظري	الدرجة الكلية
			تحريري	عملي	شفهي	المجموع	
2-3-3 CS311P	هندسة البرمجيات-1	Software Engineering-1	10	20	10	40	60	100
2-3-3 IT311P	شبكات وأمن الحاسبات	Computer Networks and Security	10	20	10	40	60	100
2-3-3 CS312T	تحليل و تصميم الخوارزميات	Algorithms Analysis and Design	25	—	—	25	75	100
2-3-3 CS313P	البرمجة المنطقية	Logic Programming	10	20	10	40	60	100
2-3-3 CS214P	لغة التجميع	Assembly Language	10	20	10	40	60	100

الفصل الدراسي الثاني

2-3-3 CS324P	الذكاء الاصطناعي (1)	Artificial Intelligence(1)	10	20	10	40	60	100
2-3-3 IT325P	معالجة الإشارات الرقمية	Digital Signal Processing	10	20	10	40	60	100
2-3-3 CS326P	تصميم لغات الحاسب	Programming Language Design	10	20	10	40	60	100
2-3-3 CS327P	نظم التشغيل (2)	Operating Systems-2	10	20	10	40	60	100
2-3-3 CSS32P	اختياري كلية (1)		10	20	10	40	60	100

الفرقة الرابعـــة-شعبة علوم الحاسب

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
2-3-3 CS411P	معالجة اللغات الطبيعية	Natural Language Processing	10	20	10	40	60	100
2-3-3 CS412P	النظم الموزعة	Distributed Systems	10	20	10	40	60	100
2-3-3 CS413P	ذكاء اصطناعي (2)	Artificial Intelligence(2)	10	20	10	40	60	100
2-3-3 CS414P	موضوعات مختارة في علوم الحاسب	Selected Topics in Computer Science	10	20	10	40	60	100
2-3-3	اختياري كلية (2)	Elective-2	10	20	10	40	60	100
2-3 GP1	مشروع تخرج-1	Graduate Project-1	20	20	10	50	--	50

الفصل الدراسي الثاني

2-3-3 CS421P	نظم المعرفة	Knowledge-Based Systems	10	20	10	40	60	100
2-3-3 CS422P	بناء المترجمات	Compiler Construction	10	20	10	40	60	100
2-3-3 CS423P	تعريب الحاسبات وتكنولوجيا اللغات	Computer Arabization and Language Technology	10	20	10	40	60	100
2-3-3 CS424P	اختياري كلية (3)	Elective-3	10	20	10	40	60	100
2-3-3	اختياري كلية (4)	Elective-4	10	20	10	40	60	100
2-6 GP2	مشروع تخرج -2	Graduate Project-2	20	15	15	50	100 (مناقشة)	150

****موضوعات مختارة في علوم الحاسب:**

مقرر إجباري على جميع الطلاب يرى القسم العلمي أهمية تدريسه ويقره مجلس الكلية

اختياري كلية:

يختار القسم مقرر من بين المقررات التخصصية التالية :

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	المجموع		
IT326P	طرق تفاعل الإنسان و الحاسب	Human Computer Interaction	10	20	10	40	60	100
IT331P	النمذجة و المحاكاة	Modeling and Simulation	10	20	10	40	60	100
CS333P	أسس الحسابات المتوازية	Parallel Computing Basics	10	20	10	40	60	100
CS334P	مقدمة في تقييم أداء النظام	Introduction to System Performance Analysis	10	20	10	40	60	100
IS333P	التحريك باستخدام الحاسب	Computer Animation	10	20	10	40	60	100
IT431P	تصميم أنظمة الدوائر واسعة النطاق	VLSI Systems Design	10	20	10	40	60	100
IS411P	الوسائط المتعددة	Multimedia Systems	10	20	10	40	60	100
IT325P	برمجة الشبكات	Network programming	10	20	10	40	60	100
CS33CP	هندسة برمجيات-2	Software Engineering-2	10	20	10	40	60	100
CS432P	الأنظمة المضمنة	Embedded Systems	10	20	10	40	60	100
IT433P	الشبكات العصبية	Neural Networks	10	20	10	40	60	100
CS434P	علم الإنسان الآلي	Robotics	10	20	10	40	60	100
IT435P	نظم الرؤية بالحاسب	Computer Vision	10	20	10	40	60	100
IT425P	تطبيقات المعالجات الدقيقة	Microprocessors Applications	10	20	10	40	60	100
IS438P	خوارزميات ضغط البيانات	Data Compression Algorithms	10	20	10	40	60	100
CS43DP	الأنظمة المتزامنة	Concurrent Systems	10	20	10	40	60	100
IT411P	الحسابات المتنقلة	Mobile Computing	10	20	10	40	60	100

الفرقة الثالثـــة-شعبة نظم المعلومـــات

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجـــات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	المجموع		
2 - 3 – 3 IS311T	نظرية المعلومات	Information Theory	25	—	—	25	75	100
2 - 3 – 3 IT311P	شبكات الحاسب	Computer Networks	10	20	10	40	60	100
2 - 3 – 3 IS312P	تحليل النظم و التصميم المنطقي	Systems Analysis and Logical Design	10	20	10	40	60	100
2 - 3 – 3 IS313P	قواعد بيانات II	Database Systems II	10	20	10	40	60	100
2 - 3 – 3 UNI311T	أساليب البحث العلمي	Research Methods	25	—	—	25	75	100

الفصل الدراسي الثاني

2 - 3 – 3 IS325P	نظم المعلومات الذكية	Intelligent Information Systems	10	20	10	40	60	100
2 - 3 – 3 IS326P	الأعمال الالكترونية	E-Business Strategy, Architecture, and Design	10	20	10	40	60	100
2 - 3 – 3 IT325P	برمجة الشبكات	Network Programming	10	20	10	40	60	100
2 - 3 – 3 IS327P	تصميم و تنفيذ النظم	Systems Design and Implementation	10	20	10	40	60	100
2 - 3 – 3	اختياري كلية -1		10	20	10	40	60	100

الفرقة الرابعـــة-شعبة نظم المعلومـــات

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
2 - 3 - 3 IS411P	الوسائط المتعددة	Multimedia	10	20	10	40	60	100
2 - 3 - 3 IT412P	الحسابات المتنقلة	Mobile Computing	10	20	10	40	60	100
2 - 3 - 3 IS413P	قواعد البيانات الموزعة	Distributed Database Systems	10	20	10	40	60	100
2 - 3 - 3 IS414P	إدارة المشروعات	Project Management	10	20	10	40	60	100
2 - 3 - 3	اختياري كلية - 2	Elective-2	10	20	10	40	60	100
2 – 3 GP1	مشروع تخرج-1	Graduate Project-1	20	20	10	50	--	50

الفصل الدراسي الثاني

2 - 3 - 3 IT421P	أمن الحاسبات	Computer Security	10	20	10	40	60	100
2 - 3 - 3 IS422P	التنقيب في البيانات	Data Mining	10	20	10	40	60	100
2 - 3 - 3 IS423P	نظم المعلومات الجغرافية	Geographic Information Systems	10	20	10	40	60	100
2 - 3 - 3 IS424P	موضوعات مختارة في نظم المعلومات	Selected Topics in Information Systems	10	20	10	40	60	100
2 - 3 - 3	اختياري كلية -3	Elective-3	10	20	10	40	60	100
2 – 6 GP2	مشروع تخرج - 2	Graduate Project-2	20	15	15	50	100 (مناقشة)	150

****موضوعات مختارة في نظم المعلومات:**

مقرر إجباري على جميع الطلاب يرى القسم العلمي أهمية تدريس ويقره مجلس الكلية

اختياري كلية-1:

يختار الطالب مقرر من بين المقررات التخصصية التالية :

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	المجموع		
IS331P	النمذجة و المحاكاة	Modeling and Simulation	10	20	10	40	60	100
IS331T	نظم المعلومات الإدارية	Management Information Systems	10	—	15	25	75	100
IS332P	نظم دعم القرارات	Decision Support Systems	10	20	10	40	60	100
IT333P	التحريك باستخدام الحاسب	Computer Animation	10	20	10	40	60	100
IT326P	طرق تفاعل الإنسان و الحاسب	Human Computer Interaction	10	20	10	40	60	100
CS312T	تحليل و تصميم الخوارزميات	Algorithms Analysis and Design	10	20	10	40	60	100
IT431P	تحليل جرائم الحاسب	Computer Forensics	10	20	10	40	60	100
IT432P	القياسات البيولوجية	Biometrics	10	20	10	40	60	100
IS432P	مخازن البيانات	Data Warehousing	10	20	10	40	60	100
IT413P	المعلوماتية الطبية	Medical Informatics	10	20	10	40	60	100
IS433P	النظم الذكية للوسائط المتعددة	Intelligent Multimedia Systems	10	20	10	40	60	100
IS434P	التمثيل المرئي للمعلومات	Information Visualization	10	20	10	40	60	100
IS435P	تكامل المؤسسات	Integrating the Enterprise	10	20	10	40	60	100
IT436P	تكامل النظم	Systems integration	10	20	10	40	60	100

الفرقة الثالثـــة-شعبة تكنولوجيا المعلومـــات

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة			نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
2 - 3 – 3 IT311P	شبكات الحاسب	Computer Networks	10	20	10	40	60	100
2 - 3 – 3 CS311P	هندسة البرمجيات	Software Engineering	10	20	10	40	60	100
2 - 3 – 3 IS313P	قواعد بيانات II	Database Systems II	10	20	10	40	60	100
2 - 3 – 3 IT312P	الكترونيات	Electronics	10	20	10	40	60	100
2 - 3 – 3 UNI311T	أساليب البحث العلمي	Research Methods	25	—	—	25	75	100

الفصل الدراسي الثاني

2 - 3 – 3 IT323P	الحسابات المبهمة	Soft Computing	10	20	10	40	60	100
2 - 3 – 3 IT324P	معالجة الصور	Image Processing	10	20	10	40	60	100
2 - 3 – 3 IT325P	برمجة الشبكات	Network Programming	10	20	10	40	60	100
2 - 3 – 3 IT326P	طرق تفاعل الإنسان والحاسب	Human Computer Interaction	10	20	10	40	60	100
2 - 3 – 3 IT321P	اختياري كلية -1		10	20	10	40	60	100

