جامعة قناة السويس
كلية الحاسبات والمعلومات

اللائحة الداخلية

(مرحلة البكالوريوس)

مارس ٢٠٠٨

اللائحة الداخلية لكلية الحاسبات و المعلومات – جامعة قناة السويس

تاسست كلية الحاسبات و المعلومات بموجب القرار الجمهورى رقم ٨٤ لعام ١٩٩٧ و بدات الدراسة بها فى العام الجامعى ١٩٩٧/١٩٩٨.

رؤية الكلية

تسعى كلية الحاسبات و المعلومات جامعة قناة السويس الى ان تكون المصدر الاول و المركز الاساسى للنهوض بمستوى مهارات الحاسبات و المعلومات في مصر و المنطقة العربية.

رسالة الكلية

تأسيس كيان علمي قوي تعليميا و بحثيا ومهنيا يسد حاجة المجتمع الى متخصصين في مجال الحاسبات و المعلومات ويرفع افاق البحث العلمى فى المجال الى مستويات غير مسبوقة .

أهداف الكلية

تهدف الكلية إلى:

(١) تخريج دفعات قادرة على تطوير برمجيات في كافة المجالات باستخدام أدوات حديثة ،تأسيس و تطوير قواعد البيانات في المجالات المختلفة، استعمال التقنييات الحديثة في علم الحاسبات و توظيفها في مجال تقنية المعلومات، التعاون و التعامل مع المجموعات الإجتماعية في المجالات المختلفة ، بناء نظم معلومات عالية المستوى في المجالات المختلفة.

(٢) بناء قدرة بحثيه متطورة بها عناصر بشرية مؤهلة تستطيع العمل ضمن مجموعات بحث لفحص المشاكل المتقاربة و ايجاد الحلول المناسبة لها و فتح قنوات للتعاون على المستوى المحلى و الاقليمى و الدولى.

(٣) مد يد التعاون لخطمة المجتمع المحيط و رفع الوعى و المعرفة بمجالات الحاسبات و المعلومات من خلال الندوات و الدورات التدريبية و الوسائل الاعلامية ، وتلبية احتياجات المؤسسات من ادوات تكنولوجيا المعلومات من خلال تقديم الاستشارات و تصميم النظم و تطوير البرمجيات .

❖ مادة (١)

تتكون كلية الحاسبات والمعلومات جامعة قناة السويس من الأقسام العلمية الآتية :

١- قسم علوم الحاسب Department of Computer Science

٢- قسم نظم المعلومات Department of Information Systems

٣- قسم العلوم الأساسية Department of Basic Sciences

وتقوم هذه الأقسام على تدريس المقررات لطلاب الكلية في جميع الفرق ، على النحو التالي .

١. قسم علوم الحاسب : ويقوم على تدريس مقررات التخصص مثل

مقدمة في علوم الحاسب – برمجة الحاسبات – البرمجة الشيئية – هياكل البيانات – معالجة الملفات – تحليل الخوارزميات – مفاهيم لغات الحاسب – الرسم بالحاسب – مقدمة في شبكات الحاسب – لغة التجميع – طرق اتصال الإنسان بالحاسب – لغات برمجة متقدمة – برمجة الويب – نظرية وتصميم المترجم – البرمجة المنطقية – بناء الحاسب – هندسة البرمجيات – معالجة الإشارات الرقمية – النمذجة والمحاكاة – الذكاء الاصطناعي – اتصالات البيانات – معالجة الصور الرقمية – نظريات نظم التشغيل – اللغات الديناميكية – الواقع الافتراضي – تقييم كفاءة الأداء – تعريب الحاسب – الشبكات العصبية – نظم الرؤية بالحاسب – الأنظمة الموزعة – الشبكات اللاسلكية – المعالجة المتوازية.

٢. قسم نظم المعلومات: ويقوم على تدريس مقررات التخصص مثل

مقدمة فى نظم المعلومات – مقدمة في قواعد البيانات – تحليل وتصميم النظم – أساسيات الوسائط المتعددة – نظرية المعلومات – نظم دعم اتخاذ القرار – إدارة شبكات الحاسب – قواعد البيانات الشيئية – الأعمال الإلكترونية – تمثيل المعرفة و الاستدلال – أمن المعلومات – نظم معلومات المكتبات – رؤية المعلومات – الحكومة الإلكترونية – قواعد بيانات الوسائط المتعددة – قواعد البيانات المتسلسلة زمنيا – قواعد البيانات متعددة الأبعاد – إدارة شبكات المؤسسات – قواعد بيانات اللغات الحية – نظم استرجاع المعلومات – النظم الخبيرة – المعلوماتية الحيوية – التنقيب عن البيانات – نظم قواعد المعرفة – نظم المعلومات الطبية – قواعد بيانات النصوص الفوقية– التجارة الإلكترونية – نظم معلومات الويب – نظم المعلومات الجغرافية – مستودعات البيانات – قواعد البيانات الموزعة – التعلم الالكتروني – الصحة الالكترونية – البنوك الالكترونية .

٣. قسم العلوم الأساسية: ويقوم على تدريس مقررات الرياضيات والفيزياء مثل تفاضل و تكامل – الرياضيات الغير متصلة – الجبر الخطي – إحصاء و احتمالات – معادلات تفاضلية – الرياضيات التنفيذية – بحوث العمليات – فيزياء .

❖ مادة (٢)

تمنح جامعة قناة السويس بناءا على طلب مجلس كلية الحاسبات والمعلومات درجة البكالوريوس بعد استكمال متطلباتها في احد التخصصيين الآتيين :

١. علوم الحاسب.
٢. نظم المعلومات.

على أن يوضح التخصص في شهادة البكالوريوس.

❖ مادة (٣)

يقيد الطالب في الثانوية العامة إذا كان حاصلا على الثانوية العامة أو ما يعادلها وفقا للمادة (٧٥) من قانون تنظيم الجامعات.

❖ مادة (٤)

مدة الدراسة لنيل درجة البكالوريوس أربع سنوات جامعية مقسمة على ثمانية فصول دراسية (نصف سنوية) بالإضافة إلى تدريب عملى فى السنوات الثلاث الأولى ومشروع للتخرج فى السنة النهائية على أن يذكر فى شهادة البكالوريوس عنوان مشروع التخرج والتقدير.

❖ مادة (٥)

يدرس الطالب فى الفرقتين الأولى والثانية دراسة عامة ثم يدرس في الفرقتين الثالثة والرابعة أحد التخصصين التاليين:

١- علوم الحاسب
٢- نظم المعلومات

وتبين الجداول التي تظهر في الباب الثالث من هذه اللائحة المقررات الدراسية موزعة على فصلين دراسيين لكل عام دراسي وكذا عدد الساعات المخصصة أسبوعيا لكل مقرر من محاضرات ودروس عملية وتمارين وأيضا الدرجات المخصصة لكل من هذه المقررات .

مادة (٦)

أ- تخصص نسبة ٦٠% على الأقل من النهاية العظمى لمجموع درجات المقرر الدراسى للامتحان التحريرى والباقى لأعمال الفصل والامتحانات العملية والشفوية .

ب- تجرى الامتحانات التحريرية فى نهاية كل فصل دراسى ، ويعتبر الطالب الغائب فى الامتحان التحريرى راسباً فى المقرر إلا إذا تقدم بعذر يتم قبوله. ولايعتبر الطالب ناجحاً إلا إذا حصل على ٥٠% على الأقل من درجة الامتحان التحريرى .