الفرقة الرابعـــة-شعبة تكنولوجيا المعلومـــات

الفصل الدراسي الأول

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
2 - 3 – 3 IS411P	الوسائط المتعددة	Multimedia	10	20	10	40	60	100
2 - 3 – 3 IT412P	الحسابات المتنقلة	Mobile Computing	10	20	10	40	60	100
2 - 3 – 3 IT413P	التعرف على الأنماط	Pattern Recognition	10	20	10	40	60	100
2 - 3 – 3 IT414P	المعلوماتية الطبية	Medical Informatics	10	20	10	40	60	100
2 - 3 - 3	اختياري كلية -2	Elective-2	10	20	10	40	60	4100
2 – 3 GP1	مشروع تخرج-1	Graduate Project-1	20	20	10	50	--	50
الفصل الدراسي الثاني								
2 - 3 – 3 IT421P	أمن الحاسبات	Computer Security	10	20	10	40	60	100
2 - 3 – 3 IS422P	التنقيب في البيانات	Data Mining	10	20	10	40	60	100
2 - 3 – 3 IT423P	تطبيقات المعالجات الدقيقة	Microprocessor Applications	10	20	10	40	60	100
2 - 3 – 3 IT424P	موضوعات مختارة في تكنولوجيا المعلومات	Selected Topics in IT	10	20	10	40	60	100
2 - 3 - 3	اختياري كلية 3	Elective-3	10	20	10	40	60	100
2 – 6 GP2	مشروع تخرج-2	Graduate Project-2	20	15	15	50	100 (مناقشة)	150

اختياري كلية:

يختار الطالب مقرر من بين المقررات التخصصية التالية :

الكود	اسم المقـــرر	Course	الدرجات					
			أعمال السنة				نظري	الدرجة الكلية
			تحريري	عملي	شفهي	مجموع		
IT331P	بنيات العميل-الخادم	Client Server Architectures	10	20	10	40	60	100
CS333P	أسس الحسابات المتوازية	Parallel Computing Basics	10	20	10	40	60	100
IS331P	النمذجة والمحاكاة	Modeling and Simulation	10	20	10	40	60	100
IT332P	بناء الحاسبات المتقدم	Advanced Computer Architecture	10	20	10	40	60	100
IS332P	نظم دعم اتخاذ القرار	Decision Support Systems	10	20	10	40	60	100
CS312T	تحليل و تصميم الخوارزميات	Algorithms Analysis and Design	10	20	10	40	60	100
IS432P	مخازن البيانات	Data Warehousing	10	20	10	40	60	100
IT431P	التعليم الإلكتروني	E-Learning	10	20	10	40	60	100
IT432P	القياسات البيولوجية	Biometrics	10	20	10	40	60	100
CS432P	الأنظمة المضمنة	Embedded Systems	10	20	10	40	60	100
IT431P	تصميم أنظمة الدوائر واسعة النطاق	VLSI Systems Design	10	20	10	40	60	100
IT435P	نظم الرؤية بالحاسب	Computer Vision	10	20	10	40	60	100
IT436P	تكامل النظم	Systems integration	10	20	10	40	60	100
IT 437P	التعرف على الكلام	Speech Recognition	10	20	10	40	60	100

ملحـــــق (ج)

المحتوى العلمي للمقررات الدراسية

Course Description

1- FIRST YEAR

Course Code	**CS111P**			
Course Name	**Fundamentals of Computer science**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Using and operating a personal computer, care and maintenance of equipment, types of programs, introduction to IBM-compatible operating systems, word processing, use of a spreadsheet, introduction to the Internet.			
Course Syllabus	• Overview (General Computer Topics, Computer Hardware and Software, Computer Systems Compared) • Processing Hardware (Computer Data and Computer Programs, The Computer Processor, Main Memory, and Registers) • Input/Output Hardware (Input Devices: Keyboard, Mouse, etc., Output Devices: Monitors, Screen, etc.) • Storage Hardware (Tape Storage, Diskette Storage, and Hard Disk Storage, Backing up Data) • System Software (Operating System Basic Features, DOS, Windows, Unix, OS/2, and Macintosh) • Application Software (Application Software Basic Features, MS Word, Excel, and Access, Specialty Applications Software) • Communications Technology (Communication Hardware, Communication Networks) • Software Programming and Languages (Programming Languages, Traditional Programming Languages, Object-Oriented and Visual Programming Languages) • Human-computer interaction: Introduction to design issues • Social context of computing: History of computing and computers; evolution of ideas and machines; social impact of computers and the Internet; professionalism, codes of ethics, and responsible conduct; copyrights, intellectual property, and software piracy.			

Course Code	**CS112P**			
Course Name	**Fundamentals of Programming**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Introduces the fundamental concepts of procedural programming in a programming Language (like C++). Topics include data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging.			
Course Syllabus	• Overview of programming languages: History of programming languages; brief survey of programming paradigms			

	• Introduction to language translation: Comparison of interpreters and compilers; language translation phases; machine-dependent and machine-independent aspects of translation • Components of the selected language (i.e. C++) environment (The editor, The compiler, The linker, The libraries). • The integrated development environment (Toolbars, Workspaces, Projects, Options). • Syntax (Compiler directives, Declarations, Statements and blocks, Mathematical orientation). • Values and variables (Data types, Literals and variables, Naming conventions, The scope of identifiers). • Operators (Numeric operators, Relational operators , Logical operators , Precedence of operators). • Program structure (Assignment, Functions, Decisions, Loops) • Data structures (Files ,Arrays). • Pointers (addresses and pointers, pointer variable, pointers and arrays, pointers and functions, passing simple variables, passing arrays, pointers to objects, pointers to pointers). • Streams and files (disk file I/O with streams, formatted file I/O, character I/O, binary I/O, closing files, file pointers).

Course Code	**UNI111T**		
Course Name	**Discrete Mathematics**		
Core/Elective	Core		
Credits	Theory: 2	Section: 3	TOT: 3
Course Description	This course serves as an introduction to some of the more important concepts, techniques, and structures of discrete mathematics, providing a bridge between computer science and mathematics.		
Course Syllabus	• Logic: Sentential and predicate languages, truth tables, quantifiers. • Methods of mathematical proof and disproof. • Set theory: Operations, cardinality, combinatorics, Boolean algebra and logic gates, simplification of logic circuits, normal forms. • Number theory: Algorithms, counting techniques, mathematical induction, recursion, computer numeration systems and representation, computer codes, computer arithmetic. • Relations and functions: Equivalence relations, partitions, partial orderings, lattices, inverse functions, composition, recursion and iteration. • Algebraic structures: Semi groups, groups, rings, Boolean algebras and isomorphism's. • Graph theory: Trees, directed graphs, colorings, and algorithms for traversing graphs. • Application of discrete mathematics: Modeling phenomena, automata theory, and historical topics.		

Course Code	**UNI112T**		
Course Name	**English for Computer Scientists**		
Core/Elective	Core		
Credits	Theory: 1	Section: 3	TOT: 2
Course Description	This course is designed to improve the English language skills and academic skills of international students during their first semester in the university. This course will place particular emphasis on the reading and writing skills students need for their university work. English proficiency will be developed through practical exercises in reading and analyzing texts, taking notes on textual materials, writing reviews and summaries, writing reports and essays from multiple sources of information, writing term papers, taking tests, and using computers for research and information access.		

Course Code	**UNI113P**			
Course Name	**Physics**			
Core/Elective	Core			
Credits	Theory: 2	Project.:0	Lab.:3	TOT: 3
Course Description	This course examines models of electrons and lattice vibrations in solids, emphasizing physical models for elastic properties, electronic transport, and heat capacity.			
Course Syllabus	• Introduction • Inertia, equilibrium, kinematics • Newton's laws, vectors, momentum, energy • Matter, elasticity, scaling • Wave kinematics • Sound, electricity, magnetism, induction • Light, reflection and refraction, emission			

Course Code	**CS123P**			
Course Name	**Object Oriented Programming**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Introduces the concepts of object-oriented programming to students with a background in the procedural paradigm.			
Course Syllbus	• Review of programming fundamentals. • Classes and objects (declaring the class, using the class, calling member functions, constructors). • Classes and objects (destructors, overloaded constructor, member functions defined outside the class, objects as arguments, returning objects from functions, structures versus classes, static class data). • Overloading unary operators (the operator keyword, operator			

	arguments, operator return value). • Overloading • Data conversion (conversion between basic types, conversion between objects and basic types, conversion between objects of different classes). • Inheritance (derived class and base class, derived class constructors, overriding member functions, abstract base class, multiple inheritance). • Templates and exceptions (function templates, class templates, exceptions) • Object-oriented design • Fundamentals of event-driven programming • Introduction to computer graphics: Using a simple graphics API • Virtual machines: The concept of a virtual machine; hierarchy of virtual machines; intermediate languages • Software development methodology: Fundamental design concepts and principles; structured design; testing and debugging strategies; test-case design; programming environments; testing and debugging tools • Software evolution: Software maintenance; characteristics of maintainable software; reengineering; legacy systems; software reuse

Course Code	**IS121P**			
Course Name	**Fundamentals of Information Systems**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course provides an introduction to systems and development concepts, information technology, and application software. It explains how information is used in organizations and how IT enables improvement in quality, timeliness, and competitive advantage.			
Course Syllabus	• Systems and IT Concepts. • IS life cycle. • Systems and Quality. • Information and Quality. • IT Hardware and Software. • IT Systems Specification. • IT and Attaining Objectives. • IS Careers. • Ethics and the IS Professional. • IS Theory. • Decision Making, Simon Model. • IS Types. • IS Development Standards.			

Course Code	**UNI125T**			
Course Name	**Calculus**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Introduction to calculus, integration, and linear algebra			
Course Syllabus	• Functions and Models (representing functions, domain and range, algebra of functions, transformations of functions, symmetry and periodicity of functions, review of polynomial, power and rational functions, convergence, completeness). • Functions ,limits and Models (the exponential and the logarithmic functions, trigonometric functions and their inverses, trigonometric formulas, the precise definition of limit, limit laws and continuity). • Rates of Change and Differentiation (rates of change, the tangent and velocity problems, applications to the sciences, differentiation, differentiation formulas, derivatives of trigonometric functions, the chain rule, implicit differentiation, higher order derivatives). • Applications of Differentiation (Fermat's Theorem, Rolle's Theorem, the Mean Value Theorem, optimization problems, applied projects). • Integrals (antiderivatives, areas and distances, the definite integral, Riemann sums and integrals, techniques and applications of integration, improper integrals). • multiple integration (integration over parameterized curves and surfaces, culminating in Stokes's Theorem).			

Course Code	**CS124P**			
Course Name	**Digital Logic Circuits**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	This course provides an introduction to the basic concepts and principles involved in digital logic.			
Course Syllabus	• Logic operations; truth tables; logic gates. • Boolean algebra and canonical forms . • K-maps; minimization of logic functions. • Multilevel combinational logic. • Multiplexers, demultiplexers. • Time response and hazards. • Programmable logic. • Tri-state and open collector gates; combinational logic case study. • Flip-flops and Latches. • Finite state machines, implementation and optimization • Arithmetic Unit: Adders/ subtractions / multipliers. • Memory: RAM and ROM. • Hardware description languages and prototyping.			

Course Code	**IT121P**			
Course Name	**Fundamentals of Information Technology**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course aims to provide the students with the introductory theory required to understand the components of computer systems, the operations of the systems and to expose students to some popular business application software. A major component of the course is the practical application of the knowledge gained from the theoretical content.			
Course Syllabus	• Operating Systems (Computer Classifications, Overview of Applications, Mail, News, Editors, RMIT News, FTP, Telnet.) • Single User Operating Systems, Multi User Operating Systems. • The Internet, Netiquette, Ethics. • The Programming Process, Programming languages, Collaborative Work. • The Central Processor, Executing Program Instructions. • Spreadsheet Introduction. Spreadsheets and Graphics. • Project Management Introduction. Managing a project. • Report Writing, Technical Reports, Document Enhancement. • Input and Output devices, Storage devices. • Creating a Home Page, Introduction to HTML, Writing a resume. • Systems Development Introduction, Systems Development Life Cycle.			

2- SECOND YEAR

Course Code	**UNI221T**		
Course Name	**Statistics & Probability**		
Core/Elective	Core		
Credits	Theory: 2	Section: 3	TOT: 3
Course Description	This course introduces the basic concepts of statistics and probability theory.		
Course Syllabus	• Sample spaces and events, probability model, independence, combinatorics, Bayes' theorem. • Random variables and probability distributions. • Discrete distributions including binomial, hypergeometric, Poisson. • Mathematical expectation, variance, covariance, Chebyshev's theorem. • Sampling distributions, central limit theorem. • Estimation and hypothesis testing; confidence intervals; student's t, chi-squared, and F distributions. • Correlation; linear, polynomial and exponential regression.		

Course Code	**CS211P**			
Course Name	**Data Structures and Algorithms**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course introduces the fundamental concepts of data structures and the algorithms that proceed from them, the file system fundamentals, and developing skills in the design and implementation of complex software systems.			
Course Syllabus	• Secondary Storage Devices Stacks, Queues, Linked Lists, Double-Ended Queues . • Sequences (Ranked Sequences, Positional Sequences, General Sequences) . • Trees (Binary Trees, Data Structures for Representing Trees) . • Priority Queues (Priority Queue as a Sequence, Heaps). • Dictionaries (Binary Search Trees, AVL Trees, Hash Tables). • Sets, Sorting, Selection (Sets, Merge Sort, Quick Sort, Radix Sort Complexity of Sorting, Selection). • Graphs (Data Structures for Graphs, Graph Traversal, Directed Graphs). • Strings (Brute-Force String Pattern Matching, Regular Expression Pattern Matching, Tries). • Record Storage and File Organizations (ordered and unordered files). • Hashing and extendible hashing. • Index structures for files (B-Trees, B+-Trees).			

Course Code	**UNI211T**		
Course Name	**Linear Algebra**		
Core/Elective	Core		
Credits	Theory: 2	Section: 3	TOT: 3
Course Description	Introduce students to common numerical problems that arise in the sciences and the fundamental computational techniques for solving such problems.		
Course Syllabus	• Introduction to linear algebra (sequences, series, Taylor's and Maclaurin's series, polar coordinates, vectors, matrices, linear systems) • Vectors and transformations (vector spaces, systems of linear equations, linear transformations, LaPlace transforms, dual spaces, eigenvectors and eigenvalues). • Applications of Linear algebra (determinants, and bilinear forms, applications to computer graphics, linear regression, and differential equations). • Introduction to modern analysis (understand, formulate, and prove mathematical statements, metric spaces, normed spaces, compactness, and measure theory).		

Course Code	**CS212P**			
Course Name	**Computer Architecture and Organization**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	This course explores modern computer architectures in terms of instruction sets and the organization of processors, controllers, memories, devices, and communication links.			
Course Syllabus	• Digital logic: Fundamental building blocks (logic gates, flip-flops, counters, registers, PLA); logic expressions, minimization, sum of product forms; register transfer notation; physical considerations (gate delays, fan-in, fan-out) • Data representation: Bits, bytes, and words; numeric data representation and number bases; fixed- and floating-point systems; signed and twos-complement representations; representation of nonnumeric data (character codes, graphical data); representation of records and arrays • Assembly level organization: Basic organization of the von Neumann machine; control unit; instruction fetch, decode, and execution; instruction sets and types (data manipulation, control, I/O); assembly/machine language programming; instruction formats; addressing modes; subroutine call and return mechanisms; I/O and interrupts • Memory systems: Storage systems and their technology; coding, data compression, and data integrity; memory hierarchy; main memory organization and operations; latency, cycle time, bandwidth, and interleaving; cache memories (address mapping, block size, replacement and store policy); virtual memory (page			

	table, TLB); fault handling and reliability • Interfacing and communication: I/O fundamentals: handshaking, buffering, programmed I/O, interrupt-driven I/O; interrupt structures: vectored and prioritized, interrupt acknowledgment; external storage, physical organization, and drives; buses: bus protocols, arbitration, direct-memory access (DMA); introduction to networks; multimedia support; raid architectures • Functional organization: Implementation of simple data paths; control unit: hardwired realization vs. micro-programmed realization; instruction pipelining; introduction to instruction-level parallelism (ILP) • Multiprocessor and alternative architectures: Introduction to SIMD, MIMD, VLIW, EPIC; systolic architecture; interconnection networks; shared memory systems; cache coherence; memory models and memory consistency • Performance enhancements: RISC architecture; branch prediction; prefetching; scalability • Contemporary architectures: Hand-held devices; embedded systems; trends in processor architecture

Course Code	**IS211P**			
Course Name	**Web Programming**			
Core/Elective	Core			
Credits	Theory:2	Project.:1	Lab.:2	TOT:3
Course Syllabus	• Internet Fundamentals: addressing, routing, servers • What is Internet Programming? • HTML Basics: Tags, editors, web page design • Style of Web Content: Inline elements, CSS • Introduction to scripting programming • Introduction to Java Basics • Using Java applets: a practical overview • XML and DOM • ADO.Net and DB Processing • ASP.Net , Web Forms and Controls			

Course Code	**CS211P**			
Course Name	**Operating Systems -1**			
Core/Elective	Core			
Credits	Theory: 3	Project: 1	Lab: 2	TOT: 6
Course Description	This course provides the student with an understanding of the basic components of a general-purpose operating system.			
Course Syllabus	• Overview: Role and purpose of operating systems; history of operating system development; functionality of a typical operating system; design issues. • Basic principles: Structuring methods; abstractions, processes, and resources; design of application programming interfaces (APIs); device organization; interrupts; user/system state transitions. • Concurrency: The idea of concurrent execution; states and state diagrams; implementation structures; dispatching and context			

	switching; interrupt handling in a concurrent environment. • Mutual exclusion: Definition of the "mutual exclusion" problem; deadlock detection and prevention; solution strategies; models and mechanisms (semaphores, monitors, condition variables, rendezvous); producer-consumer problems; synchronization; multiprocessor issues. • Scheduling: Preemptive and nonpreemptive scheduling; scheduling policies; processes and threads; real-time issues. • Memory management: Review of physical memory and memory management hardware; overlays, swapping, and partitions; paging and segmentation; page placement and replacement policies; working sets and thrashing; caching. • Device management: Characteristics of serial and parallel devices; abstracting device differences; buffering strategies; direct memory access; recovery from failures. • File systems: Fundamental concepts; content and structure of directories; file system techniques; memory-mapped files; special-purpose file systems; naming, searching, and access; backup strategies. • Security and protection: Overview of system security; policy/mechanism separation; security methods and devices; protection, access, and authentication; models of protection; memory protection; encryption; recovery management.

Course Code	**IS222P**			
Course Name	**Database Systems**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	This course is designed to introduce the foundations of database systems, focusing on basics such as the relational algebra and data model, query optimization, query processing, and transactions.			
Course Syllabus	• Information models and systems: History and motivation for information systems; information storage and retrieval; information management applications; information capture and representation. • Database systems: History and motivation for database systems; components of database systems; DBMS functions; database architecture and data independence. • Data modeling: Data modeling; conceptual models; object-oriented model; relational data model. • Relational databases: Mapping conceptual schema to a relational schema; entity and referential integrity; relational algebra and relational calculus. • Database query languages: Overview of database languages; SQL; query optimization; 4th-generation environments; embedding non-procedural queries in a procedural language; introduction to Object Query Language. • Relational database design: Database design; functional dependency; normal forms; multivalued dependency; join dependency; representation theory. • Transaction processing: Transactions; failure and recovery; concurrency control. • Distributed databases: Distributed data storage; distributed query processing; distributed transaction model; concurrency control; homogeneous and heterogeneous solutions; client-server. • Physical database design: Storage and file structure; indexed files; hashed files; signature files; b-trees; files with dense index; files with variable length records; database efficiency and tuning.			