❖ **مادة (٧)**

يحرم الطالب من التقدم لآداء الإمتحان فى كل أو بعض المقررات بقرار من مجلس الكلية بناء على طلب مجالس الأقسام العلمية المختصة وذلك إذا كانت مواظبته فى حضور المحاضرات والتمارين تقل عن ٧٥% من مجموع الساعات الفعلية . ويعتبر الطالب فى هذه الحالة راسباً فى المقررات التى حرم من التقدم لأداء الامتحان فيها إلا إذا قدم عذراً يقبله مجلس الكلية فيعتبر غائباً بعذر مقبول

❖ **مادة (٨)**

يكون نظام الدراسة والامتحان على النحو التالى:

١. مدة الامتحان التحريرى فى أى مقرر تماثل عدد ساعات محاضرات هذا المقرر.
٢. تعلن نتائج كل فصل دراسى على حدة.
٣. ينقل الطالب من الفرقة المقيد بها إلى الفرقة التى تليها إذا نجح فى جميع المقررات أو كان راسباً أو متغيباً (بعذر مقبول أو بدون عذر) فيما لا يزيد عن مقررين من فرقته أو من فرقة أدنى.
٤. يؤدى الطالب الراسب الامتحانات النظرية والعملية والشفوية فيما تخلف فيه من مقررات مع طلاب الفرقة التى تدرس هذه المقررات .
٥. يعقد خلال شهر سبتمبر من كل عام امتحان دور ثان لطلاب الفرقة النهائية الذين تخلفوا فيما لايزيد عن مقررين من فرقتهم أو من فرقة أدنى. وإذا تكرر رسوبهم امتحنوا فيما رسبوا فيه مع طلاب الفصل الدراسى الذى يدرس فيه هذا المقرر.
٦. يكون تقدير الطالب فى مادة التخلف بعد النجاح مقبولاً إلا إذا كان غائباً بعذر مقبول فيحصل على تقديره الفعلى.
٧. يكلف الطالب بحضور فترة تدريب صيفى يقوم مجلس الكلية بتحديد موضوعات و مدة التدريب بحد أدنى ستة أسابيع .

❖ **مادة (٩)**

يقوم طلاب الفرقة الرابعه بإعداد مشروع البكالوريوس فى موضوعات معينة تحددها مجالس الأقسام العلمية وذلك خلال العام الدراسى ، ثم تخصص للمشروع فترة لا تقل عن أربعة أسابيع تبدأ عقب الإنتهاء من الإمتحان

❖ مادة (١٠)

يكون تقدير الطالب فى المواد الدراسية والتقدير العام كما يلى:

- ممتاز: للحاصل على ٨٥% فأكثر من مجموع الدرجات.
- جيدجداً: للحاصل على ٧٥% إلى أقل من ٨٥% من مجموع الدرجات.
- جيد: للحاصل على ٦٥% إلى أقل من ٧٥% من مجموع الدرجات.
- مقبول: للحاصل على ٥٠% إلى أقل من ٦٥% من مجموع الدرجات.

أما رسوب الطالب فيقدر بأحد التقديرين الآتيين:

- ضعيف: للحاصل على ٣٥% إلى أقل من ٥٠% من مجموع الدرجات.
- ضعيف جداً: للحاصل على أقل من ٣٥% من مجموع الدرجات.

❖ مادة (١١)

يحسب التقدير العام للطالب فى درجة البكالوريوس على أساس المجموع الكلى للدرجات التى حصل عليها فى كل السنوات الدراسية ويمنح الطالب مرتبة الشرف إذا كان تقديره التراكمى العام ممتاز أو جيد جداً، على ألا يكون الطالب قد رسب فى أى امتحان تقدم له فى أى فرقة دراسية.

❖ مادة (١٢):

بالنسبة للمقررات الاختيارية التي تظهر في الجداول الدراسية في الباب الثالث ، يحدد مجلس الكلية أسماءها قبل بداية كل فصل دراسي بناء على اقتراحات مجالس الأقسام المختصة ، ويحتوي الباب الرابع من هذه اللائحة علي توصيف لجميع المقررات والمقررات الاختيارية المذكورة في الجداول ، ويجوز لمجلس الكلية بناء على اقتراح المجالس المختصة تغيير وتعديل هذا التوصيف كلما دعت الحاجة أو التطورات العلمية لذلك .

وبالنسبة للمقررات العامة المذكورة في الجداول :

مقدمة في علم البيئة – لغة انجليزية – لغة عربية

فيدرسها أعضاء هيئة تدريس يحددهم مجلس الكلية بناء على ترشيح وكيل الكلية لشئون التعليم والطلاب .

❖ مادة (١٣):

يعمل بهذه اللائحة من تاريخ صدور القرار الوزاري بشأنها ، وتطبق أحكامها على الطلاب الذين يلتحقون بالكلية بعد صدوره ، أما الطلاب الذين التحقوا بالكلية من قبل فتتطبق عليهم أحكام اللائحة السابقة .

الباب الثاني: النظام الكودي للمقررات

تبين الجداول التالية المقررات الدراسية موزعة على فصلين دراسيين لكل سنة من سنوات الدراسة و عدد الساعات المخصصة أسبوعيا لكل مقرر من محاضرات و دروس علمية و تمارين، مع ملاحظة ان الدروس العلمية و التمـــارين تعامل معاملة المحاضرات.

أولا : قواعد النظام الكودي لأرقام المقررات:

يتكون كود أى مقرر من أربع خانات هم : **س أ ب ج** و تفصيلها كالتالي :

س: الرمز الكودي للقسم القائم على تدريس المقرر كالتالي:

ع ح : علوم حاسب	**CS: Computer Science**
ن م : نظم المعلومات	**IS: Information Systems**
ع أ : علوم أساسية	**BS: Basic Sciences**

وبالنسبة للمقررات العامة تصبح قيمة **س** هي **ع** أي **عام** (G: General)

ج: عبارة عن رقم بخانة المئات يدل علي الفرقة الدراسية كالتالي:

١: الفرقة الأولى

٢: الفرقة الثانية

٣: الفرقة الثالثة

٤: الفرقة الرابعة.

ب : عبارة عن رقم بخانة العشرات يدل على رقم المجموعة التخصصية للمقرر داخل القسم .

أ : عبارة عن رقم بخانة الآحاد يمثل رقم المقرر داخل المجموعة التخصصية.

مثال: مقرر **ع ح ٢١٣** يدل علي مقرر يقوم علي تدريسه قسم علوم الحاسب ، ويدرس لطلبة وطالبات الفرقة الثانية، ويقع ضمن المجموعة التخصصية رقم ١ في قسم علوم الحاسب ، وهو المقرر رقم ٣ في هذه المجموعة.

الباب الثالث: جداول المقررات الدراسية

الفرقة الأولى – الفصل الأول

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع أ ١٠١	تفاضل و تكامل	٣	٤	٨٠	–	٤٠	١٢٠
ع ١٠١	مقدمة في علم البيئة	٢	–	٣٠	–	١٠	٤٠
ع ح ١٠١	مقدمة في علوم الحاسب	٣	٤	٨٠	٢٠	٢٠	١٢٠
ع ح ١٠٢	برمجة الحاسبات	٢	٢	٧٠	١٥	١٥	١٠٠
ن م ١٠١	مقدمة فى نظم المعلومات	٢	٢	٧٠	١٥	١٥	١٠٠
ع أ ١٠٣	الرياضيات الغير متصلة	٣	٣	٨٠	–	٤٠	١٢٠
	المجموع	١٥	١٥				٦٠٠

الفرقة الأولى – الفصل الثانى

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ن م ١٢٣	مقدمة في نظم قواعد البيانات	٢	٢	٥٠	١٥	١٥	٨٠
ع أ ١٠٢	الجبر الخطي	٣	٣	٨٠	–	٤٠	١٢٠
ع ١٠٥	اللغة الإنجليزية ١	٢	٣	٧٠	١٥	١٥	١٠٠
ع أ ١١٠	إحصاء و احتمالات	٣	٣	٨٠	–	٤٠	١٢٠
ع ح ١٠٣	البرمجة الشيئية	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ١٠٤	اللغة العربية	٢	١	٤٠	–	٢٠	٦٠
	المجموع	١٥	١٥				٦٠٠

الفرقة الثانية – الفصل الأول

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع أ ٢٠٣	المعادلات التفاضلية	٣	٣	٨٠	–	٤٠	١٢٠
ع ح ٢٠١	هياكل البيانات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع أ ٢٠٤	الرياضيات المتقدمة	٣	٣	٧٠	–	٣٠	١٠٠
ع ٢٠٣	اللغة الإنجليزية ٢	٢	٢	٥٠	–	٣٠	٨٠
ن م ٢٥٣	أساسيات الوسائط المتعددة	٢	٢	٧٠	١٥	١٥	١٠٠
ن م ٢١٠	تحليل وتصميم النظم	٢	٢	٥٠	١٥	١٥	٨٠
	المجموع	١٥	١٥				٦٠٠