Course Code	**IT222P**			
Course Name	**Data Communications**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	The course serves as an introduction to the theory and practice behind many of today's communications systems			
Course Syllabus	• Introduction and Objectives. Block diagram of a digital communication system. Separation of source coding and channel coding. • Fixed-length and variable-length codes for discrete sources. Data compression. Prefix-free codes. The Kraft inequality. Probability models for sources. • Expected code length criterion. Entropy bounds. Huffman codes. • Laws of large numbers. The asymptotic equipartition property. Shannon's source coding theorems. • Compression for discrete-time analog sources. Scalar quantization. Lloyd-Max algorithm. Vector quantization. Entropy quantization. • Differential entropy. High-rate uniform and non-uniform scalar quantizers. High-rate uniform and non-uniform vector quantizers. • Review of Fourier transform, Fourier series, and discrete Fourier transform. L_2 functions. The sampling theorem. Data compression for analog waveform sources. • Aliasing. Representation of waveforms by orthonormal expansions. Data compression using orthonormal expansions. • L_2 as an inner-product vector space. Subspaces, bases, and dimension. Projection. Gram-Schmidt orthonormalization. • Channel encoding and modulation. Channel decoding and demodulation. Pulse amplitude modulation. Nyquist criterion. • Passband modulation. Quadrature amplitude modulation. Viewing passband at baseband. Implementation of QAM. • Carrier recovery and Phase tracking in QAM. Orthonormal expansions at baseband and passband. Noise and stochastic processes. Gaussian processes. Stationarity. • Linear functionals for Gaussian processes. Jointly Gaussian rv's. Covariance for linear functionals and filters. White Gaussian noise. • The white noise/L_2 dichotomy and its resolution. Signal to noise ratio. Channel capacity. • Binary detection. PAM signals in WGN. Binary vectors in WGN. Waveforms in WGN. The Neyman-Pearson test. • The irrelevance theorem. Orthogonal signal sets. Capacity in the broad band limit. • Wireless channels. Physical layer modeling. Free space and fixed antennas. Free space and moving antennas. Moving antennas and multiple paths. Shadowing. • Statistical channel models. Detection in Raleigh fading. Non-coherent detection. • Channel estimation. Rake receivers. • CDMA. Orthogonal codes. Convolutional codes. The Viterbi algorithm. Frequency hopping systems.			

Course Code	**IS223P**			
Course Name	**Computer Graphics**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	Offers an introduction to computer graphics, which has become an increasingly important area within computer science. Computer graphics, particularly in association with the multimedia aspects of the World-Wide Web, have opened up exciting new possibilities for the design of human-computer interfaces.			
Course Syllabus	• Graphic systems: Raster and vector graphics systems; video display devices; physical and logical input devices; issues facing the developer of graphical systems. • Fundamental techniques in graphics: Hierarchy of graphics software; using a graphics API; simple color models; homogeneous coordinates; affine transformations; viewing transformation; clipping. • Graphical algorithms: Line generation algorithms; structure and use of fonts; parametric polynomial curves and surfaces; polygonal representation of 3D objects; introduction to ray tracing; image synthesis, sampling techniques, and anti-aliasing. • Principles of human-computer interaction: Human-centered software development and evaluation. • Graphical user-interface design: Choosing interaction styles and interaction techniques; HCI aspects of interface design; dynamics of color; structuring a view for effective understanding. • Graphical user-interface programming: Graphical widgets; event management and user interaction; GUI builders and programming environments. • Computer animation: Key-frame animation; camera animation; scripting system; animation of articulated structures; motion capture; procedural animation; deformation. • Multimedia techniques: Sound, video, and graphics; design of multimedia systems; tools for multimedia development.			

Course Code	**IS223T**		
Course Name	**Ethical ،Social and Professional Issues**		
Core/Elective	Core		
Credits	Theory: 2	Tutorial: 2	TOT: 1
Course Description	The course considers computer ethical issues, such as information privacy, computer crime, computer terrorism. The course considers the international legal framework available to protect software system development. This includes non-disclosure agreements, employment contracts, intellectual property law (copyright, patent, licensing, royalties), trademarks and warranty disclaimers.		
Course Syllabus	• Computer Ethical Issues: what are they?, how do we address them?		

	• Philosophical Ethics; what are the techniques? Dialectic, descriptive/normative, prescriptive. Who does a software developer work with / for? Publisher, marketer, employer / employee, contractor / consultant, end-user. Contracts, works-made-for-hire. • Philosophical Ethics : what are the major theories / systems? Relativism, Utilitarianism, Deontology Software Law What should be in software development contracts? Essential contract elements, negotiation limits, future modifications • What legal tools are available to protect the rights of software developers? Trade secret law, copyright, patent, trade marks, contracts, warranties. • are I.T. workers professionals? Characteristics of professions, professional relationships, codes of conduct. What does software copyright protect and how ? Establishing and assigning copyrights. • Softwares: are they intellectual property? does piracy matter ? philosophy of property, property law, softwares = programs + data. Software : should softwares be sold, licenced, free (+ fee for service) ? copyright / patent / trade secrecy, free software argument. • I.T. failures ? who is responsible ? case studies, legal liability. What does a trademark protect and how ? • Information Privacy ? does it matter ? the I.T. threat, the instrumental / intrinsic value of privacy. What does a software patent protect and how ? The politics / economics of patenting. • Computer Crime? is it really crime? the laws (abuse, trespass, fraud), hacker ethics. • What affects software development negotiations ? rejection / acceptance, letter of intent, evaluation, beta testing, (site) licensing. • ACM, IEEE codes of conduct, professional development, self-education When should developers use marketers, lawyers, agents, negotiators ?

3- THIRD YEAR: COMPUTER SCIENCES

Course Code	**CS311P**			
Course Name	**Software Engineering-1**			
Core/Elective	Core			
Credits	Theory: 2	Project: 2	Lab:1	TOT: 3
Course Description	This course introduces the fundamental principles of software engineering, modern software development techniques and life cycles are emphasized.			
Course Syllabus	• Software processes: Software life-cycle and process models; process assessment models; software process metrics. • Software requirements and specifications: Requirements elicitation; requirements analysis modeling techniques; functional and nonfunctional requirements; prototyping; basic concepts of formal specification techniques. • Software design: Fundamental design concepts and principles; software architecture; structured design; object-oriented analysis and design; component-level design; design for reuse. • Software validation: Validation planning; testing fundamentals, test plan creation and test case generation; black-box and white-box testing techniques; unit, integration, validation, and system testing. • Software evolution: Software maintenance; characteristics of maintainable software; reengineering; legacy systems; software reuse. • Software project management: Team management; project scheduling; software measurement and estimation techniques; risk analysis; software quality assurance; software configuration management; project management tools. • Component-based computing: Fundamentals; basic techniques; applications; architecture of component-based systems; component-oriented design; event handling; middleware. • Formal methods: Formal methods concepts; formal specification languages; executable and non-executable specifications; pre and post assertions; formal verification. • Software reliability: Software reliability models; redundancy and fault tolerance; defect classification; probabilistic methods of analysis.			

Course Code	**CS312T**			
Course Name	**Algorithm Analysis and Design**			
Core/Elective	Core			
Credits	Theory: 2	Project: 2	Lab: 1	TOT: 3
Course Description	Introduces formal techniques to support the design and analysis of algorithms, focusing on both the underlying mathematical theory and practical considerations of efficiency.			
Course Syllabus	• Introduction: Analysis of Algorithms, Insertion Sort, Merge Sort. • Correctness of Algorithms. • Asymptotic Notation, Recurrences: Substitution, Iteration, Master Method.			

	• Divide and Conquer: Strassen's Algorithm, Fibonacci Numbers, VLSI Layout. • Recurrences, Sloppiness. • Quick-sort, Randomized Algorithms. • Median, Order Statistics. • Sorting: Heap-sort, Dynamic Sets, Priority Queues. • Linear-time Sorting, Lower Bounds, Counting Sort, Radix Sort. • Hashing: Chaining, Universal Hashing. • Binary Search Trees (BST): Tree Walks, Analysis of Random BST. • Balanced Search Trees. • Amortized Analysis: Disjoint Sets. • Competitive Analysis. • Dynamic Programming. • Greedy Algorithms, Graphs, Minimum Spanning Trees. • Shortest Paths: Dijkstra's Algorithm, Breadth-first Search, Bellman-Ford, Shortest Paths in Dags, Difference Constraints. • Depth-first Search: Edge Classification. • All-pairs Shortest Paths: Dynamic Programming, Floyd-Washall, Johnson's Algorithm. • Computational Geometry: Segment Intersection. • Network Flow: Max-flow Min-cut Theorem, Edmonds-Karp Algorithm. • String Matching: Rabin-Karp Algorithm. • NP-completeness, Approximation Algorithms.

Course Code	**CS313P**			
Course Name	**Logic programming**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	The course familiarizes students with the logic programming paradigm and its programming techniques. After the course students should be able to construct demanding logic programs by taking into account factors related to efficiency of processing and memory space utilization.			
Course Syllabus	• Elementary Notions and Notations ,Facts About Functions • Construction Techniques ,Equivalence, Order, and Inductive Proof Unification and backtracking Compound statments,repetition , recurision • Analysis Techniques , Elementary Logic (i.e. propositional logic) • Predicate Logic • Applied Logic • Computational Logic • Resultion • Algebraic Structures ,Regular Languages and Finite Automata • Context-Free Languages and Pushdown Automata • Turing Machines and Equivalent Models , and project • Computational Notions			

Course Code	**UNI311T**

Course Name	Research Methods		
Core/Elective	Core		
Credits	Theory: 2	Research: 3	TOT: 3
Course Description	This course is an introduction to research methods in computer science. It explains the skills needed to successfully complete a research project in computer and information sciences, exposes students to ways of thinking about research, and teaches general skills for writing and experimentation.		
Course Syllabus	• The Process of Research • Writing a Research Proposal • Reading and Assessing Literature • Writing and Web Skills • Empirical Research • Tools for Experiments • Ethics, plagiarism, and copyright • Research Management • Presentations		

Course Code	CS324P			
Course Name	Artificial Intelligence			
Core/Elective	Core			
Credits	Theory:2	Project: 1	Lab: 2	TOT: 3
Course Description	Introduces students to the fundamental concepts and techniques of artificial intelligence			
Course Syllabus	• Fundamental issues in intelligent systems: History of artificial intelligence; philosophical questions; fundamental definitions; philosophical questions; modeling the world; the role of heuristics. • Search and constraint satisfaction: Problem spaces; brute-force search; best-first search; two-player games; constraint satisfaction. • Knowledge representation and reasoning: Review of propositional and predicate logic; resolution and theorem proving; nonmonotonic inference; probabilistic reasoning; Bayes theorem. • Advanced search: Genetic algorithms; simulated annealing; local search. • Advanced knowledge representation and reasoning: Structured representation; nonmonotonic reasoning; reasoning on action and change; temporal and spatial reasoning; uncertainty; knowledge representation for diagnosis, qualitative representation. • Agents: Definition of agents; successful applications and state-of-the-art agent-based systems; software agents, personal assistants, and information access; multi-agent systems. • Machine learning and neural networks: Definition and examples of machine learning; supervised learning; unsupervised learning;			

	reinforcement learning; introduction to neural networks. • AI planning systems: Definition and examples of planning systems; planning as search; operator-based planning; propositional planning.

Course Code	**CS325P**			
Course Name	**Digital Signal Processing**			
Core/Elective	Core			
Credits	Theory: 3	Project: 2	Lab: 1	TOT: 6
Course Description	The object is to be able to apply basic properties of time-invariant linear systems , understand sampling, aliasing, convolution, filtering, the pitfalls of spectral estimation and be able to explain the above in time and frequency domain representations and to be competent to use filter-design software ,and to visualise and discuss digital filters in the z-domain, and to use the FFT for convolution, deconvolution, filtering			
Course Syllabus	• Signals and systems. Discrete sequences and systems, their types and properties. Linear time-invariant systems, convolution. Harmonic phasors are the eigen functions of linear time-invariantsystems. Review of complex arithmetic.overview of digital to analog and analog to digital conversion. • MATLAB. Use of MATLAB on PWF machines to perform numerical experiments and visualise the results in homework exercises. • Fourier transform. Harmonic phasors as orthogonal base functions. Forms of the Fourier transform, convolution theorem, Dirac's delta function, impulse combs in the time and frequency domain. • Discrete sequences and spectra. Periodic sampling of continuous signals, periodic signals, aliasing, sampling and reconstruction of low-pass and band-pass signals, spectral inversion. • Discrete Fourier transform. Continuous versus discrete Fourier transform, symmetry, linearity, review of the FFT, real-valued FFT. • Spectral estimation. Leakage and scalloping phenomena, windowing, zero padding. • Finite and infinite impulse-response filters. Properties of filters, implementation forms, window-based FIR design, use of frequency-inversion to obtain high-pass filters, use of modulation to obtain band-pass filters, FFT-based convolution, polynomial representation, z-transform, zeros and poles, use of analog IIR design techniques (Butterworth, Chebyshev I/II, elliptic filters). • Random sequences and noise. Random variables, stationary processes, autocorrelation, crosscorrelation, deterministic crosscorrelation sequences, filtered random sequences, white noise, averaging, noise reduction filters, exponential averaging, periodic averaging. • (optional) overview of some modulation techniques .			

Course Code	CS326P			
Course Name	Programming Language Design			
Core/Elective	Core			
Credits	Theory: 3	Project: 1	Lab: 2	TOT: 6
Course Description	This course covers the design , development, and implementation of programming languages.			
Course Syllabus	• overview of existing programming languages conpcets , and comprison between their categories ,and some practical examples of these languages • language design principles, abstract syntax, evaluation mechanisms, binding, type systems, • polymorphism, data encapsulation, exceptions, • formal definition of programming languages, • compiling techniques • abstract machine design, • run-time systems and garbage collection.			

Course Code	CS327P			
Course Name	Operating Systems-2			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	Advanced issues in operating systems			
Course Syllabus	• Overview of Operating system scheduling. • Distributed Synchronization and Timing • Distributed File System • Theory and implementation aspects of distributed operating systems. Distributed processes, distributed algorithms and distributed systems. • OS issues related to the Internet, intranets, pervasive computing, active networks, mobile systems and wireless networks. • Selected articles from leading journals and conference proceedings, and case studies. • Discussions, seminars and debates on research issues and operating system implementations.			

4- THIRD YEAR: INFORMATION SYSTEMS

Course Code	**IS311T**		
Course Name	**Information Theory**		
Core/Elective	Core		
Credits	Theory: 2	Tutorial: 3	TOT: 3
Course Description	Teach the fundamental limits of information theory, with special attention to applications in communication theory		
Course Syllabus	• Introduction of information measures (entropy, mutual information) and basic properties. • Typical sets and the Asymptotic Equipartition Property. • Entropy rates for stochastic processes, Markov Chains. • Data Compression/Lossless Source Coding. • Huffman coding, Lempel-Ziv Compression. • Channel coding, information capacity. • The channel coding theorem for discrete memory less channels – random coding proof, error exponents. • Converse to the channel coding theorem, joint source channel coding, feedback capacity. • Differential entropy, Gaussian noise channels. • Continuous-time Gaussian channels, band-limited channels. • Quantization/Rate Distortion theory.		

Course Code	**IS312P**			
Course Name	**Systems Analysis and Logical Design**			
Core/Elective	Core			
Credits	Theory: 3	Project: 1	Lab: 2	TOT: 6
Course Description	Students will learn to analyze a business process and document it using function decomposition diagrams, data flow diagrams (DFD), and other modeling techniques. The students will also learn to design system inputs/outputs, and user interface.			
Course Syllabus	• Course overview; Review of IS concepts; Role of Modeling in Systems Analysis. • Life cycle phases including systems selection and planning, analysis, logical design, physical design, implementation and operation, maintenance • Techniques for requirements determination, collection, and organization (questionnaires, interviewing, document analysis, observation); joint application design. • (JAD) and other group approaches (e.g., electronic JAD, computer conferencing); prototyping. • Team organization and communication; interviewing, presentation design, and delivery; group dynamics; and leadership. • Project feasibility assessment and risk analysis. • Design reviews and structured walkthroughs.			

	• Object-oriented analysis and design. • Unified Modeling Language (UML). • Data organization and design. • Software and system quality metrics. • Application categories. • Software package evaluation and acquisition. • Globalization issues such as cultural values, information privacy, and data exchange. • Professional code of ethics.

Course Code	**IS313P**			
Course Name	**Database Systems 2**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	This is an advanced course on database systems and related information technology			
Course Syllabus	• Logic Query Languages. • Object Models. • Object Query Languages. • Recovery. • Concurrency Control. • Transactions. • Information Integration. • Object-Relational Databases . • Object Oriented Databases. • Query Processing for Object-Oriented Databases.			

Course Code	**IS325P**			
Course Name	**Intelligent Information Systems**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	This course is an introduction to AI and Expert Systems, covering the principles, methods and tools used in building intelligent information systems. Knowledge representation methods, search and reasoning mechanisms as well as AI-specific languages and shells will be presented.			
Course Syllabus	• Fundamental issues in intelligent systems: History of artificial intelligence; philosophical questions; fundamental definitions; philosophical questions; modeling the world; the role of heuristics. • Search and constraint satisfaction: Problem spaces; brute-force search; best-first search; two-player games; constraint satisfaction. • Knowledge representation and reasoning: Review of propositional and predicate logic; resolution and theorem proving; nonmonotonic			

	inference; probabilistic reasoning; Bayes theorem. • Advanced search: Genetic algorithms; simulated annealing; local search. • Advanced knowledge representation and reasoning: Structured representation; nonmonotonic reasoning; reasoning on action and change; temporal and spatial reasoning; uncertainty; knowledge representation for diagnosis, qualitative representation. • Agents: Definition of agents; successful applications and state-of-the-art agent-based systems; software agents, personal assistants, and information access; multi-agent systems. • Machine learning and neural networks: Definition and examples of machine learning; supervised learning; unsupervised learning; reinforcement learning; introduction to neural networks. • AI planning systems: Definition and examples of planning systems; planning as search; operator-based planning; propositional planning.

Course Code	**IS326P**			
Course Name	**E-Business Computing**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	The course focuses on the linkage between organizational strategy and networked information technologies to implement a rich variety of business models in the national and global contexts connecting individuals, businesses, governments, and other organizations to each other. The course provides an introduction to e-business strategy and the development and architecture of e-business solutions and their components.			
Course Syllabus	• Electronic commerce economics. • Business models, value chain analysis. • Technology architectures for electronic business. • Supply chain management. • Consumer behavior within electronic environments. • Legal and ethical issues. • Information privacy and security. • Transborder data flows. • Information accuracy and error handling. • Disaster planning and recovery. • Solution planning. • Web site design. • Internet standards and methods, design of solutions for the Internet, intranets, and extranets. • EDI, payment systems. • Support for inbound and outbound logistics.			

Course Code	**IS327P**
Course Name	**Systems Design and Implementation**
Core/Elective	Core

Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	This course is intended to provide the students an opportunity to continue their study into the various approaches to information systems design & analysis processes.			
Course Syllabus	• Review of Systems Analysis. • Design & Implementation concepts. • Conceptual, logical, and physical data models, and modeling tools. • Structured and object design approaches; models for databases: relational and object oriented. • Design tools; data dictionaries, repositories, warehousing, and data mining. • Database implementation including user interface and reports. • Multi-tier planning and implementation. • Data conversion and post implementation review. • Writing technical reports. • Project Management & Team Development.			