الفرقة الثانية – الفصل الثاني

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع أ ٢٠٥	بحوث العمليات	٣	٣	٨٠	–	٤٠	١٢٠
ع ح ٢١١	معالجة الملفات	٣	٣	٧٠	١٥	١٥	١٠٠
ع أ ٢٢١	فيزياء	٢	٢	٥٠	١٥	١٥	٨٠
ع أ ٢١١	العمليات التصادفية	٢	٢	٧٠	–	٣٠	١٠٠
ن م ٢٠١	نظرية المعلومات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ٢٠٢	الكتابة الفنية	٢	٢	٥٠	١٥	١٥	٨٠
	المجموع	١٥	١٥				٦٠٠

الفرقة الثالثة – علوم الحاسب – الفصل الأول

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع ح ٣١٢	تحليل الخوارزميات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٣٠٣	مفاهيم لغات الحاسب	٢	٢	٥٠	١٥	١٥	٨٠
ع ح ٣٤٠	الرسم بالحاسب	٢	٢	٥٠	١٥	١٥	٨٠
ع ح ٣٥٠	مقدمة في شبكات الحاسب	٣	٢	٧٠	١٥	١٥	١٠٠
ع ح ٣٠٤	لغة التجميع	٢	٣	٧٠	١٥	١٥	١٠٠
	منهج اختياري (١)	٣	٣	٨٠	٢٠	٢٠	١٢٠
	المجموع	١٥	١٥				٦٠٠

المناهج الاختيارية

-ع ح ٣١٤ طرق اتصال الإنسان بالحاسب -ع ح ٣٠٥ لغات برمجة متقدمة - ع ح ٣٠٦ برمجة الويب.

- ن م٣٤٠ إدارة شبكات الحاسب.

الفرقة الثالثة – علوم الحاسب – الفصل الثانى

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع ح ٣٢١	نظرية وتصميم المترجمات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٣٠٧	البرمجة المنطقية	٢	٢	٥٠	١٥	١٥	٨٠
ع ح ٣٢٠	بناء الحاسب	٢	٢	٥٠	١٥	١٥	٨٠
ع ح ٣١٥	هندسة البرمجيات	٢	٢	٥٠	١٥	١٥	٨٠
ع ح٣٥١	النمذجة والمحاكاة	٣	٣	٨٠	٢٠	٢٠	١٢٠
	منهج اختياري (٢)	٣	٣	٨٠	٢٠	٢٠	١٢٠
	المجموع	١٥	١٥				٦٠٠

المناهج الاختيارية

-ع ح ٣٤٢ معالجة الإشارات الرقمية – ع ح ٣٦١ الشبكات العصبية - ن م ٣٣١ قواعد البيانات الشيئية

الفرقة الثالثة – نظم المعلومات – الفصل الأول

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ن م ٣٤٠	إدارة شبكات الحاسب	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٣٠٨	نظم استرجاع المعلومات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٣٦٠	الأعمال الإلكترونية	٢	٢	٥٠	١٥	١٥	٨٠
ن م ٣١١	نظم دعم اتخاذ القرار	٢	٢	٥٠	١٥	١٥	٨٠
ن م ٣٣١	قواعد البيانات الشيئية	٢	٢	٥٠	١٥	١٥	٨٠
	منهج اختياري (١)	٣	٣	٨٠	٢٠	٢٠	١٢٠
	المجموع	١٥	١٥				٦٠٠

المناهج الاختيارية

– ن م ٣٠٤نظم معلومات المكتبات – ن م ٣٠٣ رؤية المعلومات – ن م ٣٥٢ تمثيل المعرفة و الاستدلال

– ع ح ٣٠٦ برمجة الوب

الفرقة الثالثة – نظم المعلومات – الفصل الثانى

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ن م ٣٦٥	الحكومة الإلكترونية	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٣٣٤	قواعد بيانات الوسائط المتعددة	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٣٣٠	قواعد البيانات المتسلسلة زمنيا	٢	٢	٥٠	١٥	١٥	٨٠
ن م ٣٠٢	أمن المعلومات	٢	٢	٥٠	١٥	١٥	٨٠
ن م ٣٤١	إدارة شبكات المؤسسات	٢	٢	٥٠	١٥	١٥	٨٠
	منهج اختياري (٢)	٣	٣	٨٠	٢٠	٢٠	١٢٠
	المجموع	١٥	١٥				٦٠٠

المناهج الاختيارية ن م ٣٣٢ – قواعد البيانات متعددة الأبعاد – ن م ٣٣٣ قواعد بيانات اللغات الحية– ع ح ٣٦١ الشبكات العصبية .

الفرقة الرابعة – علوم الحاسب – الفصل الأول

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع ح ٤٥٢	إتصالات البيانات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٤٤٣	معالجة الصور الرقمية	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٤٣١	نظريات نظم التشغيل	٢	٢	٧٠	١٥	١٥	١٠٠
ع ح ٤٠٩	اللغات الديناميكية	٢	٢	٥٠	١٥	١٥	٨٠
	منهج اختياري (٣)	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٤٩٩	مشروع التخرج	٢	٣			٥٠	٥٠
	المجموع	١٥	١٦				٥٩٠

المناهج الاختيارية

-ع ح ٤٤٤ الواقع الافتراضي -ع ح ٤٥٤ تقييم كفاءة الأداء - ن م ٤٧١ التنقيب عن البيانات.

الفرقة الرابعة – علوم الحاسب – الفصل الثانى

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ع ح٤١٧	تعريب الحاسبات	٢	٢	٧٠	١٥	١٥	١٠٠
ع ح ٤٦٠	الذكاء الإصطناعي	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٤٤٥	نظم الرؤية بالحاسب	٢	٢	٥٠	١٥	١٥	٨٠
ع ح ٤٣٢	الأنظمة الموزعة	٣	٣	٨٠	٢٠	٢٠	١٢٠
	منهج اختياري (٤)	٣	٣	٨٠	٢٠	٢٠	١٢٠
ع ح ٤٩٩	مشروع التخرج	٢	٣		١٠٠	٥٠	١٥٠
	المجموع	١٥	١٦				٦٩٠

المناهج الاختيارية

-ع ح ٤٥٣ الشبكات اللاسلكية- ن م ٤٥١ النظم الخبيرة- ع ح ٤١٨ المعالجة المتوازية.

الفرقة الرابعة – نظم المعلومات – الفصل الأول

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ن م٤٨٠	المعلوماتية الحيوية	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م٤٧١	التنقيب عن البيانات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٤٥٠	نظم قواعد المعرفة	٢	٢	٥٠	١٥	١٥	٨٠
ن م ٤٠٧	نظم المعلومات الطبية	٢	٢	٧٠	١٥	١٥	١٠٠
	منهج اختياري (٣)	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٤٩٩	مشروع التخرج	٢	٣			٥٠	٥٠
	المجموع	١٥	١٦				٥٩٠

المناهج الاختيارية

– ن م ٤٣٦ قواعد بيانات النصوص الفوقية – ن م ٤٦١ التجارة الإلكترونية – ن م ٤٠٦ نظم معلومات الويب.

الفرقة الرابعة – نظم المعلومات – الفصل الثانى

الكود	اسم المقرر	الساعات		النهايات العظمى للدرجات			
		نظرى	عملى	تحريرى	شفوى وعملى	أعمال الفصل	المجموع
ن م ٤٠٥	نظم المعلومات الجغرافية	٢	٢	٧٠	١٥	١٥	١٠٠
ن م ٤٧٠	مستودعات البيانات	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٤٣٥	قواعد البيانات الموزعة	٢	٢	٥٠	١٥	١٥	٨٠
ن م ٤٥١	النظم الخبيرة	٣	٣	٨٠	٢٠	٢٠	١٢٠
	منهج اختياري (٤)	٣	٣	٨٠	٢٠	٢٠	١٢٠
ن م ٤٩٩	مشروع التخرج	٢	٣		١٠٠	٥٠	١٥٠
	المجموع	١٥	١٦				٦٩٠

المناهج الاختيارية

– ن م ٤٦٢ التعلم الالكتروني – ن م ٤٦٣ الصحة الالكترونية – ن م ٤٦٤ البنوك الالكترونية