5- THIRD YEAR: INFORMATION TECHNOLOGY

Course Code	**IT311P**			
Course Name	**Computer Networks**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	This course introduces principles and current trends in computer networks. The ISO Reference Model will be used as the framework with the course progressing through the physical, data link, network, transport, session, and presentation layers.			
Course Syllabus	• Physical and link layer communication: media, signals, and bits; time division and frequency division multiplexing; encoding; modulation; delay, bandwidth, throughput, and noise; error correction techniques; CSMA/CD; CSMA/CA; Ethernet addressing and wiring; hubs. • Packet communication: Local Area Network and Wide Area Network technologies; token passing rings; FDDI; wireless networks; network interconnection with repeaters, bridges, and switches; DSU/CSU; xDSL and cable modems; store-and-forward; next-hop forwarding. • Internetworking: router-based architecture; IP addressing; address binding with ARP; datagram encapsulation and fragmentation; link-state and distance-vector routing; Dijkstra's algorithm; network properties: ownership and service paradigm; UDP and TCP; TCP segment format; adaptive retransmission; protocol ports; ICMP and error handling. • Network applications: client/server concept; port demultiplexing; socket API; server concurrency; DNS; TELNET; Web technologies including HTML, HTTP, CGI, Java; RPC and middleware; network management.			

Course Code	**IT312P**		
Course Name	**Electronics**		
Core/Elective	Core		
Credits	Theory: 2	Lab: 3	TOT: 3
Course Description	This course provides undergraduate students with both a basic and practical understanding of electricity and electronics. The emphasis is on applications rather than theory. Consequently there is a strong hands-on component to the subject to enable students to gain practical experience.		
Course Syllabus	• DC and AC circuits. • Diodes, transistors, operational amplifier. • Analog and digital electronics. • Detectors and transducers. • Electronic control. • Signal processing and noise.		

Course Code	**IT323P**		
Course Name	**Soft Computing**		
Core/Elective	Core		
Credits	Theory: 2	Tutorial: 3	TOT: 3
Course Description	This course introduces soft computing methods which, unlike hard computing, are tolerant of imprecision, uncertainty and partial truth. This tolerance is exploited to achieve tractability, robustness and low solution cost. The principal constituents of soft computing are fuzzy logic, neural network theory, and probabilistic reasoning.		
Course Syllabus	• Introduction: What is SC? Why is it useful? • Fuzzy Sets • Fuzzy Reasoning; Fuzzy Inference; (Fuzzy) Clustering • Rulebase Structure Identification; Clustering; Applications of Fuzzy Logic • Fuzzy Diagnosis • Fuzzy Data Fusion • Gradient Descent; Intro to GAs • Gradient descent optimization: least squares methods • Genetic Algorithms – Guest speaker: Tom Kiehl in-class exercise: class acts as GA • Applications of GA's • Neural Nets • Case-Based Reasoning • Applications of CBR: (Watson) • Automated Collaborative Filtering • Applications of Neural Nets • Hybrid Systems • Dempster-Shafer Reasoning		

Course Code	**IT324P**			
Course Name	**Image Processing**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1.30	Lab: 1.30	TOT: 3
Course Description	This is an introductory course on techniques for digital image processing and analysis. Course topics include : an introduction to image sampling, quantization, image enhance- ment, 2-D orthogonal transforms, image compression, image restoration and image reconstruction.			
Course Syllabus	• Introduction to image processing • Image analysis (preprocessing) • Human visual system • Image enhancement (Sharpening, smoothing) • Discrete transforms (Fourier, Discrete cosine, Walsh-hadamard,Haar, PCT) • Filtering, wavelet transform, pseudo color • Image restoration (Noise removal, Degradation model, Inverse filter) • Image compression (system model, lossless methods, lossy methods)			

Course Code	**IT325P**			
Course Name	**Network Programming**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	To develop an understanding of the various aspects of computer network programming.			
Course Syllabus	• Review of basic networking concepts • Layered protocol architecture • Internet protocols • Network programming essentials • Socket programming • Protocol design and implementation • Current networking issues			

Course Code	**IT326P**			
Course Name	**Human Computer Interaction**			
Core/Elective	**Core**			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	Presents a comprehensive introduction to the principles and techniques of human computer interaction and user interface.			
Course Syllabus	• Foundations of human-computer interaction: Motivation; contexts for HCI; human centered development and evaluation; human performance models; human performance models; accommodating human diversity; principles of good design and good designers; engineering tradeoffs; introduction to usability testing. • Human-centered software evaluation: Setting goals for evaluation; evaluation without users; evaluation with users. • Human-centered software development: Approaches, characteristics, and overview of process; functionality and usability; specifying interaction and presentation; prototyping techniques and tools. • Graphical user-interface design: Choosing interaction styles and interaction techniques; HCI aspects of common widgets; HCI aspects of screen design; handling human failure; beyond simple screen design; multi-modal interaction; 3D interaction and virtual reality. • Graphical user-interface programming: Dialogue independence and levels of analysis; widget classes; event management and user interaction; geometry management; GUI builders and UI programming environments; cross-platform design.			

6- FOURTH YEAR: COMPUTER SCIENCES

Course Code	**CS427P**			
Course Name	**Compiler Construction**			
Core/Elective	Core			
Credits	Theory: 2	**Project:1**	Lab: 2	**TOT: 3**
Course Description	Concepts behind the design and implementation of programming language compilers.			
Course Syllabus	• Introduction : General structure of a compiler. An overview of compilation technology. • Lexical Analysis (Scanning) : Regular languages/expressions, finite state machines, building regular expressions from a finite automaton. • Syntax Analysis (Parsing) : Expressing Syntax, Context Free Grammars, Top-Down Parsing, Bottom-Up parsing . • Semantic Analysis: Context-sensitive analysis, Attribute Grammars, • Symbol Tables, Type Checking. • Intermediate Representations : Properties, taxonomy, Graphical IRs, Linear IRs. • Storage Management : The Procedure Abstraction, Linkage convention, Run-time storage organisation. • Code Generation:Code Shape, Instruction Selection, Register Allocation, Instruction Scheduling. Code Optimisation, JIT Compilation. • Introduction to Garbage Collection			

Course Code	**CS412P**			
Course Name	**Distributed systems**			
Core/Elective	Core			
Credits	Theory: 2	**Project :1**	Lab: 2	**TOT:3**
Course Description	This course extends the study of the design and implementation of operating systems to distributed and advanced computer systems.			
Course Syllabus	• Introduction to Distributed Systems and Models. • Networking and Internetworking Essentials. • Overview of network programming • Distributed Computing Technologies and Middleware. • Distributed Operating Systems. • Distributed Algorithms. • Distributed Databases. • Distributed Applications (including Internet, Web, and Mobile applications). • Case Study and Selected Advanced Topics.			

Course Code	**CS413P**			
Course Name	**Artificial Intelligence-2**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	Advanced Issues in AI and machine learning			
Course Syllabus	• Introduction to Soft Computing (Contrast expert systems fuzzy systems ,neural Networks , expert systems and genetic algorithms) • Introduction to Expert Systems (Define expert systems; knowledge representation • Inference in Expert Systems (using rules and decision trees , Knowledge Acquisition; Processing uncertainty; preliminary comparison with fuzzy systems) • Implementation of Fuzzy Systems (Architectures & tools) • Introduction to Neural Nets (basic architectures) • Backpropagation • Gentic algorithms and Evloutionary Computing • Introductio to machine learning			

Course Code	**CS428P**			
Course Name	**Arabization**			
Core/Elective	Core			
Credits	Theory: 2	**Project:1**	Lab: 2	**TOT : 3**
Course Description	To use the arabic language in the computer applications development and design			
Course Syllabus	• Arabic lanaguage features • Natural language Processing of Araraic language • Optional topics : Arabic characters and fonts ,Viewing and printing Arabic Text • Arabic Text Optical Character Recogition,Arabic speech eneration,Arabization applications in OS,Internet,Applications			

7- FOURTH YEAR: INFORMATION SYSTEMS

Course Code	**IS411P**			
Course Name	**Multimedia**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	The creation of interactive multimedia products for cross-platform delivery.			
Course Syllabus	• Introduction to Multimedia Authoring and Production. • The Multimedia Development Process. • Introduction to Multimedia Scripting. • Types of Lingo Scripts / Behaviors / Handlers. • The Sampling Process: Understanding Audio / Video. • Using Lists and Casts. • Understanding Programming Structures. • Human Computer Interface Design. • Graphics, Audio, and Movie File Formats. • Databases, Lists, and Shockwave. • Storage and Delivery Technologies. • Global Development Issues. • Legal Issues, Copyrights, Taxes.			

Course Code	**IS412P**			
Course Name	**Distributed Database Systems**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course deals with all aspects of Distributed Database Management Systems (DDBMS).			
Course Syllabus	• Architecture of distributed systems. • Advanced transaction model. • Query processing and Optimization. • Application distribution. • Transaction management, commit protocol and database recovery. • Concurrency control mechanisms and algorithms. • Deadlock management.			

Course Code	**IS413P**			
Course Name	**Project Management**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course will introduce students to the salient issues surrounding the management of the IS function in organizations. They will learn the primary challenges facing the modern IS organization and some approaches to meeting these challenges.			
Course Syllabus	• Project lifecycle. • Project stakeholders. • Project management skills (leading, communicating, negotiating, influencing, and presenting). • Change control (scope, schedule, cost, quality, risk, project team, and senior management). • Project planning (definition, scope, schedule, costs, quality, resources, and risks). • Contingency planning • Project reporting and controls (definition, scope, schedule, costs, quality, resources, and risks). • The role of IT in organizational change. • The role of IS specialists as change agents. • Envision change and the change process. • Diagnose and conceptualize change. • Deal with the challenges of implementation and understand and cope with resistance. • Deal with issues of motivation, interpersonal relations, group/team dynamics, and leadership in the change process. • Manage organizational politics. • The limitations of projects as organizational change initiatives. • Organizational influences on project success (culture, organizational structure, rewards, and measures). • Additional activities required to ensure the success of IT projects (training, job redesign, communication, etc.). • Hands-on experience using project management software (e.g., Microsoft Project).			