الترجمة الحرفية لجداول المقررات الدراسية

First year - First term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and lab.	Class Work	Total
BS101	Calculus	3	4	80	–	40	120
G101	Introduction to General Ecology	2	–	30	–	10	40
CS101	Introduction to Computer Science	3	4	80	20	20	120
CS102	Computer Programming	2	2	70	15	15	100
IS101	Introduction to Information Systems	2	2	70	15	15	100
BS103	Discrete Mathematics	3	3	80	-	40	120
	Total	15	15				600

First year - Second term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
IS123	Introduction to Databases	2	2	50	15	15	80
BS102	Linear Algebra	3	3	80	-	40	120
G105	English Language 1	2	3	70	15	15	100
BS110	Statistics and Probabilities	3	3	80	-	40	120
CS103	Object-Oriented Programming	3	3	80	20	20	120
G104	Arabic Language	2	1	40	-	20	60
	Total	15	15				600

Second year – First term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
BS203	Differential Equations	3	3	80	-	40	120
CS201	Data Structures	3	3	80	20	20	120
BS204	Advanced Mathematics	3	3	70	-	30	100
G203	English Language 2	2	2	50	-	30	80
IS253	Fundamentals of Multimedia	2	2	70	15	15	100
IS210	Systems Analysis and Design	2	2	50	15	15	80
	Total	15	15				600

Second year – Second term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
BS205	Operations Research	3	3	80	-	40	120
CS211	File Processing	3	3	70	15	15	100
BS221	Physics	2	2	50	15	15	80
BS211	Stochastic Processes	2	2	70	-	30	100
IS201	Information Theory	3	3	80	20	20	120
G202	Technical Writing	2	2	50	-	30	80
	Total	15	15				600

Third year– Computer Science -- First term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab	Class Work	Total
CS312	Analysis of Algorithms	3	3	80	20	20	120
CS303	Programming Languages Concepts	2	2	50	15	15	80
CS340	Computer Graphics	2	2	50	15	15	80
CS350	Introduction to Computer Networks	3	2	70	15	15	100
CS304	Assembly Language	2	3	70	15	15	100
	Elective Course (1)	3	3	80	20	20	120
	Total	15	15				600

Elective Courses:
-CS314 Human Computer Interaction -- CS305 Advanced Programming Language- CS306 Web Programming – IS340 Computer Networks Management

Third year – Computer Science -- Second term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
CS321	Theory and Design of Compilers	3	3	80	20	20	120
CS307	Logic Programming	2	2	50	15	15	80
CS320	Computer Architecture	2	2	50	15	15	80
CS315	Software Engineering	2	2	50	15	15	80
CS351	Simulation and Modeling	3	3	80	20	20	120
	Elective Course (2)	3	3	80	20	20	120
	Total	15	15				600

Elective Courses:
- CS342 Digital Signal Processing - CS361 Neural Networks - IS331 Object-Oriented Database

Third year – Information Systems -- First term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
IS340	Computer Network Management	3	3	80	20	20	120
IS308	Information Retrieval Systems	3	3	80	20	20	120
IS360	E-Business	2	2	50	15	15	80
IS311	Decision Support Systems	2	2	50	15	15	80
IS331	Object-Oriented Database	2	2	50	15	15	80
	Elective Course (1)	3	3	80	20	20	120
	Total	15	15				600

Elective Courses:

-IS304 Library Information Systems -IS303 Information Visualization
- IS352 Knowledge Representation and Reasoning - CS306 Web Programming

Third year – Information Systems -- Second term

Elective Courses:

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
IS365	Electronic Government	3	3	80	20	20	120
IS334	Multimedia Databases	3	3	80	20	20	120
IS330	Time-Series Database	2	2	50	15	15	80
IS302	Information Security	2	2	50	15	15	80
IS341	Enterprise Networks Management	2	2	50	15	15	80
	Elective Course (2)	3	3	80	20	20	120
	Total	15	15				600

IS332 Multidimensional Database
-IS333 Natural Language Databases - CS360 Artificial Intelligence

Fourth year – Computer Science -- First term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
CS452	Data Communications	3	3	80	20	20	120
CS443	Digital Image Processing	3	3	80	20	20	120
CS431	Theory of Operating Systems	2	2	70	15	15	100
CS409	Dynamic Languages	2	2	50	15	15	80
	Elective Course (3)	3	3	80	20	20	120
CS499	Graduation Project	2	3			50	50
	Total	15	16				590

Elective Courses:
-CS444 Virtual Reality -CS454 Performance Evaluation
-IS408 Information Retrieval Systems

Fourth year – Computer Science -- Second term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
CS417	Computer Arabization	2	2	70	15	15	100
CS460	Artificial Intelligence	3	3	80	20	20	120
CS445	Computer Vision Systems	2	2	50	15	15	80
CS432	Distributed Systems	3	3	80	20	20	120
	Elective Course (4)	3	3	80	20	20	120
CS499	Graduation Project	2	3		100	50	150
	Total	15	16				690

Elective Courses:
-CS453 Wireless Networks -IS451 Expert Systems
-CS418 Parallel Processing

Fourth year – Information Systems -- First term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab	Class Work	Total
IS480	Bioinformatics	3	3	80	20	20	120
IS471	Data Mining	3	3	80	20	20	120
IS450	Knowledge based Systems	2	2	50	15	15	80
IS407	Medical Information Systems	2	2	70	15	15	100
	Elective Course (3)	3	3	80	20	20	120
IS499	Graduation Project	2	3			50	50
	Total	15	16				590

List of Elective Courses:

IS436 XML Database IS461 Electronic Commerce
IS406 Web Information Systems

Fourth year – Information Systems -- Second term

CODE	COURSES	HOURS		MARKS			
		Lectures	Lab.	Final Exam	Oral and Lab.	Class Work	Total
IS405	Geographical Information Systems (GIS)	2	2	70	15	15	100
IS470	Data Warehousing	3	3	80	20	20	120
IS435	Distributed Databases	2	2	50	15	15	80
IS451	Expert Systems	3	3	80	20	20	120
	Elective Course (4)	3	3	80	20	20	120
IS499	Graduation Project	2	3		100	50	150
	Total	15	16				690

List of Elective Courses:

IS462 Electronic Learning IS463 Electronic Health IS464 Electronic Banking

الباب الرابع: توصيف المقررات الدراسية

١. مقررات علوم الحاسب

Computer Science Courses

CS101 Introduction to Computer Science ع ح ١٠١ مقدمة في علوم الحاسب

The course provides the student with basic the computer terminology, hardware and software components, and communications technology. The different number systems (decimal, binary, hexadecimal) should be explored and conversions among them mastered. The student should be exposed to the logic and arithmetic operations of the computer, the concept of algorithm, and the process of designing computer-based solutions to a range of problems. The course should give a tour of the branches of computer science: computer programming, graphics, networks, system analysis and design. This course also focuses on Operating systems design and implementation. Basic structure, Process and thread management, process synchronization and communication mechanisms; Implementation of processes scheduling and protection; Memory organization and management, including virtual memory, I/O device management, secondary storage, and file systems.

CS102 Computer Programming ع ح ١٠٢ برمجة الحاسبات

The course gives the student the programming concepts in a light of learning a programming language, the course includes: introduction to programming, how to think in designing a program, writing a program, the compiler, programming language fundamentals (basic data types – program structure – statements – expressions – I/O operations – control statements – computer architecture - algorithms).

CS103 Object Oriented Programming ع ح ١٠٣ البرمجة الشيئية

This course uses an Object-Oriented language with procedural capabilities (such as C++ or Java) to teach object-oriented concepts, design and programming topics including: classes, inheritance, encapsulation, polymorphism, information hiding, patterns, and CRC cards. Typical programming language topics might include: templates, exception handling, virtual functions, and the parameterized data types.

CS201 Data Structures **ع ح ٢٠١ هياكل البيانات**

This course investigates abstract data types (ADTs), including lists, tacks, queues, priority queues, trees, and graphs. The emphasis is on he trade-offs associated with implementing alternative data structures for these ADTs. There will be four or five substantial programming assignments.

CS211 File Processing **ع ح ٢١١ معالجة الملفات**

This course gives an overview of files: file design, file manipulation, blocking and buffering (both single & double buffering). Types of storage devices (magnetic tapes, magnetic disks) are presented. Space and time calculation, Sequential file, relative file, indexed sequential file, multiple key file, and direct access file. External sort / merge algorithms. File systems-disk scheduling.

CS303 Programming Languages Concepts

ع ح ٣٠٣ مفاهيم لغات الحاسب

Language concepts are studied from an abstract point of view, with examples drawn from particular languages and implementations. Students study programming language syntax, semantic definitions, translation and interpretation, variable referencing methods, control structures, data types, input/output, procedures and functions, scope and referencing environments, concurrent computation, and compilation environments.

CS304 Assembly Language **ع ح ٣٠٤ لغة التجميع**

An introduction to the assembly levels machine organization. The course emphasizes on the architecture of processors, memory system organization and architecture, input/output, exceptions/interrupts and software interfaces. The general concepts of assemblers and assembly language programming as seen through the Intel 80 x 86 processor families are studied.

CS305 Advanced Programming Languages **ع ح ٣٠٥ لغات برمجة متقدمة**

This course investigates the science and theory of programming including modular design, recursion, program verification, robustness, and portability. The course

presents high-level language programming applications including records, sets, files, class design, inheritance, and polymorphism; introduces data structures such as stacks, linked lists, searching, and sorting; and discusses ethical and social issues in computing.

CS306 Web Programming **ع ح ٣٠٦ برمجة الويب**

This course includes an introduction to the use of Internet services and the fundamentals of web page design and web site development. Topics include basic HTML/CSS/JavaScript, Client/Server programming, Server side controls, Brief overview of PHP with database applications. Basic XML/XSL, N-tier application architecture, Sessions and state management, Security for web applications, Web services. Language constructs, design goals, run-time structures, implementation techniques, and exposure to a wide variety of programming paradigms.

CS307 Logic Programming **ع ح ٣٠٧ البرمجة المنطقية**

This course deals with the logic programming paradigm and Prolog. It discusses the syntax and the semantics of Prolog, the working of a Prolog interpreter and various applications of Prolog. In particular, the course considers the use of Prolog for Database Querying, for Parsing and for Problem Solving in Artificial Intelligence etc. Meta-Programming aspects of Prolog will be emphasized.

CS312 Analysis of Algorithms **ع ح ٣١٢ تحليل الخوارزميات**

This course covers the following topics: problem solving strategies, principles of algorithm design, metrics for evaluating designs, iterative and recursive algorithms, structured and object-oriented paradigms. Algorithms for sorting and selection, randomized techniques, search structures (heaps, balanced trees, hash tables), dynamic programming and greedy algorithms, amortized analysis and graph algorithms (breadth- and depth-first search, MSTs, shortest paths).

CS314 Human Computer Interaction ع ح ٣١٤ طرق اتصال الإنسان بالحاسب

Human-computer interaction has to do with human-computer communication and how to facilitate it. This class begins with a discussion of information processing characteristics important to human-computer interaction and formal models of human-computer interaction. Topics include dialogue techniques, response times and display rates, information presentation, interaction devices, computer training, help systems, computer supported co-operative work, information search and visualization, hypermedia and the World Wide Web.

CS315 Software Engineering ع ح ٣١٥ هندسة البرمجيات

This course aims to understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique. It also introduces the basics of the software life cycle, from requirements definition to development and evaluation.

CS320 Computer Architecture ع ح ٣٢٠ بناء الحاسب

Computer Architecture course gives a study of computer systems with an emphasis on contemporary designs. Pipelining, cache and memory design, input/output, how the various computer components process the data, and how the operating system and the hardware cooperate to make computer operation possible.

CS321 Theory and Design of Compilers ع ح ٣٢١ نظرية وتصميم المترجمات

This course aims to acquire the student the practical skills to write a simple compiler for an imperative programming language. It allows the student to understand the concepts of scanning, parsing, name management in nested scopes, and code generation. Also it aims to transfer the skills to general software engineering tasks (e.g. parsing of structured data files or argument lists).

CS340 Computer Graphics ع ح ٣٤٠ الرسم بالحاسب

This course includes an introduction to the basic concepts, 2-D and 3-D modeling and transformations, viewing transformations, projections, rendering techniques, graphical software packages and graphics systems. Students will be expected to develop a graphics application in C in conjunction with a specially developed graphics library.

CS342 Digital Signal Processing ع ح ٣٤٢ معالجة الإشارات الرقمية

This course describes the fundamentals and mathematical principles of DSP. Topics to be covered include sampling theory, sequence and sequence operation, discrete-time systems, convolution; discrete-time Fourier analysis and Z-transform; magnitude and phase responses, group delay, linear phase systems, minimum phase and maximum phase, all-pass filters; canonic and non-canonic digital structures; digital filter design, Butterworth, Chebyshev, and elliptic approximations, bilinear transformation, window functions, Remez algorithm, and computer-aided filter design.

CS350 Introduction to Computer Networks ع ح ٣٥٠ مقدمة في شبكات الحاسب

This course introduces the computer networks fundamentals with emphasis on higher level protocols and functions are considered. Course contents include network design considerations, software design and layering concepts, interface design, routing and congestion control algorithms, internetworking, transport protocol design, end-to-end communication, session and application protocols. Specific examples of commercial and international standards are cited.

CS351 Modeling and Simulation ع ح ٣٥١ النمذجة والمحاكاة

This course introduces the concepts and terminology of the modeling and simulation field to students. It provides both analytical and simulative tools that serve as a basis for addressing several performance analyses and engineering problems in computer networks and communication systems. This course also familiarizes the student with the types of software used and exposes them to simulation software through projects. Also, it discusses distributed simulation techniques and simulation protocols.

CS360 Artificial Intelligence ع ح ٣٦٠ الذكاء الإصطناعي

This course introduces student to the basic concepts and methods of artificial intelligence from a computer science perspective. The course will emphasize the selection of data representations and algorithms useful in the design and implementation of intelligent systems. It contains an overview of one of the AI languages and some discussion of important applications of artificial intelligence methodology.

CS361 Neural Networks ع ح ٤٦١ الشبكات العصبية

The course introduces the theory and practice of neural computation. It offers the principles of neuro-computing with artificial neural networks widely used for addressing real-world problems such as classification, regression, pattern recognition, data mining, time-series prediction, etc... Knowledge and tools for the specification, design, and practical implementation of ANNs are also provided.

CS409 Dynamic Languages ع ح٤٠٩ اللغات الديناميكية

This course introduces the tools and techniques on the approach to language as a dynamical system. It seeks to fruitfully integrate linguistic theory, psycholinguistics, corpus linguistics, and historical linguistics through the means of mathematical modeling. Topics include: string processing, dynamical systems and stability, stochastic processes, mathematical models of population dynamics, and dynamical models of language learning, processing, and change.

CS417 Computer Arabization ع ح ٤١٧ تعريب الحاسب

This course discusses issues and techniques that arise in computer Arabization. Topics include Arabic coding systems, Arabic display (visual output), Arabic speech synthesis (audio output), Arabic optical character recognition (visual input), and Arabic speech recognition (audio input).

CS418 Parallel Processing ع ح ٤١٨ المعالجة المتوازية

This course will cover a range of topics involved in designing and programming parallel architectures. The course focuses on the most common type of parallel machines: shared and distributed memory multi-processor systems. The course will also cover other parallel machines and programming paradigms including data-flow, vector processing, transactional memory, and multi-threaded architectures.

CS431 Theory of Operating Systems ع ح ٤٣١ نظريات نظم التشغيل

This course covers in detail many advanced topics in operating system design and implementation. It starts with topics such as operating systems structuring, multithreading and synchronization and then moves on to systems issues in parallel and distributed computing systems. The course will also introduce topics such as virtual memory management, file systems, protection and security, operating system extension techniques, fault tolerance, and the history of systems programming.

CS432 Distributed Systems **ع ح ٤٣٢ الأنظمة الموزعة**

The structure of distributed systems using multiple levels of software is investigated. The aim of this course is to take a look at different parts of distributed systems by considering programming paradigms for distributed systems and the different basic distributed algorithms, which gives an impression of the basic problems involved in developing distributed systems. Also, the course discusses DS security, and how services are located. Finally, it exemplifies the application level by looking at file services, replications and distributed shared memory.

CS443 Digital Image Processing **ع ح ٤٤٣ معالجة الصور الرقمية**

This course focuses on the properties of digital images, design of display systems and algorithms, time and frequency representations, filters, image formation and enhancement, Image sampling and quantization, color, point operations, segmentation, linear image filtering and correlation, image transforms, Eigen images, multidimensional signals and systems, multi-resolution image processing, wavelets, morphological image processing, noise reduction and restoration, simple feature extraction and recognition tasks. Students write and investigate image processing algorithms in Matlab.