Course Code	**IS424P**			
Course Name	**Data Mining**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Data Mining, called also Knowledge Discovery in Databases (KDD) is a new multidisciplinary field. Its main focus is the automated extraction of patterns representing knowledge implicitly stored in large databases, data warehouses, and other massive information repositories			
Course Syllabus	• Introduction to knowledge discovery concepts			

	• Data warehousing, OLAP and analysis and mining of data warehouses • Data preprocessing; data cleaning, data integration and transformation, data reduction, discretization and concept hierarchy generation • Association rules mining; Transactional databases and Apriori Algorithm. • Frequent pattern mining • Classification; Decision Tree Induction, Rough Sets, Bayesian Classification, Genetic algorithms, Statistical Prediction. • Cluster Analysis • Mining the web • Applications and Trends of Data Mining

Course Code	**IS425P**			
Course Name	**Geographic Information Systems**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Design, implementation and use of automated procedures for storage, analysis and display of spatial information.			
Course Syllabus	• Measuring Systems. • Location: coordinate systems. • Attributes: data types. • Topology: Basic geometric elements. • Raster Data Models. • Vector Data Models. • TIN. • Aspatial Data Models: Relational Tables. • DBMS and its use in GIS. • Data Input (spatial and thematic). • Coordinate Transformation. • Data Editing (spatial and thematic). • Metadata. • Spatial Queries. • Digital terrain analysis. • Statistical operations. • Spatial Overlay.			

8- FORTH YEAR: INFORMATION TECHNOLOGY

Course Code	**IT411P**			
Course Name	**Mobile Computing**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	The objective of this course is to learn about mobile networking and computing. In particular, it will focus on wireless data networking and mobile ad hoc networking.			
Course Syllabus	• Introduction to mobile computing. • Mobile System Architecture. • Mobile constraints and system issues. • Location Data Management and Moving Objects. • Mobile Caching. • Broadcast Data Management. • Token Ring algorithms in Wireless Environment. • Mobility and Replication Control Protocols. • Mobile Transaction Processing. • Routing Protocols in Sensor and Mobile Ad-hoc Computing. • Transport Protocols. • Fault-tolerance and Security Issues. • Energy Efficient Protocol Design. • Quality-of-Service.			

Course Code	**IT412P**			
Course Name	**Pattern Recognition**			
Core/Elective	Core			
Credits	Theory: 2	Project: 2	Lab: 1	TOT: 3
Course Description	This course will cover a wide variety of topics in machine learning, pattern recognition, and statistical modeling. The course will cover the mathematical methods and theoretical aspects, but will primarily focus on algorithmic and practical issues.			
Course Syllabus	• the basics of inductive inference, learning, and generalization. • linear classifiers: perceptron, LMS, logistic regression. • non-linear classifiers with linear parameterizations: basis-function methods, boosting, support vector machines. • multilayer neural networks, backpropagation • heterogeneous learning systems • graph-based models for sequences: hidden Markov models, finite-state transducers, Hidden Markov Models, recurrent networks. • unsupervised learning: density estimation, clustering, and dimensionality reduction methods. • energy-based models and probabilistic models.			

	• introduction to graphical models. • approximate inference, sampling. • optimization methods in learning: gradient-based methods, second-order methods, Expectation-Maximization. • objective functions: maximum likelihood, MAP, discriminative criteria. • the bias-variance dilemma, regularization, model selection. • applications in vision, speech, language, forecasting, and biological modeling.

Course Code	**IT413P**			
Course Name	**Medical Informatics**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	It includes an analysis of the computational needs of clinical medicine, a review systems and approaches that have been used to support those needs, and an examination of new technologies.			
Course Syllabus	• The nature of clinical data. • Architecture and design of healthcare information systems. • Privacy and security issues. • Medical expert systems. • Introduction to genomic medicine and its techniques.			

Course Code	**IT424P**			
Course Name	**Computer Security**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course is intended as a basic introduction to computer security and cryptography. It is an introductory course to concepts in information security and management.			
Course Syllabus	• Principles of computer security. • Basic cryptography. • Authentication. • Secure network protocols (Kerberos, SSL). • Program security (Bug exploits, Malicious code: viruses, worms, trojan horses). • Attacks and defenses on computer systems (Firewalls, Intrusion detection, Countermeasures) . • Trusted operating systems. • Ethical and legal issues in computer security. • Developing security plans for a system.			

Course Code	**IT425P**			
Course Name	**Microprocessors Applications**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	To study the architecture of microprocessor and how to program it			
Course Syllabus	• Types of interrupts and their use in sequencing events. • The connection of a microprocessor such as the 8086 to special peripheral chips including a parallel peripheral interface, a serial peripheral interface, a priority interrupt controller, an interval counter and timer, a DMA IC. • Programming of the peripheral chips • Relation of a microprocessor system to a PC • Techniques used to enhance throughput including: instruction lookahead; execution overlap, (pipelining). Problems of branching and data dependency. • Instruction set dependency on architecture: RISC , CISC, VLIW • Superscalar architecture. • Special hardware within the processor: multipliers, barrel shifters. • Signal processors. • Efficiency of pipeline hardware			

9- ELECTIVE COURSES: COMPUTER SCIENCES

Course Code	**CS331P**			
Course Name	**Modeling and Simulation**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Introduces students to the modeling and simulation of real-world processes and systems. Applications of these techniques include evaluation of potential computer architectures, predicting the outcome of physical systems or experiments, and determining the merits of financial portfolio allocations.			
Course Syllabus	• Introduction to modelling and simulation. System analysis, clasification of systems. System theory basics, its relation to simulation , Model classification • Simulation systems and languages , Principles of simulation system design. • Parallel process modelling. Discrete simulation models. Model time, simulation experiment control. Continuous systems modelling. Overview of numerical methods used for continuous simulation. • Combined simulation. The role of simulation in digital systems design. • Checking model validity, verification of models. Analysis of simulation results. • Simulation results visualization. Interactive simulation • Design and control of simulation experiments. Model optimization. • Generating, transformation, and testing of pseudorandom numbers. Stochastic models, Monte Carlo method.			

Course Code	**CS333P**			
Course Name	**Parallel Computing Basics**			
Core/Elective	Elective			
Credits	Theory: 2	Project:	Lab:	TOT: 3
Course Description	The fundamental theoretical issues of parallel computing algorithms and architectures			
Course Syllabus	• Foundations of designing a parallel algorithms • Shared memory models . • Parallel algorithms for linear algebra ,fourier transform, recurrence evaluation , graph problems. • Interconnection network based models. • Algorithm design for networks like hypercube ,shuffle-exchanges , meshes , butterfly networks…etc . • Parallel Algorithm Complexity. • Models of Parallel Processing . • PRAM and Basic Algorithms . • Shared-Memory Algorithms like sorting, selection, convex hull…etc • Systolic arrays and techniques for generating them. Message routing			

Course Code	**CS334P**			
Course Name	**Introduction to Systems Performance Evaluation**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	Performance indices and evaluation of system performance			
Course Syllabus	• Performance indices , evaluation techniques ,measurements : instrumentation , design of an experiment ,interpretation of results. • Simulation and modeling :simulator design , model , and statistical analysis of output. • Introduction to analytical modeling. • Workload characterization . • Tuning ,procurement , and capacity planning applications. • Program performance evaluation. • File I/O optimization • CPU scheduling and architecture performance analysis.			

Course Code	**CS431P**			
Course Name	**VLSI Systems Design**			
Core/Elective	Elective			
Credits	Theory: 2	Project:	Lab:	TOT: 3
Course Description	The study of VLSI design and tools			
Course Syllabus	• Unified top-down ,bottom-up design of integrated circuits and systems ,concentrating on architectural and topological issues. • VLSI architectures ,systolic arrays, self-timed systems. • Trends on VLSI development, physical limits . • Tradeoffs in customs design ,standard cells,gate arrays. • VLSI design tools			

Course Code	**CS327P**			
Course Name	**Software Engineering-2**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 2	Lab: 1	TOT: 3
Course Description	A more advanced study of software Engineering			
Course Syllabus	• Case analysis and visual modeling with UML • Software Architecture Decisions • Software Design Principles; modularization and information hiding • Software Testing and Verification • Team Software Design Processes • Advanced specification and design in UML, component-based software engineering, rapid development processes and techniques, advanced validation and verification methods, configuration management			

Course Code	**CS433P**			
Course Name	**Neural Networks**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	This course introduces the concepts of connectionism, along with algorithms for simulating neural networks, discussion of alternative network architectures and training algorithms			
Course Syllabus	• Basic neuron models: McCulloch-Pitts model, nearest neighbour model, radial basis function model, etc . • Basic neural network models: multilayer perceptron, nearest neighbor based multilayer perceptron, associative memory, radial basis function based multilayer perceptron, etc . • Basic learning algorithms: the back propagation algorithm, self-organization learning, winner-take-all competitive learning, evolutionary learning, etc . • Applications: character recognition, signal restoration, etc.			

Course Code	**CS434P**			
Course Name	**Robotics**			
Core/Elective	Elective			
Credits	Theory:2	Project: 1	Lab: 2	TOT: 3
Course Description	To give an appreciation of the issues that arise when designing complete, physically embodied autonomous agents, introduce the most popular methods for controlling autonomous mobile robots, give hands on experience of engineering design ,and to encourage independent thought on possible cognitive architectures for autonomous agents			
Course Syllabus	• Introduction : What is robotics?, Robotics and AI, Embedded Systems, Agent-Task-Environment model , Embodied Systems , Synthetic approaches to science • Sensors and signal processing : Common sensors and their properties , 1D signal processing , Animate vision • Planning approaches to robot control & robot Kinematics and Dynamics • Control Theory : Linear control problems , Modelling robot processes using control theory , Limitations of control theory • Probability Based Approaches: Markov Decision Processes (MDPs) , Analysis of robot processes as MDPs , Dynamic Programming approaches to control , Partially Observable Markov Decision Processes , Hidden Markov Models • Behaviour-Based Control : The subsumption architecture , Hybrid architectures , Formalising behaviour based control • Adaptive approaches to robot control : Reinforcement learning for control, Learning maps , Evolutionary approaches • Case studies and applications			

Course Code	**CS435P**			
Course Name	**Computer Vision**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	the goal of machine vision is to compute properties of the three-dimensional world from digital images. Problems in this field include identifying the 3D shape of an environment, determining how things are moving, and recognizing familiar people and objects, all through analysis of images and video.			
Course Syllabus	• Introduction and Matlab/Simulink review • Radiometry • Sources, Shadows and Shading • Color • Cameras • Linear Filters and Edge Detection • Texture • Digital Libraries • The Geometry of Multiple Views • Stereopsis • Segmentation and Fitting • Tracking Using Linear Dynamic Models • Correspondence and Pose • Template Matching • Recognition by Relations between Templates • Toward Category-Level Recognition			