CS444 Virtual Reality **ع ح ٤٤٤ الواقع الافتراضي**

The main objective of the course is to give an introductory to virtual reality and to give the student the basic skills to understand and evaluate VR systems, applications and simulators and its impact on future digital systems and user interfaces. This course Suits for students of all fields. It gives the basic skills to understand and evaluate VR systems, applications and simulators and its impact on future digital systems and user interfaces.

CS445 Computer Vision Systems **ع ح ٤٤٥ نظم الرؤية بالحاسب**

The aim of this course is to introduce the principles, models and applications of computer vision, as well as some mechanisms used in biological visual systems that may inspire design of artificial ones. The course will cover: image formation, structure, and coding; edge and feature detection; neural operators for image analysis; texture, color, stereo, and motion; wavelet methods for visual coding and

analysis; interpretation of surfaces, solids, and shapes; data fusion; probabilistic classifiers; visual inference and learning.

CS452 Data Communications **ع ح ٤٥٢ اتصالات البيانات**

This course covers the basics of digital communications and local area networks. The topics studied include data transmission, transmission media, signal encoding techniques, error detection and correction, data compression, ARQ protocols, ALOHA protocol, and Ethernet. Topics include multiplexing, spread spectrum, switching and routing algorithms.

CS453 Wireless Networks **ع ح ٤٥٣ الشبكات اللاسلكية**

This course covers fundamental techniques in design and operation of first, second, and third generation wireless networks: cellular systems, medium access techniques, radio propagation models, error control techniques, handoff, power control, common air protocols (AMPS, IS-95, IS-136, GSM, GPRS, EDGE, WCDMA, cdma2000, etc), radio resource and network management. As an example for the third generation air interfaces, WCDMA is discussed in detail since it is expected to have a large impact on future wireless networks.

CS454 Performance Evaluation **ع ح ٤٥٤ تقييم كفاءة الأداء**

This course is devoted to studying the performance of computer and communications systems using mathematical tools (both probabilistic and deterministic.) The student should understand the queuing theory which is an essential part of Operation Research (OR) that concerns with the waiting line models. Also, the course will provide the student with a discussion of these models which are basically applications of probability theory and stochastic processes. The ultimate objective of solving these models is to determine the characteristics that measure the performance of the system.

CS499 Graduation Project **ع ح ٤٩٩ مشروع التخرج**

This project is intended to give the student a chance to put to practical use all the knowledge acquired in the Faculty since the start. It should end with a software package designed to fulfill a predefined task. Throughout the project, the student is encouraged to practice the good procedures needed in all phases of system development: analysis, design, implementation, testing, and deployment. The project may or may not include hardware design and implementation.

٢. مقررات نظم المعلومات

Information Systems Courses

IS101 Introduction to Information Systems **ن م ١٠١ مقدمة في نظم المعلومات**

This course is designed to provide an overview of computer and information systems concepts along with a working knowledge of some of the most popular software tools currently available. Upon the completion of this course, the student will be acquainted with some typical systems such as management information systems (MIS), library information systems (LIS), and geographical information systems (GIS).

IS123 Introduction to Database Systems **ن م ١٢٣ مقدمة في نظم قواعد البيانات**

Topics include database models and systems: hierarchical, network, relational, and object-relational; database design principles; structures for efficient data access; query languages and processing; database applications development; views; security; concurrency; recovery. This course investigates the process of relational database design starting from conceptual database design, through logical database design up to and including physical database design, database tuning and administration Introduction to data abstraction E-R models, normalization theory.

IS201 Information Theory **ن م ٢٠١ نظرية المعلومات**

Information theory explores the fundamental limits of the representation and transmission of information. The course will include discrete information systems, random events and information content, entropy, information sources, characteristics of languages, optimum coding, prefix codes, block codes, communication channels (general, binary, ternary), channel capacity, errorless transmission boundaries, error-correcting codes, hamming codes, linear codes, BCH, convolution codes, signals, line spectrum, Fourier series and integral, sampling , Gaussian random process, random signal and noise, modulation and detection principles, sampling theorem, pulse modulations, power spectrum and limits, noise and error, non equidistant quantization, and capacity of band-limited channel.

IS210 Systems Analysis and Design **ن م ٢١٠ تحليل وتصميم النظم**

This course focuses on the systems analysis and Design techniques employed in the development of software applications. Topics include: software process and process models (e.g. Rational Unified Process), project management, structured and object oriented analysis, system design, quality systems, system and software architecture, design patterns, re-use and component-based design, change control and configuration management. Analysis and design will be covered primarily from an object oriented perspectives.

IS253 Fundamentals of Multimedia **ن م ٢٥٣ أساسيات الوسائط المتعددة**

Introduction to the use of mixed-media software tools for effective communication. The course will include multimedia hardware: multimedia objects and their acquisition, applications of multimedia, multimedia tools and techniques; authoring advanced multimedia applications using authoring systems; investigating Windows programs for multimedia applications. The course will discuss types of multimedia information: text, speech, audio, images, graphics, video, animation and their characterization; multimedia processing, compression standards and techniques; multimedia systems, storage and I/O devices as well as content generation and manipulation tools; multimedia networking characteristics, requirements and protocols; multimedia applications in communication, database and entertainment.

IS302 Information Security **ن م ٣٠٢ أمن المعلومات**

This course provides a broad overview of the threats to the security of information systems, the responsibilities and basic tools for information security, and the levels of training and expertise needed in organizations to reach and maintain a state of acceptable security. This course also introduces the authentication models and protection models. It also aims to let the student understand the security kernels, secure programming, intrusion detection and response, and operational security issues.

IS303 Information Visualization **ن م ٣٠٣ رؤية المعلومات**

Information visualization is an area focusing on representing large quantities of information in a visual form to help people understand and analyze that information. The purpose of this course is to introduce students to the key theoretical and practical concepts and issues in this fast-growing discipline. Upon completion of this course, students should be able to design and evaluate visually-based information systems. Knowledge of information visualization concepts has a wide range of applications. Information visualization has applications in construction, medicine, education, parallel and distributed systems programming, geographical information systems, simulation, in addition to the design of web-based information systems, interactive multimedia, security systems, engineering systems, information booths, digital libraries, virtual environments, and almost any visually-based computer program.

IS304 Library Information Systems **ن م ٣٠٤ نظم معلومات المكتبات**

The software and hardware that constitute integrated library systems allow for the efficient operation of library public, technical and administrative services. Online databases, act as key information resources for patrons and staff. Web-based resources are newer innovations and enhance information access, often providing customized content. This course intends to provide students with an understanding of the concepts and applications of computer automation in libraries and information centers. The workload is designed to simulate the challenges of working in library systems: juggling multiple priorities simultaneously in a team-based environment. Students will learn skills that can be applied on the job in both technical and broader administrative capacities. Students will gain confidence in their abilities to support technology initiatives.

IS308 Information Retrieval Systems **ن م ٣٠٨ نظم استرجاع المعلومات**

Principles of information retrieval and their application to information systems and services are introduced. The course emphasizes models of user information seeking behavior, human information processing and their relationship to retrieval models in information systems. It focuses on the principles and methods of information retrieval through interactive database searching. Problems of online database organization and structure, search strategy formulation, and online search service management are investigated.

IS311 Decision Support Systems **ن م ٣١١ نظم دعم اتخاذ القرار**

The course gives an introduction to decision analysis with elements of human cognition under uncertainty. Topics include structuring decision problems and developing creative decision options, quantifying uncertainty and preferences, and combining uncertainty and preferences to arrive at optimal decisions. The class provides the foundation needed to apply methods of decision analysis in decision support systems. NOTE: This course can also be used to fulfill the distribution requirement in the Cognitive Science area.

IS330 Time-Series Databases **ن م ٣٣٠ قواعد البيانات المتسلسلة زمنياً**

In the real world, there are thousands of time series data that coexists with other data. Every day tons of data is collected in the form of time series. Time series is a collection of observations that is recorded or measured over time on a regular or irregular basis generally sequentially. Time series arise in financial, economic, and scientific applications. Typical examples are the recording of different values of stock prices, bank transactions, consumer price index, electricity and telecommunication data, etc. In theory, such data is processed, analyzed, disseminated, and presented. However, many institutions are facing some difficult issues in organizing such a vast amount of data.

IS331 Object-Oriented Database **ن م ٣٣١ قواعد البيانات الشيئية**

The course gives the students knowledge about problems concerning relational databases, extensions of the relational model, especially nested relational systems. Also, this course provides theoretical foundations for the nested relational model, object-oriented databases' concepts and problems, semantic modeling, meta programming and concurrent problems. The course will also introduce prototypes and interfaces for object-oriented database handling, existing commercial and experimental object oriented database handling systems and distributed object-oriented database handling systems.

IS332 Multidimensional Databases **ن م ٣٣٢ قواعد البيانات متعددة الأبعاد**

During the past decade, multidimensional databases emerged to manage multimedia data, sensor data, business data and more. The multidimensional data models and schemas are used to implement current data warehouses, On Line Analytical Processing (OLAP) systems, and data mining applications.

IS333 Natural Language Databases **ن م ٣٣٣ قواعد بيانات اللغات الحية**

The course provides an overview of natural language processing theories, application areas, current research fields, the relationship of natural language processing to other disciplines and the components of a natural language processing system. Querying techniques of NL databases are investigated. The semantics-based query theory is studied.

IS334 Multimedia Databases **ن م ٣٣٤ قواعد بيانات الوسائط المتعددة**

The course introduces the student to the principles of multimedia information processing and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia information retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval.

IS340 Computer Networks Management **ن م ٣٤٠ إدارة شبكات الحاسب**

The course covers the basic principles of telecommunication, computer networking technologies, and managing a local area network (LAN) in a business environment. The course provides hands-on experience in LAN administration using widely adopted networking software in a computer laboratory. Topics covered include the concepts of computer networking and data communication, understanding and evaluating telecommunication media and devices, understanding and evaluating network protocols, setting up and configuring network services, creating and managing network user environment, and performing network administrative tasks.

IS341 Enterprise Networks Management **ن م ٣٤١ إدارة شبكات المؤسسات**

This course addresses modern enterprise network systems which are complex, multi-vendor, and vital to organizations functioning. They include Local Area Networks (LAN) integrated with Network Management Systems (NMS) that are comprised of internetworking devices, bridges, routers, gateways, and backbone interfaces. Topics cover various aspects: such as NMS standards, hardware and software tools for NMS and configuration management, along with management policies.

IS352 Knowledge Representation and Reasoning **ن م ٣٥٢ تمثيل المعرفة والاستدلال**

By the end of the course, a successful student should be able to understand the principles and operations of knowledge-based systems, and be familiar with the design of knowledge bases. Transformation of logical knowledge models into physical knowledge models is investigated. Knowledge representation and case based reasoning (CBR) techniques are discussed.

IS360 Electronic Business **ن م ٣٦٠ الأعمال الالكترونية**

This subject aims to provide students with an understanding of e-Business fundamentals. It covers key areas of e-Business, including: business-to-consumer, business-to-business and business-to-government electronic commerce (EC), online business models and electronic payment systems (EPS) and EC technology basics, standards, regulation and policy, security and social and economic issues will also be considered in the contexts of business Intranets, Extranets and the Internet. The subject also provides an introduction to the 'Patterns for e-Business' approach to e-Business analysis and design.

IS365 Electronic Government **ن م ٣٦٥ الحكومة الإلكترونية**

This course will introduce the ways in which internet technologies are affecting how people interact with government, and how governments, in turn, are using and managing these technologies to better provide information and services to the public. Course content is divided into three main themes, and begins with an overview of development techniques and assessment methods for public web sites and on-line applications. The course will then examine key policy issues relevant to implementation of e-government programs, as well as to the broader use of information technology in democratic societies. Finally, you will have a chance to explore the skills and concepts needed to effectively manage e-government projects and programs. A variety of internet tools to help accomplish this, including blogs, RSS feeds, and virtual technologies, such as Second Life are investigated.

IS405 Geographical Information Systems **ن م ٤٠٥ نظم المعلومات الجغرافية**

Geographic Information Systems (GIS) are systems of hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling and display of spatially referenced data for solving complex planning problems. This course covers underlying geographic concepts (world coordinate system and projections, vector map topology, tiled and layered maps, standard computer map file formats, urban applications, etc.) and provides computer lab tutorials and case studies on the leading GIS software, ArcGIS. By the end of the course, students will have sufficient background so that with on-the-job experience, they can become expert users of GIS in organizations - building, managing, and using GIS maps and data.

IS406 Web Information Systems **ن م ٤٠٦ نظم معلومات الويب**

This course will provide a design and development of Web-based systems. It includes Internet and Web technology; Web development using design procedures, HTML, and XML; and hands-on experience in website design and authoring. The course will provide students with real world experience in the field of web information systems. Students will become acquainted with the work place while enhancing their professional skills and interacting with other web information systems professionals.

IS407 Medical Information Systems **ن م ٤٠٧ نظم المعلومات الطبية**

This course will provide the student with a framework for understanding the vocabulary, theory and issues germane to the advancement of informatics and its application in the medical and health sciences. While the emphasis will be on health sciences as exemplars of applied informatics, some working systems will be explored. This overview of medical and health informatics will focus on the multi-disciplinary nature of the field.

IS435 Distributed Databases **ن م ٤٣٥ قواعد البيانات الموزعة**

The principles and system organization of distributed databases are introduced. Data fragmentation and distribution, distributed database design, query processing and optimization, distributed concurrency control, reliability and commit protocols, and replicated data management. Distributed algorithms for data management: clocks, deadlock detection, and mutual exclusion are discussed. Heterogeneous and federated distributed database systems are introduced.

IS436 XML Databases **ن م ٤٣٦ قواعد بيانات النصوص الفوقية**

This course will explore the current literature on XML databases and related technologies. The course will discuss current solutions to such issues as storage, indexing and query processing, and identify potential research areas. This course will also introduce topics such as XSLT, XPath, XML Schema, and XML DOM.

IS450 Knowledge Based Systems **ن م ٤٥٠ نظم قواعد المعرفة**

This course reviews the first-order logic, relational algebra, and relational calculus. Fundamentals of logic programming and logic for knowledge representation are introduced. Architecture of a knowledge-base system. Fundamentals of deductive databases. Top-down and bottom-up query processing. Some important query processing strategies and their comparison. Project or term paper on current research topics. The course also includes knowledge-based methods for artificial intelligence systems: knowledge representation, organization, and application. Typical content includes: Principles of memory organization, indexing and retrieval. Memory-based, analogical, and case-based reasoning.

IS451 Expert Systems **ن م ٤٥١ النظم الخبيرة**

The course includes topics such as concepts of knowledge-based systems and expert systems. Use of artificial intelligence concepts in the development of systems for expert decision making, with application to business problems. Review and use of selected commercial expert systems software packages. Components of expert systems. Knowledge acquisition. Expert systems development with a commercial shell. Manipulation of quantified uncertainty factors. Derivation of knowledge from data. Significance of groupware and document management systems to decision-making.

IS461 Electronic Commerce **ن م ٤٦١ التجارة الإلكترونية**

In this course, the student will examine the history of the Internet and its influence on E-Commerce; the validity of E-Commerce, and why it is increasingly being integrated into the business model. You will also explore the fundamental business concepts as they relate to E-Commerce, such as customer relationship management; e-procurement; security and staffing issues; planning; metric identification techniques for measuring the success of E-Commerce initiatives; marketing strategies on the World Wide Web; and information on E-Commerce software, hardware, and service providers.

IS462 Electronic Learning **ن م ٤٦٢ التعلم الإلكتروني**

In the education sector, e-learning increases access to education by making it possible for students to fit their education into traditional lifestyles and work schedules and choose from a wider-range of courses and learning opportunities. E-learning uses a Learning Management System (LMS) to host courses. A student can log into the system, using an ID and password, and use the course interactively. The learning system provides ways for self assessment, interaction with the teacher, interaction with the peers, uploading and downloading assignments. Relevant software, hardware, and courseware will be reviewed. The course will also introduce a learning content management system to monitor teaching-learning process. Participants will draft their own courseware development plan based on sound principles of instructional systems design.