Course Code	**CS43DP**			
Course Name	**Concurrent Systems**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 1	Lab: 2	TOT: 3
Course Description	Introductory study of the concurrent systems			
Course Syllabus	• Concurrent model of execution: Interleaving, atomic operations • Basic problems: Critical section, producer-consumer, readers-writers, dining philosophers • Correctness: Mutual exclusion, deadlock, starvation, invariants • Synchronization constructs: Load/store, semaphores, monitors, tuple-spaces (as in Linda), rendezvous • Languages: Support for concurrency within a programming language			

Course Code	**CS43EP**			
Course Name	**Knowledge-Based Systems**			
Core/Elective	Elective			
Credits	Theory: 2	**Project:1**	Lab:2	**TOT.:3**
Course Description	Logic for knowledge representation. Architecture of a knowledge-base system. Fundamentals of deductive databases. Top-down and bottom-up query processing.			
Course Syllabus	• Introduction (overview of branches of AI). • Knowledge Representation (Semantic Nets, Frames, Logic). • Reasoning and Inference (Predicate Logic, Inference Methods, Resolution). • Reasoning with Uncertainty (Probability, Bayesian Decision Making). • Expert System Design. • Architecture of expert systems. • Expert system tools. • CLIPS Overview (Concepts, Notation, Usage). • Pattern Matching (Variables, Functions, Expressions, Constraints). • Expert System Implementation (Salience, Rete Algorithm). • Expert System Examples.			

Course Code	**CS411P**			
Course Name	**Natural Language Processing**			
Core/Elective	Elective			
Credits	Theory: 2	**Project:1**	Lab:2	**TOT.:3**
Course Description	This course will consider how methods of natural language processing can be used to bridge this gap: to extract information from text, and to answer a user's questions about text and data base information.			
Course Syllabus	• Introduction; basic probability & information theory. • Language modeling. • Linguistics . • Words & the lexicon . • Hidden markov models . • Tagging. • Grammars & parsing algorithms. • Probabilistic parsing. Treebanks. • Statistical parsing. Machine translation.			

10- ELECTIVE COURSES: INFORMATION SYSTEMS

Course Code	**IS331T**		
Course Name	**Management Information Systems**		
Core/Elective	Elective		
Credits	Theory: 2	Tutorial: 3	TOT: 3
Course Description	This course is introductory in nature and therefore will deal with the basics in several areas of information systems and management.		
Course Syllabus	• Distinguish between information technology, information systems and information management as well as from computer science. • The strategic role of information systems in organization. • The organizational and technical foundations of information systems. • The use of information systems for improving human and corporate performance. • The differences between types of information systems and contemporary approaches to building and maintaining different them. • Alternatives for addressing key issues facing organizations as they relate to the application of technology. • Present the ethical and social issues related to the implementation of technological solutions.		

Course Code	**IS332P**			
Course Name	**Decision Support Systems**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course provides in-depth coverage of information systems used for decision support. Interactive computer-based systems are discussed which help decision-makers use data and models to solve semi-structured and unstructured problems. Models, interactive processes, knowledge-based approaches, and the integration of database systems are described.			
Course Syllabus	• Management Support Systems: An Overview • Decision-Making Systems, Modeling, and Support • Business Intelligence: Data Warehousing, Data Acquisition, Data mining, Business Analytics. Decision Support System Development • Knowledge-Based Decision Support and AI. Knowledge Acquisition, Representation and Reasoning. Knowledge Management • An Overview of Expert Systems. Expert System Development. Intelligent Systems over the Internet • Advanced Intelligent Systems. Collaborative Computing Technologies: Group Support Systems • Enterprise Information Systems. • Electronic Commerce. Integration, Impacts, and the Future of Management-Support Systems			

Course Code	**IS333P**			
Course Name	**Computer Animation**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	This course is designed to teach students the fundamental techniques of computer animation, and to provide experience in the design, scripting, production and post-production stages of computer animation			
Course Syllabus	• A Brief Introduction to Computer Graphics (Modelling, Rendering, Animation) • Shape Models • Operations and Transformations • Camera Motion • Traditional Animation • Three-D Rigid Animation • Articulated Bodies • Free-Form Animation • Specialized Behaviours • Recording and Other Media			

Course Code	**IS431P**			
Course Name	**Computer Forensics**			
Core/Elective	Elective			
Credits	Theory: 3	Project: 0	Lab: 3	TOT: 6
Course Description	The use of procedure-centric approaches to the study of cyber-attack prevention, planning, detection, and response with the goals of counteracting and conquering hacker attacks by logging malicious activity and gathering court-admissible chains-of-evidence using various forensic tools that reconstruct criminally liable actions at the physical and logical levels.			
Course Syllabus	• Goals of Law Enforcement and Computer Security. • Law of Cyberspace & Criminology of Cyber crime. • Computer Science of the Internet. • Incident Response. • Rules of Evidence • Search, Seizure, and Forensic Analysis. • Network Security & Social Engineering. • Network Surveillance and Reconnaissance. • Cyber insurgency and other Threats.			

Course Code	**IS432P**			
Course Name	**Data Warehousing**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course is about the deployment of advanced database techniques in large enterprises. It aims to provide students with up-to-date conceptual and practical knowledge on recent developments in database technology, specifically data warehousing.			
Course Syllabus	• Overview of data warehousing • Data warehouse design • OLAP technologies • Data cubing • Concepts of Logical Data Modeling (Guest Speaker) • Methodology (Phases) of Building a Data Warehouse • What kind of Architecture? Data Marts and Schemas • Business Analytics • Visualization • Knowledge Discovery in Data Warehouses			

Course Code	**IS433P**			
Course Name	**Intelligent Multimedia Systems**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	Intelligent multimedia systems bring together the disciplines of artificial intelligence, computer graphics, and visual arts to develop interactive systems that can dynamically customize and generate multimedia presentations, animations, or virtual environments for their users.			
Course Syllabus	• Introduction and Overview of Intelligent Multimedia Systems. • Multimedia Authoring Tools. • Automated Presentation Planning Systems. • User Modeling. • Designing 3D Virtual Environments. • Intelligent 3D Illustration Systems. • Automated Generation of Animated 3D Explanations. • Computer-Generated Cinematography. • Educational Applications of Intelligent Multimedia Systems. • Animated Agents.			

Course Code	**IS434P**			
Course Name	**Information Visualization**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	The goal of this course is to survey information visualization techniques, with an eye to evaluating the effectiveness of technical solutions and their support for human information-seeking behavior.			
Course Syllabus	• The structure and characteristics of data • Visualization Algorithms • Exploratory visual data analysis. • Focus + Context • Dynamic Queries • Document Visualization • Internet and Information Spaces • Information Workspaces • Tools and Objects • Personal Navigation • Virtual Environments • Empirical Evaluation • Principles for Effective Design			

Course Code	**IS435P**			
Course Name	**Integrating the Enterprise**			
Core/Elective	Core			
Credits	Theory: 2	Project: 1:30	Lab: 1:30	TOT: 3
Course Description	Information systems role in transforming organizations and industries. An integrated view of the organization from an external and internal perspective.			
Course Syllabus	• Organizational needs for integration and flexibility. • Overview of a typical “business architecture”. • The role and content of an enterprise conceptual data model. • Generic business processes. • Business process reengineering. • The integration of business, ERP functions/applications. • ERP trends and major vendors of software and services. • Inter-organizational systems (supply chain and EDI). • Collaborative systems and knowledge management.			

11- ELECTIVE COURSES: INFORMATION TECHNOLOGY

Course Code	**IT331P**			
Course Name	**Client Server Architectures**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 2	Lab: 1	TOT: 3
Course Description	This course expands student knowledge of Web and Internet technology to the development of medium to large size information systems that span the Internet.			
Course Syllabus	• Overview of client/server technologies. • Introduction to the .NET framework, .NET tools and Visual Basic .NET. • Introduction to ADO .NET and SQL Server 2000 • Introduction to ASP .NET applications. • Web Services • Designing component-based information systems • Messages and message queuing middleware • Transaction processing in client-server systems • Issues in Client/Server systems and middleware-security, management and trends			

Course Code	**IT432P**			
Course Name	**Biometrics**			
Core/Elective	Elective			
Credits	Theory: 2	Project: 2	Lab: 1	TOT: 3
Course Description	Biometric recognition systems utilize the physiological or behavioral characteristics of an individual for identification. By using biometrics, it is possible to establish an identity based on “who you are”, rather than by “what you possess” (e.g., an ID card) or “what you remember” (e.g., a password).			

Course Syllabus	• Biometrics in forensics
	• Design of a biometric system
	• Feature extraction and matching for:
	  o Fingerprint
	  o Hand Geometry
	  o Palmprint
	  o Face (2D and 3D)
	  o Iris
	  o Voice
	  o Signature.
	• Evaluation of System Performance
	• Image/signal quality measures
	• Multi-modal Biometrics
	• Template Protection and update
	• Privacy Issues			

Course Code	**IT436P**			
Course Name	**Systems Integration**			
Core/Elective	Core			
Credits	Theory: 2	Project: 0	Lab: 3	TOT: 3
Course Description	This course explores the theories and skills required for planning, developing, implementing, and managing the integration of information systems.			
Course Syllabus	• Overview of IT Integration • Types of Integration • Building Blocks of Integration • Integration Strategy / Architecture • XML overview • Creating XML Documents • Security & Enterprise Integration • Information Strategic Planning: - Business vision and mission - Assessment of the environment - Technology trends: opportunities and threats • Creating Document Type Definition (DTD) • Feasibility studies • Information requirements analysis • Business Process Reengineering (BPR) • Web Service Implementations • J2EE and Web Services • Integrating Technologies: Object and Message Middleware • Types of Integration: - Business model - Presentation integration • - Data integration • - Functional integration • Object-oriented Middleware • ERP: Production Planning • Workflows • ERP Implementation Risks and Change Management			