IS463 Electronic Health **ن م ٤٦٣ الصحة الإلكترونية**

This course provides IT professionals with the theoretical and practical knowledge which will enable them to take leading roles within the emerging field of Health Informatics. Principles of tools such as telemedicine, remote operating theatre, interconnection of medical data systems, automatic diagnosis, analysis of medical images, and archiving of medical records are investigated.

IS464 Electronic Banking **ن م ٤٦٤ البنوك الإلكترونية**

Technology for managing payments across electronic networks, including the banking and electronic funds transfer network. Payment gateways, electronic presentment, clearance, and dishonor, credit card transactions, and electronic bill payment. Properties and examples of digital cash: e-cash, cyber-cash, electronic purses, negotiable electronic instruments, secure checks, billing servers, micropayments. Authenticity, integrity, provability of transactions, methods for assuring delivery before payment: electronic bills, letters of credit, risks: money laundering, kiting, offshore issues, allocation of risk among buyer, seller, bank and intermediaries.

IS470 Data Warehouses **ن م ٤٧٠ مستودعات البيانات**

In this course, students study the issues involved in planning, designing, building, populating, and maintaining a successful data warehouse. Students learn the reasons why data warehousing is a compelling decision-support solution in today's business climate. Upon course completion, the student should be able to explain how a data warehouse can be used to support all levels of management when making strategic, tactical and operational decisions that affect the organization.

IS471 Data Mining **ن م ٤٧١ التنقيب عن البيانات**

Data mining plays an important role in financial industry, retail industry, Internet services, and e-business. It integrates techniques from databases, machine learning, artificial intelligence, statistics, and visualization to discover implicit and useful knowledge from large datasets. The course will provide a comprehensive introduction to data mining, various data mining techniques, and some successful applications. The emphasis is on modern approaches such as OLAP, decision tree learning, Bayesian learning, clustering, and association learning. Real world applications with data mining algorithms and tools will be emphasized.

IS480 Bioinformatics **ن م ٤٨٠ المعلوماتية الحيوية**

The course introduces principles, concepts, methods, techniques, algorithms, tools, and strategies to transform and process the masses of information from biological experiments, focusing particularly on biological sequence data. It covers topics such as: DNA and protein sequence alignment and analysis, sequence analysis software, database searching, database search heuristic algorithms, sequence alignment dynamic programming algorithms, RNA folding, and multiple sequence alignment and analysis.

IS499 Graduation Project **ن م ٤٩٩ مشروع التخرج**

This project is intended to give the student a chance to put to practical use all the knowledge acquired in the Faculty since the start. It should end with a software package designed to fulfill a predefined task. Throughout the project, the student is encouraged to practice the good procedures needed in all phases of system development: analysis, design, implementation, testing, and deployment. The project may or may not include hardware design and implementation.

٣. مقررات العلوم الأساسية

Basic Science Courses

BS101 Calculus ع أ ١٠١ تفاضل وتكامل

This course covers the basics of calculus, topics covers real numbers and functions, inequalities and absolute values, the domain and the range of a function, operations and properties of functions, composite functions, even and odd functions, increasing and decreasing functions, the inverse functions, limits and continuity of functions, limit of sequences, differentiation, the integration, definite integrals and applications of the integration.

BS102 Linear Algebra ع أ ١٠٢ الجبر الخطي

This course covers the following topics: Linear systems and matrices, introduction to linear systems, Gauss-Jordan elimination, matrix operations, inverses of matrices, determinants, 2 x 2 determinants, higher-order determinants, determinants and elementary row operations, Cramer's rule and inverse matrices, vectors in the plane and in space, vector spaces, the vector spaces R2, the vector space R3, orthogonally and the Dot product.

BS103 Discrete Mathematics ع أ ١٠٣ الرياضيات الغير متصلة

This course covers the mathematical topics most directly related to computer science. Topics included: logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, graph theory, combinatory, discrete probability, recursion, recurrence relations, and number theory, with an emphasis on application on computer science.

BS110 Statistics and Probabilities ع أ ١١٠ إحصاء و احتمالات

This course gives an introduction to probability theory and mathematical statistics that emphasizes the probabilistic foundations required to understand probability models and statistical methods. Topics covered will include the probability axioms, basic combinatory, discrete and continuous random variables, probability distributions, mathematical expectation, common families of probability distributions, and the central limit theorem. Most of exercises are related to the computer applications.

BS203 Differential Equations **ع أ ٢٠٣ المعادلات التفاضلية**

This course provides an introduction to the basic methods of solving differential equations (both ordinary & partial). Separable, homogenous, exact and linear differential equations are addressed. The main techniques considered to solve higher order differential equations are operator method, series solution, Laplace transform, and numerical methods, Euler's method, Runge-Kutta methods, multistep methods, predictor-corrector methods, stability theory, stiff systems. The course presents view of: First Order PDE's, linear equations and quasi-linear equations, shock waves, Parabolic Problems (heat equation, separation of variables, integral transform methods), Hyperbolic Problems (wave equation, D'Alembert Solution), Elliptic Problems (Dirichlet problem, Green's functions.

BS204 Advanced Mathematics **ع أ ٢٠٤ الرياضيات المتقدمة**

This course covers the study of integral transforms, especially the Laplace and Fourier transforms and convolution theorems; Topics include definitions, basic formulas, relations, operational properties, complex analysis and integration, inversion formulas, and solutions of ordinary and partial differential equations.

BS205 Operations Research **ع أ ٢٠٥ بحوث العمليات**

This course presents new description: convex set function and concave function, feasible region of solution, and modeling in operations research, linear programming, graphical method, Duality, sensitivity analysis, network models, shortest path, maximum flow problems, transportation and assignment problems. The course also includes case studies on Game theory, Fractional linear programming. The student should understand how to formulate problems, construct and solve mathematical models, and apply the systems approach to problem solving. Also be able to apply the general concepts of optimization to solve these models.

BS211 Stochastic Processes **ع أ ٢١١ العمليات التصادفية**

This course includes an introduction to elementary stochastic processes and their applications to various phenomena in engineering, management science, the physical and social sciences, and operations research. It also covers: Markov chains and processes, Brownian motion and Gaussian processes, point processes and renewal processes, martingales and weakly dependent stochastic processes, and convergence of stochastic processes.

BS221 Physics **ع أ ٢٢١ فيزياء**

This course gives an introduction to analog and digital electronics with an emphasis on their use in the laboratory. Topics include linear devices and basic linear circuit analysis, diodes, transistors, op-amps, the use of digital components including logic gates, flip-flops, counters, clocks and microcontrollers, and analog to digital conversions.

٤–المقررات عامة
General Courses

G101 Introduction to General Ecology **ع ١٠١ مقدمة في علم البيئة**

The topics of this course includes: population structure and dynamics, organization and classification of communities, and nutrient and energy flows in ecosystems, techniques and methodologies to assess organism, population, community, or ecosystem interactions, current ecological approaches used to quantify impacts of natural and human disturbances on ecosystem structure and function. Case studies illustrate impacts and management strategies in fields such as environmental toxicology, conservation ecology, agro-ecosystem ecology, and restoration ecology.

G104 Arabic Language **ع ١٠٤ اللغة العربية**

This course is designed to increase vocabulary and extend facility with Arabic grammatical forms. Reading and writing abilities will develop beyond the range of a simple sentence to that of more complexes. Emphasis will be on the technical uses of the Arabic Language.

G105 English Language 1 **ع ١٠٥ اللغة الإنجليزية ١**

This course introduces the student to the technical English styles and modern trends, with the aim to allow the student to communicate an idea or a problem in English to a reader effectively. It helps students in researching, planning, writing, revising and presenting a formal technical report. The emphasis will be on the technical English that is oriented towards computer and information technology.

G203 English Language 2 **ع ٢٠٣ اللغة الإنجليزية ٢**

This syllabus provides a general outline proposal for creating courses for advanced level students. The objective of this course is to improve Daily life interrogative and discourse capabilities, Basic person and place descriptive abilities, Number, time, quantity, and cost use, Daily life receptive understanding skills, written usage to express situations, give instructions and explanations, communicate opinions, and narrate and comprehend stories.

G202 Technical Writing **ع ٢٠٢ الكتابة الفنية**

By the end of the course, the student should have been exposed to writing such documents as proposals, projects, term papers, specification sheets, user manuals and project catalogs.